THE SOCIETY FOR SURGERY
OF THE ALIMENTARY TRACT

PROGRAM

FORTY FIFTH ANNUAL MEETING
Ernest N. Morial Convention Center
New Orleans, Louisiana
May 16 -19, 2004

PLEASE BRING THIS PROGRAM BOOK WITH YOU TO THE ANNUAL MEETING
ACCREDITATION STATEMENT

ACCREDITATION
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American College of Surgeons and the Society for Surgery of the Alimentary Tract. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

CME CREDIT
The American College of Surgeons designates this educational activity for up to a maximum of 31 category 1 credits toward the AMA Physician’s Recognition Award. Each physician should claim only those credits that he/she actually spent in the educational activity.

AMERICANS WITH DISABILITIES ACT
If you require special accommodations to attend or participate in the CME activity, please provide information about your requirements to SSAT, 900 Cummings Center, Suite 221U, Beverly, MA 01915; (978) 927-8330; Fax: (978) 524-0498 • ssat@prri.com
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OF THE ALIMENTARY TRACT

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Journal of Gastrointestinal Surgery
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In August 1958, Dr. Turell had visited Dr. Cole in Chicago to discuss the desirability of the formation of a new Society for Surgery of the Colon. Dr. Turell had for some years felt the need for a “platform” devoted entirely to the surgical problems of the intestinal tract.

This need was made more apparent by correspondence received by Dr. Turell from a number of surgeons interested in this field as a result of a correspondence stimulated by his book dealing with disease of the anus, rectum, and colon.

Dr. Cole, when approached in 1958 by Dr. Turell, mentioned that many surgeons would think that too many societies already were in existence. He stated, however, that he believed such an organization would serve a very important function by providing a forum for significant contributions in this area and especially for the many active younger surgeons in the country who are contributing to this field.

Drs. Cole and Turell decided to contact the highly respected surgeon and good friend of so many of us, the late John M. Waugh, as to whether he might have similar thoughts regarding such a society. Dr. Waugh was enthusiastic from the beginning and apparently had been thinking independently regarding the desirability of such an organization.

In 1958 and 1959 a group of surgeons selected by Drs. Cole, Turell, and Waugh were invited to become founder members of the Society for Surgery of the Colon. Several, when first approached, had some reservations regarding the need of another society and a number of these called or wrote Dr. Cole regarding his thoughts on the matter. However, almost all who were invited to join accepted the invitation.

The first meeting was held on June 12, 1960 in Miami Beach, on the Sunday preceding the meeting of the American Medical Association. The Society had been incorporated in the State of Delaware in the spring with Drs. Cole, Turell, and Waugh being named as trustees.

Dr. Turell served as Program Chairman for the first meeting at which time nineteen papers were presented and two panel discussions conducted. At the executive session Dr. Cole presided and those present formally elected officers for the following year. The officers named were: President, Dr. Warren H. Cole; President-Elect, Dr. John M. Waugh; Secretary, Dr. Robert Turell.
The trustees at this time consisted of Drs. Warren Cole, John Waugh, Robert Turell, Robert Zollinger, and Walter Maddock.

It was decided to add two additional members to the council for the following year. Dr. Victor Richards of San Francisco and Dr. Harwell Wilson of Memphis were named as trustees.

Dr. James D. Hardy was appointed Chairman of the Program Committee by Dr. Cole, the President. Dr. Hardy suggested that the scope of the Society be enlarged to include the entire gastrointestinal tract. This suggestion was favorably acted upon first by the trustees and then by the membership at the second annual meeting held in New York the following year. Fifty-two members and a number of guests attended the meeting.

The third annual meeting of the Society, now named the Society for Surgery of the Alimentary Tract, was held in Chicago with Dr. Waugh, President; Dr. Walter G. Maddock, President-Elect; Dr. Robert Turell, Secretary. Dr. James Hardy was again Chairman of the Program Committee and Dr. Robert M. Zollinger was Chairman of the Committee on Admissions. Two additional members were elected to the Board of Trustees. These were Dr. J. E. Dunphy and Dr. Claude E. Welch. The meeting was attended by sixty-eight members and fifty-one guests. Seventeen interesting clinical papers were presented followed by a clinical physiology seminar moderated by Dr. Dunphy. Other participants to the symposium were Drs. Henry N. Harkins, Edward R. Woodward, S. Stuart Welch, and Robert Zollinger. Dr. Walter Maddock was named President and Dr. Robert Zollinger, President-Elect. Dr. Robert Turell remained as Secretary.”

*American Journal of Surgery 111:1. 1966*
SSAT FOUNDATION

The SSAT Foundation is the philanthropic and marketing arm of the Society for Surgery of the Alimentary Tract. The Foundation was established in 2000 to help the Society achieve its mission. Founded over forty years ago, the SSAT now has a membership of over 2500 physicians and is in the forefront of its medical specialty. The SSAT’s mission is to stimulate, foster and provide surgical leadership in the art and science of patient care; to promote and support the education and research of the diseases and functions of the alimentary tract; to provide a forum for the presentation of such research and education endeavors; and to foster training and funding opportunities and scientific publications in support of these activities.

Research and education remain the cornerstone of fulfilling the Society’s mission and the Foundation seeks to support the SSAT’s current initiatives including the Career Development Award for young faculty members, the Residents’ Conference held at the time of Digestive Disease Week, the Traveling Fellowship for Surgeons in Private or Hospital-Based Community Practice, and the International Traveling Fellowship for Surgeons in Academic Practice.

The SSAT Foundation receives support from a variety of sources including private foundations, industry, and individual friends of the Society, most notably SSAT members. The Foundation offers a variety of giving opportunities including charitable lead trusts, charitable remainder trusts, bequests, and other planned giving instruments. The Foundation is proud of its supporters and pays special tribute to its donors through recognition of them in the table listed below.

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For listing of contributions, please refer to the printed Program Book.
GUEST ORATION
“Exploring Mars: NASA’s Opportunity & Spirit Rover’s”

Monday, May 17, 2004
11:15 a.m. - 12:00 p.m.
Ernest N. Morial Convention Center Room 243/244

MATTHEW T. WALLACE
Mission Manager, Opportunity Mars Rover
NASA Jet Propulsion Laboratory
Valencia, California
STATE OF THE ART LECTURER
“Strategies for Improving Surgical Outcomes: Better Surgeons or Better Operations?”

Tuesday, May 18, 2004
11:15 a.m. - 12:00 p.m.
Ernest N. Morial Convention Center Room 293/294

JOHN D. BIRKMEYER, M.D.
University of Michigan Medical Center
Ann Arbor, Michigan
FOUNDERS MEDAL

Tuesday, May 18, 2004
5:45 p.m. – 6:00 p.m.
Ernest N. Morial Convention Center Room 293/294

ISIDORE COHN, JR., M.D.
Louisiana State University
New Orleans, Louisiana
MONDAY, MAY 17, 2004

8:00 - 8:15 AM  SSAT OPENING SESSION  CC 243-244
Chair: Robert W. Beart Jr., Los Angeles, CA
Introduction of new members, reports of SSAT scholarship awards, the SSAT Foundation and recognition of Foundation donors

8:15 - 9:15 AM  PRESIDENTIAL PLENARY SESSION  CC 243-244
Moderator: Laurence Y. Cheung, Kansas City, KS

192  Melanocortin-4 Receptor Gene Variants Affect Results of Gastric Banding
John G. Kral, Ruth Branson, Grazyna Piec, Thomas Ricklin, Rudolf Steffen, Margret R. Hoehe, Klaus-Ulrich Lentes, Natascha Potoczna, Fritz F. Horber, Department of Surgery, SUNY Downstate Medical Center, Brooklyn, NY, Klinik Hirslanden, Zurich, Switzerland, Klinik Beau-Site, Bern, Switzerland, Max-Plank Institute for Molecular Genetics, Berlin, Germany, Bioscientia GmbH, Ingelheim

193  Recurrent Disease After Radical Resection for Pancreatic and Periampullary Adenocarcinoma: Should All Patients Receive Adjuvant Therapy?
Steve de Castro, K. F. D. Kuhlmann, O. R. C. Busch, G. Johan Offerhaus, T. M. van Gulik, Huug Obertop, D. J. Gouma, Academic Medical Center, Amsterdam, Netherlands

194  Surgical Results of a Comprehensive Intestinal Failure Program
Debra Sudan, Kishore Iyer, Jon Thompson, Steve Raynor, Clarivet Torres, Simon Horslen, Wendy Grant, Jean Botha, Alan Langnas, University of Nebraska Medical Center, Omaha, NE
195  Hepatic Resection (HR) Versus Laparoscopic Radiofrequency (RF) in the Treatment of Hepatocellular Carcinoma (HCC) of Liver Cirrhosis: A Prospective Comparative Study
Marco Montorsi, Roberto Santambrogio, Mara Costa, Paolo Bianchi, Angela Palmisano, Matteo Donadon, Eliana Moroni, Hepatobiliary Surgical Unit, Milano, Italy

9:15 – 10:00 AM  PRESIDENTIAL ADDRESS
Robert W. Beart Jr., Los Angeles, CA

10:30 - 12:00 PM  PLENARY SESSION
Moderator: Robert W. Beart Jr., Los Angeles, CA

202  A National Comparison of Surgical Versus Percutaneous Drainage of Pancreatic Psuedocysts: 1997-2001
John Morton, Alphonso Brown, Joseph Galanko, Jeff Norton, Ian Grimm, Kevin Behrns, Stanford School of Medicine, Stanford, CA, University of North Carolina, Chapel Hill, NC

203  Molecular Biology of Squamous Cell Carcinoma of the Anus: A Comparison of HIV Positive and HIV Negative Patients
Pascal Gervaz, Dieter Hahnloser, Bruce Wolff, Steven Thibodeau, Lawrence Burgart, Robert Beart, University Hospital Geneva, Geneve, Switzerland, Mayo Clinic Rochester, Rochester, MN, University South California, Los Angeles, CA

204  First Experience with Sentinel Lymphadenectomy in Early Adenocarcinoma of the Distal Esophagus and Esophagogastric Junction
Hubert J. Stein, Maria Burian, Marcus Feith, Morand Piert, Jorg Naehrig, J. Ruediger Siewert, Chirurgische Klinik und Poliklinik TU Muenchen, Munich, Germany, Department of Nuclear Medicine TU Munich, Munich, Germany, Department of Pathology TU Munich, Munich, Germany

11:15 - 12:00 PM  GUEST ORATION
EXPLORING MARS: NASA’S OPPORTUNITY & SPIRIT ROVER’S
Matthew T. Wallace, Mission Manager, Opportunity Mars Rover, NASA Jet Propulsion Laboratory, Valencia, CA
12:00 - 2:00 PM  **SSAT POSTER SESSION**  
**CC HALL F**

12:30 - 1:45 PM  **DDW MEET-THE-PROFESSOR LUNCHEON**  
**CC 269**

**Chronic Pancreatitis**  
Hans G. Beger, Ulm, Germany

12:30 - 1:45 PM  **DDW MEET-THE-PROFESSOR LUNCHEON**  
**Grand Salon B12, Hilton Riverside**

**Management of Crohn’s dx**  
Bruce A. Harms, Madison, WI

12:30 - 1:45 PM  **DDW MEET-THE-PROFESSOR LUNCHEON**  
**Salon B10, Hilton Riverside**

**Pancreatic Neuroendocrine Tumors**  
Charles J. Yeo, Cockeysville, MD

2:15 - 3:45 PM  **DDW COMBINED CLINICAL SYMPOSIUM**  
**CC Auditorium C**

*Sponsored by: SSAT, ASGE*

**CARCINOID TUMORS: MANAGEMENT AND THERAPEUTICS**

*Chairs: Barbara L. Bass, Baltimore, MD*  
*Michael L. Kochman, Philadelphia, PA*

**Carcinoid Tumors: Tumor Biology and Clinical Presentation**  
John Del Valle, Ann Arbor, MI

**Diagnostic Tools and Medical Therapies**  
David C. Metz, Philadelphia, PA

**Surgical Management of Primary and Metastatic Tumors**  
Richard C. Karl, Tampa, FL

**Somatostatin Receptor Targeted Therapeutics**  
Larry Kvols, Tampa, FL
2:15 - 3:45 PM

**DDW COMBINED CLINICAL SYMPOSIUM**

CC Auditorium A/B

*Sponsored by: AGA, SSAT, ASGE*

**CONTROVERSIES IN ULCERATIVE COLITIS**

*Chairs: Gary R. Lichtenstein, Merion Station, PA
Fabrizio W. Michelassi Jr., Chicago, IL*

**Acute Severe Colitis is an Indication for Colectomy: Con**

Russell D. Cohen, Chicago, IL

**Acute Severe Colitis is an Indication for Colectomy: Pro**

Philip Fleshner, Los Angeles, CA

**Low Grade Dysplasia is an Indication for Colectomy: Con**

Daniel H. Present, New York, NY

**Low Grade Dysplasia is an Indication for Colectomy: Pro**

John H. Pemberton, Rochester, MN

**Pouch Complications is an Indication for Pouch Removal: Con**

Edward V. Loftus Jr., Rochester, MN

**Pouch Complications is an Indication for Pouch Removal: Pro**

Robin S. McLeod, Toronto, Canada

2:15 - 5:30 PM

**SSAT/ AGA / ASGE STATE-OF-THE-ART CONFERENCE**

CC 245

**THE MANAGEMENT OF RADIATION-INDUCED INTESTINAL INJURY**

*Chairs: Walter A. Koltun, Hershey, PA
Herbert Chen, Madison, WI*

**Radiation Induced Gastrointestinal Injury: The Scope of the Problem**

Theodore J. Saclarides, Chicago, IL

**Pathophysiology & Techniques to Minimize Gastrointestinal Injury**

Scott P. Tannehill, Madison, WI

**Non-Operative Management of Radiation Enteritis and Colitis**

Thomas J McGarrity, Hershey, PA
Surgical Management of Small Bowel Radiation Injury
Keith D. Lillemoe, Indianapolis, IN

Surgical Management of Large Bowel Radiation Injury
Robert D. Fry, Philadelphia, PA

Discussion/Consensus Statement

2:15 - 5:00 PM
SSAT PLENARY SESSION  CC 243-244
Moderators: Syed A. Ahmad, Cincinnati, OH
Nathaniel J. Soper, Chicago, IL

272 Nissen Versus Anterior Laparoscopic Fundoplication. A Prospective, Randomised, Double Blind Trial
Robert J. Baigrie, University of Cape Town, Cape Town, South Africa

273 Non-obese Diabetic Mice Have Diminished Gallbladder Motility
Shannon J. Graewin, James M. Kiely, Keun-Ho Lee, Attila Nakeeb, Henry A. Pitt, Medical College of Wisconsin, Milwaukee, WI

274 Resection of the Superior Mesenteric-Portal Vein for Pancreatic Adenocarcinoma: Margin Status and Survival Duration
Jennifer F. Tseng, Charlotte C. Sun, Eddie K. Abdalla, Jean-Nicolas Vauthey, Peter W. T. Pisters, Jeffrey E. Lee, Douglas B. Evans, UT/ MD Anderson Cancer Center, Houston, TX

275 Fas/FasL Play an Important Role in Pancreatitis-Induced Liver Injury
Scott F. Gallagher, Yanhua Peng, Jun Yang, Krista Haines, Kathryn Baksh, Heather Carpenter, P. K. Epling-Burnette, Michel M. Murr, University of South Florida, Tampa, FL

276 18-FDG PET in Differentiating Malignant from Benign Pancreatic Cystic Lesions: A Prospective Study
Cosimo Sperti, Claudio Pasquali, Andrea Ferronato, Domenico Decet, Franca Chierichetti, Guido Liessi, Sergio Pedrazzoli, Clinica Chirurgica IV, Padova, Italy, Dept. of Nuclear Medicine, Ospedale Civile, Castelfranco Veneto, Italy, Dept. of Radiology, Ospedale Civile, Castelfranco Veneto, Italy
277 Ultrastaging of Non Sentinel Lymph Nodes (SLNs) Does Not Benefit Staging of Colorectal Cancer (CRCa)
S. Saha, D. Wiese, M. Nolff, A. Dan, E. Schochet, R. Aravapalli, S. Jaswani, S. Arora, J. Badin, McLaren Regional Medical Center, Flint, MI

278 A Hypoxia-Inducible Angiogenic Inhibitor Blocks Capillary Formation in Hepatocellular Carcinoma
Richard H. Pin, Maura Reinblatt, Yuman Fong, Memorial Sloan-Kettering Cancer Center, New York, NY

279 Lymph Node Metastasis in T1 Adenocarcinoma of the Colon and Rectum
Philip Paty, Satoshi Okabe, Jinru Shia, Martin Weiser, Jose Guillem, Kenichi Sugihara, Douglas Wong, Memorial Sloan-Kettering Cancer Center, New York, NY, Tokyo Medical and Dental University, Tokyo, Japan

280 Hepatitis Serology Defines Tumor and Liver Disease Characteristics but Not Prognosis After Resection of Hepatocellular Carcinoma
Timothy M. Pawlik, Ronnie Tung-Ping Poon, Eddie Abdalla, J. M. Sarmiento, Iwao Ikai, David Nagorney, Jacques Belghiti, Yoshio Yamaoka, Gregory Lauwers, Jean-Nicolas Vauthey, University of Texas, M. D. Anderson Cancer Center, Houston, TX, Department of Surgery, Queen Mary Hospital, Hong Kong, China, Mayo Clinic, Rochester, MN, Kyoto University, Kyoto, Japan, Beaujon Hospital, Paris, France, Massachusetts General Hospital, Boston, MA

281 Impaired Internalization of EGFR as a Mechanism for Resistance to Erbitux (anti-EGFR Ab) Combination Therapy in BxPC-3 Pancreatic Adenocarcinoma Xenografts
Juan P. Arnoletti, Donald Buchsbaum, Zhi-Qiang Huang, Ashley Hawkins, Selwyn Vickers, University of Alabama at Birmingham, Birmingham, AL

282 Laparoscopic Adjustable Gastric Banding Versus Laparoscopic Gastric Bypass for Morbid Obesity: A Single-Institution Comparison Study of Early Results
Jay C. Jan, Dennis Hong, Emma Patterson, Legacy Health System, Portland, OR
4:00 - 5:30 PM

DDW COMBINED CLINICAL SYMPOSIUM
CC Auditorium C
Sponsored by: AGA, SSAT, ASGE, in collaboration with NAASO

THE GROWING PROBLEM OF OBESITY
Chairs:  Samuel Klein, Saint Louis, MO
        Philip R. Schauer, Pittsburgh, PA

Obesity Bias and Discrimination among Physicians
Kelly Brownell, New Haven, CT

Regulation of Food Intake: What's the Gut Got to Do with It?
Patrick Tso, Cincinnati, OH

Physiological Consequences of Bariatric Surgery
Bruce M. Wolfe, Sacramento, CA
TUESDAY, MAY 18, 2004

7:00 - 8:15 AM  SSAT VIDEO BREAKFAST SESSION  CC 293-294

BREAKFAST AT THE MOVIES: A HOW I DO IT SYMPOSIUM
Moderator: John C. Bowen III, New Orleans, LA

Ablation Techniques for Hepatic Tumors
David M. Mahvi, Madison, WI

Endoscopic Mucosal Resection Procedures for Foregut Lesions
Jeffrey L. Ponsky, Cleveland, OH

Proctectomy with Total Mesorectal Excision
Charles P. Heise, Madison, WI

Laparoscopic Bariatric Procedures
Michel Gagner, New York, NY

8:30 - 10:00 AM  SSAT PUBLIC POLICY COMMITTEE PANEL  CC 293-294

PHYSICIAN COMPETENCY: TEACHING OLD DOGS NEW TRICKS
Moderator: Pierre-Alain Clavien, Zurich, Switzerland

What is Competency?
David L. Chicago, IL

Teaching Old Dogs New Tricks
Nathaniel J. Soper, Chicago, IL

Measuring and Maintaining Competency
Barbara L. Bass, Baltimore, MD

Discussion

10:30 - 12:00 PM  SSAT PLENARY SESSION  CC 293-294

541 Visio-Spatial Testing and Computer Experience Influence the Performance of Virtual Endoscopy.
Lars Enochsson, Bengt Isaksson, Ann Kjellin, Rene Tour, Torsten Wredmark, Li Tsai-Fellander, Center of Advanced Medical Simulation, CFSS, Stockholm, Sweden
542 Inverse Expression of Cox-1 and Cox-2 in the Pathogenesis of Barrett’s Adenocarcinoma
Daniel Vallboehmer, Jeffery H. Peters, Sylke Schneider, Nahid Hamoui, Kazumi Uchida, Hidekazu Kuramochi, Daisuke Shimizu, Parakrama T. Chandasoma, Kathleen D. Danenberg, Peter Danenberg, Tom R. DeMeester, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA, Department of Biochemistry, University of Southern California, Los Angeles, CA, Department of Pathology, University of Southern California, Los Angeles, CA, Response Genetics, Inc., Los Angeles, CA, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA

543 In Patients with Disordered Post-Surgical Gastric Emptying, Temporary Gastric Electrical Stimulation (tempGES) Quickly Improves Symptoms And Gastric Emptying
Robert Schmieg, Karen Borman, Farshid Araghizadeh, Nighat Abidi, Oscar Batista, Thomas L. Abell, University of Mississippi Medical Center, Jackson, MS

11:15 - 12:00 PM STATE-OF-THE-ART LECTURER CC 293-294
Strategies for Improving Surgical Outcomes: Better Surgeons or Better Operations?
John D. Birkmeyer, Ann Arbor, MI

12:30 - 1:45 PM DDW MEET-THE-PROFESSOR LUNCHEON CC 269
GERD (M068)
C. Daniel Smith, Atlanta, GA

12:30 - 1:45 PM DDW MEET-THE-PROFESSOR LUNCHEON CC 270
Laparoscopic Band for Obesity
Daniel B. Jones, Dallas, TX

12:30 P- 1:45 PM DDW MEET-THE-PROFESSOR LUNCHEON
Grand Salon B9, Hilton Riverside
Pancreatic Cancer
Keith D. Lillemoe, Indianapolis, IN
12:30 - 1:45 PM  
**DDW MEET-THE-PROFESSOR LUNCHEON**  
Grand Salon B10, Hilton Riverside  
**Portal Hypertension**  
Layton F. Rikkers, Madison, WI

12:30 - 1:45 PM  
**DDW MEET-THE-PROFESSOR LUNCHEON**  
CC 297  
**Roux y Bypass for Obesity**  
Philip R. Schauer, Pittsburgh, PA

2:15 - 3:45 PM  
**DDW COMBINED CLINICAL SYMPOSIUM**  
CC Auditorium C  
*Sponsored by: ASGE, SSAT*  
**MANAGEMENT OF GI OBSTRUCTION BELOW THE ESOPHAGUS**  
*Chairs: Bret T. Petersen, Rochester, MN  
Stanley W. Ashley, Boston, MA*  
*Introduction: Bret T. Petersen, Rochester, MN*  
**Case Presentation(s)**  
Stanley W. Ashley, Boston, MA  
**A Radiologist’s Perspective**  
Koenraad Mortele, Boston, MA  
**A Surgeon’s Perspective**  
Elizabeth M. Breen, Boston, MA  
**An Endoscopist’s Perspective**  
Todd H. Baron, Scottsdale, AZ  
**Discussion**

2:15 - 3:30 PM  
**SSAT PLENARY SESSION**  
CC 293-294  
*Moderators: Jeffrey B. Matthews, Cincinnati, OH  
Diane M. Simone, Ann Arbor, MI*  
**603 Risk of Fecal Diversion in Perianal Crohn’s Disease**  
Mario H. Mueller, Matthias Geis, Markus Kueper, Michael Kasperek, Joerg Glatzle, Ekkehard Jehle, Martin Kreis, Tilman Zittel, Dep. of General Surgery, University of Tuebingen, Tuebingen, Germany
604  **The Benefits of a Dedicated Minimally Invasive Surgery Program to Academic General Surgery Practice**  
Robert E. Glasgow, Kathy A. Adamson, Sean J. Mulvihill, University of Utah, Salt Lake City, UT

605  **Does Fibrin Glue Sealant Decrease the Rate of Pancreatic Fistula Following Pancreaticoduodenectomy? Results of a Prospective Randomized Trial**  
Keith D. Lillemoe, M. P. Kim, John L. Cameron, Kurtis A. Campbell, Patricia K. Sauter, J. A. Coleman, Charles J. Yeo, Indiana University School of Medicine, Department of Surgery, Indianapolis, IN, Johns Hopkins University, Baltimore, MD

606  **Inhibition of the Vanilloid Receptor Subtype-1 Attenuates TNBS-Induced Colitis**  
Kazunori Fujino, Yoji Takami, Sebastian De La Fuente, Kirk A. Ludwig, Steven R. Vigna, Christopher R. Mantyh, Duke University Medical Center, Durham, NC

607  **Evaluation of Vagus Nerve Integrity Before and After Antireflux Surgery**  
Kenneth R. DeVault, Grettel K. Wentling, Sami R. Achem, Ronald A. Hinder, Mayo Clinic College of Medicine, Jacksonville, FL

3:30 - 5:00 PM  
**ASCRS / SSAT JOINT CLINICAL SYMPOSIUM  CC 293-294**  
**CONTROVERSIES IN THE MANAGEMENT OF RECTAL CANCER**  
**Moderator: Theodore J. Saclarides, Chicago, IL**

**Transanal Excision: Are We Hurting Our Patients?**  
Ronald Bleday, Boston, MA

**What Do We Know About Pre-operative Radiation and Chemotherapy?**  
Theodore J. Saclarides, Chicago, IL

**Total Mesorectal Excision. What Is It and Does It Make Radiation and Chemotherapy Unnecessary?**  
Jose G. Guillem, New York, NY
Quality of Life Issues and Gastrointestinal Function After Proctectomy and Reconstruction
Robin S. McLeod, Toronto, ON, Canada

4:00 - 5:30 PM  DDW COMBINED CLINICAL SYMPOSIUM  CC Auditorium C
Sponsored by: SSAT, AASLD

ACUTE HEPATIC FAILURE
Chairs: Achilles A. Demetriou, Los Angeles, CA
William M. Lee, Dallas, TX

Overview of Acute Liver Failure
William M. Lee, Dallas, TX

Summary of Liver Support Devices in Acute Liver Failure
Achilles A. Demetriou, Los Angeles, CA

Surgical Options in Acute Liver Failure
Christopher Shackleton, Dallas, TX

5:00 - 6:00 PM  SSAT BUSINESS MEETING  CC 293-294

5:45 – 6:00 P.M.  FOUNDERS MEDAL  CC 293-294
Isidore Cohn, Jr., M.D.
Louisiana State University, New Orleans, Louisiana
WEDNESDAY, MAY 19, 2004

8:30 - 10:00 AM  SSAT PLENARY SESSION  CC 293-294
Moderators:  Mark P. Callery, Edward E. Whang, Boston, MA

758 Influence of Confirmation Bias on Intra-Operative Identification of Laparoscopic Bile Duct Injuries
Lygia Stewart, Lawrence W. Way, UCSF and SF VA Medical Center, San Francisco, CA, UCSF, San Francisco, CA

759 Omeprazole Does Not Reduce Gastroesophageal Reflux: New Insights Using Multichannel Intraluminal Impedance Technology
Anand P. Tamhankar, Jeffrey H. Peters, Giuseppe Portale, Chih-Cheng Hsieh, Jeffrey A. Hagen, Cedric G. Bremner, Tom R. DeMeester, University of Southern California, Los Angeles, CA

760 Successful Management of Boerhaave’s Syndrome with an Individualized Strategy: A Single Center Experience with 35 Consecutive Patients
Burkhard H. A. v. Rahden, Hubert J. Stein, Holger Bartels, J. Ruediger Siewert, Chirurgische Klinik und Poliklinik TU Muenchen, Munich, Germany

761 Organ-Specific Metastasis Formation of Colon Carcinomas Correlates with Their Adhesive Interactions in Different Target Organs In Vivo.
Peter Gassmann, Andreas Enns, Kerstin Schlueter, Timo Korb, Hans-Ullrich Spiegel, Norbert Senninger, Joerg Haier, Molecular Biology Lab, Dept. of General Surgery, Muenster, Germany, Dept. of General Surgery, University Hospital, Muenster, Germany

762 Results of More Than 100 Cases of Pediatric Intestinal Transplantation in a Single Center
Tomoaki Kato, Naveen Mittal, Gennaro Selvaggi, Seigo Nishida, Jang Moon, Juan Madariaga, John Thompson, Andreas Tzakis, University of Miami, Liver and GI Transplant, Miami, FL, University of Miami, Miami, FL

763 The Practice of Bariatric Surgery and Risk Management at Academic Centers
Ninh T. Nguyen, Nance Hove, C. M. Stevens, Candice Moore, UCI Medical Center, Orange, CA, University HealthSystem Consortium, Oak Brook, IL
10:30 - 12:00 PM  **SSAT PLENARY SESSION**  CC 293-294

**Moderators:**  Kevin E. Behrns, Chapel Hill, NC  
Andrew M. Lowy, Cincinnati, OH

**828**  Long-Term Results of Preoperative Chemoradiation for Distal Rectal Cancer-Correlation between Final Stage and Survival  
Rodrigo Perez, Angelita Habr-Gama, Ulysses Ribeiro Jr., Afonso Sousa Jr., Fabio G. Campos, Wladimir Nadalin, Victor Seid, Arazawa Sidney, University of São Paulo Medical School, São Paulo, Brazil

**829**  Genetic Predictors of Weight Loss After Gastric Banding?  
Fritz F. Horber, Andreas Juchli, Margret R. Hoehe, Klaus-Ulrich Lentes, Natascha Potoczna, Clinic Hirslanden, Zurich, Switzerland, Max-Plank Institution for molecular genetics, Berlin, Germany, Bioscientia GmbH, Ingelheim, Klinik Hirslanden, Zurich, Switzerland

**830**  Laparoscopic Total Abdominal Colectomy in the Acute Setting  
Michael R. Marohn, Eric J. Hanly, Kevin J. McKenna, Carmen R. Varin, Johns Hopkins University, Baltimore, MD

**831**  Preoperative Risk Factors for Developing Pathologic Gastro-Esophageal Reflux After Heller Myotomy.  
Alfonso Torquati, Rami Lutfi, Kenneth Sharp, William Richards, Vanderbilt University Medical School, Nashville, TN

**832**  Short and Long-Term Outcome of Roux-En-Y Gastric Bypass Stratified by BMI of 70 KG/M². A Comparative Analysis of 825 Procedures.  
Ioannis S. Raftopoulos, Julie A. Ercole, Anthony O. Udekwu, James D. Luketich Sr., Anita P. Courcoulas, University of Pittsburgh Medical Center, Shadyside Campus, Pittsburgh, PA

**833**  Improvement of Post-Fundoplication Esophageal Clearance by Botulinum-Toxin (Botox). Randomized, Prospective Pilot Trial.  
Markku Luostarinen, Juha Virtanen, Tiit Koobi, Matti Koskinen, Tuula Tyrvainen, Tuoma Rantanen, Martti Matikainen, Jouko Isolauri, Paijat-Hame Central Hospital, Lahti, Finland, Tampere University Hospital, Tampere, Finland, Ministry of Social Affairs and Health, Helsinki, Finland
CONTRIBUTIONS TO THE TREATMENT OF GI DISEASE BY LAPAROSCOPY, ENDOLUMINAL, AND TRANSLUMINAL THERAPIES
Co-Chairs: Daniel J. Deziel, Chicago, IL
L. William Traverso, Seattle, WA

12:00 PM
Session I: Laparoscopy for GI Malignancy
Moderator: Keith D. Lillemoe

When to Use Laparoscopy for Staging of Liver, Gallbladder and/or Bile Duct Cancer
Theodore N. Pappas, Durham, NC

Laparoscopic Staging Should be Used Routinely for Locally Extensive Pancreatic Cancer of The Pancreatic Head
L. William Traverso, Seattle, WA

Laparoscopic Resection of Liver or Pancreatic Neoplasms
Paul D. Hansen, Portland, OR

Laparoscopic Resection of Esophageal Cancer
Rodney Landreneau, Pittsburgh, PA

Panel Discussion

1:10 PM
Session II: Endo and Transluminal Therapy for GI Diseases
Moderator: Daniel J. Deziel

Current Status and Future of Endoluminal and Transluminal Techniques
Jeffrey L. Ponsky, Cleveland, OH

GERD and the Truth about Endoluminal Therapy
William O. Richards, Nashville, TN

Endoluminal Resection of Ampullary Tumors
Richard A. Kozarek, Seattle, WA

Panel Discussion
12:30 - 1:45 PM  DDW MEET-THE-PROFESSOR LUNCHEON
Hilton Riverside Grand Salon A4
Current Management of Perianal Disease
Robert W. Beart Jr., Los Angeles, CA

2:15 - 3:45 PM  DDW COMBINED CLINICAL SYMPOSIUM
CC La Nouvelle Orleans Ballroom A/B
Sponsored by: SSAT, ASGE
HILAR CHOLANGIOCARCINOMA
Chairs: Steven M. Strasberg, Saint Louis, MO
Pankaj J. Pasricha, Galveston, TX

Epidemiology and Diagnosis:
The Hepatologist’s Approach
Gregory J. Gores, Rochester, MN

Diagnosis and Management:
The Endoscopist’s Approach
Anthony N. Kalloo, Baltimore, MD

Diagnosis and Management:
The Radiologist’s Approach
Anthony Venbrux, Washington, DC

Staging and Resection:
The Surgeon’s Approach
William R. Jarnagin, New York, NY

Panel Discussion and Case Presentations
4:00 - 5:30 PM  DDW COMBINED CLINICAL SYMPOSIUM
CC La Nouvelle Orleans Ballroom A/B
Sponsored by: AGA, SSAT

MANAGEMENT OF PERMANENT INTESTINAL FAILURE: MEDICAL OR SURGICAL SCIENCE?
Chairs: Stephen J. D. O’Keefe, Pittsburgh, PA
       Jon S. Thompson, Omaha, NE

When is Intestinal Failure Permanent?
Stephen J. D. O’Keefe, Pittsburgh, PA

Medical Science: Long-Term Home TPN
Khursheed N. Jeejeebhoy, Toronto, ON, Canada

Surgical Skill: Reconstructive Surgery
Debra L. Sudan, Omaha, NE

Surgical Science: Intestinal Transplantation
Kareem Abu-Elmagd, Pittsburgh, PA

Panel Discussion
THE SOCIETY FOR SURGERY OF THE ALIMENTARY TRACT

BASIC SCIENCE POSTERS

MONDAY, MAY 17, 2004

12:00 - 2:00 PM  SSAT POSTER SESSION  CC HALL F

BILIARY: BASIC

M1137  Optimization of Conditionally Replicative Adenovirus for Cholangiocarcinoma
Pedro J. Ramirez, Hidetaka A. Ono, Julia Davydova, Victor Krasnykh, David T. Curiel, Masato Yamamoto, Selwyn M. Vickers, University of Alabama at Birmingham, Birmingham, AL, MD Anderson Cancer Center, UT Houston, Houston, TX

M1138  Choice of Suture in Biliary Surgery-Does It Really Matter?
Dion L. Franga, David Wicker, Naren Gupta, Thomas R. Gadacz, Jeffrey Lee, Robert G. Martindale, Medical College of Georgia, Augusta, GA

M1139  Optimising Infectivity Enhanced, Conditionally Replicative Adenovirus for Gallbladder Cancer Gene Therapy
Yaman Tekant, Pedro Ramirez, Hidetaka Ono, Viktor Krasnykh, Julia Davydova, Tatyana Gavrikova, Long Le, David Curiel, Selwyn Vickers, Masato Yamamoto, University of Alabama at Birmingham, Birmingham, AL

M1140  Swine Benign Biliary Stricture Model
Johanna Laukkarinen, Pierce Chow, Juhani Sand, Sidney Yu, S. Somnesan, Irene Kee, In Chin Song, Teck Hin Ng, Isto Nordback, Dept. of Surgery, Tampere University Hospital, Tampere, Finland, Dept. of Experimental Surgery, Singapore General Hospital, Singapore, Singapore, Dept. of Nuclear Medicine, Singapore General Hospital, Singapore, Singapore

M1141  Initial and Long-term Outcome of Biliary Bypass Surgery in Periampullary and Pancreatic Carcinoma
K. F. D. Kuhlmann, D. van Poll, Steve de Castro, O. R. C. Busch, T. M. van Gulik, Huug Obertop, D. J. Gouma, Academic Medical Center, Amsterdam, Netherlands
COLON-RECTAL: BASIC

**M1142** Comparative Study of Epithelial Gene Expression in the Small Intestine Among Total Proctocolectomized, Dietary Sodium-Depleted and Aldosterone-Infused Rats
Kouhei Fukushima, Shun Sato, Hiroo Naito, Yuji Funayama, Sho Haneda, Kazuhiro Watanabe, Chikashi Shibata, Iwao Sasaki, Tohoku Univ. Graduate School of Med, Dept of Surg, Sendai, Japan

**M1143** Phosphoramidon, a Novel Matrix Metalloproteinase Inhibitor, Inhibits Significantly Tumor Growth Independently of the Application Route in a Rat Model of Peritoneal Carcinomatosis
Arndt Hribaschek, Frank Meyer, Karsten Ridwelski, Matthias Pross, Peter Habermann, Walter Halangk, Hans Lippert, Department of Surgery, University Hospital, Magdeburg, Germany, Department of Surgery, Municipal Hospital, Magdeburg, Germany

**M1144** Increased Severity of Intestinal Inflammation in the Stat6 Knockout (Stat6(-/-)) Mouse
Lisa Poritz, Kristian Garver, Walter Koltun, Wen Jie Zhang, Eva Galka, Leo Fitzpatrick, The Milton S. Hershey Medical Center, Hershey, PA

**M1145** HnRNP A1 is a Novel Marker for Human Colorectal Carcinoma
Kazunori Shibao, Yoshifumi Nakayama, Koji Onitsuka, Yuzuru Inoue, Takefumi Katsumi, Koji Kadowaki, Yosuke Tsurudome, Keiji Hirata, Tatsuhiko Sako, Naoki Nagata, Hideaki Itoh, University of Occupational and Environmental, Kitakyushu, Japan

ESOPHAGEAL: BASIC

**M1146** Candidate Biomarkers in the Development of Barrett's Adenocarcinoma; CDX-2 & TSPAN-1
Daniel Vallboehmer, Jeffrey H. Peters, Sylke Schneider, Nahid Hamouei, Kazumi Uchida, Hidekazu Kuramochi, Daisuke Shimizu, Parakrama T. Chandrasoma, Kathleen D. Danenberg, Peter Danenberg, Tom R. DeMeester, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA, Department of Biochemistry, University of Southern California, Los Angeles,
M1147 Oxidative Injury in Gastroesophageal Reflux Disease (GERD) Does Not Disappear After Antireflux Surgery
Jarmo A. Salo, Tuomo K. Rantanen, Jari V. Rasanen, Martti Farkkila, Eero I. Sihvo, Helsinki University Central Hospital, Dept. of Cardiothoracic Surgery, Helsinki, Finland, Helsinki University Central Hospital, Dept. of Medicine, Helsinki, Finland

M1148 Absorbable Versus Non-Absorbable Mesh Repair of Congenital Diaphragmatic Hernias in a Growing Animal Model
Rodrigo Gonzalez, Mark L. Wulcan, Samer G. Mattar, Edward Lin, Bruce J. Ramshaw, C. Daniel Smith, Emory University School of Medicine, Atlanta, GA

M1149 Survey of 104 Genes for DNA Methylation Markers in Esophageal Adenocarcinoma
Tasha A. K. Gandamihardja, Mihaela Velicescu, Daniel Weisenberger, Kimberly Siegmund, Jeffrey A. Hagen, Jeffrey H. Peters, Steven R. DeMeester, Peter F. Crookes, Cedric G. Bremner, Tom R. DeMeester, Peter W. Laird, Department of Surgery, University of Southern California, Los Angeles, CA, Preventive Medicine, University of Southern California, Los Angeles, CA

M1150 Proteomic Analysis of SEG-1 Human Barrett’s-Associated Esophageal Adenocarcinoma Cells Treated with Keyhole Limpet Hemocyanin
Sara Zulfiqar, Linda Vona-Davis, Tim Vincent, David W. McFadden, West Virginia University, Morgantown, WV

HEPATIC: BASIC

M1151 Over-Expression of AIF-1 in Liver Allografts and Peripheral Blood Correlated with Acute Rejection After Transplantation
Yuichi Nagakawa, Shuji Nomoto, Yukihiko Kato, Andrew S. Klein, Zhaoli Sun, Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD
M1152 Hepatocyte Specific Metabolic Activity Is Inducible in Adult Liver Stem Cells Isolated from Rodent Bone Marrow by Interleukin-3
Daniel Inderbitzin, Adrian Keogh, Guido Beldi, Markus Gass, Peter Studer, Deborah Stroka, Beat Gloor, Daniel Candinas, Department of Visceral and Transplant Surgery, University Hospital, Bern, Switzerland

M1153 Partial Hepatectomy Does Not Enhance the Occurrence of HCC in Cyclin D1 Overexpression Transgenic Mice
Christopher D. Anderson, Natasha G. Deane, R. Daniel Beauchamp, Ravi S. Chari, Vanderbilt University Medical Center, Nashville, TN

M1154 Tumor Antigen-Specific, CD8+ T-Cell Tolerance in a Murine Model of Spontaneous Hepatocellular Carcinoma
Marcela Jimenez, James Staveley-O’Carroll II, Kevin F. Staveley-O’Carroll, Penn State University College of Medicine, Hershey, PA

M1155 Nuclear Factor-κB and Cyclooxygenase-2 Inhibitors Provide Synergistic Inhibition of Hepatocellular Carcinoma Cellular Proliferation Possibly Through Modulation of IκBα
Earl A. Gage, Matthew C. Ralstin, Atit Patel, Michelle T. Yip-Schneider, Keith D. Lillemoe, C. M. Schmidt, Indiana University School of Medicine Department of Surgery, Indianapolis, IN, Indiana University School of Medicine, Indianapolis, IN, Indiana University Departments of Surgery and Biochemistry/Molecular Biology, Indiana University Cancer Center, Indiana University School of Medicine; Richard L. Roudebush VAMC; Walther Oncology Center, Indianapolis, IN

M1156 Edaravone (MCI-186), a New Free Radical Scavenger, Reduces Oxidative Liver Damage Caused by Ischemia-Reperfusion.
Tomoya Abe, Michiaki Unno, Yu Katayose, Toshiki Rikiyama, Seiki Matsuno, Division of Gastroenterological Surgery, Tohoku University Graduate School of Medicine, Sendai, Japan
M1158 Pharmacological Effects of Recombinant Growth Hormone on Rat Liver Cirrhosis  
Shuang Chen, Hongtao Wang, Jie Wang, Jishen Chen, Qingjia Ou, Sun Yat-Sen University, Guangzhou, China

M1159 Magnetic Resonance Imaging Provides Accurate Volume Determination in Regenerating Mouse Liver  
Daniel Inderbitzin, Christoforos Stoupis, Markus Gass, Guido Beldi, Adrian Keogh, Deborah Stroka, Peter Vock, Beat Gloor, Daniel Candinas, Department of Visceral and Transplant Surgery, University Hospital, Bern, Switzerland, Department of Diagnostic Radiology, Bern, Switzerland

PANCREAS: BASIC

†M1160 Utilizing Tumor Hypoxia to Augment Viral Oncolytic Therapy in Pancreatic Adenocarcinoma  
Maura Reinblatt, Richard H. Pin, Yuman Fong, Memorial Sloan-Kettering Cancer Center, New York, NY

M1161 Prostaglandin E₂ (PGE₂) Enhances Pancreatic Cancer Invasiveness Through an ETS-1-Dependent Induction of MMP-2  
Hiromichi Ito, Mark Duxbury, Eric Benoit, Thomas E. Clancy, Michael J. Zinner, Stanley W. Ashley, Edward E. Whang, Department of Surgery, Brigham & Women’s Hospital, Boston, MA

M1162 SSTR1 Gene Ablation Causes Islet Hyperplasia and Insulinopenic Glucose Intolerance  
Xiao-Ping Wang, Michael A. Norman, Jia Yang, Franco J. DeMayo, Jonas Magnusson, F. Charles Brunicardi, Baylor College of Medicine, Houston, TX

M1163 Bile-Pancreatic Juice Exclusion Activates JNK and Increases IL-1β Production in Ligation-Induced Acute Pancreatitis  
Isaac Samuel, Smita Zaheer, Kiwhoon Lee, Asgar Zaheer, VAMC/University of Iowa Carver College of Medicine, Iowa City, IA

† Poster of Distinction
M1164  **Pancreatic Proteases Initiate Leukocyte-Endothelial Interaction In Vitro and in Experimental Acute Pancreatitis**
Tobias Keck, Veronika Friebe, Andrew L. Warshaw, Ernst von Dobschuetz, Gerald Waneck, Bozena Antoniuch, Stefan Benz, Carlos Fernandez del-Castillo, Chirurgische Universitaetsklinik Freiburg, Freiburg, Germany, Department of Surgery Massachusetts General Hospital, Boston, MA

M1165  **RNAi-Mediated NF-κB RelA Suppression Sensitizes Pancreatic Cancer Cells to TNF-α Induced Apoptosis**
Jirong Bai, Charles Vollmer Jr., Mark P. Callery, Beth Israel Deaconess Medical Center, Boston, MA

M1166  **Notch1 Signaling in Pancreatic Cancer**
Chris M. Schussler-Fiorenza, Jennifer Carpenter, Jamie Van Gompel, Muthusamy Kunnimalaiyan, Herbert Chen, University of Wisconsin, Madison, WI

M1167  **Dexamethasone Mediates Protection Against Acute Pancreatitis via Upregulation of Pancreatitis-Associated Protein**
Emad Kandil, Yin-Yao Lin, Domenico Viterbo, Victor Occasio, Martin Bluth, Michael Zenilman, SUNY-Downstate Medical Center, Brooklyn, NY, SUNY Downstate.edu, Brooklyn, NY, SUNY Downstate medical Ctr, Brooklyn, NY, SUNY Downstate Medical Center, Brooklyn, NY

M1168  **Autoimmune Activation and Glucose Intolerance in bSSTR5-/- Mouse Model**
Xiao-Ping Wang, Jie Yang, Michael A. Norman, Franco J. DeMayo, Jonas Magnusson, F. Charles Brunicardi, Baylor College of Medicine, Houston, TX

M1169  **Suramin Inhibits Not Only Tumor Growth and Metastasis but Also Angiogenesis in Experimental Human Pancreatic Cancer**
Andreas S. Porebski, O. Joe Hines, Howard A. Reber, Heinz J. Buhr, Hubert G. Hotz, Dept. of Surgery, Charite, Campus Benjamin Franklin, Berlin, Germany, Dept. of Surgery, UCLA, Los Angeles, CA

M1170  **Serum MICA Levels in Pancreatic Cancer Patients**
Kaae J. Weber, Geetha Rao, Roderick Quiros, Xiulong Xu, Richard A. Prinz, Rush University Medical Center, Chicago, IL
M1171  **Pancreatitis Associated Protein (PAP) Genetic Isoforms**
Emad Kandil, Yin-Yao Lin, Martin Bluth, Michael Zenilman, SUNY-Downstate Medical Center, Brooklyn, NY

M1172  **Reduction of the Bacterial Translocation in Experimental Acute Pancreatitis Using Pentoxifylline**
Andre S. Matheus, Cintia Y. Morioka, Ana Maria M. Coelho, Sandra N. Sampietre, Renato S. Godoy, Lourenilson J. Souza, Jose Jukemura, Jose Eduardo M. Cunha, Marcel C. C. Machado, University of São Paulo, São Paulo, Brazil

M1173  **Staple Line Reinforcement with an Absorbable Polymer Membrane in Laparoscopic Distal Pancreatectomy and Partial Splenectomy Diminishes Pancreatic Duct Leak and Hemorrhage**
Esther C. J. Consten, Michel Gagner, Sergio Bardaro, Luca Milone, Weill Cornell University, Dept of Surgery, New York, NY, Weill-Cornell University Hospital, Dept of Surgery, New York, NY, Weill-Cornell University Hospital, New York, NY

M1174  **The Peroxisome Proliferator-Activated Receptor-Gamma-Specific Agonist, Troglitazone, Decreases the Severity of Acute Pancreatitis In Vivo**
Sharon Sudarshan, Matthew A. Firpo, Michael D. Rollins, Yuanlin Shao, Brooke Hermanson, Sean J. Mulvihill, Robert E. Glasgow, University of Utah, Salt Lake City, UT

M1175  **Suicide Gene Therapy of Pancreatic Cancer with Cytosine Deaminase: A Promising in Vitro Tool**
Nicoletta Gallo, Paola Fogar, Filippo Navaglia, Daniela Basso, Eliana Greco, Carlo-Federico Zambon, Alessandra Falda, Cristina Durante, Claudio Pasquali, Cosimo Sperti, Mario Plebani, Sergio Pedrazzoli, Dept of Laboratory Medicine, Padova, Italy, Clinica Chirurgica IV, Padova, Italy

M1176  **Hypertonic Solution (NaCl 7.5%) Reduces Mortality in Experimental Pancreatitis.**
Marcel C. C. Machado, Ana Maria M. Coelho, Vera Pontieri, Sandra N. Sampietre, Nilza A. T. Molan, Andre S. Matheus, Francisco G. Soriano, Irineu T. Velasco, University of São Paulo, São Paulo, Brazil
SMALL BOWEL: BASIC

†M1177 Acidosis Stimulation of Intestinal Arginine Absorption Is Mediated by Protein Kinase C and Mitogen-Activated Protein Kinases
Haroon A. Choudry, QingHe Meng, Anne M. Karinch, ChengMao Lin, Wiley W. Soubajr., Ming Pan, Pennsylvania State University College of Medicine, Hershey, PA, The Pennsylvania State University College of Medicine, Hershey, PA

†M1178 Proteasome Gene Up-Regulation: A Possible Mechanism for Intestinal Adaptation
David M. Otterburn, L. G. Arthur, Shaheen J. Timmapuri, Suzanne M. McCahan, Marshall Z. Schwartz, Thomas Jefferson University Hospital, Philadelphia, PA, Thomas Jefferson University Hospital, Philadelphia, PA, Alfred I duPont Hospital for Children, Wilmington, DE

M1179 Enteral L-Arginine Improves Tolerance to Mesenteric Ischemia/Reperfusion (IR) in Diabetic Rats
Sunny K. Whiteman, Bradford J. Scanlan, Justin E. Elfrey, Allen Chap, Brian Chap, Aiping Zhao, Terez Shea-Donohue, Walter Reed Army Medical Center, Bethesda, MD, Walter Reed Army Medical Center, Laurel, MD, Uniformed Services University of the Health Sciences, Towson, MD, Uniformed Services University of the Health Sciences, Laurel, MD, USDA-ARS, NRFL, BHNRC, Laurel, MD, Uniformed Services University of the Health Sciences, Chevy Chase, MD, USDA-ARS, BHNRC, NRFL, Beltsville, MD

M1180 P38 MAPK Modulates ERK 1/2 During Ischemic Stress in Model Intestinal Epithelia
Celia Song, Joshua Mammen, Karl Matlin, Jeffrey Matthews, University of Cincinnati, Cincinnati, OH

M1181 Sepsis Induces Inflammation of Lung Parenchyma Via Gut-Derived Mediators in Rats
Joerg Glatzle, Mario H. Mueller, Wendelin Wilhelm, Guido Seitz, Markus Kueper, Helen E. Raybould, Martin E. Kreis, Tilman T. Zittel, University Hospital Tuebingen, Dept. General Surgery, Tuebingen, Germany, University Hospital Tuebingen, Dept. of General Surgery, Tuebingen, Germany, Dept. Vet Med. University of California at Davis, Davis, CA

† Poster of Distinction
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<tr>
<td>M1182</td>
<td>Nitrergic Mechanisms Mediating Inhibitory Control of Longitudinal Smooth Muscle Contraction in Mouse Small Intestine</td>
<td>Tatsuya Ueno, Judith A. Duenes, Abdalla Zarroug, Michael G. Sarr</td>
<td>Mayo Clinic, Rochester, MN</td>
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<td>M1183</td>
<td>ATB9/ASCT2 Message Expression in Residual Bowel Is Decreased By Massive Enterectomy and Increased By Trophic Factor (TF) Treatment</td>
<td>Nelly E. Avissar, Thomas R. Ziegler, Li H. Gu, Liana Toia, Edward C. Ray, Jorge Berlanga-Acosta, Harry C. Sax</td>
<td>University of Rochester, School of Medicine and Dentistry, Rochester, NY, Emory University School of Medicine, Atlanta, GA, Emory University, School of Medicine, Atlanta, GA, University of Rochester, School of Medicine and Dentistry, Rochester, NY, CIGB, Center for Genetic Engineering and Biotechnology, Havana, Cuba</td>
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<td>M1184</td>
<td>Protein Kinase C Mediates Transforming Growth Factor-Beta Stimulation of Intestinal Glutamine Absorption</td>
<td>QingHe Meng, Haroon A. Choudry, ChengMao Lin, Anne M. Karinch, Ming Pan</td>
<td>The Pennsylvania State University College of Medicine, Hershey, PR, The Pennsylvania State University College of Medicine, Hershey, PA</td>
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<td>M1185</td>
<td>High Yield Cytokine Screening in Gastrointestinal Carcinoid Tumors</td>
<td>Jamie J. Van Gompel, Muthusamy Kunnimalaiyaan, Herbert Chen</td>
<td>University of Wisconsin at Madison, Madison, WI</td>
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**STOMACH: BASIC**

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<tr>
<td>M1186</td>
<td>Optimization of Infectivity Enhanced Conditionally Replicative Adenoviral Vectors for the Gene Therapy of Gastric Cancer</td>
<td>Hidetaka A. Ono, Julia G. Davydova, Long P. Le, Pedro J. Ramirez, Tatyana Gavrikova, Victor N. Krasnykh, Chikara Kunisaki, Hiroshi Shimada, David T. Curiel, Masato Yamamoto</td>
<td>Division of Human Gene Therapy, University of Alabama at Birmingham, Birmingham, AL, Division of Surgery, University of Alabama at Birmingham, Birmingham, AL, Department of Experimental Diagnostic Imaging, MD Anderson Cancer Center, University of Texas, Houston, TX, Department of Surgery, Yokohama City University School of Medicine, Yokohama, Japan</td>
</tr>
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</table>
M1187 Comparative Evaluation of Gastrointestinal Transit and Immune Response Between Laparoscopic and Open Gastrectomy in a Porcine Model
Kazuki Ueda, Ronald Matteotti, Ahmad Assalia, Michel Gagner, Department of Surgery, Weill-Cornell College of Medicine, New York, NY

M1188 Postoperative Gastropyloroduodenal Motility and Gastric Emptying After Pylorus-Preserving Gastrectomy in Dogs
Naruo Kawasaki, Koji Nakada, Tomoko Takahashi, Yoshiyuki Furukawa, Nobuyoshi Hanyu, Katsuhiko Yanaga, Department of Surgery, Jikei University School of Medicine, Tokyo, Japan, Department of Surgery, Jikei University School of Medicine, Tokyo, Japan

M1189 Helicobacter Pylori Infection and Gastric Cancer-Cause or Effect? Pathological Evidence
Rodrigo Perez, Claudio Bresciani, Kyoshi Iryia, Carlos E. Jacob, Renato A. Iwashita, Bruno P. Soriano, Bruno Zilberstein, Joaquim Gama-Rodrigues, University of São Paulo Medical School, São Paulo, Brazil
**CLINICAL SCIENCE POSTERS**

**BILIARY: CLINICAL**

†M1835  *Is Patient Selection the Cause of Higher Complication Rates Observed with Open Common Bile Duct Exploration (CBDE) Relative to ERCP?*
Edward H. Livingston, Robert V. Rege, UT Southwestern, Dallas, TX

M1836  *Prospective Evaluation of Endoscopic Ultrasonography in the Diagnosis of Biliary Microlithiasis in Patients with Normal Conventional Ultrasonography*
Seyed Amir Mirbagheri, Mehdi Mohamadnejad, Jafar Nasiri, Reza Malekzadeh, Ramin Ghadimi, Farhad Zamani, Shahin Merat, Department of Internal Medicine, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran, GI and Liver Disease Research Center, Iran University of Medical Sciences, Tehran, Iran, Tehran, Iran, Digestive Disease Research Center, Tehran University of Medical Sciences, Tehran, Iran

M1837  *18F-FDG PET in the Evaluation of Patients with Gallbladder Cancer*
Carlos U. Corvera, Timothy Akhurst, Ronald P. DeMatteo, Michael D’Angelica, Leslie Blumgart, William Jarnagin, Yuman Fong, University of California, San Francisco, San Francisco, CA, Memorial Sloan-Kettering Cancer Center, New York, NY

M1838  *What Do We Do in Elderly Patients Presenting with Common Bile Duct Stones and a Gallbladder In Situ? The Economic Implications of a “Wait and See” Approach Versus Cholecystectomy*
Britt Drake, Miguel R. Arguedas, Meredith Kilgore, Charles M. Wilcox, University of Alabama at Birmingham, Birmingham, AL

M1839  *Access Related Complications After Laparoscopic Cholecystectomy: The Risk is in the Closed Technique*
Rocio Anula-Fernandez, Maria Jesus Pena-Soria, Cristina Pardo-Martinez, Julio M. Mayol, Jesus A. Fernandez-Represa, Servicio de Cirugia I, Hospital Clinico San Carlos, Madrid, Spain
M1840 The Usefulness of Bovine Pericardium in the Repair of Full Thickness Bile Duct Defects: An Experimental Study in Pigs
Ronald Matteotti, Ahmad Assalia, Kazuki Ueda, Michel Gagner, Weill-Cornell College of Medicine, New York Presbyterian Hospital, New York, NY, Weill-Cornell College of Medicine, New York Presbyterian Hospital New York, NY, USA, New York, NY

M1841 The Effect of Successful Hepatico-Jejunostomy on Bile and Its Flow- a One-Year Experimental Study
Johanna Laukkarinen, Pierce Chow, Juhani Sand, Sidney Yu, S. Somanesan, Irene Kee, In Chin Song, Teck Hin Ng, Isto Nordback, Dept. of Surgery, Tampere University Hospital, Tampere, Finland, Dept. of Experimental Surgery, Singapore General Hospital, Singapore, Singapore, Dept. of Nuclear Medicine, Singapore General Hospital, Singapore, Singapore

M1842 The United States Experience with Conversion from Laparoscopic to Open Cholecystectomy
Edward H. Livingston, Robert V. Rege, UT Southwestern, Dallas, TX

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M1843 Duration of Postoperative Ileus After Elective Colectomy is Correlated to Surgical Specialization
Pascal Gervaz, University Hospital Geneva, Geneve, Switzerland

M1844 Avoidance of Mechanical Bowel Preparation for Elective Colorectal Surgery with Primary Anastomosis: A Meta-Analysis
Pascal Bucher, Bernadette Mermillod, Claudio Soravia, Pascal Gervaz, Philippe Morel, university hospital geneva, Geneve, Switzerland

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<td>Joseph C. Muller, Andrea Ferrara, Paul R. Williamson, Sergio W. Larach, Joseph T. Gallagher, Samuel DeJesus, Robert A. Campbell, Colon and Rectal Clinic of Orlando, Orlando, FL, Colorectal Disease Center, Orlando, FL</td>
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Tobias Meile, Martin E. Kreis, Rosemarie Hinninghofen, Ilona Stabenow, Eckehard C. Jehle, Tilman T. Zittel, University Hospital Tuebingen, Department of General Surgery, Tuebingen, Germany, Tuebingen, Germany

M1855  **Embolization as First-Line Therapy for Diverticulosis-Related Massive Lower Gastrointestinal Bleeding: Evidence from a Meta-Analysis**  
Amit Khanna, Nicole Hodgson, Steven J. Ognibene, Leonidas G. Koniaris, University of Rochester SOM, Rochester, NY, University of Miami School of Medicine, Miami, FL

M1856  **Comparison of the Cecal Intubation Rate and Diagnostic Yield of Screening Colonoscopy Performed by Gastroenterologists and Surgeons**  
Christopher S. Lee, Shahzad Iqbal, Samera Vaseer, Jennifer Northrop, Christine T. Bang, Andrew Y. Lo, Albert D. Min, Beth Israel Medical Center, New York, NY

M1857  **Neoadjuvant Radiochemotherapy for Patients with Locally Advanced Rectal Cancer Leads to Impairment of the Anal Sphincter**  
Joerg Theisen, Werner K. H. Kauer, Ludwig Schmid, J. Ruediger Siewert, Hubert Stein, Chirurgische Klinik, Munich, Germany

M1858  **Patterns of Use of Nasogastric Intubation and Early Nutrition in the Management of Postoperative Ileus**  
Henrik Kehlet, Markus Buechler, Robert Beart Jr., Russell Williamson, Department of Surgical Gastroenterology, Hvidovre University Hospital, Hvidovre, Denmark, Department of Surgery, University of Heidelberg, Heidelberg, Germany, Department of Surgery, University of Southern California, Los Angeles, CA, Clinical Development and Medical Affairs, GlaxoSmithKline, Greenford, UK

M1859  **Quality of Life and Functional Results After Colon Pouch Reconstruction**  
Susanne Dorothea Otto, Martin Kruschewski, Hubert G. Hotz, Christoph T. Germer, Heinz J. Buhr, Charite - Universitaetsmedizin Berlin, Campus Benjamin Franklin, Berlin, Germany
M1860  De-Epithelialization with Seton Placement or Curettage Is Effective Primary Therapy for Perianal Fistulae in Crohn’s Disease
Richard Tilson, Sonia Friedman, Ronald Bleday, Peter Banks, Rie Ookubo, Elizabeth Breen, Brigham and Women’s Hospital, Boston, MA

M1861  Is the Current Practice of Mechanical Bowel Preparation in Colonic Surgery Evidence Based?
Henrik Kehlet, Markus Buechler, Robert Beart Jr., Russell Williamson, Department of Surgical Gastroenterology, Hvidovre University Hospital, Hvidovre, Denmark, Department of Surgery, University of Heidelberg, Heidelberg, Germany, Department of Surgery, University of Southern California, Los Angeles, CA, Clinical Development and Medical Affairs, GlaxoSmithKline, London, UK

M1862  Increased Use of Lower Anterior Resection for Rectal Cancer in Veterans
Jessica A. Davila, Neena S. Abraham, Linda Rabeneck, David H. Berger, Hashem B. El-Serag, Houston VA Medical Center/Baylor College of Medicine, Houston, TX, University of Toronto, Toronto, Canada

M1863  Examining the Feasibility of Laparoscopic Radical Proctosigmoidectomy for the Chemoirradiated Rectal Cancer
John H. Marks, Ulana B. Kawun, Wajdi Hamdan, Mohammed Mohiuddin, Gerald Marks, The Lankenau Hospital and Lankenau Medical Research Institute, Wynnewood, PA, The Lankenau Hospital and Lankenau Medical Research Institute, Wynnewood, PA, University of Kentucky, Lexington, KY

M1864  Criteria for Ileostomy Closure in Patients with Anastomotic Sinus Tracts
Avo Artinyan, Tina Wong, Robert W. Beart Jr., University of Southern California, Department of Colorectal Surgery, Los Angeles, CA

M1865  Quality of Life After Ileal Pouch-Anal Anastomosis: Comparison of Patients with Familial Adenomatous Polyposis and Ulcerative Colitis
Philippe Wuthrich, Pascal Gervaz, Philippe Morel, university hospital geneva, Geneve, Switzerland
M1866  Rectal Complications After Modern Radiation for Prostate Cancer: A Colorectal Surgical Challenge  
David W. Larson, Kristin Chrouser, Suzan Sweat, Tonia Young-Fadok, Heidi Nelson, mayo clinic, Rochester, MN, mayo clinic, Scottsdale, AZ

M1867  Effect of Immunosuppressive Therapy on Septic Complications in Ulcerative Colitis  

M1868  Quality of Life After Proctocolectomy and Ileal Pouch-Anal Anastomosis (IPAA) in Patients with Ulcerative Colitis (UC)  
Michael S. Kasparek, Jana Conrad, Joerg Glatzle, Mario H. Mueller, Ekkehard C. Jehle, Martin E. Kreis, Tilman T. Zittel, Dpt. of General Surgery, University of Tuebingen, Tuebingen, Germany, Krankenhaus St. Elisabeth, Ravensburg, Germany

M1869  Outpatient Treatment of Diverticulitis  
Jeffrey Friedman, Jose R. Monzon, Johelen Carleton, Steven J. Heneghan, Bassett Healthcare, Cooperstown, NY

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†M1870  CD147 and Matrix Metalloproteinase 2 Protein Expressions as Significant Prognostic Factors in Esophageal Cell Carcinoma  
Yoshio Ishibashi, Nobuyoshi Hanyu, Koji Nakada, Yutaka Suzuki, Nobuo Omura, Kyosuke Yamada, Kiyoshi Ohkawa, Mitsuyoshi Urashima, Makio Kawakami, Katsuhiko Yanaga, The Jikei University School of Medicine, Tokyo, Japan

M1871  Improved Prognosis of Resected Esophageal Cancer Over a Twenty Year Period  
Hubert J. Stein, Marcus Feith, Bjorn Bruecher, Holger Bartels, J. Ruediger Siewert, Chirurgische Klinik und Poliklinik TU Muenchen, Munich, Germany

† Poster of Distinction
M1872  **Upper Esophageal Sphincter (UES) Myotomy, but Not Botulinum Toxin Injection Is an Effective Treatment for Severe Oropharyngeal Dysphagia: Final Results of a Phase-2 Study**
Giovanni Zaninotto, Mario Costantini, Christian Rizzetto, Rosario Marchese Ragona, Stefano Masiero, Lorenza Caregaro-Negrin, Lorenzo Zanetti, Giampietro Feltrin, Chiara Brianzi, Loredana Nicoletti, Michela Costantino, Sandro Polidoro,
University of Padova, School of Medicine, Dept of Med and Surg Sci, Clin Chir 3, Padova, Italy, Dept of Medical and Surgical Sciences Clinica Chirurgica 3 University of Padova, Padova, Italy, ENT Department University of Padova, Padova, Italy, Dept of Medical and Surgical Sciences Rehabilitation Unit University of Padova, Padova, Italy, Dept of Clinical Medicine University of Padova, Padova, Italy, Dept of Radiology University of Padova, Padova, Italy, Dept of Neurology University of Padova, Padova, Italy

M1873  **Characterizing Normal Pharyngeal Reflux Using Impedance and 24hr Pharyngeal ph Monitoring**
Federico Cuenca-Abente, Brant K. Oelschlager, John A. Isch, Carlos A. Pellegrini, University of Washington, Seattle, WA, University of Washington, Seattle, WA, University of Washington, Seattle, WA, University of Washington, Seattle, WA

M1874  **Symptomatic Outcome After Laparoscopic Antireflux Surgery in GERD Patients with Respiratory Symptoms**
Ruxandra Ciovica, Michael Gadenstatter, Christoph Neumayer, Rudolph Pointner, Gerhard Schwab, General Hospital of Krems, Department of Surgery, Krems, Austria, General Hospital of Vienna, Department of Surgery, Vienna, Austria, General Hospital of Zell am See, Department of Surgery, Zell am See, Austria

M1875  **FDG-PET is Not Suitable for Staging of Early Cancers of the Upper Gastrointestinal Tract**
Burkhard H. A. von Rahden, Hubert J. Stein, Hinrich Wieder, Wolfgang A. Weber, Katja Ott, Mario Sarbia, J. Ruediger Siewert, Department of Surgery, Technical University Munich, Munich, Germany, Department of Nuclear Medicine, Technical University Munich, Munich, Germany, Department of Pathology, Technical University Munich, Munich, Germany
Shailesh Bajaj, Jianxiang Liu, Osamu Kawamura, Candy Hofmann, Tanya Rittmann, Ronald C. Arndorfer, Gary Korus, Dennis Blom, Reza Shaker, Medical College of Wisconsin, Gastroenterology and Hepatology, Milwaukee, WI, Medical College of Wisconsin, Surgery (Minimally Invasive/GI Surg), Milwaukee, WI

M1877  Trends in the Management of Esophageal Carcinoma: Treatment Practices of 595 Esophageal Surgeons
Charles Kim, Clifford Deveney, John Davis, Ashley Vernon, Kevin Reavis, Brett Sheppard, John G. Hunter, Blair A. Jobe, Oregon Health & Science University, Portland, OR

M1878  Characterization of Dysphagia Using Multichannel Intraluminal Impedance
Leena Khaitan, Sandy Everett, C. Daniel Smith, Emory University School of Medicine, Atlanta, GA

M1879  Barrett Esophagus: Antireflux Procedure or Proton Pump Inhibitors
Dmitry Oleynikov, Brian K. Zebrowski, Syed Shah, Aaron Sasson, John Dibaise, Jane L. Meza, University of Nebraska Medical Center, Omaha, NE

M1880  Experiences with Endoscopic Surveillance of Patients with Barrett’s Esophagus in a Single German Center
Burkhard H. A. von Rahden, Hubert J. Stein, Marcus Feith, Jakob Meyen, Mario Sarbia, J. Ruediger Siewert, Department of Surgery, Technical University Munich, Munich, Germany, Department of Pathology, Technical University Munich, Munich, Germany

M1881  Extent of Resection for Esophagogastric Junction Siewert’s Type II Tumors: Esophagectomy or Gastrectomy? Results From a Multicentre French Study
Alain Sauvanet, Christophe Mariette, Jean-Pierre Triboulet, Pascal Thomas, Patrick Lozach, Philippe Segol, Emmanuel Tiret, Jean-Robert Delpero, Denis Collet, Joel Leborgne, Hopital Beaujon, AP-HP, Clichy, France, Digestive Surgery, CHU Lille, Lille, France, Thoracic Surgery, CHU Marseille, Marseilles, France, Digestive Surgery, CHU Brest, Brest, France,
M1882  Progression of Barrett's Esophagus in the German Registry
Karl-Hermann Fuchs, Martin Fein, Joern Maroske, Markus Hospital, Frankfurt, Germany, Dept of Surgery, University of Wuerzburg, Wuerzburg, Germany, Dept. of Surgery University of Wuerzburg, Wuerzburg, Germany

M1883  Obesity, Reflux, and Hiatal Hernia: Is There a Connection?
Peter Crookes, Nahid Hamoui, Jeffrey Hagen, Anand Tamhankar, Gary Anthone, USC, Los Angeles, CA

M1884  Impedance As a Measure of Esophageal Motility in Patients with Gerd
Federico Cuenca-Abente, Brant K. Oelschlager, John A. Isch, Carlos A. Pellegrini, University of Washington, Seattle, WA, University of Wahington, Seattle, WA

M1885  Predictors of Impaired Quality of Life in Patients with Gastroesophageal Reflux Disease
Martin Fein, Joern Maroske, Marco Sailer, Karl-Hermann Fuchs, Department of Surgery, Wuerzburg, Germany, Markuskrankenhaus, Frankfurt, Germany

M1886  Optimal Therapy for Barrett Esophagus with High Grade Dysplasia: Cost-Effectiveness Analysis
Mark K. Ferguson, Amy E. Durkin, Irving Waxman, The University of Chicago, Chicago, IL

M1887  Prognostic Factors in Barretts Carcinoma: Results of 500 Consecutive Resected Adenocarcinoma of the Distal Esophagus
Marcus Feith, Hubert J. Stein, J. Ruediger Siewert, Department of Surgery, Munich, Germany

M1888  Impact of Laparoscopic Nissen Fundoplication with Mesh-hiatoplasty on Esophageal Body Motility: A Prospective Randomized Trial
Frank A. Granderath, Ursula M. Schweiger, Thomas Kamolz, Rudolph Pointner, Department of General Surgery, Hospital Zell am See, Zell am See, Austria
M1889  Obesity Is Not a Contraindication to Laparoscopic Nissen Fundoplication
Matthew J. D’Alessio, Dean Arnaoutakis, Natalie Giarelli, Alexander S. Rosemurgy II, University of South Florida College of Medicine, Tampa, FL

M1890  Extent of Preoperative Staging in Esophageal Cancer to Prevent Futile Explorative Surgery
Henderik L. Van Westreenen, Pierre A. M. Heeren, Hendrik M. van Dullemen, Eric J. van der Jagt, Pieter L. Jager, Henk Groen, John T. H. M. Plukker, University Hospital Groningen, Groningen, Netherlands

M1891  Dysphagia After Laparoscopic Antireflux Surgery Is Related to Inadequate Hiatal Closure and Not to Fundoplication
Frank A. Granderath, Ursula M. Schweiger, Thomas Kamolz, Rudolph Pointner, Department of General Surgery, Hospital Zell am See, Zell am See, Austria

M1892  Distal Esophageal Adenocarcinoma: Does Presence of Barrett’s Mucosa Matter?
Giuseppe Portale, Jeffrey H. Peters, Tasha A. K. Gandamihardja, Chih-Cheng Hsieh, Chadin Tharavej, Daniel Vallboehmer, Anand P. Tamhankar, Jeffrey A. Hagen, Cedric G. Bremner, Tom R. DeMeester, University of Southern California, Department of Surgery, Los Angeles, CA, Los Angeles, CA

M1893  The Type of Reflux Does Not Influence the Outcome of Nissen Fundoplication
Carlos A. Galvani, Maria V. Gorodner, Marco G. Patti, University of California San Francisco, San Francisco, CA, UCSF, San Francisco, CA

M1894  Patient Perception of a Clinical Pathway for Laparoscopic Foregut Surgery
Lorenzo E. Ferri, Christopher Andrew, Liane Feldman, Robert Baird, Donna Stanbridge, Gerald Fried, McGill University, Department of Surgery, Montreal, Canada, McGill University, Montreal, Canada

M1895  Does Vagotomy During Complex Esophageal Surgery Affect Clinical Outcomes?
Todd A. Woltman, Brant K. Oelschlager, Kyle Yamamoto, Juan-David Parra, Carlos A. Pellegrini, University of Washington, Department of Surgery, Seattle, WA
M1896 A Single Institution Experience with Robotically Assisted Transhiatal Total Esophagectomy
Garth Jacobsen, N. J. Espat, Federico Moser, Adam Goldstein, Jason Harris, Robert Berger, Santiago Horgan, University of Illinois at Chicago, Chicago, IL

M1898 Radiofrequency Energy Delivery to the Lower Esophageal Sphincter in Patients with Recurrent Reflux After Antireflux Surgery: Can Redo Surgery Be Avoided?
David A. McClusky III, Leena Khaitan, Vickie A. Swafford, C. Daniel Smith, Emory Endosurgery Unit, Emory University School of Medicine, Atlanta, GA

M1899 T-Tube Drainage to Create a Controlled Esophageal Fistula in the Face of Delayed Diagnosis of Esophageal Perforation
James Huang, Hasan Batirel, Richard Gilbert, Jeanne Lukanich, Yolonda Colson, Michael Chang, Philip Linden, Raphael Bueno, Steven Mentzer, David Sugaraker, Michael Jaklitsch, Brigham and Women’s Hospital, Boston, MA, St. Elizabeth’s Medical Center, Boston, MA

M1900 Esophagotomy During Laparoscopic Heller Myotomy Can Not Be Predicted by Application of Preoperative Therapies and Does Not Influence Long-term Outcome
Steven Rakita, Mark Bloomston, Natalie Giarelli, Desiree Villadolid, Candace Kalipersad, Haim Pinkas, Emmanuel Zervos, Alexander Rosemurgy, University of South Florida College of Medicine, Tampa, FL

Sergio Rojas-Ortega, Daniel Arizpe, Amelia Morales, Rachid Cesin, Gerardo Reed, Cris Gomez, Hospital de la Sociedad Espanola de Beneficencia de Puebla, Puebla, Mexico

M1902 Dysphagia After Laparoscopic Partial Fundoplication
Maud Lindeboom, Jan Ringers, Jan-Willem Straathof, Pieter van Rijn, Peter Neijenhuis, Ad Masclee, Leiden University Medical Center, Leiden, Netherlands, ’t Lange Land Ziekenhuis, Zoetermeer, Netherlands, Rijnland Ziekenhuis, Leiderdorp, Netherlands
M1903 Delayed Diagnosis of Esophageal Cancer Due to Psychiatric Disorders
Jed Robinson, Jason Andrus, Brian Diggs, Blair Jobe, Portland VA Medical Center, Portland, OR, Oregon Health and Science University, Portland, OR, Portland Veterans Medical Center, Portland, OR

M1904 Outcome and Quality of Life After Esophagectomy for High Grade Dysplasia and Intramucosal Cancer
Robert J. Moraca, Donald E. Low, Virginia Mason Medical Center, Seattle, WA

M1905 Epidemiology of Symptoms Suggestive of Gastroesophageal Reflux Disease: A Population-Based Study in South China
Minhu Chen II, Lishou Xiong, Huixin Chen, Angao Xu, Pin-Jin Hu, The 1st Affiliated Hospital, Sun Yat-sen University, Guangzhou, China, huizhou central people's hospital, Huizhou, China

M1906 Cause and Treatment of Epiphrenic Diverticula
Piero M. Fisichella, Maria V. Gorodner, Carlos A. Galvani, Lawrence W. Way, Marco G. Patti, University of California San Francisco, San Francisco, CA

M1907 Geographical Variation in Patient Expectations of Antireflux Surgery
Vic Velanovich, Thomas Kamolz, Rudolph Pointner, Sandro Contini, Henry Ford Hospital, Detroit, MI, Public Hospital of Zell am See, Zell am See, Austria, University of Parma, Parma, Italy

M1908 Laparoscopic Paraesophageal Hernia Repair (LPEHR) with Biomaterial Mesh: Favorable Short Term Results.
Omar K. Danner, George M. Eid, Samer G. Mattar, Ramesh C. Ramanathan, Giselle G. Hamad, Daniel R. Cottam, Philip R. Schauer, University of Pittsburgh Medical Center, Pittsburgh, PA, University of Pittsburgh Medical Center, Pittsburgh, PA

M1909 Non-Reflux Related Pain After Laparoscopic Nissen Fundoplication
Andrew J. Duffy, Nancy J. Hogle, Arnon Lambroza, Dennis L. Fowler, Weill Medical College of Cornell University, New York, NY, New York Presbyterian Hospital, New York, NY
HEPATIC: CLINICAL

†M1910  The Oncologic Effect of the TissueLink™ Device on Liver Surface Tumors and Positive Margins
Eric S. Weiss, Michael S. Torbenson, Tracy J. Wanner, Barbara M. McGee, Jean F. Geschwind, Michael A. Choti, Johns Hopkins Hospital, Baltimore, MD

†M1911  Hepatic Resection for Incidentaloma
Chi-Leung Liu, Sheung-Tat Fan, Chung-Mau Lo, See-Ching Chan, Irene O. Ng, Wai-Kuen Tso, John Wong, Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong, Department of Pathology, The University of Hong Kong, Hong Kong, Hong Kong, Department of Diagnostic Radiology, Hong Kong, Hong Kong

M1912  Robotically-Assisted Radiofrequency Ablation of Liver Tumors: Comparison with Standard Manual Techniques
Michael M. Awad, Stephen B. Solomon, Alex Patriciu, Dan Stoianovici, Michael A. Choti, Johns Hopkins, Baltimore, MD

M1913  In-Vivo Evaluation of a Simulation Model for Interstitial Tumor Ablation by Radiofrequency Thermotherapy in Porcine Liver with Normal and Interrupted Hepatic Perfusion
Joerg P. Ritz, Christoph Isbert, Andre Roggan, Kai Lehmann, Heinz Buhr, Department of Surgery, Charite University Medicine, Berlin, Germany

M1914  Surgical Drainage Following Hepatic Resection: A Prospective Series from a Single Institution
Jonathan B. Koea, Ali Almeida, John McCall, Department of Surgery, Auckland Hospital, Auckland, New Zealand

M1915  NASH Risk Factors in Bariatric Patients
Ronald E. Moore, Atul K. Madan, Mark A. Carlson, Constantine T. Frantzides, Northwestern University, Ft. Lauderdale, FL, University of Tennessee—Memphis, Memphis, TN, University of Nebraska Medical Center, Omaha, NE, Northwestern University, Evanston, IL

M1916  Laparoscopic Radiofrequency Ablation of Resectable Colorectal Metastases to the Liver
Jason T. H Wong, Paul Hansen, Legacy Health System, Portland, OR

† Poster of Distinction
M1917 Randomized Controlled Trial of Pylorus-preserving Whipple Versus Duodenum-preserving Pancreatic Head Resection in Chronic Pancreatitis
Frank Makowiec, Hartwig Riediger, Ulrich T. Hopt, Ulrich Adam, Department of Surgery, University of Freiburg, Freiburg, Germany

M1918 Risk Factors and Outcomes in Patients with Post-pancreatecto-duodenectomy Pancreatocutaneous Fistula
Taylor A. Sohn, John W. Lin, John L. Cameron, Charles J. Yeo, Keith D. Lillemoe, Johns Hopkins Medical Institutions, Baltimore, MD, Indiana University School of Medicine, Indianapolis, IN

M1919 Endothelial Injury Induced by Neutrophils in Acute Pancreatitis. Role of Endothelins.
Lourenilson J. Souza Sr., Ellena C. Paulino, Nilza A. T. Molan, Sonia Jancar, Jose Eduardo M. Cunha, Marcel C. C. Machado, Medicine School of University of São Paulo, São Paulo, Brazil, Medicine School University of São Paulo, São Paulo, Brazil

M1920 Pancreatecto-duodenectomy for Pancreatic Adenocarcinoma: Impact of Margin Status on Pattern of Failure and Survival
Chandrajit P. Raut, Charles R. Scoggins, Karen R. Cleary, Eddie K. Abdalla, Jean-Nicolas Vauthey, Jeffrey E. Lee, Peter W. T. Pisters, Douglas B. Evans, M.D. Anderson Cancer Center, Houston, TX

M1921 The Utility of Endoscopic Ultrasound in the Surgical Management of Pancreatic Disorders
Paul Vietzen, Shawn Mallery, Rebecca Lai, Timothy Sielaff, Univ Minnesota, Minneapolis, MN, Hennepin County Medical Center, Minneapolis, MN

M1922 Patterns of Orexigenic Hormones Following Pancreatecto-duodenectomy
Syed A. Ahmad, Jeffrey B. Matthews, S. Park, Andrew M. Lowy, A. Balasubramaniam, Sulaiman Sheriff, University of Cincinnati Medical Center, Cincinnati, OH, University of Cincinnati Medical Center, Cincinnati, OH

† Poster of Distinction
M1923  Clinical Utility of 18-FDG PET in the Diagnosis and Management of Nonpancreatic Periampullary Neoplasms.
Cosimo Sperti, Claudio Pasquali, Andrea Ferronato, Domenico Decet, Franca Chierichetti, Guido Liessi, Sergio Pedrazzoli, Clinica Chirurgica IV, Padova, Italy, Medicina Nuclere, Castelfranco Veneto (TV), Italy, Dept. of Radiology, Ospedale Civile, Castelfranco Veneto (TV), Italy

M1924  Relevance and Classification of Pancreatic Leakage After Pancreatic Resection
Frank Makowiec, Ulrich Adam, Hartwig Riediger, Ulrich T. Hopt, Department of Surgery, University of Freiburg, Freiburg, Germany

M1925  Influence of Hospital Volume on Mortality in Pancreaticoduodenectomy: A Meta-Analysis
Tjarda Van Heek, Rutger Van Geenen, Steve De Castro, Huug Obertop, D. J. Gouma, Academic Medical Center, Amsterdam, Netherlands, Onze Lieve Vrouwe Gasthuis, Amsterdam, Netherlands

M1926  Single Institution Series of 20 Solid-Pseudopapillary Tumors of the Pancreas
T. D. Dixon, Debashish Bose, John L. Cameron, Michael J. Zinner, Keith D. Lillemoe, Oregon Health Sciences University, Portland, OR, Johns Hopkins Hospital, Baltimore, MD, Brigham and Women’s Hospital, Boston, MA, Indiana University School of Medicine, Indianapolis, IN

M1927  Expression of CEACAM6 Is a Factor of Independent Prognostic Significance in Pancreatic Cancer
Evan Matros, Mark S. Duxbury, Mark Redston, Stanley W. Ashley, Edward E. Whang, Department of Surgery, Brigham & Women’s Hospital, Boston, MA, Department of Pathology, Brigham & Women’s Hospital, Boston, MA

M1928  A Clinically-Relevant Definition of Pancreatic Anastomotic Leak After Pancreaticoduodenectomy
Keita Wada, L. W. Traverso, Hiroyuki Shinchi, Virginia Mason Medical Center, Seattle, WA

M1929  Stapled Laparoscopic Cystgastrostomy — A Series with 15 Cases
Andrew Hindmarsh, Grace Lee, Michael P. N. Lewis, Michael Rhodes, Norfolk & Norwich University Hospital, Norwich, UK
M1930  Perioperative Blood Transfusion and Disease-Site Other Than Pancreas Are Associated with Increased Incidence of Clinically Relevant Intra-Abdominal Abscess Formation Following Pancreaticoduodenectomy
Margo Shoup, Pamela Hodul, Gerard V. Aranha, Loyola University Medical Center, Maywood, IL

M1931  Role of Endoscopic Ultrasound in the Evaluation of Indeterminate Pancreatic Lesions
R. Walsh, M. Ghanamah, N. Brown, Gregory Zuccaro, John Dumot, John Vargo, Cleveland Clinic Foundation, Cleveland, OH

M1932  Pharmacokinetics of the Antineoplastic Drug Mitomycin C in Regional Chemotherapy Using the Aortic Stop Flow Technique in Advanced Pancreatic Carcinoma
Frank Meyer, Karsten Ridwelski, Reinhard Grote, Jens Martens-Lobenhoffer, Hans Lippert, Department of Surgery, University Hospital, Magdeburg, Germany, Department of Surgery, Municipal Hospital, Magdeburg, Germany, Department of Diagnostic Radiology, University Hospital, Magdeburg, Germany, Institute of Clinical Pharmacology, University Hospital, Magdeburg, Germany

M1933  Long-term Results of Surgical Treatment of Vater Ampulla Neoplasms
Pascal Bucher, Chassot Gilles, Durmischi Imer, Pascal Gervaz, Philippe Morel, Department of Surgery, Geneva, Switzerland

M1934  Long Term Safety of Laproscopic Distal Pancreatectomy in Patients with Cystic Neoplasms of the Pancreas
Tauqeer Ahmad, Fazylov Rafeal, Theodoros Daskalakis, Joel Horovitz, Richard Lazarro, Jerzy Macura, Scott Tenner, Maimonides Medical Center, Brooklyn, NY, Downstate Medical Center, Brooklyn, NY

M1935  Systematic Appraisal of the Management of the Major Vascular Complications of Pancreatitis
Srinivasan Balachandra, Ajith K. Siriwardena, HPB Unit, Dept of Surgery, Manchester Royal Infirmary, Manchester, UK
M1936  **Immunosuppression with Steroids or Azathioprine Does not Increase the Postoperative Complication Rate in Abdominal Surgery for Crohn's Disease**

Markus Kueper, Andrei Dinescu, Mario H. Mueller, Tobias Meile, Michael Kasparek, Joerg Glatzle, Ekkehard C. Jehle, Martin E. Kreis, Tilman T. Zittel, Dept of General Surgery, University of Tuebingen, Tuebingen, Germany

M1937  **Analysis of 7090 Carcinoids in Florida Over the Last 20 Years**

Sarah E. Snell, Nicole Hodgson, Leonidas G. Koniaris, Alan S. Livingstone, Dido Franceschi, University of Miami School of Medicine, Miami, FL

M1938  **Palliative Stenting for Late Malignant Gastric Outlet Obstruction**

Shannon J. Graewin, Kulwinder S. Dua, Attila Nakeeb, Beth A. Erickson, Paul S. Ritch, Henry A. Pitt, Medical College of Wisconsin, Milwaukee, WI

M1939  **A Modern Approach to Managing Superior Mesenteric Venous Thrombosis**

Gregory J. McKenna, Gabriel Gondolesi, Sharif Ellozy, Alfio Carrocio, Michael Harris, Michael Wayne, Manuel Rodriguez-Davalos, Sander Florman, Sukru Emre, Myron Schwartz, Thomas Fishbein, Recanati Miller Transplant Institute, New York, NY, Recanati Miller Transplant Institute, New York, NY, The Mount Sinai Hospital, New York, NY, Tulane Center for Abdominal Transplantation, New Orleans, LA, Georgetown University Hospital, Washington, DC

M1940  **Predictive Factors for Surgery in Pediatric Patients with Crohn's Disease**

Neera Gupta, Melvin B. Heyman, Stanley A. Cohen, Traci Clemons, Terry Smith, Benjamin D. Gold, Barbara Kirschner, George D. Ferry, Robert N. Baldassano, Harland S. Winter, Michael Durant, Pat L. Fain, Pediatric IBD Consortium, University of California, San Francisco, CA, University of California, San Francisco, CA, Children's Center for Digestive Health Care, Atlanta, GA, The EMMES Corp, Rockville, MD, Structured Data Solutions, Houston, TX, Emory University School of Medicine, Atlanta, GA, University of Chicago Children's Hospital, Chicago, IL, Baylor College of
Adenocarcinomas of the Jejunum and Ileum: A 25-year Experience
Mustafa M. Ugurlu, Oktar Asoglu, D. D. Potter Jr., Sunni A. Barnes, W. Scott Harmsen, John H. Donohue, Mayo Clinic, Rochester, MN

Preoperative TNF-α Antagonist Therapy in the Surgical Management of Crohn’s Disease
Hari Nathan, Mark A. Talamini, Susan Gearhart, Mary Harris, Theodore Bayless, The Johns Hopkins University School of Medicine, Baltimore, MD

Small Bowel Adenocarcinoma: Presentation, Treatment, Pathologic Characteristics, and Outcome
Edward C. McCarron, John Gibbs, Marwan Fakih, Hector Nava, Ashwani Rajput, Roswell Park Cancer Institute, Buffalo, NY

Marked Improvement of Gastroesophageal Reflux Disease (GERD), Hypertension, Diabetes, and Other Obesity-Related Illnesses Following a Gastric Restriction Procedure with an Adjustable Band
Elizabeth E. Half, Mary F. Hewitt, Amir Onn, Hadar Spivak, Park Plaza Hospital, Houston, TX

Clinical Response to Long-Term Gastric Electrical Stimulation in Patients with Post-Surgical Gastroparesis
Jameson Forster, Zhiyue Lin, Irene Sarosiek, Paul Wetzel, Richard W. McCallum, University of Kansas Medical Center, Kansas City, KS

Contrast Studies After Weight Loss Surgery Do Not Change Outcome: An Analysis of 378 Patients
Mercedeh Baghai, Edward Lin, Kent R. Van Sickle, Vickie A. Swafford, C. Daniel Smith, Emory Endosurgery Unit and Emory Bariatrics, Emory University School of Medicine, Atlanta, GA

† Poster of Distinction
M1947  Treatment of Stomal Stricture After Gastric Bypass with Endoscopic Balloon Dilation
Ramon E. Rivera, Sreenivasa Jonnalagadda, J. Chris Eagon, Washington University School of Medicine, St. Louis, MO

M1948  Laparoscopic Gastric Bypass Results in Decreased Medication Costs With-in Six Months
Jon Gould, Michael Garren, James Starling, University of Wisconsin, Madison, WI

M1949  Patterns of Lymph Node Metastasis in Early Gastric Cancer and Impact on Survival
Carlos E. Jacob, Claudio Bresciani, Sidney Arazawa, Renato Iwashita, Rodrigo Perez, Kyioshi Iryia, Bruno Zilberstein, Joaquim Gama-Rodrigues, University of São Paulo Medical School, São Paulo, Brazil

M1950  Extreme Obesity and Outcomes Following Long-Limb Gastric Bypass
Thomas H. Magnuson, Michael Schweitzer, Johns Hopkins Bayview Medical Center, Baltimore, MD

M1951  Complications and Reoperations After Laparoscopic Adjustable Gastric Banding for Morbid Obesity - Long Term Follow-Up from an FDA Trial Center
Stewart E. Rendon, Kenneth G. MacDonald Jr., William H. H. Chapman, Bobbie L. Price, East Carolina University, Brody School of Medicine, Greenville, NC, Brody School of Medicine at East Carolina University, Greenville, NC

M1952  Pyloroplasty with Fundoplication in the Treatment of Combined Gastroesophageal Reflux Disease and Bloating
Vic Velanovich, Henry Ford Hospital, Detroit, MI

M1953  Adjustable Gastric Banding as an Outpatient Procedure; A Multi-Institutional Experience of 700 Successful Patients
Santiago Horgan, Garth Jacobsen, Federico Moser, Fernando Elli, Jason Harris, Adam Goldstein, Robert Berger, Jaime Ponce, University of Illinois at Chicago, Chicago, IL, Hamilton Surgical Weight Center, Dalton, GA

M1954  Prognostic Factors in the Management of Primary Gastric Lymphoma
Heriberto Medina-Franco, Santos Soto-Germes, Carlos Chan, Carmen Lome-Maldonado, National Institute of Medical
M1955  **Vitamin and Iron Metabolism in Morbid Obese Patients Before and Two Years After Gastric Band**  
Jocelyn P. M. Roduit, Natascha Potoczna, Thomas Ricklin, Rudolf Steffen, Thomas Krech, Fritz F. Horber, Klinik Hirslanden, Zurich, Switzerland, Obex Institut, Bern, Switzerland, Institut fur Medizinische Labordiagnostik, Kreuzlingen, Switzerland

M1956  **Extended Resection for Locally Advanced Siewert’s Type III Esophagogastric Junction Cancer: Is It Advisable? Results From a French Multicentre Study**  

M1957  **Realistic Expectations: Outcomes After Roux-En-Y Gastric Bypass in Patients with BMI Over 55**  
Steven P. Bowers Jr., Donald H. Jenkins, Joel E. Goldberg, Wilford Hall Medical Center, San Antonio, TX, Wilford Hall Medical Center, Lackland AFB, TX

M1958  **Peroral Endoscopic Repair of Staple-Line Dehiscence in Roux-en-Y Gastric Bypass: A Less Invasive Approach**  
Christopher C. Thompson, David L. Carr-Locke, John Saltzman, David Lautz, James Slattery, Malcolm K. Robinson, Brigham and Women’s Hospital, Boston, MA

M1959  **Influence of Preoperative Age, Gender and BMI on Outcome After Gastric Banding**  
Thomas Ricklin, Rudolf Steffen, Ruth Branson, Natascha Potoczna, Grazyna Piec, Fritz F. Horber, Klinik Hirslanden, Zurich, Switzerland, Klinik Beau-Site, Zurich, Switzerland
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<th>Session</th>
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<td>M1960</td>
<td>The Impact of Bariatric Surgery on Resident Operative Experience</td>
<td>Jon D. Vogel, Michael A. Schweitzer, Thomas H. Magnuson, Johns Hopkins Bayview Medical Center, Baltimore, MD</td>
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<td>M1961</td>
<td>Resolution of Diabetes After Roux-en-Y Gastric Bypass</td>
<td>Carson D. Liu, Christina Y. Kim, Greater Los Angeles Veterans Administration Hospital, Los Angeles, CA, Century City Hospital, Los Angeles, CA</td>
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<td>M1962</td>
<td>Perioperative and Postoperative Changes in Body Composition After Gastrectomy</td>
<td>Teruo Kiyama, Takashi Tajiri, Akira Tokunaga, Toshiro Yoshiyuki, Takashi Mizutani, Takeshi Okuda, Itsuro Fujita, Shunji Kato, Adrian Barbul, Nippon Medical School, Tokyo, Japan, Johns Hopkins Medical Institution, Baltimore, MD</td>
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<td>M1963</td>
<td>Laparoscopic Resection of Gastric Stromal Tumours — A Series with 29 Cases</td>
<td>Andrew Hindmarsh, Brendan Koo, Grace Lee, Michael P. N. Lewis, Michael Rhodes, Norfolk &amp; Norwich University Hospital, Norwich, UK</td>
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<td>M1964</td>
<td>Metabolic Syndrome and the Impact of Gastric Bypass Surgery</td>
<td>Thomas H. Magnuson, Michael Schweitzer, Jon Vogel, Johns Hopkins Bayview Medical Center, Baltimore, MD</td>
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<td>M1965</td>
<td>Management of Failed Adjustable Gastric Banding</td>
<td>Rudolf Steffen, Laurent Biertho, Ruth Branson, Natascha Potoczna, Thomas Ricklin, Grazyna Piec, Fritz F. Horber, Klinik Beau-Site, Bern, Switzerland, Obex Institut, Bern, Switzerland, Klinik Hirslanden, Zurich, Switzerland</td>
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<td>M1966</td>
<td>Age Alone Does Not Have a Significant Impact on the Short and Long-Term Outcome of Roux-En-Y Gastric Bypass for Morbid Obesity</td>
<td>Ioannis S. Raftopoulos, Julie A. Ercole, Anthony O. Udekwu, James D. Luketich Sr., Anita P. Courcoulas, University of Pittsburgh Medical Center, Shadyside Campus, Pittsburgh, PA</td>
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<td>M1967</td>
<td>The Preoperative Serum Albumin Level Is a Prognostic Indication for Adenocarcinoma of the Gastric Cardia</td>
<td>Yung-Chang Lien, Chih-Cheng Hsieh, Yu-Chung Wu, Han-Shui Hsu, Wen-Hu Hsu, Liang-Shun Wang, Min-Hsiung Huang, Biing-Shiun Huang, Department of Surgery, Taipei-</td>
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Veterans General Hospital, Taipei, Taiwan, Department of Surgery, Taipei-Veterans General Hospital, Taipei, Taiwan

**M1968** Analysis of Volume and Gastric Acid Output from 2 and 15 Minute Infusions of Intravenous Pantoprazole (IVP) from a Pilot Study in Peri-operative Setting

**M1969** Characterization of Psychosocial and Demographic Predictors of Outcome Following Weight Loss Surgery
Mercedeh Baghai, Leena Khaitan, David A. McClusky III, Nana Gletsu, Stanley L. Chapman, C. Daniel Smith, Emory Endosurgery Unit and Emory Bariatrics, Emory University School of Medicine, Atlanta, GA

**M1970** Laparoscopic Gastric Bypass in High Risk Patients
Paul A. Thodyijil, Tomasz Rogula, Samer G. Mattar, George M. Eid, William F. Gourash, Philip R. Schauer, University of Pittsburgh Medical Center, Pittsburgh, PA

**M1971** Depressive Illness and History of Sexual Assault in Bariatric Surgery Candidates
Steven C. Poplawski, Patricia Choban, Jon Schram, Jessica Schram, Nikhil Dhurandhar, Forest Health Medical Center, Inc., YPSILANTI, MI, Bariatric Treatment Centers of Ohio, Groveport, OH, Bariatric Treatment Centers of West Michigan, Grand Haven, MI, Wayne State University, Rochester Hills, MI

**M1972** Relationship Between Dyspeptic Symptoms, Gastroduodenal Lesions and H. Pylori Infection in Chronic Renal Failure
Gerardo Nardone, Alba Rocco, Maria Fiorillo III, Marisa Del Pezzo, Giovanni Autiero, Antonietta Lambiase, Gabriele Budillon, Bruno Cianciaruso, Department of Clinical and Experimental Medicine, University Federico II, Napoli, Italy, Department of Sperimental and Clinical Medicine, Napoli, Italy, Department of Nephrology, University Federico II, Napoli, Italy, Department of Cellular and Molecular Biology and Pathology L. Califano, University Federico II, Napoli, Italy, Dipartimento di Medicina Clinica e Sperimentale, Gastroenterologia, Napoli, Italy
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<th>M1973</th>
<th>Surgical Pathology and Outcome of Gastrointestinal Stromal Tumors of the Stomach</th>
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<td>Y. Nancy You, Yi-Qian N. You, Imran Hassan, Roman Shyyan, Florencia G. Que, Thomas C. Smyrk, John H. Donohue, Mayo Clinic, Rochester, MN</td>
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<td>M1974</td>
<td>Revision Versus First-Time Gastric Bypass in Morbid Obesity - a 5-year Follow-up Study</td>
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<td>Sven Gustavsson, Magnus Sundbom, Anita Ohlin, Department of Surgery, University Hospital, Uppsala, Sweden, Department of Surgery, Uppsala, Sweden</td>
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<td>M1975</td>
<td>Preoperative Nutritional Status of Patients Undergoing Roux-en-Y Gastric Bypass for Morbid Obesity</td>
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<td>Tihesha Wilson, Victoria Drake VI, Toni Colarusso, Louis Flancbaum, St Luke's Roosevelt Hospital Center, New York, NY</td>
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<td>M1976</td>
<td>Incidental Gastroscopic Findings in Morbidly Obese Patients</td>
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<td>Dan Azagury, Gilles Chassot, Jean-Marc Dumonceau, Philippe Morel, Olivier Huber, University Hospital of Geneva, Geneva, Switzerland</td>
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M2120 A New Optical Method of Evaluating Tactile Sensation for Robotic Surgery: Use of IHb in the Analysis of Tissue Blood Flow
Soji Ozawa, Junya Oguma, Yasuhide Morikawa, Toshiharu Furukawa, Masaki Kitajima, Department of Surgery, School of Medicine, Keio University, Tokyo, Japan

M2121 Results of Primary Surgical Treatment of Gastrointestinal Stromal Tumors
Pascal Bucher, Peter Villiger, Jean-Francois Egger, Leo Buhler, Philippe Morel, Department of Surgery, Geneva, Switzerland, Department of Pathology, Geneva, Switzerland

M2122 Da Vinci Robotic Surgical Experience at a University Setting: First One Hundred Cases
Brian Zebrowski, Sonja Kinney, Cori McBride, Dmitry Oleynikov, University of Nebraska, Omaha, NE

M2123 Does the Pneumoperitoneum with CO₂ Alter the Ultra-Structuture of the Mesothelium?
Marcos T. A. Rosario, Ulysses Ribeiro Jr., Carlos E. P. Corbett, Alberto Ozaki, Claudio Bresciani, Bruno Zilberstein, Joaquin J. Gama-Rodrigues, University of São Paulo, São Paulo, Brazil

M2124 Squamous Cell Carcinoma of Anal Canal - A Changing Entity in Era of HIV Disease?
Rabi Kundu, Franco Niccini, David Henry, Scott Fisher, Deborah Nagle, Susan Gordon, Graduate Hospital, Philadelphia, PA, Pennsylvania Hospital, Philadelphia, PA, Frankford Hospital, Philadelphia, PA

M2125 Changing Trends in Iliopsoas Abscess
Dennis K. Schimpf, Krishnan Raghavendaran, Rebecca Read, Muhammad Kulaylat, university at buffalo, hamburg, NY, university at buffalo, buffalo, NY

M2126 Diagnosing Cancer with Untreated Fresh Lymph Node and Surgical Specimens of Gastrointestinal Tract Using Contact Microscope Method
Hitoshi Satodate, Haruhiro Inoue, Shin-Ei Kudo, Showa University Northern Yokohama Hospital, Yokohama, Japan
M2127 Robotic Assisted Laparoscopic Surgery
1Sergio Rojas-Ortega, Luis Sanchez, Beneficencia Espanola de Puebla, Puebla, Mexico, Hospital Betania, Puebla, Mexico
192 Melanocortin-4 Receptor Gene Variants Affect Results of Gastric Banding

John G. Kral, Ruth Branson, Grazyna Piec, Thomas Ricklin, Rudolf Steffen, Margret R. Hoehe, Klaus-Ulrich Lentes, Natascha Potoczna, Fritz F. Horber, Department of Surgery, SUNY Downstate Medical Center, Brooklyn, NY, Klinik Hirslanden, Zurich, Switzerland, Klinik Beau-Site, Bern, Switzerland, Max-Plank Institute for Molecular Genetics, Berlin, Germany, Bioscientia GmbH, Ingelheim

BACKGROUND: The central melanocortin system modulates food intake and energy homeostasis. Melanocortin-4 receptor gene (MC4R) mutations are relatively common in monogenic severe obesity and have recently been associated with binge eating disorder (BED). The more prevalent proopiomelanocortin (POMC) and leptin receptor (LEPR) gene mutations are rarely associated with the obese phenotype or BED. It is not known whether MC4R/POMC/LEPR mutations or BED influence the outcome of dietary treatments of obesity. Gastric banding enforces a low calorie diet by diminishing the need for volitional adherence. Methods: The complete coding regions of MC4R, POMC and leptin-binding domain of LEPR were comparatively sequenced in 300 patients (233 women; age 42±1 years [mean±SEM]; BMI 43.5±0.3kg/m2) undergoing laparoscopic gastric banding. Eating behaviour, metabolic syndrome prevalence and postoperative weight loss and complications were compared between carriers and non-carriers of gene variants with and without BED during 36±3 months follow up.

RESULTS: Nineteen patients (6.3%) carried eight different MC4R mutation or variants; 85 (138) patients (48.9%, 79.3%) carried 13 (9) different POMC (LEPR) mutations. All MC4R mutation/variant carriers were bingers, compared to 18.1% of non-carriers (P<0.001), whilst POMC/LEPR mutation carriers and non-carriers demonstrated similar frequency (P>0.12). MC4R mutation carriers lost less weight (P=0.004, ANOVA for repeated measures) demonstrated less improvement of metabolic syndrome components (P=0.002 and had five times more gastric complications (P<0.001). All outcomes were similar among POMC/LEPR mutation carriers and non-carriers and MC4R non-carriers independent of BED.

CONCLUSION: In conclusion, MC4R mutations and variants may predict outcome of dietary obesity treatment independent of binge eating disorder.
Recurrent Disease After Radical Resection for Pancreatic and Periampullary Adenocarcinoma: Should All Patients Receive Adjuvant Therapy?
Steve de Castro, K. F. D. Kuhlmann, O. R. C. Busch, G. Johan Offerhaus, T. M. van Gulik, Huug Obertop, D. J. Gouma, Academic Medical Center, Amsterdam, Netherlands

Long-term outcome after resection for pancreatic or periampullary cancer (ampulla of Vater and distal bile duct) is dismal. Recent advances in adjuvant therapeutic regimens are promising. Controversy exists whether patients with periampullary carcinoma should also receive these treatments. We analyzed predictive factors for recurrence in a consecutive cohort of patients with microscopic tumor free resection margins, who did not receive adjuvant therapy. The aim of the study is to identify patients with periampullary cancer who might benefit from adjuvant therapy.

Between January 1992 and December 2002, 207 patients of 337 patients (61%) underwent a pancreatoduodenectomy with microscopic tumor free resection margins (Ro). A Ro resection was achieved in 80 of the 168 patients (48%) with pancreatic adenocarcinoma, 98 of the 115 patients (85%) with adenocarcinoma of the ampulla of Vater and 35 of the 60 patients (58%) with adenocarcinoma of the distal bile duct. Oncological factors were analyzed by logistic regression to predict recurrent disease.

Overall 5-year survival was 15% for pancreatic, 40% for ampulla of Vater and 14% distal bile duct adenocarcinoma. The median time of recurrence was 10.4 (range, 3-58), 14.8 (range, 0-53) and 16.8 (range, 5-51) months, respectively (p<0.001). Median survival thereafter was 2.8 (range, 0-22), 3.1 (range 0-28) and 3.3 (range, 0-20) months, respectively (p=0.842). Overall recurrence occurred in 117 of 207 patients (56%) with a median follow up of 3 years. No significant predictive factors for the development of recurrence were identified for pancreatic adenocarcinoma. Significant predictive factors for the development of recurrence for patients with ampulla of Vater adenocarcinoma were T-Stage (p<0.001), N-Stage (<0.001), disease stage according to the UJCC (P<0.001) and perineural ingrowth (0.02). The differentiation grade (p=0.003) was a significant predictor for recurrence of distal bile duct adenocarcinoma. Of the patients with ampulla of Vater adenocarcinoma with T1,T2 and N0 disease, recurrence after 5 years was seen in 27% compared with 85% of the patients with T3N0 or any N1 disease (p<0.001).

Patients with advanced periampullary malignancies (ampulla of Vater and distal bile duct) should be selected according to the identified predictive factors and treated with the same modalities as pancreatic cancer. These patients have a high recurrence rate after 5 years (up to 85%) and could benefit from these trials.
Surgical Results of a Comprehensive Intestinal Failure Program
Debra Sudan, Kishore Iyer, Jon Thompson, Steve Raynor, Clarivet Torres, Simon Horslen, Wendy Grant, Jean Botha, Alan Langnas, University of Nebraska Medical Center, Omaha, NE

BACKGROUND: Treatment of intestinal failure is most commonly by the administration of parenteral nutrition. In some patients however, surgical therapy may increase the ability to use the intestine for nutrition and thereby decrease the complications of TPN therapy.

METHODS: A multidisciplinary comprehensive intestinal failure program was initiated at the University Nebraska Medical Center in October 2000. Here we describe the surgical approaches to patients with short bowel syndrome and the subsequent impact on the need for parenteral nutrition and survival.

RESULTS: Fifty-two patients (children = 31, adults = 21) underwent surgical procedures to restore intestinal continuity (n = 5), repair enterocutaneous fistulas (n = 5), resect dysmotile or strictured/obstructed bowel segments or mesenteric desmoid tumors (n = 6), stricturoplasty (n = 4), Bianchi tapering and lengthening (n = 21), STEP enteroplasty (n = 6), and other (n = 7). Of these 52 patients 3 patients did not require TPN after surgical intervention and 7 had remnant small bowel anatomy that precluded TPN weaning (ex. end duodenostomy) and were listed for transplantation. Of the 42 remaining patients most received the majority of calories from TPN at the time of referral, i.e. mean calories from TPN = 90%. Subsequent to the surgical and medical therapy, 21 (50%) have been completely weaned off of parenteral nutrition. In addition, 11 had substantial decreases in their TPN requirements (i.e. from 95% of calories at onset decreased to a median 44% (range 10-80%) of required calories to date). Six patients remained on the same amount of TPN support and 4 patients are early after surgical intervention and too early to further evaluate. Four of the 7 patients listed for transplantation underwent successful transplantation and 3 died waiting for transplantation. Despite the complications of short bowel syndrome 92% (n = 48) of the patients are alive and well with mean follow-up of 1.8 years. Patient deaths occurred primarily in those listed for transplantation (3 of the 4) and were related to advanced liver disease (n = 2) or line sepsis (n = 2).

CONCLUSION: In this series of patients with short bowel syndrome, surgical intervention led to weaning or discontinuation of TPN support in 76% of patients. An organized multidisciplinary approach to the patient with short bowel syndrome is recommended.
Hepatic resection is still considered the treatment of choice for HCC on liver cirrhosis in patients not candidates to liver transplantation. Radiofrequency ablation is a new emerging modality aimed to get a complete ablation of the tumor. At present very few prospective studies are available comparing these two modalities. Aim of our study was to compare the results of HR and RF in the treatment of HCC on liver cirrhosis. From 2/97 to 2/03, a total of 98 patients were enrolled in this prospective study. Inclusion criteria were a single HCC nodule < 5 cm, Child A-B class of liver function and no previous treatment. HR was conducted according to the systematic segmentectomy technique proposed by Makuuchi; RF was performed through a laparoscopic approach under general anesthesia. Intraoperative ultrasound (IOUS) was performed immediately before the treatment in both groups: 40 pts were included in the HR group and 58 pts in the RF group. The two groups were homogeneous as far as age, sex, class of liver function and tumor characteristics are concerned. IOUS diagnosed new malignant intrahepatic nodules in both groups (10% after HR vs. 18% after RF; p=0.241), which were treated in the same session. Operative mortality was nil and there was the same 19% rate of operative morbidity within the two groups. All patients were submitted to a follow-up protocol including biochemical examination, liver ultrasound and spiral CT at 1, 3, 6 and 12 months and twice a year thereafter. Mean follow-up was 21 ± 15 months after RF and 24 ± 15 months after HR. 95% of patients in the RF group showed a complete HCC necrosis at 1 month. Actuarial survival at 4 yrs was similar (66% after HR and 50% after RF; p=0.645). There was a significant higher incidence of intrahepatic recurrences after RF than after HR (53% vs. 35%; p=0.017). A multivariate analysis (Cox model) showed the only significant factor predictive of an intrahepatic recurrence was the type of the treatment (beta: 0.234; hazard ratio: 2.339; 95% C.I: 2.14-2.54). On the other hand, only the level of alpha-fetoprotein (beta: 0.612; hazard ratio: 2.947; C.I: 2.54-3.36) was independent predictor of survival rate. With the limitations of a non-randomized study and the small sample size, the results of our study showed a significant lower incidence of intrahepatic recurrences after HR compared to RF. This seems not to have influence on the overall survival, probably because of a prompt treatment of the recurrence.
202 A National Comparison of Surgical Versus Percutaneous Drainage of Pancreatic Psuedocysts: 1997-2001
John Morton, Alphonso Brown, Joseph Galanko, Jeff Norton, Ian Grimm, Kevin Behrns, Stanford School of Medicine, Stanford, CA, University of North Carolina, Chapel Hill, NC

BACKGROUND: Competing therapies for pancreatic psuedocyst management are utilized without randomized clinical trial evidence. Single institution case series results have indicated that a surgical approach is superior to percutaneous drainage of pancreatic psuedocysts. To determine if this surgical advantage is persistent, national outcomes for both approaches were compared from 1997-2001.

METHODS: The National Inpatient Sample, a 20% sample of all non-federal hospital discharges, was queried for both drainage modalities of pancreatic psuedocysts, using ICD9 procedure codes 52.01 for the percutaneous approach and 52.4 and 52.96 for the surgical approach. Further case identification was achieved by also having the accompanying diagnosis of pancreatic psuedocyst, ICD9 diagnosis code 577.2. Both demographic and outcome variables were compared by either T test or Chi-Square analysis with a P value of < .05 as significant. Confounding variables were controlled for with linear and logistic regression models for LOS and mortality respectively.

RESULTS: As seen below, no significant demographic differences existed between the two groups. Significant differences in rates of ERCP use, intra-abdominal abscess, LOS, and in-patient mortality did exist favoring the surgical approach. In addition, regression analysis indicated that the differences for mortality and LOS continued after correcting for confounding variables. ERCP use had a protective effect on mortality (Odds Ratio, 0.7) while percutaneous drainage had an increased risk of mortality (Odds Ratio, 1.6).

CONCLUSION: This population-based study indicates that surgical drainage of pancreatic psuedocysts, particularly when coupled with ERCP use, leads to decreased complications, LOS, and mortality in comparison with percutaneous drainage. Further sub-group analysis may reveal a role for percutaneous drainage of pancreatic psuedocysts.

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<td>42.6</td>
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<td>Charlson Index Score 1-3 (%)</td>
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<td>21.5</td>
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<td>Diabetes (%)</td>
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<td>16.7</td>
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<td>ERCP (%)</td>
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<td>Intra-Abd Abscess (%)</td>
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<td>Blood Transfusion (%)</td>
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<td>LOS, Days</td>
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<td>Mortality (%)</td>
<td>5.71</td>
<td>2.71</td>
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Molecular Biology of Squamous Cell Carcinoma of the Anus: A Comparison of HIV Positive and HIV Negative Patients

Pascal Gervaz, Dieter Hahnloser, Bruce Wolff, Steven Thibodeau, Lawrence Burgart, Robert Beart, University Hospital Geneva, Geneve, Switzerland, Mayo Clinic Rochester, Rochester, MN, University South California, Los Angeles, CA

AIM: The molecular mechanisms involved in progression of squamous cell carcinoma of the anus (SCCA) are poorly elucidated, as well as the potential role of HIV infection. Loss of heterozygosity (LOH) is one of the mechanisms responsible for inactivation of tumor suppressor genes (TSG). We hypothesized that HIV-induced immunosuppression may contribute to an alternate molecular pathway in SCCA progression. This study was undertaken to compare the molecular biology of SCCA in HIV positive and HIV negative patients.

METHODS: We retrieved tumor specimen from 18 HIV negative and 10 HIV positive patients, diagnosed with SCCA in two institutions. DNA from tumor and normal tissues was extracted, and then amplified by PCR. LOH patterns were investigated with 14 primers at 6 loci: 18q (DCC); 13q (Rb); 17p (p53); 11q; 2q; and 5q (APC). LOH was defined by a tumor DNA/normal tissue DNA >2. Results: HIV positive patients were younger (36±7 Vs. 53±13 years, p=0.001) and showed a trend towards tumors of larger size (3.7±1.6 Vs. 2.6±1.5 cm, p=0.09). A total of 46 allelic losses were observed in the whole group. LOH were the most frequent on chromosome 11q (13 out of 28 patients (46%)). When considering all loci, tumors in HIV negative patients were more likely to present with LOH than tumors in HIV positive patients (38 LOH/108 loci (35.2%) vs. 8 LOH/60 loci (13.3%), p=0.002). Differences between the two groups with regard to allelic losses were also observed at specific loci, such as 18q (7/18 (HIV-) vs. 0/10 (HIV+), p=0.03) and 17p (8/18 (HIV) vs. 1/10 (HIV+), p=0.09).

CONCLUSIONS: Consistent LOH on chromosomes 17p, 18q and 11q were observed in HIV negative patients with SCCA. By contrast, allelic losses at 17p and 18q seem to be rare in tumors of HIV positive individuals. These data suggest that immunosuppression may promote SCCA progression through an alternate pathway, and that persistence of human papillomavirus within the anal canal may play a central role in this process.
First Experience with Sentinel Lymphadenectomy in Early Adenocarcinoma of the Distal Esophagus and Esophagogastric Junction

Hubert J. Stein, Maria Burian, Marcus Feith, Morand Piert, Jorg Naehrig, J. Ruediger Siewert, Chirurgische Klinik und Poliklinik TU Muenchen, Munich, Germany, Department of Nuclear Medicine TU Munich, Munich, Germany, Department of Pathology TU Munich, Munich, Germany

BACKGROUND: Extended lymphadenectomy may improve the prognosis in patients with adenocarcinoma of the esophagogastric junction (AEG) but also adds to the morbidity of the surgical resection. Prediction of lymphatic spread could thus be helpful to tailor the extent of surgical resection. We report our first experience with sentinel lymph node identification in AEG tumors.

MATERIAL AND METHODS: Intra-operative sentinel node identification was attempted in 35 patients who had resection for an AEG tumor (26 T1-tumors, 9 T2/T3-tumors). All patients had preoperative endoscopic peritumoral injection of a technetium colloid with intraoperative sentinel node identification by a hand held gamma probe, 24/35 patients also had an intraoperative peritumoral injection of lymphazurine blue dye and visual identification of the first blue stained lymph nodes. All identified ‘sentinel nodes’ were removed and assessed separately for tumor spread with standard histological and immunohistochemical techniques. Results: One or more sentinel nodes (median 2) could be identified in 32/35 patients with the technetium technique and in 20/24 patients with blue dye injection. The location of the sentinel node(s) varied markedly among the patients. The identified sentinel node(s) correctly predicted the lymph node status in 91% of the patients with T1 tumors and 83% of the patients with T2/T3 tumors.

CONCLUSIONS: Sentinel lymphadenectomy appears to be feasible and valid in patients with early adenocarcinoma of the esophagogastric junction. This opens the door for tailored lymphadenectomy strategies and reduction of the aggressiveness of the surgical approach.
2:15 - 5:00 PM  SSAT PLENARY SESSION  CC 243-244

Moderators:  Syed A. Ahmad, Cincinnati, OH
             Nathaniel J. Soper, Chicago, IL

272  Nissen Versus Anterior Laparoscopic Fundoplication. A Prospective, Randomised, Double Blind Trial
     Robert J. Baigrie, University of Cape Town, Cape Town, South Africa

AIM: To compare, at two years, laparoscopic Anterior partial fundoplication and Nissen total fundoplication in a double-blind, randomized, private practice, single surgeon setting outside the USA.

PATIENTS: All patients with proven GORD, regardless of motility. Primary Outcome measures: dysphagia; abolition of reflux; Secondary Outcome measures: patient satisfaction at 3, 12, 24 months and revision surgery.

RESULTS: 163 patients (84 Nissen, 79 Anterior) had a median stay of 2 nights, and operation times of 53 vs 59 minutes (ns). Complete follow up was available on 161 patients (99%). Reoperation rate at 90 days was zero. There were no differences in mean heartburn scores (<1/10 at 3, 12, 24 months). Dysphagia scores, using 2 scoring systems, were highly significantly lower after Anterior fundoplication for both liquids (only at 3 months) and solids (3, 12, 24 months). Satisfaction scores (ns) were >9.5/10 at all time points. 4(5%) pts had persistent dysphagia after Nissen, and all underwent successful revision laparoscopic surgery. Ten (12%) had recurrent reflux after Anterior, sufficiently severe in 7(8%) to warrant revision surgery. No patients had recurrent reflux after Nissen. No pts had persistent dysphagia after Anterior. Overall reoperation rate at 2 years was 6%, all achieved laparoscopically.

CONCLUSION: Nissen cured all patients of reflux, durable to 2 years, but 1:20 required revision. Anterior failed in 12% but avoided dysphagia completely. Patient satisfaction was >9/10 in both groups. Revision laparoscopic surgery, while more difficult, was safe and successful.
273 Non-obese Diabetic Mice Have Diminished Gallbladder Motility
Shannon J. Graewin, James M. Kiely, Keun-Ho Lee, Attila Nakeeb, Henry A. Pitt, Medical College of Wisconsin, Milwaukee, WI

BACKGROUND: Both diabetes and obesity are associated with an increased risk of cholesterol gallstones. However, the relative importance of these two risk factors is difficult to determine as obesity and diabetes are strongly associated. Previous studies from this laboratory with leptin-deficient (Lepob) and leptin-resistant (Lepdb) obese mice have demonstrated decreased gallbladder motility that correlates with increasing body weight as well as serum glucose and insulin levels. However, the relative role of diabetes, obesity, or an abnormal leptin pathway in biliary motility remains unclear. Therefore, we tested the hypothesis that leptin-normal, non-obese diabetic (NOD) mice would have reduced gallbladder motility.

METHODS: Eight-week old lean control (C57BL/6J, n=10) and NOD (n=10) mice were fed a non-lithogenic chow diet for four weeks. All animals were fasted overnight and underwent cholecystectomies. Bile was aspirated from the intact gallbladder, and the volume (µl) was recorded. Contractile response (N/cm²) to acetylcholine (Ach 10⁻⁵M), neuropeptide Y (NPY 10⁻⁸⁻⁻⁷M), and cholecystokinin (CCK 10⁻¹⁰⁻⁻⁹⁻⁻⁸⁻⁻⁷M) was measured. Results were analyzed using the Mann-Whitney Rank Sum Test and are displayed in the table.

CONCLUSIONS: These data suggest that leptin-normal, non-obese diabetic mice have 1) similar gallbladder volume but 2) diminished response to acetylcholine, neuropeptide Y, and cholecystokinin compared to the lean control mice. Therefore, we conclude that diabetes, in the absence of obesity or altered leptin function, is associated with abnormal biliary motility. Thus, diabetes may provide a link between obesity, altered biliary motility, and gallstone formation.

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<th>Wt (g)</th>
<th>GB Vol (µl)</th>
<th>ACh⁵</th>
<th>NPY⁴</th>
<th>CCK³</th>
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<tr>
<td>Lean</td>
<td>17.3 ± 0.2</td>
<td>13 ± 3</td>
<td>.24 ± .04</td>
<td>.08 ± .02</td>
<td>.75 ± .14</td>
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<tr>
<td>NOD</td>
<td>19.6 ± 0.4*</td>
<td>16 ± 2</td>
<td>.05 ± .01*</td>
<td>.02 ± .01*</td>
<td>.37 ± .09*</td>
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*p<0.01, †p<0.05 vs C57b lean controls
Resection of the Superior Mesenteric-Portal Vein for Pancreatic Adenocarcinoma: Margin Status and Survival Duration

Jennifer F. Tseng, Charlotte C. Sun, Eddie K. Abdalla, Jean-Nicolas Vauthey, Peter W. T. Pisters, Jeffrey E. Lee, Douglas B. Evans, UT/MD Anderson Cancer Center, Houston, TX

INTRODUCTION: Major vascular resection performed at the time of pancreaticoduodenectomy (PD) for adenocarcinoma remains controversial partly due to the lack of standardized preoperative imaging and prospective evaluation of resection margins. As a result, many reports have included patients who have undergone an incomplete (R2) resection precluding accurate analysis of other prognostic factors such as venous resection.

METHODS: We analyzed all patients who underwent PD for adenocarcinoma of the pancreas between 1990 and 2002. Preoperative imaging criteria for PD included the absence of tumor extension to the celiac axis or superior mesenteric artery; such patients were considered locally advanced and did not undergo PD. Tangential or segmental resection of the superior mesenteric or portal veins was performed when the tumor could not be separated from the vein. The retroperitoneal (RP) margin (soft tissue adjacent to the SMA) was prospectively evaluated at the time of pathologic evaluation and reported as positive (R1) or negative (R0).

RESULTS: PD was performed in 280 consecutive patients; 251 (90%) received adjuvant or neoadjuvant therapy. Standard PD was performed in 178 and venous resection (VR) in 102. Vascular resections included tangential resection with vein patch (28), segmental resection with primary anastomosis (28), and segmental resection with autologous interposition graft (46). No patient underwent an R2 resection. An R1 resection occurred in 20 (20%) of the 102 patients who underwent VR, and in 21 (12%) of the 178 patients who underwent standard PD (P=.056). Tumor size was significantly larger in patients who required VR (3.1 vs. 2.5 cm, p<.001). T3 tumors were also more common in the VR group (84% vs. 63%, p=.001). Median survival was 25 months in those who required VR and 26 months in those who underwent standard PD (P =.42). A Cox proportional hazards model was constructed to perform multivariate analysis of the effect of potential prognostic factors (VR, tumor size, T stage, N status, RP margin) on survival. Only the presence of nodal metastases was identified as a predictor of decreased survival (HR 1.53, p=.005).

CONCLUSION: R0 resection is possible in the majority of patients who require venous resection. Properly selected patients with adenocarcinoma of the pancreatic head who require VR have a median survival of approximately 2 years, no different from those who undergo standard PD and superior to historical patients treated with nonoperative therapy.
**275** Fas/FasL Play an Important Role in Pancreatitis-Induced Liver Injury
Scott F. Gallagher, Yanhua Peng, Jun Yang, Krista Haines, Kathryn Baksh, Heather Carpenter, P. K. Epling-Burnette, Michel M. Murr, University of South Florida, Tampa, FL

**BACKGROUND:** Liver injury is a clinical prognostic indicator in acute pancreatitis. We previously demonstrated that Kupffer cell-derived FasL mediates liver injury during experimental acute pancreatitis. **AIM:** To determine the role of Fas/FasL in liver cell apoptosis during acute pancreatitis.

**METHODS:** Acute pancreatitis was induced in NIH, C57/C57 and knock-out mice for Fas and FasL (Fas/-/-, FasL/-/-) by CDE diet. Liver Fas, FasL, p38-MAPK, PARP, and Cytochrome C were determined by immunoblotting. Apoptosis was assessed by DNA fragmentation (ELISA) and TUNEL staining. Experiments were repeated in triplicates and gels were quantified by densitometry. Data are mean+/−SEM.

**RESULTS:** CDE-induced pancreatitis increased liver FasL (4280+/−580 vs. 733+/−336, p=0.01 pancreatitis vs. sham), Fas (2866+/−595 vs. 649+/−111, p=0.02 pancreatitis vs. sham), DNA fragmentation by 60% (p=0.03 pancreatitis vs. sham), TUNEL staining (40+/−2% vs. 14+/−1%, p<0.01 pancreatitis vs. sham) and upregulated cytochrome C (3600+/−177 vs. 1452+/−167, p<0.01 pancreatitis vs. sham) and PARP (7620+/−226 vs. 1215+/−17, p<0.01 pancreatitis vs. sham). In FasL/-/- mice, the pancreatitis-induced upregulation of cytochrome C, PARP and p38-MAPK was significantly attenuated as compared to C57/C57 control mice. (Cytochrome C: 3514+/−53 vs. 6980+/−237; PARP: 3594+/−104 vs. 6393+/−591; p38-MAPK 1747+/−54 vs. 4894+/−388, all p<0.01; FasL/-/- vs. C57). Similarly, the pancreatitis-induced upregulation of cytochrome C, PARP and p38-MAPK was attenuated in Fas/-/- mice as compared to C57 mice (all p<0.01). In addition, pancreatitis-induced DNA fragmentation was reduced by 60% in Fas/-/- and FasL/-/- mice (p<0.01 vs. C57).

**CONCLUSIONS:** Acute pancreatitis induces liver apoptosis and upregulates Fas/FasL and downstream apoptotic pathways. Pancreatitis-induced apoptosis was significantly reduced in Fas and FasL knock-out mice in addition to attenuation of cytochrome C, PARP and p38-MAPK, thereby suggesting a central role for Fas/FasL in liver injury during acute pancreatitis. The ability to manipulate interactions between Kupffer cell-derived FasL and hepatocytes may have important therapeutic implications.
AIM: The aim of this study was to confirm the reliability of 18-FDG PET in distinguishing benign from malignant cystic lesions in a large cohort of patients.

MATERIALS AND METHODS: From February 2000 to June 2003 further 50 patients with suspected cystic neoplasms (n=33) or intraductal papillary mucinous tumors (IPMT n=17) were prospectively investigated with 18-FDG PET, abdominal computed tomography (CT), serum CA 19-9 assay, and, in some instances, with magnetic resonance imaging. The validation of diagnosis was based on pathologic findings after surgery (n=33), percutaneous biopsy (n=3), and according to follow-up in 14 patients (follow-up range from 1 to 3 years). The 18-FDG PET was analyzed visually and semi quantitatively using the standard uptake value (SUV). Positivity was assumed when a focal uptake occurred with a SUV of at least 2.5. The accuracy of 18-FDG PET and CT was determined for differential diagnosis between benign and malignant cystic lesions.

RESULTS: Seventeen patients had malignant tumors; 16 patients (94%) showed 18-FDG uptake with a standard uptake value ranging from 2.5 to 7.0, including two patients with carcinoma in situ. Eleven patients (65%) were correctly identified as having malignancy by computed tomography. Thirty patients had benign tumors: two patients showed increased 18-FDG uptake of 2.6 and 3.0 (a partially intrasplenic pseudocyst and a pancreatic localization of Tangier's disease, respectively). Four patients with benign cystic tumors showed CT findings of malignancy. Sensitivity, specificity, positive and negative predictive values, and efficiency for 18-FDG PET and CT scanning in detecting malignant tumors were 94%, 94%, 89%, 97%, 94%, and 65%, 88%, 73%, 83%, and 80%, respectively.

CONCLUSION: 18-FDG PET is accurate in identifying malignant pancreatic cystic lesions and should be routinely used in combination with CT in the preoperative evaluation of patients with cystic lesions of the pancreas.
Ultrastaging of Non Sentinel Lymph Nodes (SLNs) Does Not Benefit Staging of Colorectal Cancer (CRca)

S. Saha, D. Wiese, M. Nolff, A. Dan, E. Schochet, R. Aravapalli, S. Jaswani, S. Arora, J. Badin, McLaren Regional Medical Center, Flint, MI

INTRODUCTION: SLN mapping accurately stages many solid tumors including CRca. SLNs are 3 - 5 times more likely to harbor metastatic disease when ultrastaged by multilevel microsections and immunohistochemistry (IHC) as compared to non-SLNs examined by standard pathological methods. It is unknown whether such ultrastaging of the non-SLNs would lead to higher incidence of +ve nodes. Hence, we retrospectively analyzed all non-SLNs by multilevel microsections and IHC identical to the SLNs in 136 consecutive patients (pts) with CRca undergoing SLN mapping to determine its impact on nodal staging.

METHODS: All pts underwent intraoperative subserosal injection of 1% lymphazurin around the tumor. The first 1 to 4 blue stained nodes were marked as SLNs, followed by a standard oncologic resection. All SLNs were examined by 4 sections for H&E at 20 to 40 micron intervals and 1 section for cytokeratin (AE-1/AE-3). All non-SLNs were initially examined by a single H&E section and initial staging designations were made according to AJCC criteria. For this study, all non-SLNs were subsequently re-examined with 3 additional H&E sections and one for IHC by a senior pathologist blinded to previous results.

RESULTS: There were 106 pts with colon and 30 pts with rectal cancer (median age = 70yrs; M=64 : F=72). The mapping was successful in 99% of pts. A total of 1852 (13.62/pt) nodes were identified, of which 319 (17.2%) were SLNs and 1533 (82.7%) were non-SLNs. Metastases (mets) were detected in 21.3% of SLNs and 6.9% of non-SLNs (p<0.0001). The exclusive site of nodal metastases was detected in 8.8% (28/319) of SLNs, in contrast to 0.6% (9/1533) of non-SLNs (p<0.0001). Skip mets were found in 4.5% of pts. After additional ultrastaging of all non-SLNs, only 0.56% (8/1427) of initially -ve non-SLNs became +ve for mets in 8 different pts. Of these 8 pts, 7 already had +ve SLNs, hence no change of AJCC staging occurred. Only in 1 out of 136 pts, 1 non-SLN out of 39 initially negative nodes (including 3 SLNs) was found to contain a cluster of tumor cells seen only by IHC. Thus, such ultrastaging of 1427 non-SLNs changed the AJCC staging from stage II to III only in 0.7% of pts. The accuracy of identifying the presence or absence of nodal mets by SLN mapping was 96%.

CONCLUSION: SLN mapping is highly successful and accurate in staging CRca. The chance of finding additional mets by ultrastaging of all non-SLNs is extremely low (<1%), hence of little benefit. Therefore, ultrastaging restricted to SLNs alone will assure accurate staging of CRca.
A Hypoxia-Inducible Angiogenic Inhibitor Blocks Capillary Formation in Hepatocellular Carcinoma
Richard H. Pin, Maura Reinblatt, Yuman Fong, Memorial Sloan-Kettering Cancer Center, New York, NY

INTRODUCTION: Hypoxia is a common feature of solid tumors that induces vascular endothelial growth factor (VEGF) expression, stimulating angiogenesis and tumor proliferation. The VEGF signaling pathway is inhibited by soluble VEGF receptors such as Flk-1, which bind VEGF and block its interaction with endothelial cells. We set out to attenuate angiogenesis in primary hepatocellular carcinoma (HCC) with hypoxia-induced Flk-1 expression.

METHODS: SK-Hep-1 human HCC cells incubated in hypoxia (1% O₂) or normoxia (21% O₂) were assessed by ELISA for hypoxia-inducible factor 1 (HIF-1), the transcriptional regulator of hypoxia-inducible genes. A hypoxia-responsive enhancer (HRE), regulated by HIF-1, was constructed by multimerizing the hypoxia sensitive region of the VEGF promoter. HRE was cloned into a luciferase reporter vector (HRE/Luc) to assess enhancer function. HRE was then cloned upstream of the Flk-1 gene (HRE/Flk-1). SK-Hep-1 cells were transfected with HRE/Flk-1 or no DNA, and then incubated in hypoxia or normoxia. Capillary inhibition was determined by human umbilical vein endothelial cell (HUVEC) assay. Western blot demonstrated Flk-1 expression and ELISA assessed VEGF suppression.

RESULTS: HIF-1 expression increased 6-fold in hypoxic SK-Hep-1 cells compared to normoxic cells (p<0.01). Hypoxic SK-Hep-1 cells transfected with HRE/Luc had 45-fold greater luciferase activity compared to controls (p<0.01), while normoxic SK-Hep-1 cells transfected with HRE/Luc had 2.5-fold greater luciferase activity (p<0.05). In the HUVEC assay, HRE/Flk-1 transfection of hypoxic SK-Hep-1 cells yielded a 78% reduction in capillary formation vs. non-transfected, hypoxic controls (p<0.01). HRE/Flk-1 transfection of normoxic SK-Hep-1 cells resulted in a 34% reduction in capillary formation vs. non-transfected, normoxic controls (p<0.01). Western blot of SK-Hep-1 cells transfected with HRE/Flk-1 revealed increased Flk-1 expression in hypoxia compared to normoxia. Western blot also demonstrated that SK-Hep-1 cells did not express Flk-1 without prior HRE/Flk-1 transfection. VEGF levels were reduced 70% with HRE/Flk-1 transfection in hypoxia (p<0.01) and 21% in normoxia (p<0.01).

CONCLUSION: Pairing a hypoxia-responsive enhancer with a soluble VEGF receptor inhibits capillary formation, particularly at low oxygen concentrations. Tumor hypoxia can thus be used to induce anti-angiogenic factors like Flk-1, potentially reducing hepatocellular tumor growth and metastases.
279 Lymph Node Metastasis in T1 Adenocarcinoma of the Colon and Rectum
Philip Paty, Satoshi Okabe, Jinru Shia, Martin Weiser, Jose Guillem, Kenichi Sugihara, Douglas Wong, Memorial Sloan-Kettering Cancer Center, New York, NY, Tokyo Medical and Dental University, Tokyo, Japan

The biology of colon cancer differs according to location within the large intestine. To evaluate the clinical significance of tumor location as a risk factor for lymph node metastasis (LNM), we performed a detailed pathological review of T1 adenocarcinomas of the colon and rectum.

METHODS: T1 adenocarcinomas of the colon and rectum treated by radical resection (n=428) were identified from prospective clinical databases at two institutions. Tumor location was assigned as right colon (cecum to transverse), left colon (splenic flexure to sigmoid), or rectum (0-18cm from AV). Pathology slides were reviewed, extent of submucosal invasion (sm width, sm depth) was quantified using an optical micrometer, and morphologic features of the cancer and its infiltrating margin were recorded. Presence or absence of LNM was determined from the original pathology reports.

RESULTS: The overall rate of LNM was 10%. On univariate analysis, LNM was significantly more common in the rectum (27/176, 15%) compared to the left colon (13/160, 8%, p=.04) or right colon (3/92, 3%, p=.003). However, on multivariate analysis, deep submucosal invasion and vessel invasion were independent and significant risk factors, whereas tumor location was not.

CONCLUSIONS: T1 colorectal cancers have a progressively higher risk of LNM as their location becomes more distal. However, the increasing rate of LNM observed in cancers of the left colon and rectum is explained by a higher prevalence of high risk pathologic features. In early colorectal cancers, tumor morphology is the strongest clinical predictor of metastatic behavior.

<table>
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<tr>
<th>Lymph Node Metastasis in T1 Colorectal Cancers</th>
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<tbody>
<tr>
<td>Variable</td>
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</tr>
<tr>
<td>Tumor location</td>
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<tr>
<td>Submucosal depth</td>
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<tr>
<td>Grade</td>
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<td>Vessel invasion</td>
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<td>Infiltrating edge</td>
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Hepatitis Serology Defines Tumor and Liver Disease Characteristics but Not Prognosis After Resection of Hepatocellular Carcinoma

Timothy M. Pawlik, Ronnie Tung-Ping Poon, Eddie Abdalla, J. M. Sarmiento, Iwao Ikai, David Nagorney, Jacques Belghiti, Yoshio Yamaoka, Gregory Lauwers, Jean-Nicolas Vauthey, University of Texas, M. D. Anderson Cancer Center, Houston, TX, Department of Surgery, Queen Mary Hospital, Hong Kong, China, Mayo Clinic, Rochester, MN, Kyoto University, Kyoto, Japan, Beaujon Hospital, Paris, France, Massachusetts General Hospital, Boston, MA

BACKGROUND: The impact of hepatitis B (HBV) and C (HCV) serology on survival after resection of hepatocellular carcinoma (HCC) is controversial.

METHODS: 446 patients who underwent hepatic resection for HCC with complete HBV and HCV serology were identified from a multicenter institutional database. Tumor and liver characteristics and risk factors for survival were evaluated.

RESULTS: 126 patients had negative serology (28.3%), 163 HBV (36.5%), 79 HCV (17.7%), and 78 HBV+HCV (17.5%). HBV vs. HCV vs. HBV+HCV did not predict tumor grade or multicentricity (p > .05). Those with HCV or HBV+HCV had a lower incidence of vascular invasion but worse fibrosis than patients with negative or HBV serology (p < .05). In contrast, patients with negative or HBV serology had less fibrosis but more vascular invasion compared to patients with HCV or HBV+HCV (p < .001)(Figure). Median survival was 48 months (median follow-up 33 months, range 0.2 to 143). Presence of hepatitis did not significantly impact long-term survival (negative serology, median 49; HBV 41; HCV 51; HBV+HCV 61 months, p = NS). The subset with tumors < 5 cm had no difference in survival based on hepatitis status (p = NS). On multivariate analysis, hepatic fibrosis (HR = 2.2; p = .001) and microvascular invasion (HR = 1.9; p = .001) predicted decreased survival.

CONCLUSION: Prognosis after resection of HCC is influenced by tumor factors and liver disease but not hepatitis infection. These data suggest that treatment for HCC should be dictated by the extent of underlying liver disease rather than hepatitis serology.
Impaired Internalization of EGFR as a Mechanism for Resistance to Erbitux (anti-EGFR Ab) Combination Therapy in BxPC-3 Pancreatic Adenocarcinoma Xenografts
Juan P. Arnoletti, Donald Buchsbaum, Zhi-Qiang Huang, Ashley Hawkins, Selwyn Vickers, University of Alabama at Birmingham, Birmingham, AL

BACKGROUND: We have previously demonstrated that pancreatic adenocarcinoma BxPC-3 xenografts are resistant to treatment with Erbitux, gemcitabine and radiation, while MiaPaCa-2 xenografts respond favorably to the same therapy. The objective of this study is to elucidate the intra-cellular mechanisms that could explain pancreatic adenocarcinoma xenograft differential response to Erbitux combination therapy.

METHODS: MiaPaCa-2 and BxPC-3 cells were cultured in serum-free medium containing Erbitux or human IgG, 5 µg/ml, for 36 hrs. Cells cultured without Erbitux were used as control. Cells were stimulated with EGF, 60 ng/ml for 10 min. Cell lysate was harvested after cells were washed and lysed. Equal amounts of cell lysate were separated with SDS-PAGE and transferred to PVDF membrane. The membranes were probed with rabbit anti-phospho MAPK p44/42. Similarly, cells in serum-rich media were lysed, analyzed and probed with antibodies anti-EGFR, ErbB2, ErbB3 and ErbB4. ErbB2 and ErbB3 gene expression levels in both cell lines were quantified with real-time PCR following RNA extraction. Erbitux-induced internalization of EGFR was determined from the difference between EGFR protein expression levels following Erbitux treatment at 0°C and 37°C for different incubation times (1-4 hrs). Cell-associated EGFR was measured by flow cytometry after Erbitux treatment (0.1 µg/ml), followed by FITC conjugated with goat anti-human IgG antibody.

RESULTS: EGFR and ErbB2 proteins and the ErbB2 gene were expressed by both cell lines. ErbB3 protein was selectively expressed by BxPC-3 cells. There was a 10-fold increase in the ErbB3 gene expression levels of BxPC-3 cells when compared to MiaPaCa-2. ErbB4 protein was not present in either cell line. Erbitux induced internalization of EGFR in MiaPaCa-2 cells after 2 hrs of incubation. Erbitux did not promote EGFR internalization in BxPC-3 cells. EGF induced phosphorylation of MAPK p44/42 and this was blocked by Erbitux treatment in MiaPaCa-2, but not in BxPC-3 cells.

CONCLUSIONS: 1) Erbitux blocked EGF-induced MAPK activation in MiaPaCa-2 cells but not in BxPC-3 cells; 2) Impaired internalization of EGFR on BxPC-3 pancreatic cancer cells may be due to ErbB3 protein expression, which results in heterodimerization of EGFR, persistent MAPK activation and resistance to Erbitux-based combination therapy.
282 Laparoscopic Adjustable Gastric Banding Versus Laparoscopic Gastric Bypass for Morbid Obesity: A Single-Institution Comparison Study of Early Results
Jay C. Jan, Dennis Hong, Emma Patterson, Legacy Health System, Portland, OR

BACKGROUND: Worldwide, laparoscopic Roux-en-Y gastric bypass (LRYGB) and laparoscopic adjustable gastric banding (LAGB) are common surgical procedures for morbid obesity. Few studies have compared gastric bypass and gastric banding.

METHODS: All patients who underwent LRYGB and LAGB by a single surgeon at Legacy Health System were identified from a prospectively-maintained database. Preoperatively, patients were allowed to choose between LRYGB and LAGB. Age, sex, body mass index (BMI), major and minor complication rates, mortality and weight loss were examined.

RESULTS: From October 2000 to November 2003, 219 patients underwent LRYGB and 153 patients underwent LAGB. Mean BMI was 49.4 and 50.6 kg/m² (p = 0.17) respectively. Mean age was 42.2 and 46.7 years (p < 0.0001). Patients undergoing LRYGB had longer operative times (134.5 vs. 76.7 minutes, p < 0.0001), blood loss (42.3 vs. 28.2 mL, p < 0.01) and hospital stay (2.6 vs. 1.3 days, p < 0.0001). Excess weight loss was 34.4% for LRYGB vs. 18.5% for LAGB at 3 months follow-up (p < 0.0001), 48.8 vs. 25.9% at 6 months (p < 0.0001), 61.6 vs. 42.1% at 12 months (p < 0.0001), 73.3 vs. 53.3% at 24 months (p < 0.01), and 70.1 vs. 66.1% at 36 months (p = 0.9). Major complications occurred in 5.9% and 3.3% (p = 0.33) and minor complications occurred in 19.2% and 16.3% (p = 0.5), respectively. One death occurred in each group.

CONCLUSIONS: Patients undergoing laparoscopic adjustable gastric banding have shorter operative times and decreased blood loss and length of hospital stay compared to laparoscopic gastric bypass patients. Early weight loss is greater with gastric bypass, but the difference appears to diminish over time. Longer follow-up is needed.
BACKGROUND: Advanced medical simulators have been introduced to facilitate surgical and endoscopic training and thereby improving patient safety. Residents trained in a laparoscopic simulator, MIST, do laparoscopic cholecystectomy better and faster than a control group without simulator training. Little has been reported whether factors like gender, computer experience and visio-spatial tests can predict the performance in a medical simulator.

AIM: Our aim was to investigate whether such factors may influence the performance of simulated gastroscopy.

METHODS: Seventeen medical students were asked about computer and gaming experiences. Prior to the virtual endoscopy they performed the visio-spatial test Picsor, which acquires the ability of the tested person to create a 3-D image from a 2-D presentation. Each student performed one gastroscopy (level 1 case 1) in the GI-mentor II, Simbionix AÆ and several variables related to performance were registred.

RESULTS: Percent of time spent with clear view in the endoscope correlated well with the performance in the Picsor test (r=0.56, p<0.001). Efficiency of screening also correlated with Picsor (r=0.23, p<0.05). In students with computer gaming experience the efficiency of screening increased (33.6 ± 3.1 % vs. 22.6 ± 2.8 %, p<0.05) and the duration of the examination decreased by 1.5 min (p<0.05). A similar trend was seen in men compared to women.

CONCLUSION: The visio-spatial test Picsor predicts the results in the endoscopic simulator GI-mentor II. 2-D image experience, as in computer games, also seems to influence the outcome.
Inverse Expression of Cox-1 and Cox-2 in the Pathogenesis of Barrett’s Adenocarcinoma
Daniel Vallboehmer, Jeffrey H. Peters, Sylke Schneider, Nahid Hamoui, Kazumi Uchida, Hidekazu Kuramochi, Daisuke Shimizu, Parakrama T. Chandrasoma, Kathleen D. Danenberg, Peter Danenberg, Tom R. DeMeester, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA, Department of Biochemistry, University of Southern California, Los Angeles, CA, Department of Pathology, University of Southern California, Los Angeles, CA, Response Genetics, Inc., Los Angeles, CA, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA

BACKGROUND: Cox-2 gene expression is considered an important factor in the pathogenesis of esophageal adenocarcinoma. This conclusion is compromised by the lack of an inflammatory control in most studies and the inclusion of adjacent normal tissue. In addition, Cox-1, a gene thought to be constitutively expressed in most normal tissues, has not been concurrently studied.

AIM: The aim of this study is to measure the expression of both genes in laser capture microdissected tissues involved in inflammation and the metaplastic-dysplastic-carcinoma sequence of Barrett’s adenocarcinoma.

EXPERIMENTAL DESIGN: Histologic sections from endoscopic biopsies or esophagectomy specimens were classified as: reflux-esophagitis (n=8), non-dysplastic Barrett’s (n=37), dysplastic Barrett’s (n=17) and adenocarcinoma (n=38). Histology of the tissue of interest was confirmed by a pathologist and isolated by laser capture microdissection. Cellular RNA was extracted and reverse transcribed to cDNA. Expression levels of Cox-1 and -2 and were measured by quantitative real-time PCR (TaqmanÆ). Gene expression levels were compared to proximal esophageal squamous (n=45) epithelium of patients without Barrett’s or cancer.

RESULTS: Gene expression levels of Cox-2 were significantly increased in the epithelium from non-dysplastic Barrett’s (p=0.003), dysplastic Barrett’s (p=0.001) and adenocarcinoma (p<0.001) compared to normal squamous epithelium. In contrast, expression levels of Cox-1 were significantly decreased in the epithelium from non-dysplastic Barrett’s (p<0.001), dysplastic Barrett’s (p<0.001) and adenocarcinoma (p<0.001). Expression of neither gene was changed in reflux esophagitis.

CONCLUSION: In microdissected tissue we have confirmed the upregulation of Cox-2 and it appears to be a neoplastic rather than an inflammatory phenomenon. Cox-1 is not constitutively but variably expressed in carcinogenesis, suggesting its downregulation is simultaneous with upregulation of Cox-2.
In Patients with Disordered Post-Surgical Gastric Emptying, Temporary Gastric Electrical Stimulation (tempGES) Quickly Improves Symptoms And Gastric Emptying

Robert Schmieg, Karen Borman, Farshid Araghizadeh, Nighat Abidi, Oscar Batista, Thomas L. Abell, University of Mississippi Medical Center, Jackson, MS

BACKGROUND: For patients with disordered gastric emptying (DGE), gastric electrical stimulation (GES) can improve symptoms, nutritional status, health resource utilization and costs, and is now approved by the FDA as a humanitarian use device. Temporary GES can be safely and easily performed with endoscopically-placed electrodes, and can aid in preoperative patient evaluation. The efficacy and appropriate duration of tempGES in patients with DGE after gastric surgery has not been previously defined. The present study was conducted to evaluate the efficacy of tempGES in this patient group. Patient Population: 11 patients (8 female, 3 male) with DGE symptoms after gastric surgery (2 Nissen fundoplication, 5 subtotal gastrectomy, 1 pancreaticoduodenectomy, 1 colonic interposition, 2 multiple gastric procedures) were studied.

METHODS: Each patient underwent tempGES via endoscopically placed electrodes using standard GES parameters. GET was performed before and at the end of 3 days (median) of tempGES by a previously standardized method, and delayed or rapid gastric emptying was identified using standardized definitions (Am J Gastroenterol 95:1456-1462, 2000). DGE symptoms were quantified by patient interview pre- and post-tempGES. (Gastroenterol 125:421-428, 2003) GET results and DGE symptoms before and after tempGES were compared by paired t-tests.

RESULTS: GET pre-tempGES was abnormal (5 with rapid emptying with post-operative dumping, 4 with delayed emptying, and 2 unable to tolerate GET meal). After a median of 3 days of tempGES, patients had improved symptoms and GET (see table). TempGES in patients with delayed GET resulted in improved GET with increasing emptying; tempGES in patients with rapid GET resulted in improved GET with slower emptying.

CONCLUSIONS: In patients with post-surgical DGE, a median of 3 days of tempGES showed a improvement of both symptoms and GET independent of baseline rapid or delayed GET. This safe and easily performed method has potential utility in selecting patients with post-surgical gastric motility disorders who might benefit from GES with a permanent device.

<table>
<thead>
<tr>
<th></th>
<th>Nausea</th>
<th>Vomiting</th>
<th>TSS</th>
<th>EGG</th>
<th>GET 1 hr</th>
<th>GET 2 hr</th>
<th>GET 4 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline-Delayed n=4</td>
<td>3.17</td>
<td>3.38</td>
<td>17.3</td>
<td>4.60</td>
<td>81</td>
<td>66.25</td>
<td>51.50</td>
</tr>
<tr>
<td>After Temp-Delayed p value</td>
<td>1.50</td>
<td>2.33</td>
<td>8.33</td>
<td>4.50</td>
<td>66.7</td>
<td>55.67</td>
<td>35.00</td>
</tr>
<tr>
<td>Baseline-Rapid n=5</td>
<td>3.50</td>
<td>2.70</td>
<td>16.0</td>
<td>4.58</td>
<td>14.3</td>
<td>2.28</td>
<td>0.98</td>
</tr>
<tr>
<td>After Temp-Rapid p value</td>
<td>0.50</td>
<td>0.80</td>
<td>7.63</td>
<td>4.90</td>
<td>28.3</td>
<td>11.0</td>
<td>0.78</td>
</tr>
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</table>

|            |        | 0.056   | 0.9  | 0.48| 0.41     | 0.34     |          |
INTRODUCTION: Perianal lesions, which may vary from asymptomatic skin tags to severe, debilitating perianal destruction and sepsis are common in patients with Crohn’s disease. Severe perianal disease may subside with fecal diversion, thereby avoiding proctectomy. We investigated the overall risk of permanent stoma carriage in perianal Crohn’s disease and tried to identify risk factors predicting permanent stoma carriage.

METHODS: A total of 97 consecutive patients presented with anorectal Crohn’s disease for the first time in our outpatient department between 1992 and 1995. 92/97 patients (95%) could be followed up and were evaluated by a standardized questionnaire with respect to the recurrence of perianal abscesses or fistula, and surgical treatment including fecal diversion of Crohn’s disease over the years. Risk analysis was done for the following characteristics: gender, perianal or anovaginal fistulas, abscess formation, anal stricture, incontinence and abdominal surgery (AS). The median interval between the first diagnosis of Crohn’s disease and last follow-up was 15.8 years (range 8-37 years).

RESULTS: 83 of 92 patients (92%) required AS during follow-up, and a total of 227 abdominal operations had to be performed. 21 patients (23%) required temporary fecal diversion, and in 30 patients (33%) a permanent stoma became necessary. The median time from first diagnosis of Crohn’s disease to permanent fecal diversion was 8.5 years (range 0-23 years). Complex abscess formations (including severe perianal sepsis) required a permanent stoma in 36%, complex perianal fistulas in 38%, and anovaginal fistulas in 54%. Anovaginal fistulas, complex perianal fistulas and subtotal colectomy significantly increased the risk of a permanent stoma (p<0.05).

DISCUSSION: Patients with perianal Crohn’s disease carried a high risk for AS, and one third eventually required a permanent fecal diversion. Anovaginal fistulas, complex perianal fistulas or a previous subtotal colectomy indicated an increased risk for a permanent stoma.
In 2001, a dedicated minimally invasive surgery (MIS) program was established at a large, university hospital. Changes implemented included improvement and standardization of equipment and instruments, uniform patient care protocols, and staff/surgeon education. The aim of this study is to evaluate the impact of this program on academic surgery practice, including surgical volumes and approaches, operating room efficiency, and cost. From January 1999 thru October 2003, hospital and departmental databases were reviewed for all records pertaining to general surgery cases. Data were analyzed monthly and are shown as the monthly mean (SEM) for each year studied. Data trends were analyzed by regression analysis. In 1999, 15.0 (0.1)% of all general surgery cases were MIS compared to 30.2 (0.1)% in 2003 (p<0.0001). During this period, the number of patients requiring open cholecystectomy or conversion from a laparoscopic to open approach decreased from 23.4% to 4.0% (p=0.0007). In 1999, 30% of appendectomies were laparoscopic compared to 92% in 2003 (p<0.0001). This increase in the rate of laparoscopic appendectomy resulted in a decrease in average length of hospital stay for all patients with acute appendicitis from 5.5 (1.0) days in 1999 to 2.7 (0.2) days in 2003 (p<0.0001) and a decrease in total hospital cost per case from $6569 (400) in 1999 to $5186 (175) in 2002 (p<0.001). For laparoscopic cholecystectomy, average disposable instrument costs decreased from $526 to $119 per case. Total operating room time per case decreased from 131 (3.7) to 108 (3.2) minutes (p<0.0001) and actual surgery time decreased from 95 (4.1) to 74 (4.0) minutes (p=0.0006). Implementation of a dedicated MIS program has resulted in a significant increase in the number of MIS cases and percentage of general surgery cases performed by MIS. This increase in the utilization of MIS has resulted in a reduction in length of hospital stay and direct cost and has been accompanied by an improvement in surgical and operating room efficiency. A dedicated MIS program is an asset and worthwhile investment for academic surgery departments and hospitals.
Does Fibrin Glue Sealant Decrease the Rate of Pancreatic Fistula Following Pancreaticoduodenectomy? Results of a Prospective Randomized Trial
Keith D. Lillemoe, M. P. Kim, John L. Cameron, Kurtis A. Campbell, Patricia K. Sauter, J. A. Coleman, Charles J. Yeo, Indiana University School of Medicine, Department of Surgery, Indianapolis, IN, Johns Hopkins University, Baltimore, MD

PURPOSE: Despite significant improvements in perioperative mortality, various complications such as the development of pancreatic fistula remain a common occurrence following pancreaticoduodenectomy. A number of uncontrolled series have reported that the use of fibrin glue sealant may decrease the rate of pancreatic anastomotic leak. It was the objective of this study to evaluate the role of fibrin glue sealant to decrease the rate of pancreatic fistula after pancreaticoduodenectomy.

METHODS: Between August 2000 and May 2002, 124 patients were entered into this study. Criteria for entry included patients undergoing pancreaticoduodenal resection with pancreaticojejunal anastomosis which was at a high risk for development of a pancreatic anastomotic leak (soft, normal texture gland, nondilated pancreatic duct). After completion of the pancreaticojejunal anastomosis, the patients were randomized to topical application of fibrin glue or no such application. The remainder of the operative and perioperative management were as directed by the attending surgeon. The primary endpoints in this study were pancreatic fistula, total complications, death, and length of hospital stay.

RESULTS: A total of 58 patients were randomized to the fibrin glue arm, whereas 66 patients were randomized to the control arm and did not receive fibrin glue application. There were no significant differences noted between the two groups with respect to patient demographics, pathologic diagnosis, and operation performed. There was one death in the series due to a postoperative myocardial infarction in a patient in the control arm. The pancreatic fistula rate in the fibrin glue arm of the study was 26% vs. 30% in the control group (p = non-significant). The overall length of stay for all patients randomized was similar (fibrin glue = 12.2 days, control = 13.6 days) and the length of stay in patients that developed pancreatic fistula was also not different (fibrin glue = 18.9 days, control = 21.7 days). There were no differences with respect to total complications or specific complications such as postoperative bleeding, infection, or delayed gastric emptying.

CONCLUSION: These data demonstrate that the topical application of fibrin glue sealant to the surface of the pancreatic anastomosis in this patient population undergoing high risk pancreatico-jejunal anastomosis did not reduce the incidence of pancreatic fistula or total complications after pancreaticoduodenectomy.
Inhibition of the Vanilloid Receptor Subtype-1 Attenuates TNBS-Induced Colitis

Kazunori Fujino, Yoji Takami, Sebastian De La Fuente, Kirk A. Ludwig, Steven R. Vigna, Christopher R. Mantyh, Duke University Medical Center, Durham, NC

PURPOSE: Primary sensory neurons are important in the initiation and propagation of intestinal inflammation. The vanilloid receptor subtype-1 (VR-1) is a recently discovered cation channel found on sensory nerves which, when stimulated, releases pro-inflammatory peptides such as substance P. Previous reports have shown that inhibition of VR-1 with capsazepine (CPZ), a VR-1 antagonist, attenuates dextran sodium sulfate (DSS) colitis in rats. DSS-induced colitis resembles ulcerative colitis in its pathologic features. In this study, we examined the effect of CPZ on trinitrobenzene sulfonic acid (TNBS)-induced colitis, an experimental model of intestinal inflammation that most closely resembles the histologic and microscopic features of Crohn's disease.

METHODS: Colitis was induced by administering a single enema of 100 mg/kg TNBS in 50% ethanol via catheter to lightly anesthetized rats. Subsets of rats were treated with either 1 µmole/kg/ml of CPZ or CPZ vehicle via enema for six days. Seven days following TNBS administration, rats were sacrificed and inflammation was assessed using a validated macroscopic damage score (MDS), and myeloperoxidase (MPO) activity. Qualitative histology was also performed.

RESULTS: TNBS administration resulted in reproducible chronic erosive lesions extending into the muscularis propria and extensive recruitment of neutrophils in the distal colon. MDS and MPO scores were significantly elevated in the TNBS colons when compared to the CPZ-vehicle animals (Table 1). TNBS rats treated with CPZ enemas had a significant reduction in MDS and MPO scores, and demonstrated dramatically improved pathologic findings.

CONCLUSIONS: Topical CPZ, a VR-1 antagonist, resulted in significant attenuation of TNBS-induced colitis. These results support the role of VR-1 and sensory neurons in intestinal inflammation.

<table>
<thead>
<tr>
<th></th>
<th>MDS</th>
<th>MPO</th>
</tr>
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<tbody>
<tr>
<td>CPZ vehicle</td>
<td>0.42 ± 0.52</td>
<td>0.52 ± 0.17</td>
</tr>
<tr>
<td>TNBS + CPZ vehicle</td>
<td>3.20 ± 1.70</td>
<td>1.66 ± 0.30</td>
</tr>
<tr>
<td>TNBS + CPZ</td>
<td>2.00 ± 0.43 (^*)</td>
<td>0.47 ± 0.10 (^*)</td>
</tr>
</tbody>
</table>

\(^*p < 0.05\)
INTRODUCTION: Bloating and diarrhea, when occurring after antireflux surgery, are often blamed on an inadvertent vagotomy, yet there are few data concerning the true incidence of vagal injury in this surgery. We sought to evaluate vagal nerve integrity before and after antireflux surgery.

METHOD: Patients referred for antireflux surgery were recruited to the study. Patients with disorders associated with vagal dysfunction (diabetes, renal dysfunction, etc) or who took medications with anticholinergic effects were excluded. Each subject underwent a sham-feeding stimulated pancreatic polypeptide (PP) test before and, in the majority of the patients, after antireflux surgery. The PP test consists of two baseline samples obtained prior to the standardized sham meal and follow up samples at 5, 10, 15, 20, 25 and 30 minutes post sham feeding. Control data from our institution indicate that the PP level will increase by at least 25 pg/ml in over 70% of normals after sham feeding.

RESULTS: 20 patients completed preoperative testing with a age of 57 years (range 36-80). 14/20 (70%) of these patients with severe reflux had an appropriate increase in PP level with sham meal in the preoperative period. Follow up testing was available in 16/20 patients performed a mean of 45 days (range 6-134) after the surgery (12 normal and 4 abnormal preop). 5/12 (42%) who had a normal preoperative test had an abnormal postoperative result. All four of the patients with an abnormal preoperative test remained abnormal. Thus, in the 16 patients studied after surgery 9/16 (56%) had an abnormal PP test. The increase in PP was also less after surgery (64 preop vs 41 postop, p=0.03). In 15 patients, detailed symptom assessments of their bowel function were obtained before and after their surgery. 6/15 (40%) patients developed new or worse bowel symptoms after surgery (diarrhea=4, flatus=2). Importantly, there was no correlation with the results of PP testing and the development of post-operative symptoms.

CONCLUSIONS: These results suggest that a subset of patients referred for reflux surgery will have abnormal vagal function as assessed by PP testing that persists after surgery. More importantly, 42% of patients with a normal test prior to surgery will develop an abnormal test after surgery. On the other hand, in this small study, there did not appear to be a correlation between these results and the development or worsening of bowel symptoms.
WEDNESDAY, MAY 19, 2004

8:30 - 10:00 AM  SSAT PLENARY SESSION  CC 293-294

758 Influence of Confirmation Bias on Intra-Operative Identification of Laparoscopic Bile Duct Injuries
Lygia Stewart, Lawrence W. Way, UCSF and SF VA Medical Center, San Francisco, CA, UCSF, San Francisco, CA

PURPOSE: Laparoscopic bile duct injuries (BDI) continue to be a problem. We previously utilized human error analysis to elucidate mechanisms for prevention. In this study we used principles of cognitive psychology to examine impediments to injury identification (ID) during the index operation. Specifically how confirmation bias impedes injury ID. Confirmation bias is selective thinking where findings that confirm pre-set beliefs are observed and contradictory findings ignored.

METHODS: 280 BDI following laparoscopic cholecystectomy were studied. Stewart-Way injury distribution was Class I, 7%; Class II, 21%; Class III, 61%; and Class IV, 10%. Records were examined for: 1) intra-operative cholangiography: routine (IOC), or of an abnormal duct (DIC), 2) perceived anatomic anomalies (additional ducts, ductal anomalies, vascular anomalies, other), 3) additional input (conversion to open procedure, specimen exam). Cases identified at the index operation or post-op were compared.

RESULTS: 25% of injuries were recognized at the index operation. In 38% the OP report noted nothing unusual, including 9 cases where the CHD was clipped. Routine IOC did not improve injury ID (22% with IOC vs 19% without, P=0.318), but with suspected injury, DIC improved injury ID (94% with DIC vs 21% without, P<0.0001). Identification of vascular anomalies correlated with decreased injury ID (13% with vs 46% without, P<0.0001). Noting an additional duct improved injury ID (76% with a duct vs 5% without, P<0.0001), but in 24% of these cases the duct was classified as an accessory duct (reflecting the power of bias). No injuries were identified in 23 cases where ductal anomalies, but not an additional duct, were noted. Additional input most improved injury ID when an injury was suspected (ID 44% in cases opened due to poor visibility vs 89% specimen exam for suspected BDI, P=0.032). More abnormalities were reported in cases with bile duct injury ID (2.5 cases ID vs 0.8 cases not ID, P<0.0001). Number of abnormalities noted vs ID was; 0, 0%; 1, 16%; 2, 33%; 3, 74%; and 4, 82%. Thus, it took 3 abnormalities to derail confirmation bias. Observations in the context of a suspected injury improved ID, 88% suspected vs 18% unsuspected, P<0.0001.

CONCLUSIONS: This study elucidates how confirmation bias impairs the operative recognition of laparoscopic bile duct injuries. Awareness of these principles should improve injury identification at the index operation, and possibly the prevention of laparoscopic bile duct injuries.
Omeprazole Does Not Reduce Gastroesophageal Reflux: New Insights Using Multichannel Intraluminal Impedance Technology

Anand P. Tamhankar, Jeffrey H. Peters, Giuseppe Portale, Chih-Cheng Hsieh, Jeffrey A. Hagen, Cedric G. Bremner, Tom R. DeMeester, University of Southern California, Los Angeles, CA

AIM: Proton pump inhibitors are the mainstay of medical management in gastroesophageal reflux disease. Though they provide symptomatic relief, reflux may persist. We hypothesize that omeprazole does not reduce the total amount of gastroesophageal reflux, but simply alters its pH characteristics.

METHODS: Six asymptomatic volunteers had combined 24hr impedance-pH monitoring before and after seven days of omeprazole (20mg bid). All subjects had a normal barium esophagogram, motility and 24 hr pH studies. Multichannel intraluminal impedance was used to identify reflux episodes, which were classified as acid (pH < 4), weak acid (pH > 4, but drop >1 pH unit) and non-acid (pH > 4 & drop <1 pH unit) by pH measurements five cm above the lower esophageal sphincter (LES). The duration of the reflux episodes was measured at the same level by impedance. A gastric pH sensor located 10cm below the LES was used to verify the action of omeprazole. Data were compared using Wilcoxon matched pairs test and Fisher’s exact test.

RESULTS: Impedance detected a total of 116 reflux episodes before and 96 after omeprazole treatment. The median number of reflux episodes per subject was similar before and after omeprazole therapy (18 vs 16, p=0.4). The total duration of reflux episodes was also similar (1637 seconds before vs 2548 seconds after omeprazole, p=0.5). The median duration of reflux episodes per subject was again similar (287.6 vs 220.1 seconds, p=0.5). However, the proportion of acid reflux episodes was reduced from 62.9% before to 2.1% after omeprazole (p<0.0001). Following omeprazole therapy, the proportion of non-acid reflux episodes increased (14.6% to 76%, p<0.0001) corresponding to the reduction of acid reflux episodes, while the proportion of weak acid reflux episodes did not change (22.4% to 21.8%, p=1.0). The combined proportion of non-acid and weak acid reflux episodes increased from 37.1% to 97.9% (p<0.0001).

CONCLUSIONS: Combined 24 hour impedance-pH monitoring showed that omeprazole treatment does not impact the number of reflux episodes or their duration. Omeprazole does convert acid reflux to less acid reflux. These findings have a profound impact on our understanding of the treatment of gastroesophageal reflux disease.
760 Successful Management of Boerhaave's Syndrome with an Individualized Strategy: A Single Center Experience with 35 Consecutive Patients
Burkhard H. A. v. Rahden, Hubert J. Stein, Holger Bartels, J. Ruediger Siewert, Chirurgische Klinik und Poliklinik TU Muenchen, Munich, Germany

BACKGROUND: Despite emergency surgery the reported mortality rates of emetogenic esophageal rupture (Boerhaave's syndrome) are high. We report our experience with an individualized treatment strategy in the largest so far reported single center series of patients with Boerhaave's syndrome.

MATERIAL AND METHODS: Over a period of 21 years a total of 35 patients (27 male, 8 female, median age 69 years) with Boerhaave's syndrome were treated at a center for esophageal surgery. After confirmation of the diagnosis all patients received immediate endotracheal intubation, shock therapy, drainage of pleural effusions, placement of esophageal and gastric tubes, and systemic antibiosis. Surgical therapy was only performed after stabilisation of vital parameters and based on length/location/containment of the rupture, time interval to diagnosis, intraoperative aspect of the esophagus, and general condition of the patient.

RESULTS: Median length of the rupture was 3.8 cm (range 1.8-8 cm). Time interval between rupture and initiation of treatment was <24 hours in 19 patients and >24 hours in 16. In 15/35 patients a primary closure and covering with fundoplication was possible. In 18/35 patients an esophagectomy was performed because of length of the rupture or destroyed esophageal wall. Reconstruction after esophagectomy was delayed until complete recovery (4-46 weeks after esophagectomy) and was performed with gastric pull-up (n=10) or colon interposition (n=8). In 2/35 patients with delayed diagnosis (> 3 days) and covered rupture a successful nonoperative management was possible. Despite a substantial morbidity (empyema 47%, septic multiorgan failure 27%, peritonitis 17%) with a median ICU stay of 23 days only 1 patient died (mortality 2.9%).

SUMMARY: In a center for esophageal surgery Boerhaave's syndrome can be managed successfully with a mortality below 5%. Key to success are preoperative intensive care management until stabilisation, individualized surgical and conservative strategies and aggressive therapy of complications.
BACKGROUND: Tumor cells can show different malignant properties, such as those related to their abilities to form organ-specific distant metastasis. The colonization of different target organs is a nonrandom process, and the adhesive and invasive characteristics of circulating tumor cells appear to be crucial for this process. We investigated adhesive interactions of colon carcinoma cells within the microcirculation of different organs (liver, kidney, lung) and their behavior during early steps of organ-specific metastasis in vivo.

METHODS: Single cell suspensions of human colon carcinoma of low (HT-29P: n=10; CACO-2: n=10), intermediate (KM-12C: n=9) or high (HT-29LMM: n=9; KM-12L4, n=9) metastatic potential were labeled with Calcein-AM and intracardially injected into Sprague-Dawley-rats. Initial interactions between different cell lines and the microvasculature of liver, kidney or lungs were observed over 20-30 minutes in situ and semiquantitatively analysed.

RESULTS: All the cell lines showed high adhesion rates within the microvessels independent of their metastatic potential in liver and lungs, but never in the renal capillaries. The diameters of the microvessels with arrested tumor cells were larger than those of the tumor cells in both organs. Circulating cells were able to easily pass the microvessels of all organs without mechanical arrest. In addition, the relative rates of cell migration of highly metastatic HT-29-LMM and KM-12L4 cells into the liver parenchyma was significantly higher than in low metastatic HT-29P or CACO-2 cells (p<0.05).

CONCLUSION: Colon carcinoma cell adhesion within potential metastatic host organs appears to be mediated by specific tumor cell-host organ interactions, and mechanical cell arrest mediated by size restriction was not observed. Our results indicate significant differences of colon carcinoma cells with different metastatic phenotypes regarding their invasion of host organ microvessels during the initial steps of host organ colonization. Invasion of tumor cells into the target organ correlated with their ability to form metastases.
Results of More Than 100 Cases of Pediatric Intestinal Transplantation in a Single Center
Tomoaki Kato, Naveen Mittal, Gennaro Selvaggi, Seigo Nishida, Jang Moon, Juan Madariaga, John Thompson, Andreas Tzakis, University of Miami, Liver and GI Transplant, Miami, FL, University of Miami, Miami, FL

AIM: To describe a single center experience of pediatric intestinal transplantation (Itx).

METHODS: Retrospective analysis of children who underwent Itx at our center since August 1994. Results were compared in 4 groups: Group 1 (8/94-12/97, n=26), Group 2 (01/98-12/00, n=30), Group 3 (01/01-12/03, with no Campath-1H induction, n=38) and Group 4 (01/01-12/03, with Campath-1H induction, n=21).

RESULTS: 102 children received 115 Itx during study period. The median age was 17.5 months (range 6 months to 17 years). Major causes of intestinal failure were: short gut syndrome due to gastroschisis (n=32), NEC (n=17), dysmotility (n=11), volvulus (n=10), intestinal atresia (n=12), Hirschsprung's disease (n=10), and microvillus inclusion disease (n=4). The types of graft included isolated intestine (n=28), composite liver and intestine (n=23), non-composite liver/intestine (n=4), multivisceral (n=54), and multivisceral without the liver (n=6). The pancreaticoduodenal complex was included in 16 liver/intestinal grafts and kidneys were included in 8 multivisceral grafts. Tacrolimus was used as baseline immunosuppression in all patients. Induction with OKT3, cyclophosphamide or MMF was used in Group 1. Daclizumab was used in Group 2 and Group 3. Patients in Group 4 received Campath 1H induction. Seventy-two patients (71%) had concomitant liver failure at the time of transplant. Presence of concomitant liver failure was more common in younger population (87% in age <1.5y, vs 53% in age >1.5y, p=0.0001). Fifty patients are currently alive. Two children survived more than 8 years and additional 8 survived more than 5 years. Actuarial patient survivals at 6-month/1-year/2-year were 48%/44%/32%, 61%/54%/47%, 91%/84%/74%, and 60%/47%/47% in Group 1,2,3 and 4, respectively. Incidences of severe rejection were 36%, 23%, 11% and 0% in Group 1, 2, 3 and 4, respectively. Viral infections seen in these children included CMV (n=12), adenovirus (n=7), and RSV (n=6) infections. Nine patients (9%) developed PTLD; two died of generalized PTLD, three required retransplant and the remaining treated successfully. Recent transplant year (p=0.004) and absent of severe rejection (p=0.014) positively influenced patient survival.

CONCLUSIONS: Itx provided reasonable chance of survival in children with intestinal failure and TPN related complication. Main indication for Itx in younger age was development of liver failure. Patient survival improved significantly in recent years with decreased incidence of severe rejection.
The Practice of Bariatric Surgery and Risk Management at Academic Centers

Ninh T. Nguyen, Nance Hove, C. M. Stevens, Candice Moore, UCI Medical Center, Orange, CA, University HealthSystem Consortium, Oak Brook, IL

INTRODUCTION: With the development of laparoscopic bariatric surgery, there is a high demand for development of bariatric surgical practices. Inadequate hospital facilities and inexperienced surgeons/personnel managing the morbidly obese can lead to worker’s compensation and malpractice claims. We surveyed participating institutions of the University HealthSystem (UHC) Consortium to examine the current practice of bariatric surgery and its associated risk management at academic centers.

METHODS: A bariatric surgery survey was sent to all participating UHC institutions. The survey questioned 1) the availability of bariatric equipment, 2) credentialing and reappointment process of bariatric surgeons, 3) the availability of outcome measures, 4) risk management data (worker’s compensation and malpractice claims related to the care of bariatric patients), and 5) suggested improvement in their bariatric surgery program.

RESULTS: Seventeen UHC institutions participated in the survey. 82% of the organizations performed bariatric surgery. More than a quarter of the institutions do not have appropriate bariatric equipment such as bedside commodes, gowns, high weight scales, beds, OR tables, surgical instruments, and radiologic equipment capable of handling the morbidly obese. 38% of institutions have had accidents or equipment problems related to bariatric equipment and 55% of institutions had worker’s compensation claims due to care for bariatric patients. Only 60% of institutions require a minimum number of procedures to be performed by surgeons prior to granting privileges; 80% of institutions use bariatric surgical outcome measures to evaluate a surgeon’s competence for reappointment; and 92% of institutions track complication rates. 62% of institutions had claims related to the care of bariatric patients and 53% of the claims were related to surgical complications of the procedure. Suggested improvements included more bariatric equipment, establishment of a comprehensive bariatric program, development of a specific unit to specialize in bariatric surgery, and enhance the educational training of all members of the bariatric surgical team.

CONCLUSION: The results from this survey demonstrated that the practice of bariatric surgery is suboptimal in more than a quarter of institutions performing bariatric surgery with regard to availability of bariatric equipment and credentialing of surgeons. Inadequate practice of bariatric surgery can lead to high worker’s compensation and malpractice claims.
INTRODUCTION: Neoadjuvant chemoradiation treatment has resulted in significant tumor down-staging and improved local disease control for distal rectal cancer. Overall survival and disease-free survival may be associated with final pathological stage 0-III and complete clinical response.

PATIENTS AND METHODS: 260 patients with distal (0-7cm from AV) rectal adenocarcinoma considered resectable were treated by neoadjuvant chemoradiation with 5-FU and Leucovorin plus 5040 cGy. Patients with incomplete clinical response were treated by radical surgical resection. Patients with complete clinical response were treated by non-operative treatment and were followed by an experienced colorectal surgeon. Patients with complete clinical response were considered stage c0 and patients with complete pathological response were considered stage p0. Statistical analysis was performed using Chi-squared, student T test and Kaplan-Meier curves.

RESULTS: 71 patients (28%) showed complete clinical response (Stage c0). 22 patients (9%) showed incomplete clinical response, were operated on and pathological examination revealed pT0N0M0 (Stage p0). 59 patients (22%) had stage I, 68 (26%) had stage II and 40 patients (15%) had stage III disease. Overall survival rates were significantly higher in stage c0 (p=0.01) compared to stage p0. Disease-free survival rate showed a trend towards better results in stage c0. Ten-year overall survival rates for stage p0 and c0 were 84% and 93% respectively. Five-year overall and disease-free survival rates were 97.7% and 84% (stage 0); 94% and 74% (stage I); 77% and 50% (stage II); and 50% and 28% (stage III).

CONCLUSIONS: Neoadjuvant chemoradiation therapy may result in significant tumor downstaging in patients with distal rectal cancer. Stage 0 disease is associated with excellent long-term results irrespective of treatment strategy. Surgical resection may not lead to improved outcome in this situation (stage 0 disease) and result in significant rates of unnecessary stomas. Furthermore, survival may be directly correlated to final pathological staging.
**829 Genetic Predictors of Weight Loss After Gastric Banding?**

Fritz F. Horber, Andreas Juchli, Margret R. Hoehe, Klaus-Ulrich Lentes, Natascha Potoczna, Clinic Hirslanden, Zurich, Switzerland, Max-Plank Institution for molecular genetics, Berlin, Germany, Bioscientia GmbH, Ingelheim, Klinik Hirslanden, Zurich, Switzerland

**BACKGROUND:** Both, the gene encoding the alpha subunit of G stimulatory proteins (GNAS1) and the β subunit gene (GNB3) of G-proteins are associated with obesity and hypertension. Moreover, the TT/TC825 polymorphism (PM) of GNB3 predicts greater weight loss than the CC825 PM in obese patients (mean BMI about 35kg/m2) undergoing a structured non-pharmacological weight loss programme (SWLP). In contrast, when patients were treated with sibutramine and SLWP, the CC825 PM was associated with greater weight loss than the TT/TC825 PM (Hauner et al., Pharmacogenetics 2003;13:453). Gastric banding (GB) enforces a low calorie diet by diminishing the need for volitional adherence. It is unknown whether these PM predict the variable weight loss seen in patients treated with GB.

**METHODS:** 304 severely obese patients (age: 42±1 [mean±SEM] years, f/m: 245/59, BMI: 43.9±0.3 kg/m2) followed prospectively for at least three years after GB were genotyped for the GNB3 C825T, G814A PM and GNAS1 T393T PM. All analyses were performed blinded to the phenotypic characteristics of the study group.

**RESULTS:** Frequency and weight loss are shown in table. Multivariate analysis taking into account potentially confounding parameters such as reoperation rate, use of serotonin reuptake inhibitors, sibutramine or orlistat revealed similar (P>0.7). Blood pressure was not modulated by any PM neither preoperative nor postoperative. Conclusion: No PM studied did predict three-year weight loss nor was associated with high blood pressure in severely obese patients after gastric banding, whereas melanocortin-4 receptor variants (Obes Res 2003,11 Suppl, A24) predict poor outcome after GB. Regardless of the mechanism(s) involved for these discordant findings, GNB3 C825T, G814A and GNAS1 T393C PM’s do not seem to be reliable predictors of long-term weight loss.

<table>
<thead>
<tr>
<th>Frequency of GNB3 and GNAS1 PM and effect on weight loss</th>
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<tbody>
<tr>
<td><strong>GNB3 C825</strong></td>
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<tr>
<td>----------------</td>
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<tr>
<td>Frequency (%)</td>
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<tr>
<td>Weight loss 1 year*</td>
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<td>Weight loss 2 year*</td>
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<td>Weight loss 3 year*</td>
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ANOVA for repeated measures P>0.7, *kg±SEM
830 Laparoscopic Total Abdominal Colectomy in the Acute Setting
Michael R. Marohn, Eric J. Hanly, Kevin J. McKenna, Carmen R. Varin, Johns Hopkins University, Baltimore, MD

OBJECTIVE: We report results from a single surgeon’s ten-year team experience with laparoscopic total abdominal colectomy. Previous reports of laparoscopic total colectomy have been mixed. We review our series, which includes a large subgroup of ill, high risk patients, requiring urgent surgery.

METHODS: From 1993 to 2003, our group performed 65 laparoscopic total abdominal colectomies. All patients referred for total abdominal colectomy were offered a laparoscopic approach. We tracked patient demographics, surgical indications, preoperative status, duration of surgery, blood loss, complications, length of stay, subsequent surgeries, patient satisfaction, and lessons learned from our experience.

RESULTS: Preoperative diagnoses included ulcerative colitis (85%), Crohn’s colitis (5%), colonic inertia (5%), and familial adenomatous polyposis (FAP) (5%). Among the inflammatory bowel disease patients, 70% of cases were performed on ill patients, refractory to medical management, requiring urgent surgery. This subgroup was managed with laparoscopic total abdominal colectomy and Brooke ileostomy, with ileo-anal pouch anastomosis deferred. Operative times were long, ranging from 6 to 9+ hours. Blood loss averaged ~200 cc. Length of stay ranged from 2 to 13 days, averaging 4.3 days. There were no conversions to open surgery and there were no deaths. Complications occurred in 12% of patients and included intra-abdominal abscess (2), wound infection (3), stoma stenosis (1), and incisional hernia (2). Postoperative patient satisfaction was high. Subsequent surgeries, including restorative proctectomy, were also performed laparoscopically.

CONCLUSIONS: Laparoscopic total abdominal colectomy is technically challenging and requires a team approach, but offers patients significant benefit in length of stay and surgical recovery, and can be effectively employed with minimal morbidity in difficult, ill patients requiring urgent surgery.
AIM: To identify risk factors for development of GER after Heller myotomy.

METHODS: Patients who underwent laparoscopic Heller myotomy without concomitant antireflux procedures were asked to return for esophageal manometry and 24-h pH study after giving an IRB approved informed consent. After undergoing 24-h pH study, the patients were diagnosed with GER if distal esophageal acid exposure time was >4.0%. Logistic regression was used in both univariate and multivariate modeling to identify independent preoperative variables associated with the presence of postoperative GER. Independent variables examined included 12 putative preoperative risk factors. Model parameters were estimated by the maximum-likelihood method. From these estimates, odds ratios (OR) with 95% confidence intervals (CI) were computed.

RESULTS: The study enrolled 48 patients, 46 reported good to excellent relief of dysphagia after myotomy. The prevalence of postoperative GER was 37.5% (18/48 patients). Postoperative lower esophageal sphincter pressure (LESP) was similar in the two groups (GER: 15.0 ± 8.2 vs. NO-GER: 13.8 ± 4.2 mmHg, P=0.5). On univariate analysis, the only preoperative factor associated with GER was the preoperative LESP (NO-GER: 40.3 ± 12.3 vs. GER: 32.4 ± 13.0 mmHg, P=0.04). Preoperative LESP remained an independent risk factor for GER in the multivariate logistic regression model after adjusting for covariates. A pressure lower than 25 mmHg increased seven times the risk to develop GER postoperatively (OR 7.1; 95% CI, 1.1-48.4; P=0.04). Another significant risk factor was age at the time of surgery. Patients younger than 45 years were at more than nine times the risk to develop GER after myotomy compared to those older than 45 years (OR, 9.9; 95% CI, 1.7-57.8; P=0.01).

CONCLUSION: 1. Heller myotomy is associated with high prevalence of postoperative GER. 2. Age <45 years and preoperative LES pressure <25 mmHg are independent and significant risk factors to develop GER after Heller myotomy.
832 Short and Long-Term Outcome of Roux-En-Y Gastric Bypass Stratified by BMI of 70 KG/M\(^2\). A Comparative Analysis of 825 Procedures.

Ioannis S. Raftopoulos, Julie A. Ercole, Anthony O. Udekwu, James D. Luketich Sr., Anita P. Courcoulas, University of Pittsburgh Medical Center, Shadyside Campus, Pittsburgh, PA

OBJECTIVE: To compare the safety, excess weight loss (EWL) and improvement of obesity-related disorders after Roux-en-Y gastric bypass (RYGBP) in morbidly obese (BMI < 70 Kg/m\(^2\)) and superobese patients (BMI ≥ 70 Kg/m\(^2\)).

METHODS: Since 1995, a total of 825 morbidly obese patients underwent RYGBP in our institution. There were 79 (9.6%) patients (group A) with a BMI ≥ 70 Kg/m\(^2\) and 746 patients (group B) with a BMI < 70 Kg/m\(^2\). Patient demographics, operative morbidity and mortality, % EWL and improvement of obesity-related disorders were prospectively collected in a database.

RESULTS: A laparoscopic access was used in 261/825 patients (31.6%). There was a significant difference in age (A: 40.8 vs. B: 43.2 years, p=0.01), gender (% males, A: 40.5% vs. 17.6%, p<0.0001) and type of access (% laparoscopic RYGBP, A: 4.1%, B: 34.2%, p<0.0001) between superobese and morbidly obese patients. American African race was more common in the superobese group (A: 21.2% vs. B: 12.6%) but it did not reach statistical significance. Although there was no significant difference in morbidity between the two groups, mortality was higher in the superobese group (A: 3.8% vs. B: 0.5%, p=0.02). Laparoscopic access had no impact on the outcome of RYGBP except for a shorter LOS (A: 6.2 vs. B: 4.9 days, p=0.001) in favor of the morbidly obese group. Mean follow-up was similar in both groups (A: 17.7 vs. B: 18.2 months). %EWL at 1-year was significantly lower in the superobese group (A: 54.6% vs. B: 64.3%, p<0.0001) but there was no difference at 3 years (A: 66.5% vs. 60.7%). Preoperative incidence of sleep apnea (A: 57% vs. B: 31.4%, p<0.0001) and venous stasis dermatitis (A: 16.5% vs. B: 2.4%, p<0.0001) was significantly higher in the superobese group, but postoperative improvement of all obesity-related disorders was similar in both groups.

CONCLUSION: Complications are not increased in the superobese but they are more often fatal. Weight loss in the superobese is slower, but it continues beyond the first year. RYGBP in the superobese is as effective as in the morbidly obese in resolving, or improving obesity-related disorders.
BACKGROUND: Postoperative dysphagia seems to be more common after laparoscopic than open fundoplication. This is reflected in disturbance of esophageal clearance, shown by esophageal radionuclide transit. If dysphagia leads to repeated dilatations or even reoperation, the advantages of laparoscopic procedure are vanished. Some disturbance in LES/fundic wrap relaxation is, however, essential to anti-reflux function of fundoplication.

HYPOTHESIS: Although the main antireflux mechanism of fundoplication may be one-way flap function, fundic wrap has also features of a sphincter. Botox injected to the wrap may decrease pressure on the lower esophageal sphincter region and facilitate deglutitive relaxation and decrease resistance to bolus transport, an analogy with Botox in treatment of achalasia. Because of one-way flap function, Botox injection should not induce reflux.

PATIENTS AND METHODS: 15 consecutive patients with confirmed GERD and normal esophageal motility received in randomized double-blind manner at the end of laparoscopic fundoplication 4 boluses of 20 IU Botox (5 patients) or same volume of NaCl (10 patients) into their wraps through retroflexed endoscope. Esophageal clearance was measured by liquid bolus radionuclide transit preoperatively and 3, 30 and 90 days after fundoplication.

RESULTS: Symptoms and signs of reflux were abolished in all. Esophageal clearance was disturbed during the follow-up in 6/10 of the patients of the NaCl group, compared to 1/5 of the Botox-group. 90% appearing time of acticity to the stomach (in seconds, upper normal limit 11.5) was preoperatively 4.9 (SD 0.96), on 3h postoperative day 7.4 (SD 2.3), on 30th postoperative day 8.4 (SD 3.1) and on 90th postoperative day 5.9 (SD 1.43) in Botox-group, compared to 7.0 (SD 2.9), 17.8 (SD 21.7), 9.0 (SD 3.1) and 19.0 (SD 18.9) in NaCl-group, respectively.

CONCLUSION: Injection of Botox to fundic wrap has observable effect in normalizing esophageal clearance during early postfundoplication period.
M1137  Optimization of Conditionally Replicative Adenovirus for Cholangiocarcinoma
Pedro J. Ramirez, Hidetaka A. Ono, Julia Davydova, Victor Krasnykh, David T. Curiel, Masato Yamamoto, Selwyn M. Vickers, University of Alabama at Birmingham, Birmingham, AL, MD Anderson Cancer Center, UT Houston, Houston, TX

PURPOSE: Cholangiocarcinoma remains a devastating disease; it is minimally responsive to adjuvant therapy. Hence, there is a need for new therapeutic modalities. Adenoviral (Ad) gene therapy represents one strategy. However, it has been plagued by transduction inefficiency and systemic toxicity from lack of specificity. To address these limitations, we endeavored to optimize an infectivity enhanced, promoter based conditionally replicative adenovirus (CRAd) aiming at a safe and effective therapeutic modality for cholangiocarcinoma.

METHODS: In order to establish the safety feature of our approach, we analyzed by luciferase assay the in vitro functionality of nine tumor specific promoters (tsp) on a panel of three cholangiocarcinoma cell lines by using an isogenic non-replicative Ad vector. In parallel, non-replicative Ad vectors with fiber modifications were analyzed by luciferase assay to assess the effect of fiber modification strategies on infectivity. Two different fiber modifications were assessed: incorporation of an RGD motif in the HI loop of the Ad fiber knob domain (RGD modification) and a chimeric fiber which consists of the tail and shaft of Ad serotype 5 in combination with the knob of Ad serotype 3 (5/3 fiber chimera). Based on these analyses, an array of CRAds were configured incorporating promising tsp and fiber modifications. These were then compared by cell cytotoxicity assays.

RESULTS: In vitro, among the nine promoters tested, the midkine (MK) and cyclooxygenase-2 (COX-2) tsp exhibit the most advantageous profile in terms of potency in the cell lines tested; the latter has better selectivity. Fiber modification with the RGD motif and the 5/3 fiber chimera significantly enhances in vitro Ad infectivity in two and three of the cell lines tested, respectively. These approaches, when combined into the context of a CRAd, result in an optimal 5/3 fiber modified CRAd with COX-2 tsp controlled E1 expression. Analysis of data from cell cytotoxicity assays using this optimal CRAd correlates with luciferase data.

CONCLUSION: These data demonstrate that the combination of a tsp for selective transgene expression along with fiber modification for infectivity enhancement results in an optimized conditionally replicative adenovirus that promises to be a safe, useful therapeutic modality for cholangiocarcinoma gene therapy.
INTRODUCTION: Foreign bodies within the biliary tree are widely recognized to serve as a nidus for biliary stone formation. This stone formation often presents long after the initial procedure. Silk suture has reportedly been the most common suture to induce stone formation. This has prompted the use of various other suture materials based mostly on anecdotal evidence. Little scientific data exists to base the choice of suture in biliary surgery. We have developed a reliable and reproducible animal model to evaluate sutures commonly used in biliary surgery.

METHODS: Following approval from the institutional animal use committee, New Zealand White rabbits (3-3.5kg) were anesthetized with Ketamine/ Xylazine. A midline laparotomy was performed and the gallbladder exposed. Animals were randomized into 4 groups (4-0 silk, vicryl, polpropylene, and polydiaxone suture). A cholecystotomy was performed and 2 cm of suture was passed into the gallbladder and secured. All rabbits were fed a lithogenic diet for the entire two-week period of study. At 2 weeks, cholecystectomy was performed. The 2 cm segment was divided into equal portions for Scanning Electron Microscopy, biochemical analysis and polarized light microscopy.

RESULTS: All animals in the silk suture group produced gallstones adherent to the suture. Scanning Electron Microscopy revealed the presence of gallstones within the interstices of the silk and vicryl braids as well polpropylene suture. Smears of silk, vicryl and polypropylene suture revealed the presence of cholesterol crystals under polarized light. Polydiaxone suture failed to reveal any significant source of microcrystals on polarized microscopy or stone formation under Scanning Electron Microscopy.

CONCLUSION: Our data indicate that this rabbit gallbladder model serves as a reliable and reproducible model to evaluate suture materials in the biliary tree. Based on our findings, absorbable monofilament suture should be used to minimize stone formation following biliary surgery.
M1139  Optimising Infectivity Enhanced, Conditionally Replicative Adenovirus for Gallbladder Cancer Gene Therapy

Yaman Tekant, Pedro Ramirez, Hidetaka Ono, Viktor Krasnykh, Julia Davydova, Tatyana Gavrikova, Long Le, David Curiel, Selwyn Vickers, Masato Yamamoto, University of Alabama at Birmingham, Birmingham, AL

PURPOSE: Gallbladder carcinoma has a dismal prognosis. Most patients are diagnosed with advanced disease, for which no effective therapy exists. Novel treatment modalities are needed to improve survival. Cancer gene therapy strategies using adenoviral (Ad) vectors is a promising new approach. In this study, infectivity enhanced, promoter based, conditionally replicative adenoviruses (CRAd) were investigated for their therapeutic potential in gallbladder cancer cell lines.

METHODS: An isogenic non-replicative Ad vector was used to examine the in vitro efficacy of nine tumor specific promoters (tsp) by luciferase assay on two gallbladder cancer cell lines (NOZ and OCUG-1). RGD incorporation into the HI loop (RGD modification) and a chimeric construct with a serotype 5 shaft and a serotype 3 knob (5/3 fiber modification) were also analysed and compared with the wild-type fiber to assess infectivity enhancement. Promising tsp and fiber modifications were then incorporated onto CRAds and comparisons made by cytotoxicity assays.

RESULTS: Highest potency was exhibited by the Midkine (MK) and cyclooxygenase-2 (COX-2) tsp in both the cell lines tested. Other promising tps were VEGF in both cell lines (especially OCUG-1), EGP-2 and SLPI in the OCUG-1 and GRP and FLT-1 in the NOZ cell line in a decreasing order. MCP was the least potent in both. While the 5/3 fiber chimera conferred significant enhancement of Ad infectivity in both of the cell lines, RGD modification did so to a lesser extent only in the NOZ cell line. Crystal violet staining showed enhanced cytocidal effect especially with the 5/3 fiber modification in the NOZ cell line and to a lesser extent with the RGD modification. In the context of a CRAd development, it translates into 5/3 fiber modification with COX-2 tsp controlled E1 expression as the optimal vector design.

CONCLUSION: This study demonstrates that fiber modified, tsp based CRAds have enhanced infectivity and transgene expression selectivity in vitro, providing a potential tool for safe and effective gene therapy strategies in gallbladder carcinoma.

† Poster of Distinction
INTRODUCTION: Treatment of benign (iatrogenic or traumatic) bile duct strictures (BDS) is a challenging clinical problem. Despite the development of the various BDS treatment methods, such as percutaneous or endoscopic stenting techniques, the results are far from satisfactory. In order to further promote such research, a comparable animal model of BDS suitable for this work needs to be established. Although BDS models exist in rats and smaller rodents, these models do not allow comparisons of various biliary stents relevant to human application. The aim of the current study was to develop a BDS model in the swine.

METHODS: Twenty-four 50-kg Yorkshire swines were studied. Cholecystectomy was performed. After pilot studies with various absorbable sutures (Vicryl 3-0 or 2-0, Catgut 3-0 or 2-0), Catgut 2-0 was chosen for subtotal ligation of the BD. Three interrupted sutures were tied around the BD and a 1 mm thick wire beside it at 3 mm intervals. After tying the wire was removed. The swines were followed by repeated 99mTc dynamic biligraphy (DBG) and blood and serum determinations and sacrificed at 1, 2, 4 and 6 months (6 animals at each time point), when the BDS was measured and histological analysis performed.

RESULTS: At 1, 2, 4 and 6 months, the survival was 100, 83, 67 and 0%, respectively. The BDS was 10 (range 9-11) mm long in median, and the lumen inner diameter at 1, 2 and 4 months was 5 (3-6), 2 (1-2) and 1 (0.5-1) mm, respectively (median and range). Bile ducts proximal to the BDS were dilated. At 4 months the liver was fibrotic in the histological analysis. None of the animals survived till 6 months because of liver function failure. DBG showed progressively decreasing liver clearance and at all time points, and serum bilirubin was significantly increased at 4 months compared to the preoperative values.

CONCLUSIONS: We conclude that this novel benign BDS model seems to be reproducible and can easily be used in the studies with different BDS treatment methods, e.g. in the application of biliary stents. The optimal timing for the treatment method to be introduced is 2-3 months after inducing the BDS.

Table. Data at 1, 2, 4 and 6 months.

<table>
<thead>
<tr>
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<th>1 month</th>
<th>2 months</th>
<th>4 months</th>
<th>6 months</th>
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<tr>
<td>Survival (%)</td>
<td>100</td>
<td>83</td>
<td>67</td>
<td>0</td>
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<tr>
<td>BDS lumen diameter (mm)*</td>
<td>5 (3-6)</td>
<td>2 (1-2)*</td>
<td>1 (0.5-1)*</td>
<td>-</td>
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<tr>
<td>DBG Liver clearance at 45 min reduced by (%)*</td>
<td>34 (28-40)</td>
<td>48 (42-58)*</td>
<td>74 (68-82)*</td>
<td>-</td>
</tr>
<tr>
<td>Serum bilirubin (µmol/L)*</td>
<td>8 (4-15)</td>
<td>16 (8-28)</td>
<td>82 (60-112)*</td>
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*median (range) ^p<0.05 (vs. 1 month)
M1141 Initial and Long-term Outcome of Biliary Bypass Surgery in Periampullary and Pancreatic Carcinoma
K. F. D. Kuhlmann, D. van Poll, Steve de Castro, O. R. C. Busch, T. M. van Gulik, Huug Obertop, D. J. Gouma,
Academic Medical Center, Amsterdam, Netherlands

Controversy remains on the palliative treatment of biliary obstruction. Endoscopic stent placement is effective for short term relief of jaundice and early complications are uncommon. However, stent exchanges are needed frequently and cause considerable morbidity. Surgical bypass procedures can offer optimal long-term palliation of obstructive jaundice but are associated with higher morbidity and mortality. The aim of this study was to analyze initial morbidity and mortality and long-term complication rates after biliary bypass surgery for periampullary and pancreatic carcinoma.

From 1992 to 2003, 277 consecutive patients underwent a surgical bypass procedure for periampullary and pancreatic carcinoma. Perioperative parameters and the incidence and indications of readmissions were analyzed to assess initial and long-term follow-up.

The overall complication rate was 29%. The rates for severe complications were 1% (3 patients) for anastomotic leakage, 3% (9 patients) for intraabdominal hemorrhage and 3% (7 patients) for abdominal abscesses. Three percent underwent a relaparotomy during the initial stay, mainly for anastomotic hemorrhage or leakage. Median postoperative stay was 10 days and in-hospital mortality was 3% (7 patients). Fifty seven percent of patients were readmitted. Sixteen (6%) patients were readmitted for indications related to the biliary bypass (e.g. biliary obstruction, cholangitis), 12 (4%) for surgery-related indications (e.g. abscess, incisional hernia), 126 (45%) for disease-related indications (e.g. pain, terminal care) and 24 (9%) for indications not related to the disease. Twenty three (9%) patients underwent a relaparotomy during a readmission, mainly for gastrointestinal obstruction due to tumor ingrowth. Median and 3-year survival was 7.4 months and 3%, respectively.

Surgical bypass procedures are associated with a relative low complication rate and acceptable mortality. The overall readmission rate was high, mainly due to readmissions indicated for disease-related complications. The incidence of readmissions indicated for complications related to the biliary bypass and related to surgery were low. In conclusion, a surgical biliary bypass is a safe and effective procedure to treat and prevent biliary obstruction in patients with periampullary and pancreatic carcinoma.
Comparative Study of Epithelial Gene Expression in the Small Intestine Among Total Proctocolectomized, Dietary Sodium-Depleted and Aldosterone-Infused Rats
Kouhei Fukushima, Shun Sato, Hiroo Naito, Yuji Funayama, Sho Haneda, Kazuhiro Watanabe, Chikashi Shibata, Iwao Sasaki, Tohoku Univ. Graduate School of Med, Dept of Surg, Sendai, Japan

PURPOSE: We previously demonstrated enhanced plasma aldosterone, ileal activation of epithelial sodium channel (ENaC) and induction of 11b-hydroxysteroid dehydrogenase type 2 following total proctocolectomy in rats. However, factor(s) other than circulating aldosterone may cause molecular induction associated with sodium transport in the remnant small intestine.

METHODS: Sprague-Dawley rats underwent total proctocolectomy. Alternatively, rats were subjected to a sodium deficient diet or subcutaneous aldosterone infusion for 4 weeks. Plasma aldosterone levels were measured by radio-immunoassay. We isolated epithelial cells of the distal small intestine, extracted RNA, and compared mRNA expression of a-, b-, g-subunit of ENaC, prostasin, sodium glucose transporter 1(SGLT1), a1- and b1-subunit of Na+K+ ATPase among control, total proctocolectomized, dietary sodium-depleted and aldosterone-infused rats by quantitative RT-PCR or Northern blotting. Histological examination was performed to investigate possible association between altered gene expression and mucosal structure.

RESULTS: Significant increase of aldosterone was noticed in proctocolectomized, sodium-depleted and aldosterone-infused rats. Induction of three subunits of ENaC and prostasin mRNA was observed in proctocolectomized, aldosterone-infused but not in dietary sodium-depleted rats. Levels of a1- and b1-subunit of Na+K+ATPase were similar among experimental groups. SGLT1 mRNA was induced only in proctocolectomized rats. We did not find any morphological change in the distal small intestine.

CONCLUSION: The present study clearly demonstrated that molecular induction of all of ENaC, prostasin and SGLT1 in the distal small intestine is unique for total proctocolectomized rats. Aldosterone infusion can reproduce mRNA induction of several but not all molecules for sodium absorption as seen in total proctocolectomy, suggesting that both hormonal regulation and lack of the colon contribute to adaptation in the remnant small intestine.
INTRODUCTION: Occurrence of peritoneal carcinomatosis remains still an unsolved problem in gastrointestinal cancer. Over the last years, novel antineoplastic substances such as matrix metalloproteinase (MMP) inhibitors have been investigated in animal models to achieve a decrease of tumor growth. The aim of the study was to determine whether i) Phosphoramidon, an MMP inhibitor, can prevent or diminish i.p. tumor growth, and ii) whether direct i.p. administration of Phosphoramidon is superior to the i.v. route. Methods: In WAG rats (weight, 250-300g) divided in 2 groups, peritoneal carcinomatosis was induced by tumor cell transfer (5x1,000,000 cells of an adenocarcinoma cell line CC-531; Cell-Lines Service, Heidelberg, Germany). Phosphoramidon (0.46 µg; 7 ml; Morphochem AG, Munich, Germany) was given either i) directly (i.p. administration) immediately after tumor cell transfer or ii) fractionated (i.v.) on days(d) 3,6,9,12,15 postoperatively. Twenty five d after tumor cell transfer, tumor growth was quantified by tumor weight of the greater omentum and the mesenteric site, number and size of detectable tumor lesions, occurrence of hepatic and pulmonary metastases and the amount of ascites.

RESULTS: See table. Summary: 1) Phosphoramidon was highly effective to diminish i.p. tumor growth after direct intraoperative i.p. application. 2) The effect of i.p. administration using this potential drug was more pronounced than i.v. treatment.

CONCLUSION: The results suggest that the MMP inhibitor Phosphoramidon appears to be a promising antineoplastic substance to overcome dysadvantageous tumor growth at the peritoneal site. Additional studies should be focussed on possible alterations of healing of anastomoses and wounds by this agent.

| Tumor weight (g) and size (cm²) as representative parameters for quantification of tumor growth comparing the effect of Phosphoramidon given i.p. or i.v. after tumor cell transfer. |
|---|---|---|---|
| n=8 rats per group | Tumor weight (g) | Size of tumor lesion (cm²) |
| Greater omentum | i.p. | i.v. | i.p. | i.v. |
| 1.601.06 * | 2.400.86 * | 1.381.06 * | 2.120.83 * |
| Mesenteric site | i.p. | i.v. | i.p. | i.v. |
| 2.550.48 * | 3.660.73 * | 2.500.76 * | 4.000.76 * |

*, P<0.05; t test (SPSS for Windows) vs. no treatment (not shown)
Increased Severity of Intestinal Inflammation in the Stat6 Knockout (Stat6(-/-)) Mouse
Lisa Poritz, Kristian Garver, Walter Koltun, Wen Jie Zhang, Eva Galka, Leo Fitzpatrick, The Milton S. Hershey Medical Center, Hershey, PA

A relative increase in pro-inflammatory Th1 cytokines by a down regulation of antiinflammatory Th2 cytokines can result in increased inflammation. IL-4, a Th2 cytokine, regulates gene expression through the IL-4-Stat6 signaling pathway.

HYPOTHESIS: Dextran Sodium Sulfate (DSS) induced intestinal inflammation will be more severe in the Th2 deficient Stat6(-/-) mouse. Methods: Stat6(-/-) and wild type Balb/c mice were fed either 0 or 3% DSS in the drinking water for 7 days (n>=5 in all groups). On day 7 weight (wt) change, fecal blood, and colon length were measured. The colonic mucosa was harvested and myeloperoxidase (MPO) activity and IL-1b were measured. Mucosal nuclear factor-Kappa B (NF-kB) was quantitated by western blot using monoclonal antibody to NF-kBp65. Results were compared by ANOVA.

RESULTS: After 7 days of DSS ingestion all animals appeared ill and dehydrated with grossly bloody diarrhea. DSS treated animals had significant weight loss, shortening of the colon, increased MPO activity and IL-1b expression compared to control animals. Colonic NF-kB expression was significantly increased in the Stat6(-/-) DSS treated mice compared to Balb/c DSS treated mice. See table.

CONCLUSIONS: 1: DSS ingestion caused weight loss, colonic shortening, bloody diarrhea and colitis in both Balb/c and Stat6(-/-) mice. 2: Both Balb/c and Stat6(-/-) DSS treated mice had significantly increased MPO activity and IL-1b expression compared to controls animals. 3: Two of the markers of inflammation measured, MPO activity and NF-kB expression, were significantly increased in the DSS treated Stat6(-/-) mice compared to the Balb/c DSS treated mice suggesting the intestinal inflammation is more severe in the Th2 deficient Stat6(-/-) mouse.

<table>
<thead>
<tr>
<th></th>
<th>Balb/c H2O</th>
<th>Balb/c DSS</th>
<th>Stat6(-/-) H2O</th>
<th>Stat6(-/-) DSS</th>
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<td>Wt. Change</td>
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<td>-10.85 ± 2.0</td>
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<td>-8.45 ± 1.2</td>
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<td>Colon @</td>
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<td>MPO Act.</td>
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<td>IL-1b</td>
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<td>NF-kB</td>
<td>1.04 ± 0.07</td>
<td>2.68 ± 0.53</td>
<td>1.04 ± 0.07</td>
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@ colon length (cm)/ weight (g), •p <0.05 vs Balb/c DSS, †p<0.01 vs appropriate control, ‡p<0.001 vs appropriate control
**M1145**  
**HnRNP A1 is a Novel Marker for Human Colorectal Carcinoma**  
Kazunori Shibao, Yoshifumi Nakayama, Koji Onitsuka, Yuzuru Inoue, Takefumi Katsuki, Koji Kadowaki, Yosuke Tsurudome, Keiji Hirata, Tatsuhiko Sako, Naoki Nagata, Hideaki Itoh, University of Occupational and Environmental, Kitakyushu, Japan

**BACKGROUND:** The heterogeneous nuclear ribonucleoprotein A1 (hnRNP A1) is a nucleocytoplasmic shuttling protein that binds nascent pre-mRNA in the nucleus. hnRNP A1 regulates splice site selection and exports mature mRNA to the cytoplasm for translation. hnRNP A1 is important for cell proliferation, elongation of telomerase, and apoptosis in vitro, but the importance of this protein in human colorectal carcinoma is unknown. Here we examined hnRNP A1 expression in relation to cell proliferation and clinicopathologic factors in patients with colorectal carcinoma.

**METHODS:** The expression of hnRNP A1 was evaluated immunohistochemically in 26 formalin fixed paraffin embedded samples from surgically resected colorectal carcinomas. Immunohistochemistry was performed by a streptavidin-biotin-peroxidase complex method using polyclonal anti-hnRNP A1 and monoclonal anti-PCNA (PC10) antibody. The percentages of cells stained positively for hnRNP A1 and PCNA (labeling index; L. I.) were individually estimated by counting 1,000 tumor cells in multiple fields and were related to tumor characteristics. Immunoblot and Northern blot analysis were performed using paired frozen samples of colorectal carcinomas and adjacent normal mucosa.

**RESULTS:** Immunohistochemistry showed that hnRNP A1 was localized mainly in the nucleus and was overexpressed in all cancerous lesions relative to normal mucosa. hnRNP A1 expression correlated strongly with PCNA expression (p<0.01) but was not associated with any clinicopathologic factors. Both immunoblot and Northern blot analysis showed increased hnRNP A1 expression in carcinomas, relative to normal mucosa.

**CONCLUSION:** hnRNP A1 may be a useful proliferation-associated marker in patients with colorectal carcinoma.
M1146  Candidate Biomarkers in the Development of Barrett’s Adenocarcinoma; CDX-2 & TSPAN-1

Daniel Vallboehmer, Jeffrey H. Peters, Sylke Schneider, Nahid Hamoui, Kazumi Uchida, Hidekazu Kuramochi, Daisuke Shimizu, Parakrama T. Chandrasoma, Kathleen D. Danenberg, Peter Danenberg, Tom R. DeMeester, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA, Department of Biochemistry, University of Southern California, Los Angeles, CA, Department of Surgery, Division of Thoracic and Foregut Surgery, University of Southern California, Los Angeles, CA, Department of Pathology, University of Southern California, Los Angeles, CA, Response Genetics, Inc., Los Angeles, CA

BACKGROUND: A biomarker to predict which patients with Barrett’s esophagus will progress to dysplasia and cancer is highly desirable. The aim of this study was to assess the expression of CDX-2, a gene important in the early differentiation and maintenance of intestinal epithelium, and TSPAN-1, a gene known to effect the proliferation, motility, and adhesion of cells, as potential biomarkers in the development of Barrett’s adenocarcinoma.

EXPERIMENTAL DESIGN: Histologic sections from endoscopic biopsies or esophagectomy specimens were classified as: reflux-esophagitis (n=8), non-dysplastic Barrett’s (n=35), dysplastic Barrett’s (n=18) and adenocarcinoma (n=37). The desired tissue was isolated by laser capture microdissection. Cellular RNA was extracted and reverse transcribed to cDNA. Expression levels of CDX-2 and TSPAN-1 were measured by quantitative real-time PCR (TaqmanÆ). Gene expression levels were compared to proximal esophageal squamous (n=45) epithelium of patients without Barrett’s or cancer.

RESULTS: Expression of both CDX-2 & TSPAN-1 were increased in the early steps of esophageal carcinogenesis, i.e. non-dysplastic and dysplastic Barrett’s epithelium (p<0.001, p<0.001 and p<0.001, p<0.001 respectively) compared to normal squamous epithelium. They were significantly increased but less so in adenocarcinoma (p<0.001, p<0.001). In inflammation CDX-2 was increased and TSPAN-1 was decreased compared to normal squamous epithelium (p=0.011, p=0.019).

CONCLUSION: Increasing expression of CDX-2 and TSPAN-1 may be useful as a biomarker for monitoring the metaplasia-dysplasia sequence in Barrett’s esophagus.
Oxidative stress of esophageal mucosa has an important role in the pathogenesis of GERD and in the development of Barrett's esophagus and adenocarcinoma. Fundoplication heals reflux symptoms and endoscopic mucosal injury, but the effects of fundoplication on oxidative injury of esophageal mucosa are conflicting and long-term results are lacking. Oxidative stress and radical scavenger capacity of esophageal mucosa was measured in 20 patients with GERD, before and after fundoplication, and compared with normal controls (N=9). Preoperatively the mean pH<4 was 20.1% and 12 of 20 patients had endoscopically verified erosive esophagitis or Barrett's metaplasia. Postoperatively the healing of GERD was verified with endoscopy and 24-h pH monitoring 6 months and 4 years after fundoplication. At the same time endoscopic biopsies of the distal and proximal esophageal mucosa were obtained for analysis of myeloperoxidase (MP), superoxide dismutase (SOD), and glutathione (GSH). Statistical analysis was performed using the Kruskal-Wallis and the Friedman and Wilcoxon rank test. Results are expressed as medians (range). Even after successful fundoplication MP levels were significantly higher and GSH levels lower than in controls. SOD values did not differ significantly (Table 1). MP activity was higher in the Macroscopic esophagitis/Barrett-group than in the No macroscopic esophagitis/Barrett-group: preoperatively; 4.35 (0.14-7.70) vs 0.12 (0.03-3.74), at 6 months 3.27 (0.05-9.42) vs 0.10 (0.03-4.37) and at 4 years 2.17 (0.10-3.54) vs 0.31 (0.05-1.08), p<0.05 for all patients. Anyhow, oxidative stress measured by MP activity had decreased significantly also in the Esophagitis/Barrett-group: preoperatively 4.35 (0.14-7.70) vs 2.17 (0.10-3.54) at 4 years (p<0.05). Antireflux surgery diminishes oxidative stress of the distal esophageal mucosa, but even after successful fundoplication oxidative injury remains increased particularly in patients with preoperative macroscopic lesions.

Table 1. SOD, MP and GSH compared with control patients preoperatively, 6 months, and 4 years after fundoplication.

<table>
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<th>6 months after</th>
<th>4 years after</th>
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<td>(Um/g protein)</td>
<td></td>
<td>0.11 (0.10-0.19)</td>
<td>0.11 (0.04-0.25)</td>
<td>0.17 (0.06-0.27)</td>
</tr>
<tr>
<td><strong>MP</strong></td>
<td>N</td>
<td>9</td>
<td>20</td>
<td>17</td>
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<tr>
<td>(Um/g protein)</td>
<td></td>
<td>0.13 (0.02-0.78)</td>
<td>1.41 (0.03-7.70)*</td>
<td>1.44 (0.03-9.43)*</td>
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<tr>
<td><strong>GSH</strong></td>
<td>N</td>
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<td>20</td>
<td>16</td>
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<tr>
<td>(mmol/mg protein)</td>
<td></td>
<td>2.96 (1.35-3.88)</td>
<td>1.54 (0.52-2.65)**</td>
<td>0.98 (0.26-2.16)**</td>
</tr>
</tbody>
</table>

* p <0.05 ** p<0.01 the Kruskal-Wallis test
INTRODUCTION: Congenital diaphragmatic hernia (CDH) repair is typically performed with the aid of a prosthetic patch. Expanded polytetrafluoroethylene (ePTFE) mesh is the most commonly used biomaterial. As patients grow the implanted prosthesis covers a smaller cross-sectional area of the diaphragm, frequently resulting in recurrence.

AIM: The aim of this study is to compare PTFE with an absorbable mesh in a growing animal model.

METHODS: The left diaphragm of 20 two-month-old Yucatan pigs was nearly completely resected. Small intestinal submucosa (Cook Biothech, Lafayette, IN) and ePTFE (Gore-Tex, Flagstaff, AZ) were randomly assigned to cover the defect in 10 animals each. Yucatan pigs reach breeding age and are therefore considered adults at 8 months. Necropsies were performed 6 months after the surgery and animals were assessed for recurrent herniation, quality of the newly formed diaphragmatic tissue (NFDT), adhesion formation, and tissue integration according to a 1-4 point scale.

RESULTS: One animal in the ePTFE group died 3 weeks postoperatively with reherniation. The animals that survived had increased their weight threefold. At the time of necropsy another 2 animals in the ePTFE group had evidence of herniation (p>0.05 compared with SIS group). Tissue integration (2.8±0.2 vs 1.3±0.3) and amount of muscle tissue in the NFDT (1.9±0.2 vs 0.4±0.2) scores were higher in the SIS group. Adhesion scores to the liver (1.2±0.3 vs 1.5±0.5) or lung (2.8±0.5 vs 2.5±0.4) were similar between ePTFE and SIS.

CONCLUSION: SIS prosthesis allowed for muscle tissue ingrowth from the surrounding endogenous tissue as it is degraded. This resulted in a more natural repair of the defect with more muscle and better integration to the tissue as the diaphragm grew.
Survey of 104 Genes for DNA Methylation Markers in Esophageal Adenocarcinoma

Tasha A. K. Gandamihardja, Mihaela Velicescu, Daniel Weisenberger, Kimberly Siegmund, Jeffrey A. Hagen, Jeffrey H. Peters, Steven R. DeMeester, Peter F. Crookes, Cedric G. Brenner, Tom R. DeMeester, Peter W. Laird, Department of Surgery, University of Southern California, Los Angeles, CA, Preventive Medicine, University of Southern California, Los Angeles, CA

BACKGROUND: Early detection is important to improving outcome in patients with esophageal adenocarcinoma. Molecular markers have been proposed as a strategy to achieve this goal. Recent attention has focused on detection of abnormal DNA methylation as a potential molecular marker strategy. These abnormalities in DNA methylation are an epigenetic process resulting in gene silencing that is widely recognized in cancers of many cell types. To date, studies using DNA methylation markers have been limited to the analysis of one or two genes. The aim of this study was to identify a panel of abnormally methylated genes as the first step in developing DNA methylation markers in esophageal adenocarcinoma.

METHODS: Paired tumor and normal esophageal tissue samples were obtained from 7 patients who underwent esophagectomy as primary treatment for esophageal adenocarcinoma (6M: 1F), median age 65.9 years (64-75). We studied the methylation patterns of 104 genes, which were chosen based on their potential involvement in the pathogenesis of cancer. Methylation patterns within the promoter region of the genes were determined by the quantitative MethyLight assay, using fluorescence-based real-time PCR (TaqmanÆ) technology. The percent methylated reference (PMR) was calculated for each gene by comparison to a fully methylated control gene. A gene was considered discriminatory when abnormally methylated in 6/7 patients.

RESULTS: Of the 104 genes, 58 (56%) showed variable degrees of methylation in both tumor and normal tissues (PMR range of 1-660). Forty-six genes (44%) had no detectable methylation (PMR= 0) in both tumor and normal tissues. Of the 58 abnormally methylated genes, 13 (22%) discriminated between tumor and normal tissues in all 7 patients, and an additional 8 genes (14%) discriminated between tumor and normal tissues in 6/7 patients.

CONCLUSION: This study has produced a panel of 21 highly discriminatory DNA methylated markers for esophageal adenocarcinoma. The sensitivity, specificity and diagnostic utility of this panel will be evaluated in future studies.
Proteomic Analysis of SEG-1 Human Barrett’s-Associated Esophageal Adenocarcinoma Cells Treated with Keyhole Limpet Hemocyanin
Sara Zulfiqar, Linda Vona-Davis, Tim Vincent, David W. McFadden, West Virginia University, Morgantown, WV

BACKGROUND: Keyhole limpet hemocyanin (KLH) is an immune stimulant and hapten carrier derived from a circulating glycoprotein of the marine mollusk Megathura crenulata. It is used clinically in bladder cancer therapy. We previously reported that KLH has significant anti-proliferative effects in vitro against esophageal squamous cell carcinoma, breast, pancreas, and prostate cancers. In addition, we have shown that KLH directly inhibits the growth of human Barrett’s-associated esophageal adenocarcinoma cancer in vitro via apoptotic and non-apoptotic mechanisms. The exact mechanism(s) of action of KLH on cancer cells, however, are still unknown. We hypothesize that KLH reduces the growth of Barrett’s esophageal adenocarcinoma by altering protein expression profiles.

METHODS: Esophageal cell line (SEG-1) derived from Barrett’s-associated adenocarcinomas of the distal esophagus was selected. Cells were exposed to KLH (500 µg/ml) or vehicle. After 24 hours, cytosolic fractions were isolated by standard methods. 1- and 2D-gel electrophoresis profiles were established by running 3 independent gels on extracts per treatment group. Statistical analysis was performed with Phoretix Pro software to identify spots that were differentially expressed between the KLH- and control groups. Identification of proteins by MALDI-TOF mass spectrometry is pending.

RESULTS: Phoretix Pro identified 420 different expressed proteins of which 4 were differentially expressed between the KLH and control groups. In all cases, the protein concentration was decreased 5-fold or greater in the KLH-treated cells versus the control cells. Protein spots will be trypsin-digested for mass spectrometry identification.

CONCLUSIONS: Our findings reveal that KLH inhibition of Barrett’s adenocarcinoma growth in vitro results from markedly decreased expression in a minority of proteins. Their identification is forthcoming. Given the increase in the incidence of esophageal cancer, the use of KLH as adjuvant or topical therapy for Barrett’s adenocarcinoma provides a promising development in the treatment of this disease.
Allograft inflammatory factor-1 (AIF-1), expressed in activated macrophages, plays an important role in the inflammatory process. AIF-1 transcript levels are significantly decreased in allografted animals that receive immunosuppressive and immunomodulatory regimens, suggesting an association of AIF-1 with the inflammatory process during allograft rejection. We hypothesized that expression of AIF-1, a cytokine-inducible protein in liver allografts and peripheral blood, would be a biomarker for liver allograft rejection. The specific aims of this study were to determine whether (1) AIF-1 expresses in hepatic resident macrophages (Kupffer cells, KC) and circulating macrophages after liver transplantation, and (2) AIF-1 expression correlates with liver allograft rejection.

METHODS: Orthotopic liver transplantation was performed in two allogeneic rat combinations: Lewis into DA (chronic acceptance model) and DA into Lewis (acute rejection model). Liver samples and peripheral blood were collected on days 1, 5, 7 and 10 post-transplantation. AIF-1 expression in liver allografts was quantified by immunohistochemistry staining and RT-PCR analysis. Expression of AIF-1 and ED2 (a marker for resident macrophages) in peripheral leukocytes were analyzed by RT-PCR and flow cytometry.

RESULTS: AIF-1 expression can be detected in KC at low levels in non-transplanted control livers. However, there was no AIF-1 expression in blood from non-transplanted control rats. Following liver transplantation AIF-1 expression increases in both liver allografts and peripheral blood in a time dependent fashion during the initial week post-transplant. AIF-1 mRNA expression peaked at 7 days after transplantation. Interestingly, AIF-1 expression was increased two-fold in acutely rejecting liver allografts compared with chronically accepted livers on day 5, 7 and 10 after transplantation. AIF-1 expression in liver allografts paralleled AIF-1 expression in peripheral blood, which was also significantly greater in the rejection model compared to the acceptance model. Flow cytometric analysis of peripheral blood leukocytes demonstrated that AIF-1 expressed in ED2-positive cells.

CONCLUSION: Increased AIF-1 expression in peripheral blood is associated with increased AIF-1 expression in liver allografts, and the over-expression of AIF-1 correlates with liver allograft rejection. These findings suggest that AIF-1 may be a potential biomarker for liver allograft rejection.
M1152 Hepatocyte Specific Metabolic Activity Is Inducible in Adult Liver Stem Cells Isolated from Rodent Bone Marrow by Interleukin-3

Daniel Inderbitzin, Adrian Keogh, Guido Beldi, Markus Gass, Peter Studer, Deborah Stroka, Beat Gloor, Daniel Candinas, Department of Visceral and Transplant Surgery, University Hospital, Bern, Switzerland

Adult liver stem cells (ADULIS) can be isolated from rodent bone marrow. ADULIS in co-culture with isogeneic hepatocytes from 14 days bile duct ligated (BDL) rats are transdifferentiating into a hepatocyte-like lineage and are able to produce urea from ammonia. The aim of the study presented is to describe the hepatocyte specific metabolic capacity of ADULIS isolated from normal or BDL rats when cultured under various conditions (i.e. in single or co-culture with isogeneic hepatocytes, with or without Interleukin-3 (IL-3)).

METHODS: ADULIS were isolated from rat femoral bone marrow and cultured on a matrigel layer in supplemented (5% isogeneic serum, dexamethason (10\(^{-7}\) M), ) small hepatocyte media. Isogeneic hepatocytes were isolated and seeded on an inlay for co-culture experiments. IL-3 was added in the corresponding experimental groups at 10ng/ml. ADULIS cultures were challenged with ammonia and urea formation determined. Cells were harvested and 18S(rRNA) content (realtime PCR, TaqmanÆ) used to standardize the metabolic signal. The significance level was set at p<0.05.

RESULTS: Relative urea synthesis in cultures from normal animals was 1.03±0.42 (Standard deviation) in single and 1.38±0.41 in co-culture. In BDL rats values were 1.58±1.43 in single and 2.63±1.32 in co-culture. Addition of IL-3 increased urea formation (p<0.05) in ADULIS from normal rats to 1.68±0.6 in single and 2.65±1.02 in co-culture but not in ADULIS from BDL animals (2.39±0.51 in single and 3.16±0.81 in co-culture). Co-culture induced stronger ureagenesis under all culture conditions examined (paired t-test: p<0.05).

CONCLUSIONS: Co-culturing ADULIS with isogeneic hepatocytes increased ureagenesis in all paired culture experiments. As there is no direct cell contact between hepatocytes and ADULIS, paracrine factors secreted by hepatocytes are likely to be responsible for hepatic differentiation of ADULIS. Addition of IL-3 induced transdifferentiation in ADULIS cultures from normal animals but not in BDL cultures. In further studies it will be necessary to determine if cholestatic serum also induces accelerated and more pronounced hepatocyte specific metabolic capacity in ADULIS from normal animals. Factors responsible for this transdifferentiation should then be isolated from cholestatic serum and might be used to support the failing liver in vivo potentially by activation of the ADULIS pool in the bone marrow and the liver.
INTRODUCTION: Post-resectional de novo tumor recurrence is a significant clinical problem in hepatocellular carcinoma (HCC). Following partial hepatectomy, changes which favor hepatocyte regeneration may also accelerate malignant transformation of genetically altered hepatocytes in the remnant liver. The primary objective of this study was to investigate the effect of partial hepatectomy on tumor formation in transgenic mice known to form HCC.

METHODS: Overexpression of cyclin D1 has been associated with aggressive forms of human HCC. We have previously demonstrated that male transgenic mice overexpressing cyclin D1, under control of the rat liver fatty acid binding protein promoter, which targets the overexpression to the liver and intestine, predictably develop hepatic dysplastic nodules by age 9 months and HCC by age 15 months. In the present study, sixteen male transgenic mice over-expressing cyclin D1 underwent 70% partial hepatectomy (PH) or sham at one month of age. Surveillance hepatic MRIs were performed every three months, and mice were sacrificed for autopsy at 9 and 15 months. The livers were examined for gross and histologic evidence of hepatocyte dysplasia, dysplastic nodules, and HCC.

RESULTS: (1) Surveillance MRI did not demonstrate evidence of tumor formation in mice at 3, 6, 9 or 12 months. (2) MRI at 9 months (n =5) and 15 months (n=5) correlated with autopsy findings with a specificity of 100%. (3) At 9 and 15 months, all livers (10/10) displayed histological evidence of hepatocyte dysplasia. (4) At 9 months, dysplastic nodules appeared in 33% of sham and 100% of PH animals. (5) At 15 months one mouse (sham) developed HCC, no PH developed HCC. Six (3 sham, 3 PH) died at 6, 8, and 12 months without autopsy.

CONCLUSION: (1) MRI can be used to follow liver tumor development in mice. (2) The regenerative stimulus resulting from partial hepatectomy does not accelerate the formation of dysplastic nodules or HCC in the cyclin D1 transgenic mouse. These results indicate that the regenerative response following partial hepatectomy does not enhance a genetic predisposition to form HCC.
M1154 Tumor Antigen-Specific, CD8+ T-Cell Tolerance in a Murine Model of Spontaneous Hepatocellular Carcinoma
Marcela Jimenez, James Staveley-O’Carroll II, Kevin F. Staveley-O’Carroll, Penn State University College of Medicine, Hershey, PA

INTRODUCTION: Although hepatocellular carcinoma is the leading cause of cancer mortality internationally, the immune response to this virally-induced cancer has been largely unexplored. MTD2 transgenic mice express the transforming T antigen of SV40 virus under the control of the mouse major urinary protein promoter; this causes males to spontaneously develop T antigen-expressing hepatocellular carcinomas by 40 weeks of age. To examine the fate of tumor antigen-specific CD8+ T cells in MTD2 mice, we vaccinated mice with a recombinant vaccinia virus expressing T antigen and compared their response to vaccination with that of syngeneic mice that do not express the T antigen.

METHODS: MTD2 mice and syngeneic C57BL/6 mice that do not express tumor antigen were vaccinated with 10^7 plaque-forming units of T antigen-expressing recombinant vaccinia virus. Nine days later, T cells were isolated from spleens. Fluorescent staining with tetramer was used to quantitate CD8+ T cells specific for T antigen epitope IV. T-cell function was assessed through epitope IV-specific ≥-interferon production.

RESULTS: No CD8+ T cells specific for T antigen epitope IV were detected in MTD2 mice; similarly, no T antigen peptide IV-specific ≥-interferon production was demonstrated. By contrast, in control mice CD8+ T cells specific for T antigen epitope IV proliferated vigorously as a response to vaccination and matured into effector cells capable of peptide-specific ≥-interferon production (p<.05).

CONCLUSION: In MTD2 mice, tumor antigen-specific CD8+ T cells are not detected in response to vaccination, demonstrating tumor antigen-specific tolerance. This could be either central tolerance due to thymic expression of the tumor antigen or peripheral tolerance, as we have recently described in a system of T antigen-driven osteosarcoma. This model represents a powerful tool for the assessment of strategies to break this tolerance of hepatocellular carcinoma antigens.
Cyclooxygenase-2 (COX-2) inhibitors have been shown to inhibit hepatocellular carcinoma (HCC) cellular proliferation even in cell lines not expressing COX-2. COX-2 inhibitors may modulate nuclear factor kappa B (NF-κB) signaling. Parthenolide, a sesquiterpene lactone isolated from the feverfew herb, is a novel NF-κB inhibitor which may work through modulation of an inhibitor of NF-κB, IκBα (IκBα). We hypothesized that COX-2 inhibitors and parthenolide may have complementary effects in HCC through effects on IκBα. Three human HCC cell lines (HepG2, Hep3B, and PLC) and one liver adenocarcinoma cell line (SKHep) were treated with NS398 and parthenolide alone and in combination. Growth was assessed using an MTS assay and cell counts. Total- and phospho-IκBα expression were determined by immunoblot. MTS proliferation assays demonstrated concentration-dependent growth inhibition with parthenolide (0.1-100μM) and NS398 (10-100μM) in HepG2, Hep3B, PLC, and SKHep cell lines. Combination treatment with parthenolide (2.5-5μM) and NS398 (25-50μM) produced synergistic growth inhibition in HepG2, Hep3B and SKHep cells. Combination treatment in PLC cells was additive. These results were also confirmed with cell counts. In Hep3B cells, NS398 alone had no effect on expression of total IκBα. Total IκBα expression was, however, increased with parthenolide. Combination treatment with NS398 and parthenolide demonstrated no further increase in total IκBα expression than with parthenolide alone. Conversely, phospho-IκBα was decreased in both parthenolide and NS398 treated cells. Phosphorylation of IκBα targets this protein for degradation, leading to activation of NF-κB. Cells treated with the combination of these two agents yielded lower phospho-IκBα expression than with either agent alone. These effects were concentration dependent. In conclusion, parthenolide and NS398 effectively inhibit HCC cellular proliferation. Combination of these agents produces complementary inhibition of HCC cellular proliferation. Both compounds appear to modulate the inhibitor of NF-κB, IκBα, which may point to a common pathway, NF-κB, for their growth inhibitory effects. NF-κB pathway regulation in HCC may be a compelling chemotherapeutic strategy for in vivo studies.
Edaravone (MCI-186), a New Free Radical Scavenger, Reduces Oxidative Liver Damage Caused by Ischemia-Reperfusion.
Tomoya Abe, Michiaki Unno, Yu Katayose, Toshiki Rikiyama, Seiki Matsuno, Division of Gastroenterological Surgery, Tohoku University Graduate School of Medicine, Sendai, Japan

Ischemia-reperfusion injury causes oxidative stress, producing reactive oxygen species which is a serious problem linked to morbidity and mortality in liver surgery. We investigated the effects of edaravone (MCI-186, 3-methyl-1-phenyl-2-pyrazolin-5-one), a new free radical scavenger, on liver oxidative stress in vitro and in vivo. We employed a hypoxia-reoxygenation model of primary cultured hepatocytes using an AnaeroPack. Hepatocytes were exposed to 3h or 4h of hypoxia and then returned to oxygenation. We analyzed the time course changes of aspartate aminotransferase (AST), phosphatidylcholine hydroperoxide (PCOOH), and ATP content in hepatocytes of edaravone-treated groups or non-treated groups after reoxygenation. As shown in the table, edaravone attenuated significantly the elevation of the AST level of the medium and hepatocellular PCOOH, and preserved the hepatocellular ATP level. In vivo, male Sprague-Dawley rats were subjected to 45 minutes of hepatic ischemia and 120 minutes of reperfusion. The rats were intravenously injected with vehicle or edaravone (3 mg/kg or 10 mg/kg) before reperfusion and 1h after reperfusion. Serum AST levels and hepatic PCOOH and energy charge were significantly improved in both edaravone groups compared to control. In conclusion, edaravone has the ability to eliminate intra-hepatocellular superoxide species and attenuate oxidative liver damage in liver surgery.

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<td>4.00±0.00</td>
<td>4.00±0.00</td>
<td>6.63±1.52</td>
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<td>36.50±11.44</td>
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<td>4.00±0.00</td>
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<td>13.88±5.34</td>
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<tr>
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Pharmacological Effects of Recombinant Growth Hormone on Rat Liver Cirrhosis
Shuang Chen, Hongtao Wang, Jie Wang, Jishen Chen, Qingjia Ou, Sun Yat-Sen University, Guangzhou, China

BACKGROUND & AIMS: It is still controversial if recombinant human growth hormone (rhGH) plays an important role in metabolic modulation of cirrhotic livers. We aimed to explore the mechanisms and effects of rhGH on liver function and portal hypertension of rats with liver cirrhosis.

METHODS: Male S.D. rats with thioacetamide-induced liver cirrhosis were randomly assigned to receive normal saline (NS, 0.5ml) or rhGH(333ng/kg body weight) daily by subcutaneous injection for up to 7 days. After the respective treatments, changes of GH-binding capacity (RT), GHRmRNA, relative content of collagen (RCC), malon-dialdehyde (MDA), superoxide dismutase (SOD) in liver tissue, serum albumin and ALT and portal vein pressure (PVP) were examined.

RESULTS: RT (fmol/mg protein) of GHR was respectively 30.6+/-.4.17, 39.5+/-.7.29(P<0.05), GHRmRNA (iOD, pixel) was 23+/-.3, 42+/-.8(P<0.05), MDA (nmol/mg protein) was 18.7+/-.3.16, 12.0+/-.2.15(P<0.05), SOD(U/mg protein) was 824.4+/-.108.4, 1028.9+/-.75.54(P<0.05), RCC (%) was 22.3+/-.3.86, 14.7+/-.2.07(P<0.05) and serum albumin (g/L) was 29.1+/-.4.2, 36.6+/-.7.0(P<0.05), ALT (U/L) was 297+/-.29, 236+/-.33(P<0.05), and PVP(cmH2O) was 14.41+/-.1.95, 9.28+/-.1.54 (P<0.05).

CONCLUSIONS: The expression of GHR and its mRNA was up-regulated simultaneously by a pharmacological dose of rhGH and it was suggested that the up-regulation of GHR caused by its ligand GH might be achieved through stimulation of transcription and translation of GHR gene and thus be beneficial against acquired GH resistance of liver cirrhosis. It was also showed that the stimulation of albumin synthesis, improvement of liver functions, repression of fibrosis and reduction of portal vein pressure were induced by rhGH as a hepatotropic factor against free radical-induced hepatic injury revealed by the decrease of free radical product (MDA) and the increase of antioxidant activity (SOD) in liver tissue after rhGH treatment.
M1159 Magnetic Resonance Imaging Provides Accurate Volume Determination in Regenerating Mouse Liver

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To test liver supportive regimens in mouse models of liver regeneration a non-invasive repetitive volume determination would provide an attractive tool for real-time measurement of the therapeutic effect. The aim of the study presented was to develop a magnetic resonance (MR) based volumetric procedure to accurately determine the hepatic volume in the regenerating mouse liver.

METHODS: In Balb-C mice (20-25g, 6-8 weeks) under general intraperitoneal (i.p.) anaesthesia varying amounts of liver tissue were resected (i.e. 62%, n=8; 35%, n=3; 27%, n=2). MR imaging was performed 24 hours later in a 1.5 Tesla Unit (Sonata, Siemens), using a phased-array coil for small parts (dedicated wrist coil) under i.p. anaesthesia. T1 and T2 weighted images (T1: VIBE, TR 11,3, TR 5.51 msec, T2: TSE, 3D, TR 3000, TE 113 msec) in axial plane were acquired with continuous 1mm thick slices. Two groups of animals were compared: With (n=6) or without (n=7) intravenous administration of paramagnetic contrast agent (Gadovist®). Immediately after MR examination animals were killed, the livers resected and weighted. The liver was delineated in every single 1mm slice by two independent, blinded examiners and the hepatic volume calculated by the surface areas determined. Simple linear regression analysis was performed from the data obtained.

RESULTS: Correlation coefficients (CC) between liver volume measured and liver weight were 0.83 in T1 weighted images in the group without paramagnetic contrast injection. Injection of paramagnetic contrast agent allowed superior liver delineation in T2 weighted images (CC=0.96, p=0.002,) while discrimination in T1 pictures was difficult (CC=0.42). The standard error of the estimate of the mean was 6.8% resulting in an accurate liver volume determination.

CONCLUSIONS: The MR-based volumetric protocol developed allows accurate and precise liver volume measurement during regeneration in a mouse model. Repetitive individual volumetry decreases inter-individual differences between animals thereby reducing the numbers of animals needed per group to detect significant differences in hepatic regeneration. This is particularly important when using precious transgenic or KO mice in experimental liver regeneration research. Non-invasive liver volume determination during liver regeneration allows fast, animal-sparing, and cost-saving screening of the regenerative capacity of individual mouse strains.
Utilizing Tumor Hypoxia to Augment Viral Oncolytic Therapy in Pancreatic Adenocarcinoma

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INTRODUCTION: Hypoxia is a common tumor characteristic correlated with increased metastases and therapeutic resistance. Oncolytic viral therapy is a novel cancer treatment that seeks to exploit replication competent viruses to specifically infect, replicate within, and lyse tumor cells. G207 is an oncolytic herpes virus that has been genetically engineered to have reduced virulence for non-cancerous cells through deletion of ribonucleotide reductase (RR), a key enzyme in viral replication. We sought to determine if replacement of RR controlled by a hypoxia-responsive promoter (HRP) would allow more vigorous and specific viral killing of hypoxic pancreatic adenocarcinoma.

METHODS: Hypoxia-inducible factor 1 (HIF-1) is the transcriptional regulator which binds HRP to increase hypoxia-inducible gene expression. ELISA assessed HIF-1 levels of AsPC-1 human pancreatic adenocarcinoma cells incubated in hypoxia (1% O₂) or normoxia (21% O₂). HRP was constructed from the hypoxia-responsive region of the vascular endothelial growth factor promoter and cloned into a luciferase vector to assess function. HRP was then cloned upstream of the RR gene (HRP/RR). AsPC-1 cells were transfected with HRP/RR or no DNA, and then incubated in hypoxia or normoxia. Cells were infected with G207 and viral cytotoxicity assays were performed over 10 days. LacZ staining assessed viral infection.

RESULTS: HIF-1 levels increased 7-fold in hypoxic AsPC-1 cells compared to normoxic cells (p<0.01). HRP enhanced luciferase expression 53-fold in hypoxia (p<0.01) and 3-fold in normoxia (p<0.05), compared to controls. Hypoxic AsPC-1 cells transfected with HRP/RR had a 78% increase in tumor cell kill by day 10 compared to hypoxic AsPC-1 cells without transfection (p<0.0001). Hypoxic AsPC-1 cells transfected with HRP/RR had a 61% increase in viral cytotoxicity by day 10 compared to normoxic cells transfected with HRP/RR (p<0.001). Hypoxic AsPC-1 cells without HRP/RR transfection were resistant to G207 therapy alone, with less than 15% cell kill 10 days after infection. LacZ staining demonstrated greater viral infection in hypoxic cells transfected with HRP/RR compared to hypoxic cells without transfection.

CONCLUSIONS: Hypoxia-driven ribonucleotide reductase production significantly enhances G207 cytotoxicity in hypoxic cancer cells, which would otherwise be resistant to viral therapy alone. Hypoxia, a negative tumor characteristic, can thus be exploited to improve viral oncolytic therapy in pancreatic adenocarcinoma.

† Poster of Distinction
Prostaglandin $E_2$ (PGE$_2$) Enhances Pancreatic Cancer Invasiveness Through an ETS-1-Dependent Induction of MMP-2

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BACKGROUND: There is much evidence that COX-2 overexpression is correlated with greater invasive and metastatic potential in many cancers. However the mechanisms of COX-2-dependent cancer progression are still unclear. Given that 1) most tumors that overexpress COX-2 contain high levels of prostaglandin $E_2$ (PGE$_2$) and 2) matrix metalloproteinase-2 (MMP-2) overexpression is associated with greater invasive potential, we tested the hypothesis that PGE$_2$ enhances cancer invasion by inducing MMP-2 expression.

METHODS: We tested two pancreatic cancer cell lines, MIAPaCa-2 and Panc-1. MMP-2 activity and expression were determined using zymography and Western blotting, respectively. MMP-2 promoter activity was analyzed with luciferase assay. The binding activities of transcription factor Ets-1 and Oct-1 were analyzed using gel shift assay. We used rofecoxib as a COX-2-selective inhibitor. We specifically suppressed Ets-1 gene expression using RNA interference. Cellular invasive potential was determined using a Matrigel Boyden chamber invasion assay.

RESULTS: Exogenous PGE$_2$ (10$^6$M) increased MMP-2 activity and expression by 85% for MIAPaCa-2, and 122% for Panc-1 at 24 hours following administration. Administration of rofecoxib (5μM) decreased MMP-2 activity and expression by 48%, and 55%, respectively (p < 0.05). PGE$_2$ increased the binding of Ets-1, but not of Oct-1, at 4hrs, and increased MMP-2 promoter activity by 81%, and 124% (p<0.05) at 24 hours. Rofecoxib reduced the binding of Ets-1 by 72%, and 76% (p < 0.05) and MMP-2 promoter activity by 42%, and 46% (p < 0.05), respectively. siRNA mediated Ets-1 gene silencing reduced baseline MMP-2 expression by 63% and 66% (p < 0.05), respectively and abolished PGE$_2$-induced increase in MMP-2 activity and expression. Rofecoxib reduced cellular invasiveness by 64% and 65%, respectively, as did administration of MMP-2 neutralizing antibody alone.

CONCLUSION: These results suggest that COX-2-derived PGE$_2$ mediates pancreatic cancer cellular invasiveness through an Ets-1-dependent induction of MMP-2 expression and activity.
**M1162**  
**SSTR1 Gene Ablation Causes Islet Hyperplasia and Insulinopenic Glucose Intolerance**  
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Somatostatin receptor subtype 1 (SSTR1) has been found on all beta cells in human pancreas, however, its role in insulin secretion has yet to be elucidated. The purpose of this study was to examine the effect of SSTR1 gene ablation (SSTR1/-) on islet morphology, insulin secretion and glucose tolerance in mice.

**METHODS:** Insulin secretion and glucose tolerance were examined using intraperitoneal glucose tolerance tests (IPGTT). In vitro glucose-stimulated insulin secretion was studied using the isolated pancreas perfusion assay. Pancreata morphology was examined using H&E and immunohistologic analysis. Endocrine hormones levels, including insulin and somatostatin were determined. Expression levels of insulin receptor, PDX-1, PCNA and SSTR5 were also measured.

**RESULTS:** Compared with WT mice, SSTR1/- mice had significantly lower basal insulin levels and were found to be glucose intolerant at 3 months of age (n=42, p<0.05). Similar results were also found in 6 and 12 month old mice (n=45 and 28 respectively, p<0.05). Compared with WT controls, male SSTR1-/− mice had markedly reduced body weight at 3 and 12 months of age (17.6g vs 23.7g and 22.4g vs 31.0g respectively, p<0.05). Perfusion of isolated pancreata at 3 and 6 months of age demonstrated an increase of glucose stimulated insulin secretion in SSTR1/- mice compared with WT controls (n=6 p<0.05) H&E analysis indicated that SSTR1/- mice had islet hyperplasia with an increase of islet number (p<0.05), which coincided with a significant increase of both PDX-1 and proliferating cell nuclear antigen (PCNA) expression. Immunostaining also revealed an absence of SST staining and diminished SSTR5 expression in the SSTR1/- mouse islet.

**CONCLUSION:** SSTR1/- resulted in growth retardation and alterations in glucose regulation and insulin secretion in vivo with significant proliferation of the islets. Increased expression of PDX-1 and PCNA in the SSTR1/- mice was associated with the hyperplastic islet morphology. Intraislet SST regulatory pathways are disrupted, as shown by the decreased levels of SST and SSTR5 which correlated with the pattern of insulin secretion in the perfusion model. These data suggest that SSTR1 plays a pivotal role in regulation of islet cell proliferation and insulin secretion in the mouse pancreas.
Elucidation of the mechanism of cytokine production is central to understanding early events in the pathogenesis of acute pancreatitis. Increased cytokine production from activation of stress kinases (such as JNK) is implicated in disease pathogenesis. Using a unique and original surgical model, The Donor Rat Model, we previously showed that bile-pancreatic juice (BPJ) exclusion from gut exacerbates ligation-induced acute pancreatitis via neuro-hormonal pathways. We showed that duodenal replacement of BPJ, obtained fresh from a donor rat, ameliorates pancreatic morphologic changes and hypercholecystokininemia in duct ligation-induced acute pancreatitis. We hypothesize that BPJ exclusion from gut exacerbates acinar cell stress and induces cytokine production in ligation-induced acute pancreatitis. We studied activation of the stress kinase JNK and IL-1β production in pancreata of rats as follows: Diseased-controls had bile-pancreatic duct ligation. Diseased-treated rats had duodenal BPJ replacement fresh from a Donor Rat beginning immediately before duct ligation. Sham controls had ducts dissected only. Rats were killed after 1 or 3 hr (n=6/group). Pancreatic homogenates were analyzed as follows: a) Immunoblots using phospho-specific JNK antibody showed increased JNK activation after duct ligation that was inhibited by BPJ replacement. Actin immunoblots confirmed equal loading of lanes. b) Immune-complex kinase assay using JNK antibody, and cJun as substrate, showed a dramatic 7-to-15 fold increase in JNK activation after duct ligation compared to sham. JNK activation in pancreata of rats with duct ligation was substantially subdued by BPJ replacement (60-70% amelioration by densitometry). c) After duct ligation ELISA showed a 5-to-6 fold increase over sham in pancreatic IL-1β production that was significantly ameliorated by BPJ replacement (99.5% amelioration at 1h; 72% amelioration at 3h; ANOVA, p<0.05).

CONCLUSION: BPJ exclusion from gut increases JNK activation and IL-1β production in ligation-induced acute pancreatitis in rats. These findings support our hypothesis that BPJ exclusion from gut exacerbates acinar cell stress and pro-inflammatory cytokine production in this experimental corollary of gallstone-induced acute pancreatitis. Our Donor Rat Model provides a unique opportunity to study the effects of the enteral response to BPJ exclusion in disease pathogenesis. (Support: National Pancreas Foundation, NIDDK #1K08-DK062805-01)
M1164 Pancreatic Proteases Initiate Leukocyte-Endothelial Interaction In Vitro and in Experimental Acute Pancreatitis

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Neutrophil mediated tissue injury in acute pancreatitis includes a severe reduction of the functional microcirculation via interaction of adhesion molecules on leukocytes (MAC-1) and endothelium (ICAM-1).

AIM: The aims of this study were (1.) to link the effect of trypsin and elastase to the expression of these adhesion molecules (2.) to determine the effect using intravital microscopy (3.) to evaluate the benefit of protease inhibition on adhesion molecule up-regulation and subsequent functional capillary density (FCD).

METHODS: In vitro: Cultured endothelial cells (HUVEC) and leukocytes (PMN), isolated from human whole blood were stimulated with increasing doses of trypsin and elastase. In addition pre-treatment of PMN or HUVEC was performed with the protease inhibitors FUT and FOY. The expression of ICAM-1 or MAC-1 was evaluated by flow cytometry. In vivo: Trypsin and elastase were infused to rats or experimental pancreatitis was induced. Microcirculatory disturbances were evaluated by intravital microscopy (IVM) evaluating sticking (adhesion >30s) of PMN to the endothelium and FCD in controls, acute pancreatitis or acute pancreatitis and treatment with FUT.

RESULTS: MAC-1 and ICAM-1 expression require co-stimulation with serum. The maximal increase of MAC-1 and ICAM-1 expression was found at concentrations of trypsin or elastase physiologic for acute pancreatitis. The inhibitors FUT or FOY significantly reduced protease induced expression of MAC-1 and ICAM-1. Infusion of trypsin or elastase significantly increased adhesion of PMN (570.6 ±16.5/mm2) compared to controls (80.3† ±9.8/mm2). IVM revealed that FCD in acute pancreatitis was significantly reduced (267.1†±2.95/mm2 vs. 91.29±12.81/mm2) and treatment with FUT protected pancreatic perfusion (134.6±4.6/mm2; p<0.05 vs. untreated pancreatitis).

CONCLUSION: Both trypsin and elastase up-regulate the expression of adhesion molecules on leukocytes and endothelial cells in the presence of serum. This effect can be abrogated by protease inhibitors, with FUT being more powerful than FOY. Infusion of trypsin and elastase alone also significantly increase PMN adhesion in vivo. FUT prevented the severe diminution of FCD characteristic of experimental acute pancreatitis, confirming the deleterious path of free circulating trypsin and elastase, adhesion molecule expression and microcirculatory failure in acute pancreatitis.
RNAi-Mediated NF-κB RelA Suppression Sensitizes Pancreatic Cancer Cells to TNF-α Induced Apoptosis

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Resistance of cancer cells to death receptor-mediated apoptosis pivots in part on NF-κB signaling and its consequential transcription of anti-apoptotic genes. The RelA/p50 NF-κB heterodimer is constitutively activated in most pancreatic cancer cells. To determine its role in NF-κB dependent chemoresistance, we examined whether genetic silencing of RelA could enhance TNF-α induced cytotoxicity and apoptosis.

METHODS: We developed self-inactivating retroviral-based RNAi gene transfer vectors (SINeG) for the genetic silencing of NF-κB/RelA (SINeG-RelAi). These were first transfected into 293T cells, and next transduced with 97% efficiency into human Panc-1 and Mia PaCa-2 pancreatic cancer cell lines. After documenting TNF-α receptor expression by FACS analysis, susceptibility of both control and RelA-silenced cells was measured by MTT cytotoxicity assay. Cleaved fragments of pro-apoptotic caspases, as well as NF-κB RelA subunits, were analyzed by Western Blot.

RESULTS: Upon initial transfection into 293T cells, RelAi suppressed both RelA expression and RelA-mediated transactivation of a NF-κB promoter-driven reporter gene we included. Both cell lines clearly expressed TNF-α receptors but were strongly resistant to ligand-induced killing. Following RelAi transduction, however, RelA expression decreased in both, while TNF-α induced cytotoxicity increased significantly compared to non-transduced and control-vector counterparts. Increased TNF-α induced apoptosis was seen in RelAi transduced cells consistent with observed activations of caspases 8 and 9.

CONCLUSIONS: Death receptor expression alone fails to confer ligand-susceptibility when NF-κB/RelA activation can occur in these pancreatic cancer cells. New strategies designed to defeat both upstream and downstream effectors of NF-κB may have clinical relevance in chemoresistant pancreatic cancers.
INTRODUCTION: Notch1 signaling has been shown to be integral to the development of cervical, lung, colon, renal, breast, endometrial, and squamous cell cancer. During pancreatic cell development, activation of the Notch1 signaling pathway leads to differentiation away from an endocrine phenotype towards an epithelial one. This pathway is activated by Notch1 binding to CBF-1, leading to downregulation of hASH1, an endocrine transcription factor. These factors are normally absent in adult tissues. We hypothesize that Notch1 is present and functionally active in pancreatic cancer cells.

METHODS: To determine if Notch1 pathway activation is present in pancreatic cancer cells, we utilized 3 pancreatic adenocarcinoma cell lines (Mia PaCa2, PANC1, BXPC-3) and 3 control lines (pancreatic carcinoid BON, pulmonary carcinoid H727, fibroblast PA317). Notch1 pathway activation was assessed by 3 methods: Western analysis for Notch1 protein, transient transfection with Notch1-target CBF-1-luciferase vectors to measure Notch1 functional activity, and Western analysis for hASH1, a downstream target of Notch1.

RESULTS: By Western, Notch1 was found in 3/3 pancreatic adenocarcinoma cell lines but not in any of the control cell lines. Transfection of the pancreatic adenocarcinoma cell lines with the CBF-1-luciferase vectors resulted in increased luciferase activity of 150%, 170%, and 160% above that of the control baseline in the BXPC-3, Panc1, and Mia PaCa2 cell lines respectively. As predicted, this high Notch1 activity in the pancreatic cancer cells lines results in suppression of the downstream target hASH1 as shown by the absence of hASH1 protein in the pancreatic cancer cell lines and high levels of hASH1 in the carcinoid cell lines.

CONCLUSIONS: Notch1 is present and its signaling pathway appears to be activated in human pancreatic cancer cells. These findings suggest that Notch1 may also play a role in the development of pancreatic cancer, the 4th leading cause of adult cancer deaths.
M1167 Dexamethasone Mediates Protection Against Acute Pancreatitis via Upregulation of Pancreatitis-Associated Protein

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BACKGROUND AND AIM: Pancreas-associated protein (PAP) gene expression is significantly upregulated in the pancreas during acute pancreatitis. We have recently shown that antisense knockdown of PAP gene expression exacerbates the severity of acute pancreatitis, suggesting that PAP mediates significant protection against pancreatitis. In the rat, three isoforms of PAP, PAPI, II, III, are known, all of which are upregulated during acute pancreatitis. No data exist regarding the effect of dexamethasone on the relationship of PAPI, II, and III expression. In the present work, the influence of dexamethasone on PAP I, II and III gene expression using both in vivo and in vitro models of acute pancreatitis were examined and correlated with severity of pancreatitis. We hypothesize that dexamethasone mediates protection against acute pancreatitis via PAP gene induction.

METHODS: In vivo, pancreatitis was induced in rats by retrograde injection of 4% taurocholate into the pancreatic duct. Animals were pretreated with daily intraperitoneal injection of dexamethasone (2mg/kg) or saline for 4 days prior to pancreatitis induction (n = 8 per group). Pancreata and serum were harvested after 24h. PAP I, II and III levels were measured, in vivo and in vitro, by real-time reverse transcription-polymerase chain reaction (RT-PCR). Severity of pancreatitis was based on serum amylase, pancreatic wet weight, and histopathological score. In vitro, IL-6 stimulated pancreas acinar AR-42J cells were cultured with increasing concentrations of dexamethasone and assayed for PAP expression.

RESULTS: In vivo, pancreas mRNA levels of PAP I, II or III increased by 2.6-fold, 1.9-fold, and 1.3-fold respectively after dexamethasone treatment, compared with control animals treated with saline. Serum amylase levels and edema were significantly lower in the dexamethasone group compared with the saline group (P < .05 for both). Histopathologic evaluation revealed less inflammation and necrosis in pancreata obtained from dexamethasone treated animal when compared with controls. In vitro, dexamethasone and IL-6 induced a marked stimulation of PAP I, II and III gene transcription in AR42J cells at 24 h. (P < .05 for all comparisons).

CONCLUSIONS: Administration of dexamethasone significantly decreased the severity of pancreatitis. The protective mechanism of dexamethasone may be via upregulating PAP gene expression during injury.
We have reported that SSTR5 gene ablation in ß-cells in mice resulted in glucose intolerance and hyperglycemia at 3 months of age. These mice also had decreased levels of intraislet somatostatin (SST). SST is a neuropeptide found in many organs throughout the body, whereas its dominant receptor in islet cells, SSTR5, has also been found in T cells and B cells in many tissues. However, the impact of SST-SSTR5 interactions during immune activation has not been explored. The objective of this study was to determine autoimmune activation in ßSSTR5-/- mouse. Results of glucose tolerance tests (IPGTTs) at 6 and 12 months of age were compared with that at 3, months of age. Islet morphology were determined via H&E staining and immunohistochemistry analysis using antibodies against insulin receptor, PDX-1, PCNA, and cMyc. SST production was determined in the islet, peripancreatic lymph nodes (pLN) and thymus using immunostaining. The expression of CD8 and proliferation rate of the thymocytes was determined using FACS analysis and mononuclear cell infiltration into the islets were determined via H&E stainings.

IPGTT results at 1 year of age showed male bSSTR5-/- mice had a worse glucose tolerance compared to females with consistently elevated fasting levels of serum insulin and exaggerated late response of insulin secretion. H&E staining of islet and pLN at 3 months of age demonstrated an increase of mononuclear cell infiltration into the islet which was consistent with germinal center formation in pLNs. An increase of SST production in thymus and pLNs was associated with absence of intraislet SST levels. At 12 months of age, fatty cell replacement in the germinal center was found and correlated with a significant increase in F4/80 positive antigen presenting cells infiltration and destructive morphology of the islet. Flow cytometric analysis demonstrated a significant increase of CD8 expression on matured T cells.

In conclusion, gene ablation of SSTR5 in ß-cells resulted in an autoimmune activation in vivo with increase of CD8 expression in thymocytes, germinal center formation in pLN and destruction of islets. These results suggest SST-SSTR5 also regulates systemic immune active T cells in vivo. This animal model thus is a useful tool in studying the mechanisms of type 1 diabetes.
Suramin Inhibits Not Only Tumor Growth and Metastasis but Also Angiogenesis in Experimental Human Pancreatic Cancer

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A previous study demonstrated that Suramin, a naphthyl urea derivative, reduces the proliferation of human pancreatic cancer cells in vitro. This was accompanied by reduced secretion of the proangiogenic mediator VEGF (vascular endothelial growth factor).

AIM: The aim of the present study was to systematically evaluate the effect of Suramin on tumor growth, metastasis and angiogenesis in vivo in a clinically relevant orthotopic nude mouse model.

METHODS: 5 million cells from 3 human pancreatic cancer cell lines MIAPaCa-2 (MP, undifferentiated), AsPC-1 (AP, poorly differentiated) and Capan 1 (C1, well differentiated) were subcutaneously injected in nude mice. 1 cubic mm fragments of the resulting sc. donor tumors were orthotopically implanted in the pancreas of 84 other mice. These animals were randomized into 7 groups: MP-Con (control), MP-S10 (Suramin 10 mg/kg), MP-S60 (Suramin 60 mg/kg), AP-Con, AP-S60, C1-Con, and C1-S60. Treatment was started after tumor implantation (weekly by intraperitoneal injection) for a maximum of 14 weeks. The volume of the primary tumor (TU-Vol) and local infiltration as well as systemic metastasis (dissemination score: D-Score) were determined at autopsy. Microvascular density (MVD) as a parameter of neoangiogenesis in the primary tumor was analyzed in CD31-stained tumor sections. To assess the antiangiogenic effect of Suramin, other tumor-bearing animals (n = 8 per group) were treated with a specific angiogenesis inhibitor (TNP-470) and MVD was determined in the primary tumor. Results: table.

CONCLUSIONS: 1) Suramin has no influence on tumor growth, metastasis and angiogenesis in MIAPaCa-2 tumors at low concentrations (10 mg/kg). 2) Suramin reduces primary tumor growth and dissemination in all 3 pancreatic carcinomas at high concentrations (60 mg/kg). 3) Beside a direct inhibition of tumor cell proliferation, a reduction of microvascular density plays a role. 4) The antiangiogenic effect of the unspecific inhibitor Suramin is less pronounced than that of the specific inhibitor TNP-470.

Results:

<table>
<thead>
<tr>
<th>Group</th>
<th>TU-Vol (cmm)</th>
<th>D-Score (pts.)</th>
<th>MVD (0.74 qmm)</th>
<th>Group</th>
<th>MVD (0.74 qmm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP-Con</td>
<td>3387 ± 690</td>
<td>10.9 ± 2.0</td>
<td>69.8 ± 6.4</td>
<td>MP-Con</td>
<td>74.8 ± 7.8</td>
</tr>
<tr>
<td>MP-S10</td>
<td>3382 ± 513</td>
<td>7.2 ± 1.4</td>
<td>60.0 ± 7.8</td>
<td>MP-TNP</td>
<td>24.8 ± 3.7*</td>
</tr>
<tr>
<td>MP-S60</td>
<td>889 ± 269*</td>
<td>2.3 ± 0.9*</td>
<td>49.3 ± 4.3*</td>
<td>AP-Con</td>
<td>75.3 ± 5.0</td>
</tr>
<tr>
<td>AP-S80</td>
<td>2052 ± 190</td>
<td>17.1 ± 2.7</td>
<td>81.3 ± 3.6</td>
<td>AP-Con</td>
<td>75.3 ± 5.0</td>
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<tr>
<td>AP-S60</td>
<td>1222 ± 158*</td>
<td>11.3 ± 2.8</td>
<td>55.5 ± 6.7*</td>
<td>AP-TNP</td>
<td>26.0 ± 3.4*</td>
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<tr>
<td>C1-Con</td>
<td>1103 ± 157</td>
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<tr>
<td>C1-S60</td>
<td>561 ± 129*</td>
<td>3.8 ± 0.9</td>
<td>50.5 ± 6.2*</td>
<td>C1-TNP</td>
<td>26.9 ± 2.5*</td>
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</tbody>
</table>

(* = p<0.05 vs. Control)
INTRODUCTION: Major histocompatibility complex class 1 chain-related A (MICA) is a stress-inducible glycoprotein that can be expressed as a transmembrane protein or can be shed as a soluble protein through cleavage by matrix metalloproteinases. MICA functions as a ligand binding to NKG2D, an activation receptor expressed in natural killer cells, α-β T cells and CD8 T cells. Recent studies have demonstrated that MICA expression is increased in a variety of epithelial malignancies including melanomas, colon, breast, and gastric cancers. In the present study, we investigated whether serum MICA levels are increased in patients with pancreatic cancer; and whether serum MICA levels fluctuate following the administration of gemcitabine.

METHODS: Twenty-six blood samples from healthy volunteers and 28 samples from pancreatic cancer patients were analyzed for MICA levels by using an ELISA kit. Twelve serum samples from patients treated with gemcitabine were analyzed for serum MICA over a three-week period. Serum MICA levels were correlated with demographic and clinicopathologic parameters. Unpaired student t test and Mann-Whitney U test were used to test the significant differences.

RESULTS: Serum MICA levels (mean value: 1797 pg/ml) in the samples of pancreatic cancer patients were significantly higher than that in the control group (mean value: 211 pg/ml). Serum MICA levels (mean value: 222 pg/ml) in pancreatic cancer patients with lower tumor stages (T1-3) (N=5) were significantly lower than that in T4 stage (mean value: 2193 pg/ml) (N=23). Serum MICA levels (mean value: 471 pg/ml) in patients with resected tumors (N=13) were also significantly lower than in unresectable patients (mean value: 2946 pg/ml) (N=15). Patients (N=9) with high serum MICA levels (>1000 pg/ml) survived slightly longer (mean survival time: 11.9 months) than those (N=19) with low serum MICA level (<1000 pg/ml) (mean survival time: 9.8 months) (p>0.05). Serum MICA levels increased in 2 of 12 patients receiving gemcitabine with high serum levels in the first week and did not change in the remaining 10 patients.

CONCLUSION: Serum MICA levels are significantly increased in the serum of pancreatic cancer patients. Elevated serum MICA levels correlated with advanced tumor stage. Surgical removal of the tumor mass may decrease serum MICA levels. These observations suggest that soluble serum MICA in patients with high levels may be a useful marker to monitor tumor therapy and recurrence.
BACKGROUND & AIMS: Acute pancreatitis induces changes in the expression of a number of genes in the pancreas. Pancreas-associated protein (PAP) is an endogenous pancreatic protein minimally expressed in normal pancreas, but strongly induced in acute pancreatitis. In the rat, three isoforms of PAP, PAP I, II, III, are known, all of which are upregulated during acute pancreatitis. However, the relationship among all isoforms of PAP in pancreatitis is poorly understood. We examined PAP expression using both in vivo and in vitro models of acute pancreatitis.

METHODS: In vivo: Pancreatitis was induced in rats by retrograde injection of 4% taurocholate into the pancreatic duct (n=8). Pancreata were harvested after 24 hours. In vitro: Serum from rats with acute pancreatitis (SAP) was cultured with AR42J pancreatic acinar cells. Levels of mRNA expression of PAP I, PAP II and PAP III, in vivo and in vitro, were measured by real time reverse transcription-polymerase chain reaction (RT-PCR).

RESULTS: In vivo, all three isoforms of PAP were expressed at very low levels in the healthy pancreas. Pancreatic PAP mRNA levels dramatically increased 24 hours after pancreatitis induction. PAP II was the most abundant isoform, followed by PAP I, and then PAP III. When compared with normal rats, pancreatic PAP mRNA expression in pancreatic rats increased; 67-, 30-, and 46-fold for PAP I, II, and III, respectively (P < .05 for all comparisons). When compared with normal PAP III (the lowest expressed), pancreatic mRNA expression of PAP I, II, and III was upregulated 289 folds, 456 folds, and 46 folds, respectively, 24 hours after pancreatitis induction. In vitro, addition of SAP to cultured AR42J cells significantly increased PAP mRNA expression at 24 h (1.48, 3.66, and 16.19 fold for PAP I, II, and III, respectively. (P < .05).

CONCLUSIONS: PAP is an intra-pancreatic genetic product, which is significantly upregulated in the pancreas in vivo and in vitro following pancreatitis. Our results point out the potential role of PAP as an endogenous marker of acute pancreatitis.
M1172 Reduction of the Bacterial Translocation in Experimental Acute Pancreatitis Using Pentoxifylline
Andre S. Matheus, Cintia Y. Morioka, Ana Maria M. Coelho, Sandra N. Sampietre, Renato S. Godoy, Lourenilson J. Souza, Jose Jukemura, Jose Eduardo M. Cunha, Marcel C. C. Machado, University of São Paulo, São Paulo, Brazil

BACKGROUND: Pancreatic necrosis develops in 10-20% of all cases of acute pancreatitis, and in 30-50% of these patients, pancreatic infection occurs. Sepsis and septic complications are the major cause of deaths in this disease. Bacterial translocation (BT) has been implicated in the development of multiple organ failure and is one of the major causes of pancreatic infection in patients with severe acute pancreatitis. Pentoxifylline (PTX) is a derivative of methyl xanthine and has a several beneficial effects in sepsis. The purpose of this study was to determinate if the BT can be reduced in severe AP after pentoxifylline administration.

METHODS: An experimental model of severe AP by injection of 0.5ml of 2.5% sodium taurocholate into the pancreatic duct was utilized. Thirty male wistar rats were divided in 3 groups: Sham (surgical procedure without AP induction), Pancreatitis (AP Induction), and Pentoxifylline (AP induction plus intraperitoneally administration of 25 mg/kg pentoxifylline). We analyzed the occurrence of BT to the pancreas, mesenteric lymph nodes, liver, blood, and peritoneal cavity, BT was evaluated with bacterial cultures performed 24 h after the AP induction. The numbers of organisms were expressed in colony forming units (CFU) per gram.

RESULTS: Bacterial translocation was not observed in the Sham group. We observed bacterial translocation and a higher bacterial accumulation in the pancreas, mesenteric lymph nodes, blood, and peritoneal cavity in Pancreatitis group (p < 0.05). The Pentoxifylline group had a statistically significant reduction of BT in all analyzed tissues (p <0.05).

CONCLUSIONS: Severe AP increased BT. BT in AP is a complex process and involves many variables as a hematogenic, lymphatic, and transperitoneal bacterial dissemination. The administration of pentoxifylline reduces bacterial translocation in this acute pancreatitis experimental model. These findings provide a possible improvement in treatment of acute pancreatitis. Supported by Grant: FAPESP 02/03773-6
M1173  

Staple Line Reinforcement with an Absorbable Polymer Membrane in Laparoscopic Distal Pancreatectomy and Partial Splenectomy Diminishes Pancreatic Duct Leak and Hemorrhage

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BACKGROUND: Outcome after pancreatectomies is influenced by perioperative complications like bleeding, pancreatic leaks, and fistula formation. Bleeding may occur in 0.5 to 36% of patients and leakage rates and pancreatic fistulas are reported in 16 - 23% of cases.

AIM: Can a new technique of staple line reinforcement with an absorbable polymer membrane tested in an animal model reduce perioperative bleeding and leaks after pancreatic resections? MATERIALS & METHODS: In this prospective survival animal study, 20 female 40kg pigs underwent laparoscopic distal pancreatectomy and partial splenectomy. Staple line reinforcement technique with an absorbable polymer membrane, which buttresses the resection site, was used in 10 consecutive animals (group A). In a control group of 10 animals (group B) a conventional stapler without buttressing was used to transect the pancreas and spleen. Necropsy was performed after 6 weeks: pancreas and spleen were sent for histopathology.

RESULTS: Operation time did not differ between both groups (group A: 118 minutes, group B 116 minutes). Perioperative blood loss after distal pancreatectomy (5 +/- 1 ml, vs 75 +/- 5 ml)(p<0.04) and partial splenectomy (45 +/- 7 ml, vs 215 +/- 12 ml) was significantly higher in group B (p<0.01). There was 1 death in group B (10%) due to extensive postoperative bleeding at the staple line region of the spleen. Morbidity was encountered in 1 animal (10%, group B), a retrogastric fluid collection with elevated amylases levels. At necropsy results showed minimal adhesions in both groups. In group B, reinforcement material was absorbed completely and no local inflammatory reactions or fibrosis in duodenum, stomach or colon were encountered. Histopathology results showed after 6 weeks, tears and fibrosis to vessels and pancreatic duct only in group B. In 2 cases of group B, a methylene blue test demonstrated a leak of the pancreatic duct at the transection site. No leaks or damages were encountered in group A.

CONCLUSION: These results show that the absorbable polymer membrane reduces staple line hemorrhage and pancreatic duct leakages. This study supports future application of absorbable buttress material for pancreatic transection and partial splenectomy in humans. This may result in a decrease of perioperative complications like bleeding and pancreatic leaks.
The Peroxisome Proliferator-Activated Receptor-Gamma-Specific Agonist, Troglitazone, Decreases the Severity of Acute Pancreatitis In Vivo

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Peroxisome proliferator-activated receptors (PPAR) are ligand inducible transcription factors that have potent anti-inflammatory properties by down regulation of proinflammatory genes, including the NFkappaB pathway, via cross coupling. We have previously shown that PPAR-gamma is expressed in pancreatic acinar cells in vivo. We hypothesized that either pretreatment or treatment with the PPAR-gamma-specific agonist, troglitazone, would decrease the severity of acute pancreatitis. Acute pancreatitis was induced in male C3H mice by cerulein hyperstimulation. Severity of acute pancreatitis was determined by serum amylase and blinded histologic scoring. Pancreatic tissue-specific expression of TNF-alpha and IL-6 were determined using RT-PCR. Pretreatment of mice prior to induction of acute pancreatitis with troglitazone reduced peak serum amylase (6-hour post cerulein injections) by 32% with a single i.p. injection (p<0.001) and by 47% with four pretreatment injections (p<0.001) compared to untreated cerulein pancreatitis control. Pretreatment also reduced tissue acinar cell vacuolization by 25%, edema by 22%, leukocyte infiltration by 53%, and acinar cell necrosis by 55% compared to the pancreatitis control (all p<0.05). Treatment of mice with three hourly i.p. injections of troglitazone beginning three hours after the induction of acute pancreatitis reduced peak amylase activity by 34% (p=0.002). Peak pancreatic tissue expression of the pro-inflammatory cytokines, TNF-alpha and IL-6, occurred 3 hours after the last cerulein injection (17.9 fold and 22.3 fold increases relative to controls, respectively, p<0.01). Pretreatment with troglitazone reduced peak TNF-alpha expression by 98% (p=0.001) and IL-6 by 81% (p=0.01). In summary, pretreatment with the specific PPAR-gamma agonist, troglitazone decreases the severity of acute pancreatitis in vivo by inhibiting expression of proinflammatory cytokines within the pancreas. Furthermore, troglitazone treatment of established acute pancreatitis decreases the severity of acute pancreatitis.
**BACKGROUND:** Gene therapy is a novel approach for pancreatic cancer (PC) treatment, and the insertion in the host genome of suicide genes seems somewhat promising. Among them cytosine deaminase (CD) is able to convert the 5-fluorocytosine (5-FC) into 5-fluorouracile (5-FU). Aim: to ascertain in vitro whether CD or CD joint to 5-phosphoribosiltransferase (5PRT) gene transfer to a series of pancreatic cancer cell lines allows their killing by 5-FC treatment.

**METHODS:** Three pancreatic cancer cell lines (CAPAN-1, MIA PaCa 2, PANC-1) were chemically transfected with two plasmid vectors containing both a neo-selectable marker gene and a mammalian constitutive promoter (RSV) and CD (pRSV-CD) or CD+5PRT (pRSV-PRT) from Saccaromyces cerevisiae. Stable transfectected cell lines were selected by G418 treatment. Each parental, pRSV-CD and pRSV-PRT transfected cell lines were treated with 5-FC at the dosages of 0, 0.1, 0.5, 1, 5 and 10 mM for 1, 3, 6, 8, 10, 13 and 15 days.

**RESULTS:** pRSV-PRT/PANC-1 cell line growth was significantly inhibited at 0.5 mM 5-FC just after 6 treatment days (F=18.3; p<0.001). The vector pRSV-CD conferred to PANC-1 cells a lesser sensitivity to 5-FC, which inhibited cell growth only after 8 treatment days at dosage of 5 mM (F=33.4; p<0.001). MIA PaCa 2 cells transfected with both vectors become sensitive to 5-FC treatment at 5 mM after 13 days (F=5.2; p<0.05). 5-FC at any dosage and for any time of treatment was ineffective on transduced CAPAN-1 cell growth.

**CONCLUSIONS:** the suicide gene CD seems useful to confer 5-FC sensitivity to some pancreatic cancer cell lines. The co-transfection of CD and 5PRT enhances 5-FC sensitivity, possibly because the enzyme encoded by 5PRT may in part counteract the 5-FU degradation observable in some pancreatic cancer cells.
Hypertonic Solution (NaCl 7.5%) Reduces Mortality in Experimental Pancreatitis.
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BACKGROUND: In spite of advances in the understanding of the pathophysiologic mechanisms of acute pancreatitis (AP), the therapeutic interventions have not significantly changed clinical evolution and mortality. Previous studies have demonstrated that treatment of hemorrhagic shock with hypertonic saline solutions significantly reduces mortality through an improvement in the hemodynamic conditions and possible by an antinflammatory effect. Therefore hypertonic solutions could be effective in AP. The aim of this study was to evaluate the effects of hypertonic solution treatment on rats with acute pancreatitis.

METHODS: We used 31 male Wistar rats weighing 230-270g. The left femoral artery and vein were canulated 24 hours prior to AP induction by the injection of 2.5% sodium taurocholate into the pancreatic duct. The animals were divided in two groups: NS(n=17)-received 34ml/Kg of normal saline solution (NaCl 0.9%) i.v.; and HS(n=14)-received 4ml/Kg of hypertonic saline solution (NaCl 7.5%) i.v. The solutions were administrated 1 hour after AP induction in both groups. Arterial blood pressure and cardiac rate were recorded before (baseline), 24 and 48 hours after AP. In the mortality study the animals were followed for 4 days.

RESULTS: Hypertonic solution prevents hypotension at 48 hours when compared to saline treatment as shown in table. A significant reduction on mortality was observed in HS (0/14) compared to NS (6/17-35%) (p < 0.013).

CONCLUSION: Administration of HS attenuates the hemodynamic insults in experimental acute pancreatitis reducing the mortality rate. However many others known effects of hypertonic saline solution administration need to be evaluated in this model. Hypertonic solutions may represent a novel therapeutic strategic in the treatment of acute pancreatitis.

Mean arterial blood pressure (MAP) and cardiac rate (CR)

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<tr>
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<tr>
<td></td>
<td>NS</td>
<td>HS</td>
<td>NS</td>
<td>HS</td>
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<tr>
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<td>96±3</td>
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<tr>
<td>48 hours after AP</td>
<td>91±3*</td>
<td>102±2**</td>
<td>377±10</td>
<td>360±28</td>
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* p<0.05 compared to baseline; ** p<0.05 compared to saline group (mean±sd).

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Acidosis Stimulation of Intestinal Arginine Absorption Is Mediated by Protein Kinase C and Mitogen-Activated Protein Kinases

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BACKGROUND: Acidosis stimulation of intestinal absorption of L-arginine, the exclusive precursor for nitric oxide (NO) biosynthesis and an essential nutrient for intestinal integrity, is critical in maintaining intestinal homeostasis in catabolic states. However, the regulation mechanism of extracellular pH on arginine absorption is poorly understood. The purpose of this in vitro study was to investigate the intracellular signaling pathways involved in the regulation of intestinal arginine absorption in acidosis.

METHODS: Human intestinal epithelial Caco-2 cells were incubated in growth media of various pHs (pH 6.6 to pH 7.4). 3H-arginine transport activity, arginine transporter MCAT1 mRNA levels, cellular protein kinase C (PKC) and mitogen-activated protein kinases (MAPK) levels were measured in the absence and presence of inhibitors of PKC (Chelerythrine Cl, 0-6.6 µM), MAPK MEK1 (PD98059, 0-50 µM) and p38MAPK (SB203580, 0-50 µM). Data were analyzed by ANOVA.

RESULTS: Desired extracellular pH (pH 6.6 to pH 7.4) was achieved 6 hours after medium changes and pH was stable throughout the experiment period. Chronic acidosis (pH 6.6, 48 hours) significantly increased the cellular phospho-PKC-pan and phospho-PKC-δ levels but not the phospho-PKC-αβ, PKC-θ, or PKC-µ levels. Specific PKC inhibitor chelerythrine Cl (CHEL) abolished the acidosis-induced arginine absorption (control: 0.23 ± 0.033, acidosis: 1.05 ± 0.15, CHEL: 0.32 ± 0.16, acidosis + CHEL: 0.41 ± 0.07, nmole/mg/min) and MCAT1 mRNA levels. Cellular active form phospho-p44/p42MAPK levels were significantly increased by acidosis. MAPK MEK 1 inhibitor PD98059 abolished the acidosis-induced arginine absorption (control: 0.258 ± 0.015, acidosis: 0.93 ± 0.045, PD98059: 0.253 ± 0.054, acidosis + PD98059: 0.28 ± 0.18, nmole/mg/min) and MCAT1 levels. Phospho-p38MAPK levels were significantly reduced by acidosis and the acidosis-induced arginine absorption was further augmented by p38MAPK inhibitor SB203580 (control: 0.256 ± 0.015, acidosis: 0.93 ± 0.045, SB203580: 0.28 ± 0.066, acidosis + SB203580: 2.07 ± 0.19, nmole/mg/min).

CONCLUSIONS: Protein kinase C and mitogen-activated protein kinases are key intracellular regulators in the signal transduction cascade involved in this acidosis stimulation of arginine absorption in Caco-2 cells. An increased availability of arginine to cells during acidosis provides substrate for NO biosynthesis and may help in maintaining cellular integrity.

† Poster of Distinction
Intestinal adaptation is a dynamic process that occurs in response to a massive loss of the small intestine, and results in an increase in mucosal mass and substrate absorption. Although these functional and structural changes are well documented, the mechanisms that start and stop the adaptive process remain unknown. To try to better understand these mechanisms that control the adaptive process, we used microarray technology to analyze changes in gene expression in a rat model of intestinal adaptation.

METHODS: Adult male Sprague-Dawley rats underwent either a massive (70%) small bowel resection (MSBR) with end-to-end jejunooileal anastomosis or a sham operation with small bowel transection and reanastomosis. After 21 days, ileal mucosa was harvested and RNA was extracted. The DNA and protein content of the mucosa were measured and compared to confirm that adaptation had occurred. Individual RNA samples (n=5 per group) were labeled and hybridized to 10 separate RAE 230A rat GeneChips (Affymetrix, Inc.). The signal values were calculated and scaled to a median value of 500 using MAS5.0 (Affymetrix, Inc.). The two groups were compared using a t-test with the multiple testing correction of Benjamini & Hochberg set to a false discovery rate of 10% (10% FDR) in GeneSpring (Silicon Genetics). Significantly different probe sets were analyzed for over-represented physiologic pathways using Expression Analysis Systematic Explorer (EASE).

RESULTS: The MSBR group had significantly greater protein and DNA content (p<0.05) than the sham group. Of the 15,866 probe sets on the RAE 230A GeneChip, 5,437 contained no present calls and were excluded. Analysis of the remaining 10,420 probe sets with the t-test identified 1721 probe sets with significantly altered expression (10 % FDR), and EASE identified several over-represented pathways (EASE score < 0.01 after Bonferroni correction). One of these pathways, proteasome degradation, has been implicated in the regulation of cell proliferation. Further analysis of this pathway revealed that 13 probe sets were significantly up-regulated in the intestinal adaptation group compared to the sham group.

CONCLUSION: The proteasome is an enzyme complex that plays a pivotal role in the regulation of the cell cycle. Our preliminary microarray data identified 13 proteasome subunits that were significantly up-regulated during intestinal adaptation. Thus, proteasomes may play a critical role in regulating the proliferation of intestinal mucosa during intestinal adaptation.
Nitric oxide (NO) has an important role in the intestinal response to oxidative stress. Acute administration of L-arginine (ARG), the precursor to NO, attenuates mesenteric ischemia/reperfusion (IR). In addition, diabetic animals have impaired NO synthase activity and exhibit increased sensitivity to mesenteric IR.

**AIM:** To determine the effects of enteral ARG supplementation on diabetic tolerance to mesenteric IR. Methods: Male Sprague-Dawley rats were randomly assigned to 2 groups and given an intraperitoneal injection of vehicle (VEH) or streptozotocin (65mg/kg ip) to induce diabetes (DIAB) and studied 8 weeks later. Blood sugar and weights were monitored. ARG was introduced in the drinking water to achieve a dose of 0.67-1 gm/day for the last 2 weeks. Rats were subjected to laparotomy and clamping of the superior mesenteric artery for 10 (IR10) or 30 (IR30) minutes followed by 1 hour of reperfusion. Sections of small intestine were Giemsa-stained to assess neutrophil (PMN) infiltration and mucosal injury was blindly graded using a scale of 0 (none) to 5 (severe).

**RESULTS:** Diabetic rats exhibited significant weight loss (304±16 vs 464±14 gm) and blood glucose elevation (549±33 vs 110±10 mg%) which was unaltered by ARG (259±14 gm; 431±65 mg %). In VEH rats, IR10 had no effect on intestinal morphology, but significantly elevated PMN infiltration. In DIAB rats, IR10 induced both mucosal injury and inflammation (table). ARG blunted PMN influx in response to IR10 in VEH, but not in DIAB rats. IR30 induced significant mucosal injury and PMN influx in VEH. None of the DIAB survived IR30 (5/5). In VEH rats, ARG attenuated mucosal injury induced by IR30 despite enhanced PMN influx. ARG improved IR30 survival in DIAB to 66% (4/6) yet did not alter the development of significant mucosal injury or PMN infiltration.

**CONCLUSIONS:** In VEH treated rats, ARG supplementation improves susceptibility to mesenteric IR. More importantly, ARG normalizes a diabetic’s response to mesenteric IR to resemble that observed in the VEH group. ARG supplementation may improve morbidity and mortality in diabetics undergoing procedures involving oxidative stress.

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<tr>
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<th>SHAM</th>
<th>VEH IR10</th>
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<th>DIAB IR10</th>
<th>DIAB IR30</th>
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<th>ARG IR30</th>
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<tr>
<td>MI</td>
<td>0.5±0.1</td>
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<td>25±5</td>
<td>12±2</td>
<td>55±3</td>
<td>25±2</td>
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Values = means±SE; *p<0.05,**p<0.01 vs SHAM; 6p<0.05 vs VEH IR30
INTRODUCTION: Sublethal ischemia activates an orchestrated cellular response that leads to either cell survival or subsequent apoptosis. These divergent endpoints are determined in part by the interplay between three families of mitogen-activated protein kinases: extracellular signal regulated kinases (ERK), stress associated protein kinase (SAPK), and p38 MAPK. The basis for the counterbalancing actions of these distinct pathways is incompletely understood. Recent data suggest that the pro-apoptotic p38 MAPK can interact directly with the pro-survival ERK1/2 pathway.

AIM: To determine whether p38 MAPK affects ERK1/2 activation during transient ischemic stress in intestinal epithelia.

METHODS: Polarized human intestinal T84 cells were grown on permeable supports. Reversible ATP depletion was induced by 60 min incubation in substrate-free buffer containing metabolic inhibitors 1µM oligomycin-A and 10mM 2-deoxyglucose, followed by return to glucose-containing buffer. Interaction between p38 MAPK and ERK 2 was determined by co-immunoprecipitation. ERK 1/2 activity was determined by western blot of whole cell lysates using phospho-specific antibodies. SB203580 (10µM, 30 min pretreatment) was used as a specific inhibitor of p38 MAPK activity.

RESULTS: After 60 min ATP depletion, levels of phosphorylated ERK1/2 were profoundly reduced without a change in total ERK1/2; during subsequent ATP repletion, ERK1/2 phosphorylation increased dramatically above baseline to a peak at 20-30 min. Over the 60 minutes of ATP depletion, there was a marked increase in interaction between p38 MAPK and ERK 2, evidenced by a 2.1 fold +/-0.24 increase in co-immunoprecipitation. Over the first 20 min of ATP repletion, this association transiently decreased. Inhibition of p38 MAPK using SB203580 markedly increased basal levels of phosphorylation of ERK1/2 and markedly abrogated the decline in ERK 1/2 phosphorylation during repletion leading to a sustained ERK 1/2 activation.

CONCLUSIONS: p38 MAPK directly interacts with ERK2 during ATP depletion and repletion, particularly at points where levels of ERK 1/2 phosphorylation are reduced. Phosphorylation of ERK1/2 can be markedly enhanced by pharmacological inhibition of p38 MAPK, particularly at times of enhanced p38 MAPK-ERK2 interaction. These data suggest that p38 MAPK negatively regulates ERK1/2 in intestinal epithelia, an interaction that may contribute to the counterbalancing effects of these signaling cascades during ischemic stress.
M1181  **Sepsis Induces Inflammation of Lung Parenchyma Via Gut-Derived Mediators in Rats**  
Joerg Glatzle, Mario H. Mueller, Wendelin Wilhelm, Guido Seitz, Markus Kueper, Helen E. Raybould, Martin E. Kreis, Tilman T. Zittel, University Hospital Tuebingen, Dept. General Surgery, Tuebingen, Germany, University Hospital Tuebingen, Dept. of General Surgery, Tuebingen, Germany, Dept. Vet Med. University of California at Davis, Davis, CA

**BACKGROUND:** Severe pulmonary dysfunction often follows abdominal sepsis. Via the thoracic duct, the lung is the first organ exposed to gut derived mediators released into the mesenteric lymph. Recently, we have shown that the release of inflammatory cytokines like TNF alpha into the mesenteric lymph is about 100 fold increased in a rat model of sepsis (Glatzle J, Gastroenterology A-797, 2003). Specific Aim: To investigate whether gut derived mediators in mesenteric lymph induce histological changes, inflammatory response, and apoptosis in the lung.

**METHODS:** Mesenteric lymph was obtained from awake lymph fistula donor rats during intestinal perfusion with a dextrose/electrolyte solution. Lymph from donor rats was collected for 12 h following treatment with saline (control, n=6) or lipopolysaccharide (LPS, 5 mg/kg ip, sepsis model, n=6), centrifuged and reinfused into the jugular vein of healthy recipient rats (n=6 each group) for 1 h corresponding to the lymph flow of donor rats (3ml/h). Thereafter, the lung tissue was harvested, stained with hematoxylin-eosin and analyzed for 1) perpendicular parenchyma thickness of the alveolar wall (distance of oxygen diffusion), 2) myelo-peroxidase (MPO) positive immune cells (marker for inflammatory response) 3) TUNEL positive cells (apoptosis marker) using the Leica Quantimed system (analysis of n=30 optical sections per rat).

**RESULTS:** Sepsis lymph infusion into healthy recipient rats induced a significant increase in alveolar wall thickness (NaCl: 9.4±0.2µm, control lymph: 11.8±0.45µm, sepsis lymph: 15.1±0.44µm*, *p<0.001 vs NaCl / control lymph). The number of MPO or TUNEL positive cells was also significantly increased in the lung parenchyma of healthy recipient rats after infusion of sepsis lymph (MPO positive cells per optical section, NaCl: 6±1, control lymph 11±0.5, sepsis lymph 15±0.4*, TUNEL positive cells per optical section, NaCl: 3±1, control lymph 3±1, sepsis lymph 12±2*, * p<0.01 vs NaCl or control lymph).

**CONCLUSIONS:** Sepsis induces the release of gut derived inflammatory mediators which alter lung parenchyma. The changes observed might contribute to pulmonary dysfunction during sepsis by increasing the distance for oxygen transport and by disturbing alveolar wall function by inflammation and apoptosis. Gut derived mediators drained via the mesenteric lymph directly into the lung might play an important role in sepsis induced pulmonary failure. Supported by DFG GL 311, 3/1.
M1182  Nitrergic Mechanisms Mediating Inhibitory Control of Longitudinal Smooth Muscle Contraction in Mouse Small Intestine
Tatsuya Ueno, Judith A. Duenes, Abdalla Zarroug, Michael G. Sarr, Mayo Clinic, Rochester, MN

BACKGROUND: Studies using genetic manipulation to study mechanisms of control of physiologic function often necessitate mouse models. However, baseline functional analysis of murine small intestinal motility has not been well defined.

AIM: To define nitrergic mechanisms regulating mouse small intestinal longitudinal muscle. Hypothesis: Endogenous nitric oxide (NO) is an important non-adrenergic, non-cholinergic (NANC) neuroregulatory substance mediating inhibition of contractile activity in murine small bowel.

METHODS: Full thickness muscle strips of jejunum and ileum from C57BL/6 mice (≥6) were cut in direction of longitudinal muscle, suspended in temperature-controlled, oxygenated organ bath, and connected to force transducers. After stabilization of contractile activity, numerous conditions of electrical field stimulation (EFS), varying frequency, voltage, and pulse width designed to release different spectrums of endogenous neurotransmitters from enteric nerves were applied under adrenergic and cholinergic blockade (propranolol, phentolamine, atropine). In separate experiments, effects of exogenous NO solution and NO donors (sodium nitroprusside, S-nitroso-N-acetylpenicillamine) were studied in the absence or presence of nitric oxide synthase (NOS) inhibitors, and 1H-[1,2,4]-oxadiazoalo-[4,3-a]-quinoxalin-1-one (ODQ), a downstream inhibitor of guanylyl cyclase, the mediator of NO effect in smooth muscle.

RESULTS: With voltage and pulse width fixed, EFS-induced frequency-dependent inhibition of contractile activity in both jejunum and ileum (p<0.05). With frequency and pulse width fixed, as voltage increased, different effects occurred in jejunum and ileum. In jejunum, inhibition turned to excitation as voltage increased from 5 to 100 V; in contrast, ileum demonstrated a voltage-dependent increasing inhibition (p<0.05 each). EFS-induced inhibition was blocked by NOS inhibitors and ODQ. Although NO solution had no effect, NO donors inhibited spontaneous contractile activity which was abolished (as would be expected) by ODQ.

SUMMARY: NO is an endogenous NANC inhibitory neurotransmitter in murine longitudinal small bowel muscle; other NANC neurotransmitters also exist, as uncovered by altering EFS parameters.

INTRODUCTION: Two weeks after massive enterectomy in the rabbit, glutamine (Gln) transport is downregulated in residual small bowel due to a decrease in System B⁰ activity. Epidermal growth factor (EGF) plus growth hormone (GH) reverse this trend by increasing systems A and B⁰⁺ activities. Further, colonic oligopeptide transporter 1 (PEPT1) message increases in humans after small bowel resection. We hypothesized that ATB⁰/ASCT2 message expression correlates with system B⁰ activity in small intestine and exhibits a similar pattern to that of PEPT1 in the colon following enterectomy.

METHODS: New Zealand White rabbits (n=25) underwent either 70% jejunoileal resection or no resection (n=5). Resected rabbits received immediate parenteral EGF (n=5), GH (n=5), both (n=5), or neither (n=5) for two weeks. Mucosa from residual jejunum, ileum and whole tissue from ascending colon was subjected to Northern blot analysis for ATB⁰ and normalized to 18S. Statistical significance was analyzed by ANOVA or Student t test.

RESULTS: ATB⁰ message in all tissues was reduced by approximately 50% with resection (p<0.05). EGF and GH treatment each increased ATB⁰ message abundance 2- and 3.5-fold, respectively, in residual ileum.

CONCLUSION: ATB⁰ message levels paralleled changes seen with resection in system B⁰ activity and protein. However, while ATB⁰ activity and protein did not change with two weeks TF treatment, the message abundance increased in the ileum. This may indicate a later increase in protein and activity levels of the transporter. In contrast to the increase in PEPT1 message in humans, ATB⁰ message expression in colon is decreased after massive enterectomy in the rabbit. Supported by NIH grant R01-DK47989-09.
M1184  Protein Kinase C Mediates Transforming Growth Factor-Beta Stimulation of Intestinal Glutamine Absorption
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BACKGROUND: Transforming growth factor-beta (TGF-β) regulates intestinal epithelial cell proliferation and wound repair. Previously, we have shown that TGF-β stimulates intestinal absorption of amino acid glutamine, an essential nutrient for epithelia cell integrity, but intracellular signaling pathways involved in this stimulation have not been well studied. The purpose of this in vitro study was to investigate the intracellular signaling pathways involved in the regulation of TGF-β on glutamine absorption in cultured intestinal cells.

METHODS: Membrane [³H]-L-glutamine transport assays and western blot analysis of cellular protein kinase C levels were performed in cultured intestinal Caco-2 cells treated with TGF-β (0 - 50 ng/ml), phosphoinositol-3-kinase (PI3-kinase) inhibitors (LY294002, 0 - 10 µM, and wortmannin, 0 - 50 µM) and protein kinase C inhibitor (Chelerythrine Chloride, 0 - 6.6 µM). Data were analyzed by ANOVA.

RESULTS: Continuous TGF-β exposed (50 ng/ml, 12 hours) resulted in a 58% increase in glutamine transport activity (control: 0.75 ± 0.17 vs. TGF-β: 1.19 ± 0.20, nmole/mg protein/minute, p<0.01) and this stimulation was individually blocked by PI3-kinase inhibitors LY294002 or wortmannin. TGF-β incubation increased the levels of active form of cellular protein kinase C (PKC), phospho-PKC-pan, and the TGF-β-induced glutamine transport activity was abolished by protein kinase C inhibitor chelerythrine Cl (CHEL) (control: 0.77 ± 0.05, TGF-β: 1.35 ± 0.16, CHEL: 0.96 ± 0.06, TGF-β+CHEL: 0.87 ± 0.20, nmole/mg protein/minute, p <0.05).

CONCLUSION: TGF-β stimulates intestinal glutamine absorption in cultured human intestinal epithelial cells via a mechanism that involves activation of intracellular protein kinase C cascade.
Carcinoid tumors are predominantly found in the gastrointestinal (GI) tract and are characterized by hypersecretion of various substances, including cytokines and growth factors, leading to functional tumor disease. A few cytokines have been shown to act as autocrine factors, modulating carcinoid tumor growth and hormone production, through induction of various signaling pathways such as the raf-1/MEK/ERK1/2 pathway. However, cytokine secretion in GI carcinoid tumors has not been completely characterized, and the signaling pathways involved in cytokine expression are not well understood. Therefore, to further determine the secreted cytokine profile of GI carcinoid tumors and to define the role of the raf-1/MEK/ERK1/2 signaling pathway on cytokine expression, we utilized a human GI carcinoid tumor cell line BON.

BON cells were stably transduced with an estrogen-inducible raf-1 vector, creating BON-raf cells. BON and BON-raf cells were treated with estradiol for 48 hours. Cellular supernatants were harvested and analyzed using a human cytokine antibody array (Panomics 3.0). At baseline, BON carcinoid cells were found to express 28 distinct cytokines including expression of cytokines previously described such as vascular endothelial growth factor. Interestingly, 12 of these cytokines had not been previously shown to be expressed in carcinoid tumors, including matrix metalloproteinase 3, Interleukin (IL)-8, and IL-12. Activation of the raf-1/MEK/ERK1/2 pathway led to differential secretion of 6 cytokines. Specifically, IL-7, Fas ligand, leptin, and rantes were reduced with raf-1-induction whereas IL-17 was upregulated.

In conclusion, high yield cytokine screening of GI carcinoid tumor cells led to identification of 12 novel secreted cytokines. Moreover, the raf-1/MEK/ERK1/2 pathway appears to play a role in the regulation of cytokine expression. These data will allow delineation of the signaling pathways that may control tumor growth and hormone expression by GI carcinoid cells. Furthermore, these findings may suggest candidate factors and pathways for targeting by molecular signaling therapies for the treatment of patients with GI carcinoid tumors.
**STOMACH: BASIC**

**M1186 Optimization of Infectivity Enhanced Conditionally Replicative Adenoviral Vectors for the Gene Therapy of Gastric Cancer**

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**PURPOSE:** Gastric cancer is the fourth most common malignancy in the world. In 2000, 870,000 patients were diagnosed with gastric cancer; 650,000 patients died from it. Despite the progress of treatment for this disease, there is no effective therapy for advanced gastric cancer. Thus, the development of a novel therapy for advanced gastric cancer is needed. Adenoviral vectors have been applied for gene therapy of various cancers because of their high transduction efficiency. However, the infectivity of gastrointestinal cancer cells is poor due to the limited expression of the primary receptor (Coxsackie-adenovirus receptor, CAR). In addition, few tumor specific promoters (TSPs) have been characterized for this type of cancer. To overcome these problems, we constructed several TSP-driven conditionally replicating adenoviruses (CRAds) and two fiber modifications. RGD modification has an RGD-4C motif incorporated in the HI-loop of the adenoviral fiber/knob region and 5/3 modification has replacement of the adenovirus type 5 knob with that of adenovirus type 3. In this study, we proposed TSP-driven CRAds with fiber modification for gene therapy of gastric cancer.

**METHODS:** We analyzed 7 TSPs by using promoter driven luciferase (Luc) expression vectors and evaluated cytocidal effect of TSP-driven CRAds by MTS assay. CAR expression in gastric cancer cells was analyzed by FACS analysis. We assessed infectivity enhancement by Luc expressing vector with and without fiber modification in gastric cancer cell lines. We analyzed cytocidal effect of CRAds with fiber modification by crystal violet staining.

**RESULTS:** Luc activity of Midkine (MK) Cyclooxygenase-2 (Cox-2) M, and Cox-2 L promoter promoters showed high levels. Cox2CRAd showed a significant cytocidal effect in four gastric cancer cell lines while MKCRAd showed cell killing in three cell lines. Six out of 7 gastric cancer cell lines showed low CAR expression. The luciferase activity of Luc expressing vector with 5/3 fiber modification was dramatically higher than that without fiber modification in 7 out of 7 gastric cancer cell lines while enhancement by RGD modification was minimal. 5/3CRAdCox2F showed the strongest cytocidal effect in 6 out of 7 gastric cancer cell lines. RGDCRAdCox2F conferred minimal enhancement in cytocidal effect comparable to unmodified CRAdCox2F in all gastric cancer cells.

**CONCLUSION:** Cox2 CRAd with 5/3 fiber modification represents a promising agent for the gene therapy of gastric cancer.
M1187 Comparative Evaluation of Gastrointestinal Transit and Immune Response Between Laparoscopic and Open Gastrectomy in a Porcine Model
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BACKGROUND: Several reports have shown advantages of laparoscopic procedures compared to open procedures, especially faster gastrointestinal (GI) transit and lesser surgical stress.

AIM: The aim of this study was to assess the differences of gastrointestinal transit and immune response between laparoscopic and open gastrectomy using a porcine model.

METHODS: Fourteen 30-40 kg pigs were assigned to undergo subtotal gastric resection either by laparoscopic (lap group) or laparotomy (open group). GI transit times were assessed using 24 x-ray visible markers and measured until half of the markers were evacuated (stomach-to-anus transit). To assess immune response, we used delayed-type hypersensitivity (DTH) skin antigen (Bordetella Bronchiseptica-Erysipelothrix Rhusiopathiae-Pasteurella Multocida Bacterin-Toxoid) testing. DTH skin testing was evaluated at 48 hours after the primary injection for induration. GI transit times and DTH skin testing were assessed pre- (1 week prior to surgery) and postoperatively. At 2 weeks after the procedures, all the animals underwent necropsy and evaluated for adhesion formation using the scoring scale described by LeBlanc et al. in 2003.

RESULTS: Operation time was significantly longer in lap group (157±32 min versus 109±31 min, p=0.01). The GI transit times in the postoperative phase were significantly prolonged compared to the preoperative measured times (57.4±6.0 hours, p<0.0001 lap group and open group). In the postoperative phase, the open group was significantly prolonged compared to the lap group, 135.6±12.6 hours and 111.5±10.7 hours, respectively (p=0.008). Immune response measured by DTH skin testing was better preserved in the lap group than in the open group. The average diameter of induration was significantly greater in the lap group (14.0±2.5 mm versus 8.7±2.1 mm, p=0.002). Adhesion formation was significantly less in the lap group (4.8±1.1 versus 6.7±1.4, p=0.03).

CONCLUSIONS: Laparoscopic gastrectomy resulted in faster bowel recovery and stronger DTH response as compared with an open procedure. These findings may have clinical implications when choosing the laparoscopic approach for gastrectomy.
M1188 Postoperative Gastropyloroduodenal Motility and Gastric Emptying After Pylorus-Preserving Gastrectomy in Dogs

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BACKGROUND: Pylorus preserving gastrectomy (PPG) has been thought to be a beneficial reconstruction procedure to reduce the incidence of postgastrectomy syndrome, and to ameliorate quality of life of the gastrectomized patients. In the early postoperative period after PPG, however, dyspeptic symptoms such as bloating or early satiety are commonly observed.

AIM: To investigate the altered motility and gastric emptying after PPG. (Method) Fasting and fed motility were studied in four PPG dogs and four control dogs instrumented with 4 strain gauges on the stomach, pylorus, duodenum and jejunum. In fasted state, gastrointestinal (GI) motility was studied at postoperative day (POD) 3, 7, 14 and 28. In fed state, GI motility was studied POD 10 and 25. Gastric emptying was also assessed by paracetamol (15mg/kg) method.

RESULTS: In fasted state, the contractions were rarely seen, and interdigestive motor contractions (IMCs) did not appear in the gastroduodenum at early postoperative period. In contrast, the incidence of pyloric contractions had greatly increased. The incidence of the isolated pyloric contractions (IPCs) and the rate of IPCs against total pyloric contractions were significantly increased in PPG dogs (P<0.05). (Fig.) IMCs began to appear in the gastroduodenum at one week in control dogs and at two weeks in PPG dogs, respectively. During IMCs, when the antrum was contracted, the pylorus was synchronously relaxed in control dogs, though the pylorus was not relaxed with the contraction of the remnant stomach in PPG dogs. In fed state, there was no remarkable motility change between control and PPG dogs. Gastricemptying was delayed in PPG dogs in fasted state (POD 3 and 28) and fed state (POD 10 and 25) (P<0.05).

CONCLUSIONS: These motility changes in PPG dogs may, in part, explain the occurrence of dyspeptic symptoms in the PPG patients at early postoperative period.
INTRODUCTION AND PURPOSE: Helicobacter pylori (Hp) infection has been implicated in the carcinogenesis of gastric cancer. In the present study, the presence of Hp infection was determined in 95 Brazilian patients with gastric cancer by conventional pathological examination of the resected stomach. Patients and Methods: 91 consecutive patients with diagnosis of adenocarcinoma of the stomach treated by surgical resection were reviewed. Pathological examination was repeated to determine the presence of Hp infection, intestinal metaplasia and confirmation of the histologic type.

RESULTS: Associated intestinal metaplasia (IM) was observed in 81 tumors (89%). In the group of patients with intestinal type and diffuse GC, intestinal metaplasia was present 88% and 90% of tumors respectively. In the group of patients with early and advanced gastric cancer, the presence of intestinal metaplasia was observed in 94% and 87% of tumors. Overall, the presence of Hp infection was observed in 46 tumors (50.5%). Similar frequencies of Hp infection were observed in male (45%) and female (55%) patients. In the group of patients with early and advanced gastric cancer, Hp infection had no statistical significance (p>0.05). Hp infection had no statistical significance as well between the group of patients with intestinal metaplasia (49%) and patients with tumors without metaplasia (50%). In the subgroup of patients with intestinal type gastric cancer and with metaplasia the presence of Hp was present in 27 tumors (50%). Curiously, proximal tumours had more frequently Hp infection (56%) when compared to distal tumours (37%).

CONCLUSIONS: The prevalence of Hp infection in our study was surprisingly low, 50.5%. The infection rate had no significant association with histologic type, gender or stage. These results may indicate that Hp infection may contribute to the process of gastric carcinogenesis but is probably not essential. Also, the participation of Hp infection in gastric cancer development may be distinct of intestinal metaplasia progression. Finally, it is possible that the association between GC and Hp infections are merely coincidental.
**BACKGROUND:** The incidence of CBDE fell from 47,000/year to 1980s to 8,000/year now. ERCP has replaced most (43,000 ERCPs/year) CBDEs yet appreciable numbers of CBDEs are still performed. From 1979 to 2001 the annual CBDE complication rate increased from 3.4% to 17.4%. We tested the hypothesis that the increased morbidity resulted from adverse patient selection.

**METHODS:** Thirty comorbidity variables identified by Elixhauser (Med Care 36:8-27, 1998 and www.ahrq.gov/data/hcup/comorbid.htm), age and gender were used in a logistic regression model to determine their contribution to biliary tract disease mortality. There were 51,771 biliary tract disease admissions in the 1993-2001 National Hospital Discharge Survey database. Regression demonstrated 18 factors that significantly influenced mortality. These were assessed in patients undergoing CBDE and ERCP to determine if either group had disproportionately greater numbers of high-risk patients.

**RESULTS:** CBDE complication rates increased while CBDE experience decreased (Figure). The presence of comorbidity factors (Renal failure, coagulopathy, alcoholism, CHF, hepatic failure etc.) was equally distributed between the CBDE and ERCP groups. The mean age for patients undergoing CBDE was 60.2+/-.0.1 y/o v. 59.3+/-.0.3 y/o. Similar proportions of males underwent either procedure: 41% for CBD and 37% for ERCP.

**CONCLUSIONS:** 1) Application of newer technologies has greatly improved patient care. Even though CBDE complication rates have increased with time, the overall morbidity and mortality for patients with common bile duct stones has decreased. 2) Higher CBDE complication rates do not result from greater disease burden for those undergoing CBDE relative to ERCP. 3) The temporal decline in CBDE with a concomitant increase in complication rates most likely reflects declining surgical experience. 3) Despite the reduction in CBDE attributable to ERCP, 8,000 CBDEs are performed annually. Surgeons require the skills to perform these operations yet too few may exist to provide adequate training. Alternative training techniques such as simulators etc. are required to ensure surgeons acquire adequate skills for performing CBDE.

† Poster of Distinction
Prospective Evaluation of Endoscopic Ultrasonography in the Diagnosis of Biliary Microlithiasis in Patients with Normal Conventional Ultrasonography

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BACKGROUND: Microlithiasis has been proposed as a cause of both occult gallbladder disease and of idiopathic pancreatitis. This study investigated the role of endoscopic ultrasound (EUS) in the diagnosis of microlithiasis in patients with biliary type abdominal pain and normal transabdominal ultrasonography (TUS).

METHODS: This is a prospective study of patients with biliary type upper abdominal pain in whom TUS and upper GI endoscopy were normal. All patients underwent EUS for evaluation of microlithiasis. Serum AST, serum ALT, and serum alkaline phosphatase were also measured. Patients with gallbladder microlithiasis or gallbladder wall thickness on EUS underwent laparoscopic cholecystectomy. Preoperative ERCP and biliary sphincterotomy (ES) was also performed in patients with dilated common bile duct (CBD), sludge in CBD, elevated AlkP. Also, patients who declined cholecystectomy underwent biliary sphincterotomy alone.

RESULTS: Eighty patients (34 males and 46 females) were recruited. Mean age of the patients was 48.2 years. On EUS 76 (95%) patients had gallbladder sludge or small stones, 65 (81.2%) had gallbladder wall thickness, and 48 (60%) had CBD sludge. CBD size was dilated (more than 6 mm) in only three patient. 69 Patients underwent laparoscopic cholecystectomy with or without sphincterotomy. 11 other patients underwent ES alone. 24 patients were followed post-operatively, with an average of 9.2 months (range, 3 and 13 months). Thirteen patients (54.2%) underwent combined cholecystectomy and endoscopic biliary sphincterotomy. 8 patients (33.3%) underwent laparoscopic cholecystectomy alone, and 3 (12.5%) underwent biliary sphincterotomy alone. In all patients who underwent cholecystectomy, gallbladder histology revealed chronic cholecystitis. Cholestrolosis was also found in 3 patients. After treatment 23 patients (95.8%) became symptom free. Beside of the study population, 4 patients with atypical upper abdominal discomfort and biliary sludge on EUS also underwent cholecystectomy. Of them, only 1 patient (25%) became symptom free on the 10.5 months of follow-up.

CONCLUSION: EUS is an important diagnostic tool in patients with unexplained biliary colic. Cholecystectomy with or without biliary sphincterotomy are effective treatment modalities in these settings. Precise history taking before the procedure is very important; since patients with atypical upper abdominal pain do not respond well to cholecystectomy.
M1837 18F-FDG PET in the Evaluation of Patients with Gallbladder Cancer
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BACKGROUND: 18F-flourodeoxyglucose (18F-FDG) positron emission tomography (PET) is a functional imaging modality in widespread clinical use but its role in patients with gallbladder cancer (GBCA) is undefined.

METHODS: Between March 2001 and October 2003, 41 patients with a presumed GBCA underwent PET. Histologic confirmation of the diagnosis was used as the reference standard to which PET results were compared. Patient follow-up information and serial imaging was also reviewed for progression of lesions detected by PET.

RESULTS: Of the 41 study patients, 31 underwent PET for preoperative staging and 10 for evaluation of recurrent cancer. Of those who underwent preoperative PET (n=31), the primary diagnostic sensitivity was 89% and specificity was 50%. Eight patients who underwent preoperative PET had not been previously submitted to cholecystectomy. Twenty three (74%) patients had undergone recent cholecystectomy with a mean time to definitive surgical resection of 80 days. The sensitivity for detecting tumor was 85% and specificity of 50%. Preoperative PET identified advanced disease in 18 patients (58%) and changed clinical management in 7 (23%) patients. Exploration was carried out in 18/31 patients with complete resection in 11 patients. Of the 11 patients who were resected, two patients had no residual cancer in the final specimen corresponding to negative preoperative PET studies. Overall, PET could have changed clinical management in another 7 (23%) patients. Preoperative PET correctly identified distant metastasis 13 (42%), and nodal metastasis in 12 (39%). PET diagnosed or confirmed recurrent cancer in 9 of 10 patients.

CONCLUSION: The majority of GBCA are 18F-FDG avid tumors. In preoperative staging, the sensitivity of 18F-FDG PET for detecting the primary was high. In patients with potentially resectable tumors based on conventional imaging, PET identified occult metastatic disease and changed management in a large proportion of patients. PET was also helpful in confirming recurrent cancer after resection.
BACKGROUND: Common bile duct stones (CBDS) are especially prevalent in the elderly population. Although the standard of care is endoscopic retrograde cholangiography with sphincterotomy (ERC-S), the clinician’s decision to refer a patient for cholecystectomy after ERC-S depends on several factors. Among these are the potential for future biliary symptoms and complications, increased morbidity and mortality related to cholecystectomy as well as health care expenditures associated with immediate referral for cholecystectomy versus conservative approach. Therefore, using decision analysis, we explored the economic implications of cholecystectomy versus conservative approach following ERC-S in patients presenting with CBDS.

MATERIALS & METHODS: A decision tree was constructed with DATA 3.5 (Williamstown, MA) to estimate the costs and outcomes associated with two treatment strategies following ERC-S for CBDS in patients 60-65 years of age: 1) elective cholecystectomy, and 2) conservative approach. Transition probabilities were derived from the medical literature and cost reflected Medicare reimbursement rates at our institution. The time horizon of the analysis was 2 years.

RESULTS: Elective cholecystectomy was associated with total costs of $8,497 with 93.8% of the cohort alive, whereas the conservative approach was associated with total costs of $2,731 with 93.9% of the cohort alive. The results were sensitive to the probability of recurrent biliary symptoms in patients treated conservatively. Compared to elective cholecystectomy, conservative treatment became more expensive and less effective at a probability of recurrent symptoms greater than 30% and 60%, respectively.

CONCLUSIONS: In patients aged 60 and older, a conservative approach after ERC-S for CBDS is a reasonable treatment option but the economic attractiveness of this strategy is highly dependent on the probability of recurrent symptoms.
**M1839 Access Related Complications After Laparoscopic Cholecystectomy: The Risk is in the Closed Technique**

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**OBJECTIVE:** Laparoscopic access may cause complications, but their precise frequency and outcome remain largely unknown. Our goal was to determine the incidence of access-related complications and to investigate the frequency of those directly related to the technique used for the creation of the pneumoperitoneum after lap cholecystectomy.

**PATIENTS AND METHODS:** Patients (n = 686) who consecutively underwent lap cholecystectomy over a 5-year period were studied. Data had been prospectively collected and entered into a computerized database. Patients were followed at the out-patient clinic for at least 15 months. The following complications were investigated: intestinal and vascular injury, incisional hernia, wound infection and wall hematoma. Statistical analysis was on intention-to-treat basis. Quantitative data were compared using Student's t test. Statistical significance was defined as p<0.05.

**RESULTS:** There were 491 women and 195 men with a mean age of 56 ± 15 yrs. History of previous abdominal surgery was present in 190 patients (27.7%). Laparoscopic access was gained with the open technique with a Hasson's trocar in 547 cases (79.7%), whereas the Veress needle was used in the remaining 139 cases (28.4%). The overall number of abdominal wall punctures was 2319, including Veress needle (n=139), trocars (n=2052), cholangiography catheters (n =117) and Tru-cut for liver biopsy (n =11). The average number of punctures per patient was 3.38. Forty four patients (6.4%) developed access-related complications: wall hematoma (n = 24; 3.5%), wound infection (n = 11; 1.6%), incisional hernia ( n = 7; 1%) and vascular injury (n=2; 0.3%). The absolute risk per puncture was 0.019. Forty one patients (6%) developed complications directly related with the technique used for the creation of the pneumoperitoneum. The complication rate was higher in those in whom the access to the abdominal cavity was gained with the closed technique using the Veress needle, (n= 13; 9.4%), compared to those in whom the open technique was used (n =28, 5.1%; p<0.01). The number of patients needed to treat with the open technique to prevent one complication with the closed technique (NNT) is 4.

**CONCLUSION:** The access to the abdominal cavity for laparoscopic cholecystectomy can be associated with severe complications. The majority of the access-related complications occur at the umbilical insertion site. Even though closed laparoscopy is safe, open laparoscopy is associated with lower morbidity rates.
**The Usefulness of Bovine Pericardium in the Repair of Full Thickness Bile Duct Defects: An Experimental Study in Pigs**

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Previous used prosthetic materials for the repair of common bile duct defects generally failed. Bovine pericardium is a substitute for different tissues in humans, mainly arterial blood vessels and cardiac valves, used with encouraging results.

**AIM:** The aim of this study was to evaluate bovine pericardium in the repair of full thickness common bile duct (CBD) defects in a porcine model.

**MATERIALS AND METHODS:** 14 animals were divided into 2 groups according to the type of the CBD defect created: Group I (N = 7) 50% of the circumference at the anterolateral aspect and group II (N = 7) 2 cm length whole circumference defect. A cholecystectomy was performed followed by repair of the defects with a patch in group I and a tube graft in group II. The repair was done with continuous 6/0 Prolene suture. Blood counts and liver function tests were obtained preoperatively, at day 1 and each week for 6 weeks. The animals were monitored for signs of intra-abdominal infection and jaundice. Upon sacrifice, a cholangiogram was performed, the CBD was inspected for the extent of stenosis, or proximal dilatation of extra-hepatic bile ducts and the specimen including a liver biopsy were histopathologically examined.

**RESULTS:** One animal in group II died on postoperative day 7 due to mesenteric infarction. No biliary leak was observed. Additionally, three animals died during the fifth postoperative week due to severe jaundice associated with ascites. Macroscopically, no bile leaks developed and marked inflammatory and fibrotic response was noticed in all animals. The prosthesis was not evident. This was more intense in group II. The degree of stenosis at the site of the repair was more severe in group II and accordingly, the extent of proximal bile ducts dilatation. The liver function tests showed marked progressive obstructive pattern which was significantly more severe in group II with p < 0.0001. Cholangiograms showed stenosis of the CBD in group I and total or near obstruction in group II. Histopathology in all animals revealed intense inflammatory and fibrotic response with total resorption of the prosthesis. A restoration of the diameter of the CBD could be seen in group I, the stenosis was due to periductular inflammation.

**CONCLUSIONS:** Repair of full thickness CBD defects using Bovine pericardium showed disappointing results. Based on this experimental model, the use of Bovine pericardium cannot be recommended for this purpose. It might be useful in repairing of smaller defects if local inflammation leading to stenosis can be controlled.
M1841 The Effect of Successful Hepatico-Jejunostomy on Bile and Its Flow- a One-Year Experimental Study
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INTRODUCTION: Hepatico-jejunostomy (HJ) is a common operation used to establish biliary-enteric continuity after resections for benign and malignant strictures, in liver transplantation, pancreaticoduodenectomy and after iatrogenic (surgical) biliary complications. The overall changes in the biliary dynamics caused by HJ after cholecystectomy (CC) have not been studied either in human or in the swine before. Knowledge of the changes in biliary dynamics and in the bile juice after HJ is valuable e.g. when new techniques and devices, such as stents, pertaining to the biliary tree are developed.

AIM: Our aim was to study biliary dynamics and bile juice changes before and after CC and CC plus Roux-Y HJ in the swine.

METHODS: Twenty-four 50-kg Yorkshire pigs underwent CC (G1) or CC plus Roux-Y HJ (G2) and were followed by repeated ⁹⁹ᵐTc dynamic biligraphy (DBG) and blood, serum and bile duct (BD) bile determinations until sacrificed at 6 or 12 mths when the inner diameter of BD or HJ was measured.

RESULTS: During the follow-up the animals did not differ in the weight gain, blood haemoglobin or leukocyte counts, serum liver function tests or BD/HJ inner diameter. In the bile there was no bacterial growth pre-op. or in the G1 post-op., but all of the G2 animals had post-op. aerobic bacterial growth (dominating E. Coli) (p<0.05). Bilirubin, bile acids, -glucuronidase, phospholipids and cholesterol concentrations of the bile juice were decreased in both of the groups post-op. compared to the pre-op. values (p<0.05) without difference between the two groups. Compared to the pre-op. stage, in DBG the liver clearance 15, 30 and 45 min after ⁹⁹ᵐTc injection remained almost unchanged at 3 mths postoperatively in both groups, but was reduced significantly at 6 mths postoperatively both in G1 and in G2 by 62 (54-67) / 86 (75-89) %, 30 (22-33) / 41 (36-47) % and 16 (11-20) / 20 (16-25) %, respectively (median and range; p<0.05). At 12 mths post-op. the liver clearance remained unchanged in G1 (CC) pigs compared to the clearance at 6 mths postoperatively, but in G2 (HJ) pigs the liver clearance was reduced, more than at 6 mths postoperatively, by 91 (86-95) %, 41 (36-47) % and 28 (21-33) %, in clearances 15, 30 and 45 min, respectively (median and range; p<0.05).

CONCLUSIONS: As a conclusion, HJ reduces biliary drainage, manifest as decreased liver clearance, more than CC alone during the 12-mth follow-up, and brings about bacterial growth in the bile, the other changes in the bile composition being the same after CC and HJ operations.
M1842 The United States Experience with Conversion from Laparoscopic to Open Cholecystectomy
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PURPOSE: To determine the national incidence and risk factors for conversion from laparoscopic to open cholecystectomy.

BACKGROUND: Most series reporting the rates at which laparoscopic cholecystectomies are performed relative to the open procedure have come from centers specializing in laparoscopic surgery. The rates at which conversions occur from these centers may not reflect those in community practice. We sought to determine the actual, and, therefore, acceptable conversion rate by examining nationally representative discharge data.

METHODS: The National Hospital Discharge database base for 1998-2001 was acquired from the CDC. All gallbladder disease related admission were extracted and the cholecystectomies (ICD-9-CM codes 51.2X) were analyzed using the SAS package. Stepwise logistic regression was used to determine what factors were associated with the risk of conversion from laparoscopic to open cholecystectomy.

RESULTS: Approximately 25% of all cholecystectomies are performed by the open technique. Of the remaining 75% there is an approximately 5-10% conversion rate. The major risk factors for conversion included male gender, obesity and cholecystitis. Concurrent choleodocholithiasis, cholelithiasis and cholecystitis were associated with a conversion rate of 25%. Length of stay (LOS) was reduced for laparoscopic operations and although conversion added 2-3 days to the LOS, for most cases the LOS was still less than for primary open operations.

CONCLUSIONS: Three-quarters of all cholecystectomies are performed laparoscopically and the national conversion rate is 5-10%. Cholecystitis, choleodocholithiasis, male gender and obesity are major predictors for conversion. The data presented in terms of conversion rates and LOS were derived from population adjusted hospital discharge data and represent the current, U.S. experience for cholecystectomy. From these data the community standards for conversion rates, risk factors and LOS can be derived.
M1843 Duration of Postoperative Ileus After Elective Colectomy is Correlated to Surgical Specialization
Pascal Gervaz, University Hospital Geneva, Geneve, Switzerland

AIM: Postoperative ileus is an important factor of complications following gastrointestinal procedures. Its pathophysiology and the parameters which may impact on its duration remain unclear. The aim of this study was to measure the role of various clinical determinants on intestinal function after elective colorectal surgery.

METHODS: From July 2002 to September 2003, all patients who underwent laparotomy for colectomy (laparoscopic resections excluded) with either an ileo-transverse, colo-colic or high colo-rectal anastomosis were entered in this prospective study. The intervals in hours between the end of the surgical procedure and passing of flatus (PG) and passing of stool (PS) were recorded by an independent investigator (clinical research nurse). PG and PS were eventually correlated with the following parameters: type of colectomy (right Vs left); early removal of nasogastric tube [NGT] (<1 day or >1 day); mechanical bowel preparation [MBP] (yes or no); type of underlying disease (cancer or other); systemic administration of opiates; and surgical training (colorectal fellowship or other).

RESULTS: 124 patients were entered in this study. Four patients (3.2%) developed septic complications (3 anastomotic leaks and one intraabdominal abscess) and were excluded from the analysis. Median age in this population was 68 (range 30-95) years. Mean duration of postoperative ileus was 70±28 hours (PG) and 99±34 hours (PS). The type of colectomy (p=0.78), underlying disease (p=0.73), MBP (p=0.15), and early NGT removal (p=0.22) were all parameters which failed to correlate significantly with the duration of postoperative ileus. By contrast, time intervals PG and PS were statistically shorter in the group of patients treated by a colorectal surgeon (56±23 hours Vs 74±28 hours [PG]; 82±26 hours Vs 103±35 hours [PS], p=0.004).

CONCLUSION: Restoration of normal intestinal function after elective open colectomy takes 3 (PG) to 4 (PS) days. In our series, specialized training in colorectal surgery has a positive impact on the duration of postoperative ileus. Surgical expertise should be considered an important parameter in future clinical trials aiming to reduce duration of postoperative ileus.
BACKGROUND: The presence of bowel contaminant during surgery has been related to anastomotic leakage. Mechanical bowel preparation (MBP) is considered to be efficient to decrease the risk of infectious complications after colic anastomosis.

OBJECTIVES: To assess the role of prophylactic MBP in terms of morbidity and mortality rates after elective colorectal surgery.

MATERIALS AND METHODS: All publications describing mechanical bowel preparation before elective colorectal surgery were sought through Medline and old Medline searches, completed by hand-searching without limitation for date and language. All randomised, clinical trials, that were performed in order to answer the hypothesis (i.e. comparison of MBP and avoidance of MBP, elective colorectal surgery) were included. Outcomes measures were: Anastomosis dehiscence, wound infection, Intra-abdominal abscess, re-laparotomy rate, extra-abdominal morbidity and mortality.

RESULTS: Seven randomised control trials (RCT) were retrieved. Of the 1357 patients included in these RCTs, 673 were allocated to MBP group and 684 to no MBP group before elective colorectal surgery. Anastomotic dehiscence 5.5% in MBP group compared with 2.6% in no MBP group; Odds ratio (OR) 2.15, 95% CI: 1.21-3.82 (P=0.01). Wound infection: 8% in MBP group compared with 5.6% in no MBP group Odds ratio (OR) 1.51, 95% CI: 0.98-2.31 (P=0.07). Intra-abdominal abscess: 3.1% in MBP group compared with 2% in no MBP group; Odds ratio (OR) 1.51, 95% CI: 0.67-3.41 (P=0.4). Re-laparotomy 5.7% in MBP group compared with 2.3% in no MBP group; Odds ratio (OR) 2.64, 95% CI: 1.20-5.78 (P=0.02). Extra-abdominal morbidity: 21% in MBP group compared with 17% in no MBP group; Odds ratio (OR) 1.26, 95% CI: 0.88 - 1.79 (P=0.2).

CONCLUSIONS: The results failed to support the hypothesis that bowel preparation reduces anastomotic dehiscence rates and other complications. According to the results of this meta-analysis, MBP seems to contribute to a higher risk of post-operative infectious complications after colorectal anastomosis. Thus, the routine use of mechanical bowel preparation in patients undergoing elective colorectal surgery is questionable.
M1845  Resection of Isolated Pelvic Recurrences After Colorectal Surgery-The Fox Chase Cancer Center Experience
Leonard R. Henry, Elin Sigurdson, Eric A. Ross, Gary M. Freedman, Andre Konski, John P. Hoffman, Fox Chase Cancer Center, Philadelphia, PA, Fox Chase Cancer Center, Philadelphia, PA

BACKGROUND: Recurrent adenocarcinoma in the pelvis after surgery of the sigmoid colon and/or rectum presents a difficult dilemma to the surgeon. The decision to attempt resection must balance the potential for long term disease-free survival/cure against possible high morbidity. Prospective study of this cohort is difficult, and treatment decisions are often based upon large case series. Setting: Fox Chase Cancer Center (FCCC), a NCI-designated Comprehensive Cancer Center

METHODS: Retrospective case review of all attempted curative resections in patients with isolated pelvic recurrences after colorectal surgery from 1988 to present. Groups were divided as: 1) prior resection for a pelvic recurrence outside our institution, 2) primary sigmoid tumors, 3) primary local excisions and 4) primary formal rectal resection. Median and 5 year survival per group was estimated by kaplan-meier curves.

RESULTS: 92 patients underwent an attempt at curative resection of a pelvic recurrence. Group number distribution from one to four respectively were: 16, 14, 11, and 51. Actuarial median and 5 year survival estimates were as follows: group 1-20 months, 7%; group 2-median survival not yet obtainable, 62%; group 3-85 months, 76%; and group 4-80 months, 72%. Subgroup analysis in group 4 revealed negative microscopic margins at resection to be associated with a near 50 month improvement in median survival (p=ns), and approximately 40 month improvement in median recurrence free survival (p=0.0035). An audit of our practice patterns revealed that 39% and 57% of our patients received no adjuvant radiation or chemotherapy respectively after resection.

CONCLUSIONS: This series demonstrates that excellent long term survival is possible in selected patients with isolated pelvic recurrences after colorectal surgery and warrants an aggressive surgical posture. Microscopically negative margins favor prolonged disease-free survival in patients with recurrence after formal resection for primary rectal cancer. The expanded use of adjuvant strategies for treating these patients warrants further study.
**M1847** Rate of Incisional Hernia After Laparoscopic-Assisted Colectomy-Early Experience

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**PURPOSE:** To assess the incidence of incisional hernia after laparoscopic assisted colectomy during the early phase of development of laparoscopic instrumentation. Methods: Chart review on open colectomy patients undergoing surgery at our institution between 1/1/92 and 10/31/02 (N=885 patients) was performed on available charts and all patients not meeting exclusion criteria listed below were included as the open group for the study. Similarly, a chart review on laparoscopic colectomy patients undergoing surgery from 9/1/92 to 9/1/97 (N=280 patients) was done, excluding those meeting the same exclusion criteria plus any laparoscopic patient that had the procedure converted to the open technique. A retrospective study was then done comparing the remaining two groups (open group, N=105 and lap group, N=103). Exclusion criteria included: 1) Prior abdominal surgery except diagnostic-only laparoscopy and tubaligation 2) IPAA done for any indication 3) Inflammatory bowel disease 4) Colectomy performed under conditions of gross fecal contamination. Data collected included age, gender, indication for surgery, type of colectomy, development of incisional hernia, length of followup, and development of small bowel obstruction.

**RESULTS:** Male to female ratio for (open/lap group) was (2.28/1.64). Average age for (open/lap) was (61.3/61.2) years. Followup was defined as the time interval in months from date of surgery to last office visit showing no evidence of a hernia or SBO. Also from the date of surgery until the patient either had another abdominal surgery, or died. Indications for surgery in (open/lap) groups included: Polyp (5.7%/17.5%), diverticular disease (11.4%/20.3%), cancer (75.2%/48.5%), constipation (3.8%/7.7%). Procedures performed in the (open/lap)groups included: Left hemicolectomy (10.4%/1%), Colostomy (6.6%/11.6%), sigmoid colectomy (6.6%/34.9%), right hemicolectomy (14.2%/19.4%), low anterior resection (53.3%/27.2%), APR (2%/2%), TAC with IRA (6.6%/0%). Incidence of incisional herniorrhaphy in the open and laparoscopic groups were 7 (7.6%) and 8 (6.7%) respectively.

**CONCLUSION:** Laparoscopy did not result in a decreased rate of incisional hernia. This could be related to the early experience with muscle cutting trocars that produced small incisions that were difficult to close. The development of newer trocars with muscle splitting penetration and the use of hand assisted techniques may improve the rate of incisional hernia in laparoscopic colectomy.
M1848  Assessment of Quality of Life in Patients with Rectal Cancer Treated with Preoperative Radiotherapy: A Longitudinal Prospective Study
Pascal Gervaz, Abdelkarim S. Allal, Arnaud Roth, Philippe Morel, University Hospital Geneva, Geneve, Switzerland

PURPOSE: To prospectively assess quality of life (QoL) in patients treated with preoperative radiotherapy (XRT) and surgery for locally advanced stage II-III rectal adenocarcinomas (RC). Patients and methods: We studied 53 patients enrolled in 2 phase I-II trials and treated with bifractionated XRT (50 Gy in 40 fractions over 4 weeks), followed (median interval 45 days) by either abdomino-perineal resection (APR) (11 patients) or low anterior resection (LAR) (42 patients). QoL was assessed using 2 self-rating questionnaires developed by the European Organization for Research and Treatment of Cancer: one cancer-specific (QLQ-C30) and one site-specific (QLQ-C38). Questionnaires were filled out before XRT and 12-16 months post-XRT, at which time 17 patients had colostomies.

RESULTS: Compared to pre-RT scores, at one-year follow-up patients reported significant improvement in their emotional state (median 75 vs. 100, p<0.0001), their perspective for the future (67 vs. 100, p<0.001) and their global QoL (75 vs. 83, p=0.0008) as well as a decrease in gastrointestinal symptoms (13 vs. 100, p=0.002). However, the sexual dysfunction score increased significantly, particularly in males (17 vs. 83, p=0.004), and a trend towards a lower body image score was observed (100 vs. 89, p=0.06). At one year, patients who had an APR reported significantly improved symptom scores for fatigue, pain, gastrointestinal problems and sleep disturbance, whereas no such improvement was observed in patients who underwent LAR.

CONCLUSION: One year after combined treatment for RC, patients exhibit significant improvement in global QoL, despite a decrease in sexual function and body image. Any further improvement in QoL outcome may require refinements in the XRT and surgical techniques to reduce late sequelae, particularly sexual dysfunction. Our results suggest that QoL considerations do not justify sphincter-conserving approaches if loco-regional tumor control would be compromised thereby.
Multi-option Strategy to Maximize Therapeutic Outcome in Patients with Liver Metastases from Colorectal Cancer

Giovanni Begossi, Ihor Ponomarenko, Charu Taneja, Heidi Allen, Martha Jamison, Harold J. Wanebo, Roger Williams Medical Center, Providence, RI

OBJECTIVE: The gold standard in the treatment of liver metastases from colorectal cancer (CRC) is surgical resection. In selected patients the 5-year survival rate is 20-40%. However, most of the patients are unresectable at the time of presentation. To optimize the operative procedure, we have utilized alternative therapeutic strategies in nonresectable cases. The objective of this study was to analyze the benefit of alternate procedures in the management of this disease.

METHODS: Our clinical series included 273 patients (pts) with liver metastases from CRC (period 1978-2001). One hundred thirty-four pts were treated surgically as follows: resection (87 pts), hepatic artery infusion (HAI) (26 pts), resection plus HAI (13 pts), ablation and ablation plus HAI (8 pts). The remaining 139 pts received conventional and/or supportive treatment (historic control). Overall and median survival was measured with Kaplan-Meier method from treatment of liver metastases in the surgical group and from diagnosis in the historic group.

CONCLUSIONS: A multi-option therapeutic strategy is essential in surgical planning for management of liver metastases from CRC. Resection has an overall 5-y survival of 21% which is greatly enhanced by addition of adjuvant therapy with HAI. In the event of non-resectability, HAI with tumor ablation or HAI alone is associated with a median survival of 31 and 17 months respectively and provides excellent palliation ensuring that the operative procedure is maximized in these high-risk patients.

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**M1850**  
**Full-Thickness Transanal Excision Can Achieve Excellent Oncologic Outcomes in Low T1 and T2 Rectal Cancers**

John Lee, Ingrid M. Meszoely, John P. Hoffman, Fox Chase Cancer Center, Philadelphia, PA

**BACKGROUND:** Transanal excision of early, low rectal cancers is an appealing alternative to abdominoperineal resection (APR) or low anterior resection (LAR) with coloanal anastomosis secondary to decreased morbidity. The oncologic outcome following transanal excision remains controversial.

**METHODS:** Between April 1987 and April 2003, the records of 56 patients who underwent full-thickness excision for low T1 and T2 rectal adenocarcinoma as definitive surgical therapy were reviewed with a median follow-up of 49 (range 1-173) months. Data were collected on clinical and pathologic tumor characteristics, pre-operative work-up, adjuvant chemotherapy and radiation therapy, recurrence rate, treatment after recurrence, and disease-related mortality.

**RESULTS:** Of the 56 patients, 25 were T1 and 31 were T2. 53% of the patients received endorectal imaging (either ultrasound or MRI). No patients were suspected of having involved lymph nodes. 12.5% of the T1 and 21.2% of the T2 patients had evidence of lymphovascular invasion. 16% of the T1 and 91% of the T2 patients received combination 5FU based chemotherapy and radiation therapy in the adjuvant setting. Two (8%) patients in the T1 group had a local recurrence at 28 and 30 months after initial transanal excision. One (3.2%) patient in the T2 group had a local recurrence at 30 months after initial transanal excision. Of these three patients with recurrence, one died of metastatic disease at 33 months after surgical salvage and 61 months after initial transanal excision. The remaining two patients are without evidence of disease at last follow-up 27 and 129 months after surgical salvage.

**CONCLUSIONS:** Transanal excision of low T1 and T2 rectal tumors is a safe alternative to LAR or APR in appropriately selected patients. Margin negative, full-thickness excision with adjuvant chemoradiation for high risk tumors can achieve prolonged disease-free survival. Surgical salvage of local recurrences and re-excision of margin positive tumors achieve acceptable outcomes.
INTRODUCTION: It has been demonstrated in randomised controlled multicenter trials that patients with advanced rectal cancer undergoing low anterior resection (LAR) and total mesorectal excision (TME) benefit from neoadjuvant preoperative short-term radiotherapy (NSTR: 5x5Gy, 5 days) in terms of local recurrence rate and prolonged survival without serious adverse effects. Of note, in these studies the lower border of the irradiation field was above 3cm of the upper anal verge. In contrast to this experience we observed in our single center series of patients with low rectal cancer undergoing NSTR prior to LAR/TME a high rate of anastomotic breakdown.

MATERIALS AND METHODS: In the past two years 64 patients with rectal cancer were treated at our institution and all received endosonographic staging. 45 of them underwent LAR/TME, of whom 17 had low rectal cancer (distal tumor border <4cm above the upper anal verge). In this group asymptomatic patients (no bleeding or stenosis) and patients with no need for downstaging of the tumor were elected for NSTR (total dose of 25 Gy in 5 fractions during 5 days) prior to the operation, knowing to put the sphincter area at risk of irradiation (n=6). All other patients underwent either immediate operation (n=8) or operation after a four weeks course of neoadjuvant radio-chemotherapy (n=3). Upon clinical signs anastomotic leakage was verified by computed tomography using a contrast agent or by contrast agent enema.

RESULTS: In the group with low rectal cancer (n=17) LAR/TME including protective loop ileostomy was performed in 6 patients with NSTR and in 11 patients without NSTR. There was no perioperative mortality and to date no local recurrence was noted. Anastomotic breakdown and leakage rate in patients with low rectal cancer was 17.5% (3/17), in the group with NSTR 50% (3/6) and in the group without NSTR 0% (0/11), respectively (p<0.05).

SUMMARY/CONCLUSION: Our prospectively collected single center data demonstrate in patients with low rectal cancer a significantly higher anastomotic leakage rate in the group with NSTR compared to the group without NSTR. Our experience suggests that neoadjuvant short-term irradiation of the sphincter area seems to be a major risk factor for postoperative breakdown of low anastomosis. In this light we conclude that preoperative neoadjuvant short-term radiotherapy of low cancers should be abandoned or only be performed under controlled study conditions.
Efficacy of Fibrin Glue Sealing in the Treatment of Anal Fistulas
Marco Sailer, Dominik Stehle, Dieter Bussen, Martin Fein, Department of Surgery - University of Wuerzburg, Wuerzburg, Germany

BACKGROUND: Surgical treatment of perianal fistulas is associated with the risk of anal sphincter damage and subsequent fecal incontinence. Fibrin glue may seal fistula tracts without muscle division and could therefore be an alternative treatment option particularly in patients with high or complex fistulas. The aim of this prospective study was to evaluate the efficacy of fibrin sealing in anal fistulas.

METHODS: Twenty-four patients presenting with anal fistulas were included in the trial. The procedure was performed under general or spinal anaesthesia in the lithotomy position. Fistulas were thoroughly cleaned with an endoscopic brush and/or small curette. The two-component fibrin glue was then applied with a long pliable cannula to permit the glue to exit from the internal opening. The internal opening was subsequently closed by a single absorbable suture. Follow-up was carried out at 6 weeks, 3, 6, 12 and 18 months.

RESULTS: Most patients had transsphincteric fistulas (n=18). Three patients had underlying Crohn’s disease. Median follow-up was 18 months. Fibrin glue treatment had no side effects. In 12 patients (50%) the fistula remained closed after the first application. In two patients the procedure was successfully repeated. Two patients had further evidence of fistulas but had no symptoms and declined further treatment. The remaining eight patients underwent surgical procedures for definite treatment. In all three Crohn’s patients the fistulas recurred.

CONCLUSION: In our study fibrin glue sealing of anal fistulas had a success rate of nearly 60%. However, application is safe with no side effects. Therefore, its application should be considered as a first-line treatment in high or complex fistulas to minimize the risk of sphincter injury associated with surgical treatment.
BACKGROUND: Laparoscopic rectopexy (LR) has been established to treat rectal prolapse, but long-term functional outcome data are still lacking.

SPECIFIC AIM: To generate long-term functional outcome data after LR.

PATIENTS: Between 1/1996 and 12/2002, we operated 107 patients with symptomatic internal rectal prolapse (intussusception, n=65) or external rectal prolapse (n=42). In 14 patients, laparoscopic ileostoma (LI) and a secondary sphincter repair due to obstetric sphincter trauma was necessary. Median postoperative follow-up was 36 months (12-95), patients were evaluated by a standardized questionnaire and anorectal manometry (maximum squeeze and resting pressure, SP and RP).

RESULTS: Length of hospital stay was 11±6 days for LR and 18±9 days for LR + LI. Operating time was 157±44 min for LR and 180±53 min for LR + LI. We observed 1 recurrence of external rectal prolapse 42 months postoperatively. In patients operated for internal rectal prolapse, the main symptoms were stool soiling, repetitive toilet visits, difficulties to evacuate stool and fecal incontinence. Stool soiling was eliminated in 7/21 patients (33%), repetitive toilet visits in 13/33 patients (39%), and evacuation problems in 12/41 patients (29%). Some degree of fecal incontinence was observed in 82% of patients, urinary incontinence in 50%. Fecal incontinence improved in 52% of patients (48% of those fully continent), urinary incontinence in 42% of patients (88% of those fully continent). Sphincter pressures did not change postoperatively (men: SP 166±41 vs 185±37, RP 110±16 vs 117±16; women SP 83±6 vs 91±9, RP 123±16 vs 115±9 mmHg). In nullipara (n=9), postoperative SP increased (74±15 vs 113±21, p<0.004), while it decreased in women with 3 or more children (n=8; 99±15 vs 74±11, p<0.03) and was unchanged in women with 1 or 2 children (n=28; 83±8 vs 82±10).

CONCLUSIONS: LR offers symptom improvement, although symptoms are not completely resolved in most patients. The recurrence rate for external rectal prolapse is very low. Sphincter pressures remain largely unchanged, but fecal and urinary incontinence improves in about half of the patients.
M1854 Posterior Rectal Resection (Altemeier Operation) for the Treatment of Rectal Prolapse or Rectocele
Tobias Meile, Martin E. Kreis, Rosemarie Hinninghofen, Ilona Stabenow, Eckehard C. Jehle, Tilman T. Zittel, University Hospital Tuebingen, Department of General Surgery, Tuebingen, Germany, Tuebingen, Germany

BACKGROUND: Posterior rectal resection can be used to treat rectal prolapse or rectocele. Outcome reports are scarce on this procedure. Specific Aim. To evaluate the outcome of posterior rectal resection for rectal prolapse or rectocele.

METHODS: Between 1.1.2000 and 30.6.2003, we prospectively documented 22 consecutive cases (21 female, 1 male, mean age 66±2 years, range 39-78) operated for symptomatic internal rectal prolapse (intussusception, n=8), external rectal prolapse (n=5), rectocele (n=2) or a combination of prolapse and rectocele (n=7). Anorectal manometry, an incontinence score (Rockwood, 0=complete continence, 64=complete incontinence) and a quality of life score (personal global well-being score) were evaluated preoperatively and up to 25 months postoperatively (median follow-up 7.6 months, range 6-25). Soiling and stool evacuation were evaluated by a visual analog scale (VAS in mm, 0=best, 100=worst).

RESULTS: Operating time was 119±4 min, resection length 5±0.2 cm (4-7). Complications: 1 pneumonia, 1 perirectal abscess and 1 peritonitis requiring temporary ileostoma (3/22, 14%). Recurrence of rectal prolapse: 2/20 (10%), both being treated by laparoscopic rectopexy (5 and 21 months after rectal resection). Stool evacuation was improved postop. (61±7 vs 39±9, p=0.02), but stool soiling (77±8 vs 67±11, p=0.2) and stool frequency (3.7±0.6 vs 3.6±0.7 / die, p=0.31) were unchanged. Manometric squeeze pressure decreased from 78±9 (31-181) to 59±7 (16-128) mmHg postop (p=0.05), while manometric resting pressure was unchanged (97±11 mmHg (17-195) vs 98±14 (23-213) mmHg; n.s.). There was a tendency towards an improved incontinence score (35±4 (0-61) vs 27±4 (0-59), p=0.11), but the overall quality of life did not improve postoperatively (70±4 (38-89) vs 68±4 (36-100); n.s.).

CONCLUSION: Posterior rectal resection had a complication rate of 14% and a recurrence rate of 10%. The procedure significantly improved stool evacuation, but no significant changes were observed with regards to stool soiling, fecal incontinence, incontinence score or overall quality of life.
OBJECTIVE: To determine which etiologies of LGIB may be treated with superselective embolization. METHODS: A meta-analysis of all 25 publications reporting embolization and 12 consecutive cases of LGIB from the authors institution. Seven series met selection criteria.

RESULTS: Multiple regression analysis demonstrated no significant difference in pooled outcomes when varying the included study, age, or embolization method on the outcome of rebleeding. The pooled odds ratio for rebleeding for arteriovenous malformations (AVM) and other diseases was 3.53 compared to rebleeding after localization and embolization for diverticular disease (95% Confidence Interval OR (1.33, 9.41), p<0.01). Embolization for diverticular bleeding demonstrated was successful in 85% of cases. Moreover, the vast majority of cases that re-bled did so within 48 hours. In contrast, rebleeding after embolization for non-diverticular bleeding occurred in greater than 40% of cases and over a more protracted period.

CONCLUSION: Embolization for LGIB is most effective for the treatment of diverticular bleeding. Caution should be used when applying embolization therapy for non-diverticular causes due to the considerably higher associated failure rate. An inpatient observation period of up to 2 days is suggested following embolization for diverticular bleeding. Alternative therapies should be considered for non-diverticular bleeding.
Comparison of the Cecal Intubation Rate and Diagnostic Yield of Screening Colonoscopy Performed by Gastroenterologists and Surgeons

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INTRODUCTION: It is unclear whether the current supply of gastroenterologists (GI) will be able to meet the increase in demand for screening colonoscopy. One potential measure to increase the availability of screening colonoscopy is to have surgeons perform this exam. However, limited data suggest that colonoscopies performed by surgeons may miss colorectal neoplasia more frequently than those by GI. This study compares the cecal intubation rate and adenoma detection rate of average-risk colonoscopy by surgeons and gastroenterologists.

METHODS: A prospectively collected database of colonoscopy reports from October 1999 to October 2003, at Beth Israel Medical Center, NY, was retrospectively analyzed. All colonoscopy reports from patients ≥50 years of age with the indication of average-risk screening were reviewed. Procedures done on patients with prior colon resection (n=6), as well as those that lacked documentation on the extent of exam (n=5) were excluded. Patient demographics, dosage of medications, preparation quality, extent of examination, endoscopic and pathologic findings, and complications were recorded.

RESULTS: A total of 2,705 colonoscopies met the study criteria. Of these, 163 (6%) were performed by 5 surgeons, while 2,542 (94%) were performed by 38 GI. The mean age of patients was similar between the two groups (surgeons - 60.6 years; range, 50-85; and GI - 59.0 years; range, 50-97), as was the female/male ratio (surgeons - 50.3% female, 49.7% male; and GI - 50.7% female, 49.3% male) (p=0.93). Overall cecal intubation rate was 157/163 (96.3%) for surgeons and 2407/2542 (94.7%) for GI (p = 0.36). After excluding those aborted due to inadequate preparation, cecal intubation rate was 157/162 (96.9%) for surgeons compared with 2407/2487 (96.8%) for GI (p=0.93). At least one adenoma was detected in 26/162 (16.1%) of surgeon cases, and in 488/2487 (19.6%) of GI cases (p=0.27). There was no significant difference in detection of high-risk adenomas (defined as those ≥1 cm, or with high-grade dysplasia or villous elements) between the 2 groups (surgeons - 8/162, 4.9% vs. GI - 130/2487, 5.2%) (p=0.87). Invasive cancer was detected in 5/2487 (0.2%) of GI cases and in none of the cases performed by surgeons (p=0.57).

CONCLUSIONS: Surgeons can achieve similar cecal intubation rates and adenoma detection rates as gastroenterologists for screening colonoscopy. Thus, surgeons may be a potential source of increasing the availability of screening colonoscopy.
INTRODUCTION: Neoadjuvant radiochemotherapy has become an acceptable therapy for patients with locally advanced rectal cancer. However little is known about the effect of the RCTX on the function of the anal sphincter.

PATIENTS AND METHODS: Forty consecutive patients with locally advanced rectal cancer (cT3, N+) underwent neoadjuvant Radio-Chemotherapy with subsequent resection. All patients were examined clinically and by anal manometry for their sphincter function. A multi channel water perfused catheter system was used and resting pressure, maximum squeeze pressure and length of the anal high pressure zone was determined prior to the neoadjuvant therapy and before the operation.

RESULTS: The length of the high pressure zone did not change after the neoadjuvant therapy. However, resting and maximum squeeze pressure decreased significantly.

CONCLUSION: Neoadjuvant Radio-Chemotherapy leads to impairment of the anal sphincter. These patients experience incontinence after a curative resection and should be considered for postoperative biofeedback therapy.

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M1858 Patterns of Use of Nasogastric Intubation and Early Nutrition in the Management of Postoperative Ileus
Henrik Kehlet, Markus Buechler, Robert Beart Jr., Russell Williamson, Department of Surgical Gastroenterology, Hvidovre University Hospital, Hvidovre, Denmark, Department of Surgery, University of Heidelberg, Heidelberg, Germany, Department of Surgery, University of Southern California, Los Angeles, CA, Clinical Development and Medical Affairs, GlaxoSmithKline, Greenford, UK

PURPOSE: Nasogastric tubes (NGTs) are often left in situ for days after surgery and have been considered the mainstay approach to managing postoperative ileus (POI). However, two meta-analyses (1, 2) have reported firstly, that using NGTs has no significant benefit, and secondly, that early enteral feeding may be of benefit in reducing length of hospital stay (LOS) and may also reduce morbidity. We conducted a survey of clinical practice in POI in Europe and the USA, which allowed the investigation of the current use of NGTs and early postoperative feeding. (1) Cheatham et al. A meta-analysis of selective versus routine nasogastric decompression after elective laparotomy. Annals of Surgery 1995, 221: 469-78. (2) Lewis et al. Early enteral feeding versus ‘nil by mouth’ after gastrointestinal surgery: systematic review and meta-analysis of controlled trials. BMJ 2001, 323: 1-5.

METHODS: The survey was conducted in over 260 hospitals in France, Germany, Italy, Spain, the UK and the USA. Diaries of NGT use and feeding in all patients who had undergone specified elective colon operations and who were discharged (or died) over a 2-week period were completed by surgeons or senior nurses.

RESULTS: Of over 950 patients surveyed, less than 20% were offered solid food in the 48 hours after surgery. The majority of patients (63-94% across the countries) had an NGT left in situ postoperatively. The NGT was most likely to be removed on the day of surgery in the USA (37%), or following laparoscopy (34%); but NGT removal was not more likely in patients who had received intra-operative opiates via an epidural than i.v. (both 20%). The mean day of NGT removal was 2.3-3.8 days postoperatively, and the LOS appeared to be shorter for patients whose NGT was removed on the day of surgery (mean LOS 14.1 days) than for those who had their NGT removed 1-5 days after surgery (LOS 15-17 days).

CONCLUSIONS: The use of early postoperative oral feeding is infrequent in Europe and the USA, whereas there is routine and widespread use of postoperative NG intubation. These findings are in contrast to evidence recommending early oral/enteral feeding and no routine use of NGT.
OBJECTIVE: After total mesorectal excision and low anastomosis, patients have functional complaints like high stool frequency and incontinence. Improvement of these symptoms by inserting a colon pouch may increase the patients’ quality of life.

AIM: The aim of this study was to record a change in the quality of life and bowel function during the first year after ileostomy closure.

METHODS: 109 consecutive patients with low rectal cancer underwent total mesorectal excision, colon J-pouch reconstruction and loop ileostomy. Standardized questioning on bowel function (according to the Kelly-Holschneider score) and quality of life (according to the quality of life questionnaire of the EORTC) was carried out 6 and 12 months after ileostomy closure. The Mann-Whitney U test was used for statistical analysis.

RESULTS: There was no difference in the overall quality of life but a higher score in emotional function, future perspective and less defecation related loss in life quality. Stool frequency decreased from 5.4/d to 2.7/d. The percentage of patients with stool urgency decreased from 30% to 13%. The percentage of patients with formed stools increased from 20% to 52% and those with normal discrimination from 50% to 78%.

CONCLUSION: Compared to six months after ileostomy closure, pouch function (stool frequency, stool consistency, discrimination) was considerably improved at 12 months. The patients felt defecation related quality of life and future perspectives improved equally.

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<th>Time after ileostomy closure</th>
<th>Bowel function</th>
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<td>Stool frequency</td>
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<td>stool/d</td>
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<td>6 months</td>
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<td>12 months</td>
<td>2.7*</td>
<td>52%*</td>
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*Table: Parameter of pouch function 6 und 12 months after ileostomy closure (*<0.05)
M1860 De-Epithelialization with Seton Placement or Curettage Is Effective Primary Therapy for Perianal Fistulae in Crohn's Disease
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BACKGROUND: Infliximab, surgery, and immunomodulator medications are effective both alone and in combination for the treatment of perianal fistulae in Crohn's disease. Recent evidence demonstrates that infliximab and surgery together improve fistula healing. There are currently no consensus guidelines regarding whether type of fistula surgery, perioperative timing of infliximab, or immunomodulator therapy impacts clinical outcome.

METHODS: We retrospectively reviewed clinical records on all patients with Crohn's disease who underwent seton placement or curettage for perianal fistulae between 1999 and 2003. We used the Present score to classify fistula response (drainage decreased by 50% with gentle compression at 2 successive clinic visits) or remission (no drainage despite gentle compression) at six weeks, six months, and one year after initial surgery. We collected data on perioperative use, timing, and dose of infliximab and immunomodulator therapy. We used univariate logistic regression analysis to determine significant differences in rates of fistula response and remission.

RESULTS: 27 patients underwent 36 procedures during the study period. The mean age was 39; disease location was 58% colonic, 10% ileal, 31% ileocolonic. 5 patients were treated with infliximab prior to initial surgery. Overall, response rates at 6 weeks, 6 months, and 12 months were 33%, 65%, and 67% respectively, with remission rates 11%, 21%, and 33% for the same time intervals. The use of infliximab at any frequency (0, <=3 doses, and >3 doses), timing of infliximab after each surgery (<=6 weeks, >6 weeks), and use of immunomodulatory drugs at any dose did not significantly affect outcome.

DISCUSSION: De-epithelialization with seton placement or fistula curettage is effective primary therapy for perianal fistulae in Crohn's disease. In this series, fistula healing is not affected by concomitant use of infliximab, timing of infliximab, or immunomodulator drugs.
Is the Current Practice of Mechanical Bowel Preparation in Colonic Surgery Evidence Based?
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PURPOSE: Mechanical bowel preparation is routinely conducted before colorectal surgery, but the conclusions from a systematic review (1) and results from a recent large randomised trial (2) show that conventional pre-operative mechanical bowel cleansing before elective colorectal surgery is not necessary, although it is not known whether there needs to be a widespread change in current clinical practice. We therefore investigated the use of mechanical bowel preparation in elective colonic surgery in a multinational survey of clinical practice in postoperative ileus, which was carried out in Europe and the USA. (1) Wille-Jorgensen et al. Clinical value of preoperative mechanical bowel cleansing in elective colorectal surgery: a systematic review. Diseases of the Colon & Rectum 2003, 46: 1013-20. (2) Zmora et al. Colon and rectal surgery without mechanical bowel preparation - a randomized prospective trial. Annals of Surgery 2003, 237: 363-7.

METHODS: The survey was conducted in over 260 hospitals in France, Germany, Italy, Spain, the UK and the USA. The use of pre-operative bowel cleansing was assessed in patients who had undergone elective colonic resection (excluding low anterior resections and patients receiving a stoma) and who were discharged (or died) over a 2-week period.

RESULTS: The use of pre-operative bowel preparation was surveyed in over 950 patients. The use of any bowel cleansing method was 86-97% across the countries. Bowel preparation was conducted at home in 3-42% of patients, although the proportion was less than 20% in most countries. Oral laxatives were used pre-operatively in 26-89% of patients. Enemas were least used in the UK (13%) and most in France (51%). Phosphoral was not used in Germany, but was given to 10-14% of patients in the UK, France and Italy, and 52% in Spain.

CONCLUSIONS: Most patients undergoing elective colonic resection receive bowel cleansing despite clinical evidence suggesting this practice is not necessary. Furthermore, the large variation between countries in methods for bowel cleansing is related to traditions rather than scientific evidence.
**M1862 Increased Use of Lower Anterior Resection for Rectal Cancer in Veterans**

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**BACKGROUND:** Two surgical procedures with curative intent are available to patients with rectal cancer: lower anterior resection (LAR) and abdominoperineal resection (APR). The choice of LAR confers no survival advantage but has significantly higher quality of life and functionality.

**OBJECTIVE:** We examined temporal changes in the use of LAR and APR between 1989-2000 in all VA hospitals. Potential factors associated with the use of LAR were evaluated, including patient demographics, pre-existing co-morbidities, and hospital surgical volume.

**RESEARCH DESIGN:** Using national Veterans Administration (VA) administrative data, we identified patients with rectal cancer during 1989-2000 who received LAR or APR at a VA facility. A disease co-morbidity score (Deyo index) was calculated for each patient. Hospital surgical volume was calculated annually as number of rectal cancer resections per year per VA facility. Logistic regression models were used to examine the association between use of LAR (outcome) and corresponding time period of surgical resection.

**RESULTS:** A total of 5,201 patients were identified. An increase in the use of LAR from 40.0% (1989-1991) to 50.1% (1998-2000), a 12.7% increase, was paralleled by a corresponding decline in APR (60.1% to 49.9%). Patients who received surgery for rectal cancer during 1992-1994, 1995-1997, and 1998-2000 had a 6%, 7%, and 28% greater odds of receiving LAR, respectively, when compared with those in 1989-1991 after adjusting for demographics, co-morbidity score, and hospital surgical volume. Older age, lower co-morbidity score and greater hospital surgical volume were also significant predictors of LAR. No significant differences in the use of LAR were observed by gender or race/ethnicity.

**CONCLUSIONS:** An increase in the use of LAR for rectal cancer was observed over time in the VA. Greater surgical expertise in high volume hospitals, as well as improvements in surgical stapling techniques, could partly explain these findings. The consequent impact on the quality of life of patients over time has yet to be determined.
M1863  Examining the Feasibility of Laparoscopic Radical Proctosigmoidectomy for the Chemoirradiated Rectal Cancer

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INTRODUCTION: The frequent use of neoadjuvant therapy for rectal cancer and the increasing use of laparoscopic colorectal surgery warrants careful evaluation of the safety and effectiveness of laparoscopic radical proctosigmoidectomy (RPS) for the chemoirradiated rectal cancer. This study reports our experience and evaluation of this combined approach.

METHODS: From 4/97 to 10/03, 41 consecutive patients (29 men), median age of 61 yrs (22-75yo), underwent a laparoscopic RPS by a single surgeon after chemoirradiation (median dose 5500cGy/ 5FU CVI 225mg/m²) for rectal adenocarcinoma. Procedures included low anterior resection (LAR) N=8, RPS with hand-sewn coloanal anastomosis N=21, APR N=10 and total proctocolectomy with APR N=2. Intraoperative and perioperative events were assessed.

RESULTS: There was no mortality. Three patients were converted to laparoscopically assisted and 3 were converted to open. A Veress needle injury was a single morbidity. An intracorporeal EEA stapled anastomosis was created in all but 2 open LAR, the remaining had a hand-sewn coloanal anastomosis or stoma. Median EBL was 400cc. Clear liquid diet tolerated by 73% pts by POD 2; 73% pts tolerated regular diet by POD 4. Median discharge home POD 5.5. Pathologic staging: 0 (complete pathologic response): 7, I: 8, II: 9, III:8, IV: 5. Median distal margin was 2.9cm (0.5-12cm). Delayed morbidity after long term follow-up (Median 9mos, 1-75mos) was 7%(N=3): 1 ischemic neorectum requiring permanent stoma, 1 anastomotic stenosis requiring dilatation and 1 significant stomal bleed requiring multiple transfusions. There was 1 pelvic recurrence followed by rapid metastatic spread. There were no port site recurrences.

CONCLUSION: Laparoscopic RPS for rectal cancer can be performed safely and effectively after neoadjuvant therapy. It is our impression that laparoscopic resection may offer rectal cancer patients perioperative benefits. Long term results are still needed.
M1864 Criteria for Ileostomy Closure in Patients with Anastomotic Sinus Tracts
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PURPOSE: Complications of ileal-pouch anal anastomosis (IPAA) include anastomotic leaks, fistulae, and abscesses, which occasionally persist as asymptomatic sinus tracts. We have reviewed our series of 5 patients who underwent ileostomy closure in the presence of persistent sinus tracts revealed by pouchography to identify criteria for restoration of intestinal continuity.

METHODS: Operative logs and medical records were screened for patients who underwent IPAA with diverting ileostomy. The records of patients with persistent sinus tracts were then reviewed for clinical course following IPAA and outcome following ileostomy closure.

RESULTS: Following IPAA, two patients developed anastomotic leaks and three developed pelvic abscesses that were treated by percutaneous drainage. All patients were asymptomatic prior to ileostomy closure and were shown to have blind-ending sinus tracts originating from the pouch on contrast pouchography. Two patients required transanal marsupialization to allow adequate drainage into the pouch lumen prior to ileostomy closure. The mean time from IPAA to ileostomy closure was 5.3 months (range 2.5 to 10 months). The mean stool frequency was 10 BM per day (range 6 to 12 BM/day) and 2 patients reported occasional nighttime fecal spotting. There were no reports of complete fecal incontinence. There were no cases of clinical anastomotic leak, pelvic sepsis or pouch dysfunction and no patients required reoperation up to 8 months following ileostomy closure.

CONCLUSION: Ileostomy closure following IPAA in patients with radiographically demonstrated sinus tracts results in clinical outcomes similar to those in patients with uncomplicated IPAA. Guidelines for closure are proposed and include: 1) lack of symptoms and exam findings, 2) blind-ending sinus tract with no communication with the peritoneum and/or viscera, 3) adequate emptying of the sinus into the pouch lumen which usually implies a sinus of less than 6 cm.
M1865  Quality of Life After Ileal Pouch-Anal Anastomosis: Comparison of Patients with Familial Adenomatous Polyposis and Ulcerative Colitis
Philippe Wuthrich, Pascal Gervaz, Philippe Morel, university hospital geneva, Geneve, Switzerland

BACKGROUND: Ileal pouch-anal anastomosis (IPAA) is the gold standard for treatment of severe ulcerative colitis (UC) and familial adenomatous polyposis (FAP). However, the long-term quality of life (QoL) of patients who underwent this procedure has rarely been investigated. In addition, the impact of either the initial pathology (UC Vs FAP) and the type of reconstruction (J- Vs S-pouch) on QoL remains to be determined.

METHODS: A questionnaire-based evaluation of QoL using the Medical Outcomes Study short-form (SF-36) was undertaken. The SF-36 questionnaire is composed of 36 items that assess 8 health concepts; physical functioning (PF); role limitations due to physical problems (RP); bodily pain (BP); general health perception (GH); vitality (VT); social functioning (SF); role limitation caused by emotional problems (RE); and mental health (MH).

RESULTS: 67 out of 106 (63%) patients who had an IPAA in our institution from 1981 to 2002 responded to the questionnaire. The median age at the time of the procedure was 38 (range 17-69) years and the median delay between the procedure and the assessment of QoL was 83 (range 4-230) months. Forty-seven (70%) patients had UC and 15 (22%) patients were operated upon for FAP. Pouch construction was of the J-type in 37 (55%) cases. For the whole group, the results in terms of QoL were the following; PF = 50±9, RP = 44±16, BP = 49±13, GH = 47±11, VT = 46±13, SF = 44±12, RE = 40±20, MH = 42±14. QoL was not significantly different between UC and FAP patients (Physical Component Summary (PCS) = 52±9.7 in UC and 50±9.5 in FAP, t test p value = 0.39; Mental Component Summary (MCS) = 42±16 in UC and 38±16 in FAP, p = 0.40). Similarly, the type of reconstruction was not a factor of improved QoL (PCS for J-pouch = 51±10 Vs 50±10 in S-pouch). Time-dependent regression analysis demonstrated a trend towards decreasing QoL with time after IPAA (Spearman rank correlation r = 0.24, p = 0.05).

CONCLUSION: IPAA patients did not differ from the general population in all of 8 general health categories assessed by the SF-36. All aspects of QoL appeared better preserved in UC compared with FAP patients although the difference did not reach statistical significance. However, decreasing QoL with time is to be expected after this type of procedure.
M1866  Rectal Complications After Modern Radiation for Prostate Cancer: A Colorectal Surgical Challenge
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PURPOSE: The operative management of rectal complications after radiation for prostate cancer has been incompletely studied. Our purpose was to determine a logical surgical approach to these severe rectal complications.

METHODS: 5,719 patients were identified from an institutional database who were evaluated between 1990 and 2003 with a history of prostate cancer treated with radiation (external beam or brachytherapy). 14 patients were identified from this group who underwent operative intervention for complications stemming from radiation. The charts from these patients were retrospectively reviewed for demographics, prostate cancer treatment, rectal symptoms, diagnostic techniques, operative interventions, and outcome.

RESULTS: Ten patients (71%) had documented recto-urethral fistulas. An additional 4 patients (29%) had either transfusion dependant rectal bleeding or intractable fecal incontinence. Utilizing a surgical algorithm, we proceeded with fecal diversion alone (20%), urinary and fecal diversion alone (50%), and primary repair with or without a tissue flap and fecal diversion (29%) in the 14 affected patients. Symptomatic improvement and resolution of these three complication occurred in 85% of patients. However, only 15% were able to retain their intestinal continuity to achieve this outcome.

CONCLUSION: Radiation therapy for prostate cancer is generally well tolerated but has the potential for severe toxicity. The introduction of a step-wised approach to this problem has resulted in symptomatic resolution in the majority of patients. However, this is achieved at the cost of permanent fecal and sometimes urinary diversion.
M1867 Effect of Immunosuppressive Therapy on Septic Complications in Ulcerative Colitis

AIMS: In patients receiving systemic corticoid medication the risk for septic complications after total colectomy with ileal pouch - anal anastomosis (IPAA) for ulcerative colitis (UC) is significantly higher. As further immunosuppression therapy (IS) in steroid refractory UC (i.e. azathioprine, cyclosporine, 6-MP, and methotrexate) is more and more inaugurated, further impact of preoperative treatment on postoperative morbidity is probable. The aim of this study is to evaluate the effect of preoperative immunosuppression in major surgery due to UC. Material and methods: Online-evaluation of all patients who presented to our surgical department with UC from June 1995 to June 2003.

RESULTS: A total of 299 patients (m:f 150:149, mean 41 years) were assessed. Surgery was performed due to steroid refractory UC / adverse effects, dysplasia and toxic megacolon in 71.2%, 10.8% and 5% of patients. Frequency of immunosuppressive medication rose from 30% in 1999 to 50% in 2003. Most patients treated with supplementary IS received azathioprine (96%), cyclosporine (26%) and 6-MP (15%). Methotrexate, tacrolimus and cyclophosphamide were administered in 7%, 7%, and 4% of patients. One patient was applied leukocytapheresis. 44% of patients received multiple (up to 3) immunosuppressive regimes. Postoperative course was uneventful in 29% of patients receiving IS. Minor complications occurred in 52% treated with IS. Most common minor complications were wound infection in 64%, pelvic infection in 36%, catheter sepsis in 21% and pneumonia in 14%. 19% of the IS treated patients were re-operated due to pelvic sepsis. In total, major complications were seen in 29% of patients receiving IS.

SUMMARY: In patients with UC, preoperative immunosuppressive medication is strongly associated with septic complications after major surgery.
SPECIFIC AIM: To evaluate the quality of life (QoL) in patients with UC and IPAA.

Methods: A standardized questionnaire, the quality of life short form 36 (SF-36), the gastrointestinal quality of life index (GIQoL, Eypasch) and the fecal incontinence quality of life scale (FIQoL, Rockwood) were sent to all patients with UC and IPAA operated in our institution between 1996 and 2002. In addition, the patients charts were analyzed retrospectively.

RESULTS: Completed questionnaires were received from 72% of patients (39 male, 19 female, median age at operation 41, range 22 to 60 years). 55% of the patients had at least one episode of pouchitis. Compared with an European cohort, no differences were observed with respect to physical functioning (90 vs 85±3%), social functioning (76 vs 71±5%), bodily pain (82 vs 77±4%) and the emotional role (80 vs 77±6%) of the SF-36. Physical role (88 vs 64±7%), general health (80 vs 62±3%), vitality (85 vs 61±3%) and mental health (83 vs 70±3%) were decreased to some extent. Increasing postoperative time did not cause any significant changes on these scales. The GIQoL was slightly decreased compared to healthy persons (101±19 vs 121±15, maximum 144 points). No differences were found for the control of gastrointestinal symptoms (57±10 vs 59) and the physical QoL (16±6 vs 22), while the emotional QoL (11±2 vs 17) was reduced and the social QoL (12±4 vs 7) was increased. 18% of patients experienced fecal incontinence to some extent. FIQoL was not decreased in UC patients with IPAA compared to patients with gastrointestinal symptoms in general, and better than in patients with fecal incontinence.

CONCLUSIONS: We observed only minor decreases in QoL in UC patients with IPAA.
INTRODUCTION: There is a growing trend to manage diverticulitis with oral antibiotics in an outpatient setting. There appears to be very limited data to support this practice. To determine the effectiveness of this treatment we analyzed the outcome of the patients treated as outpatients at our institution.

METHODS: A retrospective chart review of all patients diagnosed and treated for the first time for diverticulitis as outpatients over a two-year period. The information obtained included: age at time of diagnosis, gender, presenting symptoms and signs, diagnostic studies utilized, and treatment choice. Each patient had a follow-up of between 3 and 5 years and was analyzed for any evidence of recurrent symptoms or further treatment. The data was analyzed using chi-square, Student’s t test and Fisher’s exact test. RESULTS: Sixty patients were included in the study of which 18 were males (30%) and 42 were females (70%). Ninety three percent presented with left lower quadrant pain, 23% had nausea, 19% had constipation and/or diarrhea and 15% had fever or chills. Fifty four percent of the patients were treated with a single antibiotic and 46% with two antibiotics. Eleven patients (45%) were treated for 7 days and 13 patients (54%) were treated more than 7 days with oral antibiotics. Twenty-six of the sixty patients (43%) had recurrent episodes of diverticulitis during our study period. Of the patients with recurrent diverticulitis, 11 (18%) underwent surgery without any significant complications or deaths. Two patients never became asymptomatic with the initial treatment and underwent emergent colectomy with colostomy for obstructive symptoms at 3 and 8 months post presentation. Nine patients underwent elective surgery without colostomy after having one or two recurrent episodes of diverticulitis. All of these patients responded well to the subsequent treatments of diverticulitis before surgery. When the group of patients with recurrent diverticulitis was compared to the one without recurrent disease, the only significant difference found was age. The age of the recurrent group was older with a mean of 65.19 years compared to 58.65 years in the non recurrent group (p=0.03).

CONCLUSIONS: The practice of outpatient treatment with oral antibiotics for diverticulitis appears to be safe and similar to previous published data on the outcomes for inpatient treatment. Contrary to some published opinions older rather than younger patients had a higher chance of recurrence. We did not find any variables besides age that would predict the odds of recurrence.
ESOPHAGEAL: CLINICAL

†M1870 CD147 and Matrix Metalloproteinase 2 Protein Expressions as Significant Prognostic Factors in Esophageal Cell Carcinoma
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BACKGROUND: Esophageal squamous cell carcinoma has heterogeneous clinical outcomes that cannot be predicted well using any existing clinical prognostic factors. CD147, also known as extracellular matrix metalloproteinase inducer (EMMPRIN), is highly expressed on outer surface of carcinoma cells, but not on normal mucosal cells, which stimulates adjacent fibroblast to produce some kinds of matrix metalloproteinases (MMPs). A family of MMPs is known to degrade the extracellular matrix. Thus, carcinoma cells can interact with adjacent normal cells to produce MMPs via CD147 on their surface, in turn, invade through extracellular matrix with help of the MMPs. The aim of this study was to investigate if MMP and its inducer CD147 in cancerous esophageal lesions and surrounding tissue might be prognostic.

METHOD: Tissue samples from a total of 117 patients with esophageal squamous cell carcinoma were obtained by surgery and stained with CD147 or MMP2 antibody for immunohistochemical analysis. Chi-squared tests were used to evaluate the relationship between immunohistochemical staining patterns and several clinicopathological parameters. Survival curves of the patients were calculated by the Kaplan-Meier method and analysis was done by the log-rank test. Cox proportional hazards models were fitted for multivariate analysis.

RESULTS: Greater staining intensity of CD147 within cancerous lesions than dysplastic lesions were related to reducing relapse-free survival in stages 3, 4A and 4B (p<0.0001). Moreover, greater expression of MMP2 in normal tissue also reduced relapse-free survival when CD147 was predominant in cancerous lesions (p<0.0001). Combination of CD147 and MMP2 improved accuracy of predicting the prognosis by clinical stages in proportional hazard models.

CONCLUSION: In addition to stages, measurement of CD147 and MMP2 expression with simple immunohistochemical staining might further enhance the ability to predict prognosis in patients with esophageal squamous cell carcinoma.

† Poster of Distinction
BACKGROUND: Surgical therapy of esophageal cancer has been changed dramatically during the past decades. We evaluated if these changes had an impact on the prognosis.

MATERIAL AND METHODS: Between 1982 and 2003 a total of 1285 patients with esophageal cancer had resection in curative intention at a single center. Patient related, treatment related and outcome parameters were documented prospectively. Three time periods were analysed separately and compared: Period I: 1982-1990, n=342; Period II: 1991-1997, n=432; Period III: 1998-2003, n=511. The survival status for 94% of all patients could be verified in November 2003.

RESULTS: Survival analysis showed a marked and highly significant ($p<0.0001$) improvement of the long term prognosis over time (figure). The actual 1-, and 2-year survival rates improved from 62% and 38% during period I (1982-90) to 84% and 79% during period III (1997-2002). This was significantly related with a decrease of postoperative mortality (11% period I, <2% period III), an increased use of multimodal therapy (<10% period I, >40% period III), an increase in the rate of early cancers (<15% period I, >25% period III), a relative increase in adenocarcinoma and, despite an increasing number of resections, a more critical patient selection.

CONCLUSION: In an experienced center the prognosis of resected esophageal cancer has markedly improved during the past two decades. This was related to changes in epidemiology, better patient selection, decrease in postoperative mortality, and the use of individualized therapeutic concepts.
Upper Esophageal Sphincter (UES) Myotomy, but Not Botulinum Toxin Injection Is an Effective Treatment for Severe Oropharyngeal Dysphagia: Final Results of a Phase-2 Study

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INTRODUCTION: This study was designed to assess the efficacy and safety of Botox Injection (BI) in the Crico Pharyngeal Muscle (CPM) and CPM myotomy in consecutive patients (pts) with Oro-Pharyngeal Dysphagia (OPD) of different causes.

MATERIAL AND METHODS: OPD pts were enrolled after failure of 2-6 months of rehabilitation; pts unable to cope with oral feeding had a percutaneous gastrostomy; a tracheostomy was performed in those who had aspiration. All pts underwent neurological evaluation, esophageal manometry, upper gastrointestinal endoscopy and videofluoroscopy (VFS). Dysphagia was scored according to severity and frequency (0-8). VFS findings were scored from 1 to 5. Pts received 5 to 10 Botox units injections in the CPM identified by electromyography. Surgical myotomy of the UES was performed when dysphagia persisted after 2 cycles of BI. After treatment, pts were re-evaluated by VFS and clinical interviews. Data are expressed as median and (range). Wilcoxon’s U test, Fisher’s test, and logistic regression test were used, as appropriate.

RESULTS: 21 pts (6 F/15 M, median age 68 years, range 25-83) with OPD were recruited from 1999 to 2003. Pts were divided according to OPD etiology: 8 pts had central nervous system abnormalities (CNSA); 6 pts had peripheral nerve disease (PND); 7 pts were classified as primitive or muscular. 12 pts had a gastrostomy inserted and 5 had a tracheostomy. The median time since the onset of dysphagia was 18 months (2-65). The preoperative dysphagia and VFS scores were 8 (3-8) and 3 (1-5), respectively. No Botox- or surgery-related complications were observed. After BI, OPD improved only in 9 pts, i.e. 2/8 in the CNSA group, 4/6 in the PND group and 3/7 in the muscular etiology group (p: n.s.). However, a further improvement in dysphagia was obtained by myotomy in 8/11 pts who failed to respond to BI. Overall, the dysphagia score decreased after treatment from 8 (3-8) to 0 (0-8) and the VFS score dropped from 4 (1-5) to 1 (0-5) (p:<.05). Gastrostomy was removed in 5 pts and the tracheostomy was closed in 3. Pts who responded to the BI had a shorter UES length and higher VFS scores than those who did not (p:<.05). At multivariate analysis, a high VFS score was predictive of the failure of Botox treatment (p:<.05, CI 1.19-14.16).

CONCLUSION: In conclusion, BI in the CPM is safe, but it does not restore normal swallowing in pts with a severe VFS swallowing impairment: CPM myotomy should be considered in these pts.
M1873  Characterizing Normal Pharyngeal Reflux Using Impedance and 24hr Pharyngeal pH Monitoring

Federico Cuenca-Abente, Brant K. Oelschlager, John A. Isch, Carlos A. Pellegrini, University of Washington, Seattle, WA, University of Washington, Seattle, WA, University of Washington, Seattle, WA

We have previously studied pharyngeal reflux in normal subjects using pharyngeal pH monitoring (pH) and though we could define the number and character of acid reflux episodes, there were deficiencies inherent in that technique. Multichannel Intraluminal impedance (MII) enables the measurement of both acid and non-acid reflux and the refluxate characteristics (i.e. reflux of liquid vs. gas). We hypothesize that combining both techniques, MII and pH, we would more precisely characterize normal pharyngeal reflux.

METHOD: Ten subjects without any symptoms and normal manometry associated with gastroesophageal reflux (GERD), underwent MII and pH with a specially constructed bifurcated catheter that allowed simultaneous esophageal and pharyngeal monitoring continuously for 24hrs. MII was measured at 3, 5, 7, 9cm above the lower esophageal sphincter (LES), as well as 2 cm above and 5 cm below the upper esophageal sphincter (UES). pH was measured 5cm above the LES and 2 cm above the UES.

RESULTS: A total of 496 gastroesophageal reflux episodes were detected in the esophagus by MII in 24hrs of monitoring. There were 195 liquid, 28 pure gas, and 271 mixed (liquid and gas) episodes. The majority -399 (80.4%)- were acid reflux episodes (pH less than 4), thus would be detected by traditional pH monitoring. Of the other 97, 27 were minor-acid (pH did not reach 4, but dropped more than 1 point) and 70 were non-acid (no change in pH or drop less than 1 point). Most reflux episodes reached the mid esophagus (9 cm above LES: 348 episodes). Fifty-one of the 496 episodes of reflux (10%) reached the pharynx (PR). Similar to our previous studies, only 13 PR episodes (25%) were acidic [median=1 (0-6)]; while 4 were minor acid and 34 were non-acid. The median number of PR episodes per person per 24hrs was 5 (range 0-10). Twenty-six PR episodes were liquid and 25 were mixed.

CONCLUSION: This study shows that most reflux episodes in the distal esophagus are acidic, and tend to extend up to the mid esophagus. By contrast most episodes of pharyngeal reflux are non-acid, thus pharyngeal pH markedly underestimates true reflux events reaching the pharynx. A combination of MII and pH is needed to accurately determine the true extent of pharyngeal reflux, which should enhance our ability to identify patients at risk for aspiration.
M1874 Symptomatic Outcome After Laparoscopic Antireflux Surgery in GERD Patients with Respiratory Symptoms
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PURPOSE: Medical and surgical treatment are able to improve heartburn in patients with gastroesophageal reflux disease (GERD).

AIM: The aim of this study was to evaluate the intermediate and long-term outcome following laparoscopic antireflux surgery in GERD patients with primary respiratory-related symptoms and to investigate the quality of life index before and after therapy.

METHODS: Seven hundred consecutive GERD patients underwent surgical treatment in two affiliated surgical centers. Out of this group 103 patients had primary respiratory symptoms related to GERD. All patients were studied in detail before and after surgery (symptom questionnaire, upper gastrointestinal endoscopy, esophageal manometry, 24-hour esophageal pH-monitoring, barium esophagogram). In addition the quality of life index was measured by the means of GIQLI (Gastrointestinal Quality of Life Index). The outcome was assessed at 3, 6 and 12 months postoperatively. Follow-up was completed in all patients.

RESULTS: All respiratory symptoms were significantly improved following surgery (table). While GIQLI was highly impaired compared to normals (122 points) before surgery a significant improvement of quality of life was obtained one year following surgery.

CONCLUSIONS: Since medical treatment is likely to fail in GERD patients with respiratory symptoms the need for surgery arises in these patients and may be the only successful therapy in the long-term. Quality of life can significantly be improved in these patients by surgical treatment.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Asthma</th>
<th>Bronchitis</th>
<th>Laryngitis</th>
<th>Cough</th>
<th>Hoarseness</th>
<th>GIQLI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-OP</td>
<td>17.6%</td>
<td>21.4%</td>
<td>33.0%</td>
<td>69.9%</td>
<td>69.9%</td>
<td>79.4 points</td>
</tr>
<tr>
<td>Post-OP</td>
<td>2.9%</td>
<td>1.9%</td>
<td>0.9%</td>
<td>9.7%</td>
<td>0.9%</td>
<td>118.7 points</td>
</tr>
</tbody>
</table>

* p < 0.001 vs pre OP (Wilcoxon signed rank test).
FDG-PET is Not Suitable for Staging of Early Cancers of the Upper Gastrointestinal Tract
Burkhard H. A. von Rahden, Hubert J. Stein, Hinrich Wieder, Wolfgang A. Weber, Katja Ott, Mario Sarbia, J. Ruediger Siewert, Department of Surgery, Technical University Munich, Munich, Germany, Department of Nuclear Medicine, Technical University Munich, Munich, Germany, Department of Pathology, Technical University Munich, Munich, Germany

BACKGROUND: Positron Emission Tomography with Fluoro-deoxyglucose (FDG-PET) is increasingly used for staging of cancer patients and evaluation of response during oncological multimodality treatment. But the impact of this method is not completely defined as yet. Especially data evaluating early tumor stages - e.g. in cancers of the upper gastrointestinal tract - are missing. Patients and Methods: We performed a prospective evaluation of 32 patients with histologically proven early cancers of the upper gastrointestinal tract. These patients received FDG-PET examination in addition to the standard pre-treatment staging. There were 16 adenocarcinomas of the esophagogastric junction (AEG), 5 gastric cancers and 11 esophageal squamous cell cancers. PET data were analyzed regarding delineation of the primary tumor, lymphatic spread and distant manifestations. Data were correlated with the histopathologic work-up of the resection specimen and clinical data.

RESULTS: The postoperative histopathologic report confirmed the preoperative classification “early cancer” (T1) in all cases. Five patients had lymph node involvement (2 adenocarcinomas und 3 squamous cell cancers of the esophagus). FDG-PET scan demonstrated the primary tumor in only 18 cases (56.3%). In the remaining 14 cases (43.7%) PET was negative for the primary tumor - even with exact knowledge of its localization. Delineation of the primary tumor was better in esophageal squamous cell cancers (T-PET positive in 9 of 11 cases; 81.8%) compared with the AEG tumors (T-PET positive in 7 of 16 cases; 43.8%). This was more likely due to the larger tumor volume of the predominantly pT1b tumors in this group, than due to the histological tumor type. None of the lymph node metastases was detected with FDG-PET. One PET-positive signal which was suggestive for nodal involvement was false positive. Two PET signals were suggestive for systemic tumor spread. Both were false positive (enchondroma of a rib; hemangioma of the liver)

CONCLUSIONS: FDG-PET is not suited for staging of patients with early cancers of the upper gastrointestinal tract, because delineation of the primary tumor is often impossible, and it does not provide suitable information about nodal involvement or systemic tumor spread.

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INTRODUCTION: Outflow obstruction secondary to “too tight fundoplication” is hypothesized to be the cause of post-operative dysphagia. Currently there is no quantifiable approach to guide fundoplication construction. A better understanding of the changes in GEJD induced by fundoplication may help develop an objective intra-operative technique to prevent this complication.

AIMS: To determine 1) safety and feasibility of this technique, 2) the effect of fundoplication on GEJD and 3) contribution of LES tone to GEJD.

METHODS: GEJD was measured in 7 healthy volunteers and compared to 7 patients pre- and post-fundoplication using a specifically designed barostat catheter. GEJD was calculated as dV/dP for 5-25ml and repeated after abolishing LES tone by mid-esophageal balloon distention. Measurements were performed 2-4 times for each test.

RESULTS: The GEJD was significantly higher in anesthetized patients compared to healthy unanesthetized controls (P<0.01). Fundoplication significantly reduced the GEJD with (P<0.01) and without presence of esophageal balloon distension (P<0.01) (Fig.). Overall, the resistance to distension (as measured by pressure volume curve) was mostly due to tissue physical properties rather than LES tone (79% vs. 21%, respectively). No patient experienced any morbidity or complication.

CONCLUSIONS: 1) Intra-operative measurement of GEJ distensibility is safe and feasible and no more difficult than nasogastric tube insertion, 2) This technique can be used to gauge the tightness of the fundoplication construction and shows that fundoplication significantly decreases GEJ distensibility, 3) Mid-esophageal balloon distention does help differentiate between the influences of tissue physical property and LES tone on GEJ distensibility.
BACKGROUND: Because of the relatively low disease incidence and resultant paucity of adequately powered controlled trials, there is little consensus regarding the optimal treatment of esophageal cancer.

OBJECTIVE: To determine the patterns of management and techniques utilized by surgeons for the treatment of esophageal cancer.

DESIGN: Survey.

SETTING: Tertiary referral center.

PARTICIPANTS: Surgeons that treat esophageal carcinoma (n=595).

METHODS: Based on society rosters, surgeons (n=1447) from every state and 19 countries were contacted and queried as to whether they perform esophagectomy. Forty-one percent (595 of 1447) perform esophagectomy and subsequently completed a 50-item questionnaire pertaining to surgeon demographics, utilization of induction radiochemotherapy (RCT), and techniques for esophageal resection and palliation.

RESULTS: There is a wide range with which RCT is employed: 8% never give RCT and 22%, 20%, 13% initiate treatment for stages I, II, and III, respectively. Thirty-six percent leave the decision for RCT up to the medical oncologist. Eighty-nine percent of surgeons treat Barrett's esophagus with high-grade dysplasia with esophagectomy and 11% employ endoscopic therapies in conjunction with intensive surveillance. Many surgeons (24%; 142 of 595) have performed minimally invasive esophagectomy (MIE). Twenty-four percent (33 of 140) have stopped performing MIE primarily because of length of case (40%) and increased morbidity (19%). Four percent (5 of 140) of surgeons have had one or more port site metastasis. Table 1 lists the techniques used for esophageal resection. (see table) The preferred methods for palliation are endoscopic stent placement (46%), esophagectomy (38%), and laser ablation (16%).

CONCLUSIONS: There is no clear consensus about the use of RCT and the operative management of esophageal cancer, but THE and ILE are equally popular. MIE and en bloc esophagectomy are performed by less than 10% of surgeons. This underscores the need for controlled trials comparing management strategies.
M1878 Characterization of Dysphagia Using Multichannel Intraluminal Impedance
Leena Khaitan, Sandy Everett, C. Daniel Smith, Emory University School of Medicine, Atlanta, GA

INTRODUCTION: It is often difficult to clearly assess the true etiology of dysphagia using traditional esophageal manometry alone. Multichannel intraluminal impedance combined with traditional manometry (Sandhill Scientific, Highlands Ranch, CO), now termed esophageal function testing (EFT), is a new technology that allows the objective assessment of esophageal clearance and bolus transit in addition to esophageal pressures. In normal subjects, published data shows that patients who have normal motility also have normal bolus transit. The aim of this study was to see if symptoms of dysphagia in patients referred to a tertiary care center can be objectively characterized using EFT.

METHODS: Between January, 2003 and October, 2003, 115 consecutive patients with esophageal symptoms were studied with EFT. Of these, 40 patients (24F, 18M) reported dysphagia and comprise the study group. All studies included 10 standard liquid swallows followed by 10 viscous swallows. Patients' EFT and demographic information were prospectively collected and analyzed using standard statistical software (STATA, College Station, TX). Data is expressed as mean±SD.

RESULTS: In addition to dysphagia, patients (age 52±15 years) also complained of heartburn (21), regurgitation (11) and chest pain (4). Thirteen patients had prior fundoplication. No differences in lower esophageal sphincter pressure (LES P), bolus transit time and residual pressure (LES RP) were noted between patients who had previous fundoplication and others. Mean LES P was 26±13 mmHg with an LES RP of 6.4±3.7 mmHg. Of 10 swallows, only 6.1±3.1 saline swallows and 6.5±3.5 viscous swallows were completely transmitted despite normal peristalsis. Only 27/40 (67.5%) patients had both completely peristaltic and transmitted swallows. Fifty seven percent of patients with incomplete LES relaxation (LES P>8.2 mmHg) failed to normally transmit viscous swallows compared to only 38% incomplete transmission when LES RP≤8.2. No such differences were seen with saline swallows. Bolus transit time was not different between liquid and viscous swallows.

CONCLUSION: Patients with dysphagia show a high percentage of incompletely transmitted swallows despite normal manometry. Bolus transit may be related to symptoms of dysphagia. EFT is a new way to evaluate and further characterize dysphagia and may assist in its management.
M1879 Barrett Esophagus: Antireflux Procedure or Proton Pump Inhibitors

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INTRODUCTION: Barrett’s esophagus is a premalignant condition that in recent notable papers has been found to regress with antireflux procedures. We examined the controversial issue and hypothesized that a laparoscopic, minimally invasive, antireflux procedure (LARP) should be routinely performed on patients with Barrett’s esophagus compared to chronic use of proton pump inhibitors (PPI). The treatment of Barrett’s esophagus with LARP provides regression of the metaplastic tissue and can prevent progression to adenocarcinoma not provided by PPI’s.

METHODS: A Markov Monte Carlo decision analytic model was developed to track a hypothetical cohort of patients with Barrett’s esophagus and reflect the possible clinical outcomes associated with two treatment strategies. The two treatment options were LARP vs PPI. The input variables for the treatment options were estimated by a pooled analysis of 40 published studies. Possible outcomes for the LARP included regression, progression, no change, complication requiring reoperation, complication requiring return to PPI or death. Possible outcomes for PPI included progression requiring esophagectomy, regression, no change or complication further requiring LARP. Utility scores and probabilities were assigned and expected utilities were obtained from the statistical software.

RESULTS: Expected utility score for LARP was calculated to be .93 compared to the expected utility score for PPI of .88. The model predicted that LARP was the optimal treatment strategy for patients with Barrett’s esophagus. Conclusion The treatment of Barrett’s esophagus is a very controversial topic. Our model, with a comprehensive review of the surgical and medical literature, justified that LARP was more beneficial in patients than PPI. The LARP despite the associated morbidity and mortality is a more reasonable treatment strategy than PPI’s alone.
M1880 Experiences with Endoscopic Surveillance of Patients with Barrett's Esophagus in a Single German Center

Burkhard H. A. von Rahden, Hubert J. Stein, Marcus Feith, Jakob Meyen, Mario Sarbia, J. Ruediger Siewert, Department of Surgery, Technical University Munich, Munich, Germany, Department of Pathology, Technical University Munich, Munich, Germany

BACKGROUND: Barrett's cancer is a result of malignant progression of the precancerous Barrett's esophagus. Intraepithelial changes - which occur due to the chronically damaging effect of gastroesophageal reflux - are regarded to follow a metaplasia - intraepithelial neoplasia - carcinoma sequence. Uncertainty remains concerning the time schedule of these events and whether patients benefit from endoscopic surveillance. As data from centers in Germany are not available so far, we analyzed a large series of patients with Barrett's esophagus, undergoing endoscopic surveillance in a single German center.

PATIENTS & METHODS: 204 consecutive patients (1990-2002) with histologically proven Barrett's esophagus but without evidence of high grade intraepithelial neoplasia (HG-IN) or invasive carcinoma at time of presentation were invited to participate in a Barrett's esophagus surveillance program, according to international guidelines.

RESULTS: 159 of the 204 patients participated in the surveillance program. The mean follow-up time was 25.7 months and the total follow-up time 4084 months (340 years). Low grade intraepithelial neoplasia was detected in a total of 33 patients, 29 on initial biopsy, and 4 during follow-up. In 8 of the 159 patients, either HG-IN (n=2) or invasive carcinoma (5 pT1 tumors, 1 pT3 tumor) were detected during follow-up. This accounts for a carcinoma/ HG-IN incidence of 0.024 per year of follow-up (1 per 42.5 follow-up years). The time interval between inclusion into the surveillance program and diagnosis of HG-IN or invasive cancer ranged between 2.3 years and 8.6 years (mean 3.8).

CONCLUSIONS: Endoscopic surveillance of patients with Barrett's esophagus in a surgical center in Germany shows a higher carcinoma/ HG-IN incidence (2.4%) compared with recent US-American publications (between 0.5 and 2%). The majority of incident carcinomas (80%) were detected at an early stage with good chance for cure.
M1881  Extent of Resection for Esophagogastroduodenal Junction Siewert’s Type II Tumors: Esophagectomy or Gastrectomy? Results From a Multicentre French Study


INTRODUCTION: The choice of surgical resection for Siewert’s type II adenocarcinoma, which are found to lie between 1 cm above and 2 cm below the esophagogastric junction (EGJ), remains controversial. Total gastrectomy and distal esophagectomy (TGDE) allows extended resection and lymphadenectomy. An alternative, subtotal esophagectomy and proximal gastrectomy (SEPG), allows easier GI reconstruction. The aim of this study was to compare these two techniques in the treatment of the Siewert’s type II adenocarcinoma of the EGJ.

PATIENTS AND METHODS: The data from 1192 patients who underwent surgical resection for adenocarcinoma of the EGJ from 1985 to 2000 in 36 French surgical centers were retrospectively reviewed. Mortality and morbidity rates, pulmonary complications and anastomotic leakage rates, median hospital stay, pT and pN categories, complete resection (R0) and 5-year survival rates were compared.

RESULTS: Of 1192 patients, 500 (42.0%) had Siewert’s type II adenocarcinoma. Five patients underwent atypical resection. Comparative results between SEPG (n = 292) and TGDE (n = 203) are presented in table.

CONCLUSION: SEPG appears to be the best technique for curative treatment of type II adenocarcinomas of the EGJ, allowing better R0 resection and survival rates, similar mortality and morbidity rates with lower anastomotic leakage rate.
M1882 Progression of Barrett’s Esophagus in the German Registry
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INTRODUCTION: The benefit and necessity of surveillance in Barrett’s Esophagus remains controversial. Some evidence suggest difference in progression to cancer between the United States and Europe. The aim of this analysis is an evaluation of the progression of patients followed prospectively within the German Barrett Registry under different therapeutic management: PPI, antireflux surgery and ablation.

METHODS: Barrett patients underwent initial investigation in 15 centers and initial registration in a central registry, followed by a subsequent prospective follow-up between 1/2000 and 11/2003. Data of the natural and posttherapeutic course of patients were documented regarding history, endoscopy, histopathology and functional diagnostics. Patients gave their informed consent for a central data registration. Participating centers were free to decide for therapy. Results: Between 1/2000 and 11/2003 487 patients were registered. Data of 456 patients (322 males / 124 females) were complete and analysed. Refluxsymptoms were present in 66% of patients daily or weekly, in 25% they were absent. Mean age: 58 years (10-89); at time of registration: 94.5% on PPI therapy, 38.2% long-segment Barrett, 55.5% esophagitis, 78% Sphincter-incompentence, 62% Bile reflux. Follow-up: 820 patient-years after registration with total of 1300 patient-years follow-up-time; Progression: post-surgery 1/143 to low grade dysplasia (LGD), post-ablation 0/87, under PPI 1/291 to LGD and 1/291 to cancer.

CONCLUSION: In Germany as representative of a western society progression of Barrett’s esophagus is low independent of treatment option.
M1883 Obesity, Reflux, and Hiatal Hernia: Is There a Connection?
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BACKGROUND: Obesity is often alleged to cause or exacerbate both gastroesophageal reflux (GER) and hiatal hernia (HH). We studied this possible relationship from two different viewpoints: the prevalence of GER and HH in obese patients presenting for bariatric surgery and the prevalence of obesity in patients seeking treatment for symptoms of GER.

METHODS: We studied 201 (163 F: 38 M) consecutive bariatric patients. Frequency of heartburn, regurgitation, and proton pump inhibitor (PPI) use were recorded. HH was classified as small (≤2 cm), moderate (>2-5 cm), or large (>5 cm) on radiologic (n=197) or endoscopic (n=4) evaluation. We similarly studied 228 (114F: 114M) consecutive patients presenting for treatment of GER (reflux patients) and 56 (20F: 36M) asymptomatic subjects.

RESULTS: The prevalence of HH was 22% in bariatric patients (small 14%, moderate 6.5%, large 1.5%), which contrasted markedly with a prevalence of 68% in reflux patients (small 12%, moderate 47%, large 9%). The incidence of HH was 27% in asymptomatic subjects (small 20%, moderate 7%). In bariatric patients, the BMI of those with HH was similar to those without HH (49 versus 51, p=ns). This was also true in asymptomatic subjects (24.2 vs 23.8, p=ns). In reflux patients, the BMI in those with HH was slightly higher than those without HH (27.3 vs 24.4, p=0.02). In bariatric patients, heartburn and/or regurgitation were reported by 55%, and 16% took PPIs, whereas in reflux patients, heartburn and/or regurgitation were reported by 94%, and 83% took PPIs. On multivariable analysis, the relative risk (RR) of HH in reflux patients was 9.3 compared to bariatric patients (p=<.001). Increasing age (RR 1.6 per 10 year interval, p=<.001) was also found to be predictive of HH but BMI was not.

CONCLUSIONS: The prevalence of HH in bariatric patients is low, and comparable to that found in normal subjects. Hernias which are detected tend to be small. Reflux symptoms are common but rarely require PPIs. Obesity appears to have no etiologic role in HH.
Impedance As a Measure of Esophageal Motility in Patients with Gerd
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The role of manometry in the preoperative evaluation of patients with gastroesophageal reflux disease (GERD) has recently been challenged. We sought to determine the role that multichannel impedance (MII), which directly measures bolus transit through the esophagus, may play in the assessment of effective esophageal motility.

MATERIAL AND METHOD: We performed simultaneous manometry and impedance in 27 patients with GERD being evaluated for an antireflux procedure without obstruction of the cardia (i.e. no stricture, paraesophageal hernia, or prior operation). Each study was done with both liquid (water) and viscous material. Abnormal manometry for a given swallow was defined as a distal esophageal amplitude < 30 mmHg, and for the entire study if 30% or more swallows met this criteria. Impedance was defined as abnormal if the swallowed bolus entered but failed to completely exit the esophagus. The study was abnormal if less than 80% of liquid or 70% of viscous swallows failed to clear.

RESULTS: A total of 278 liquid swallows and 252 viscous swallows were studied. In 14% of liquid and 11% of viscous swallows there was discordance in the results of manometry and impedance (table). Four patients had abnormal motility by manometry, though two of these were normal by impedance criteria. Six patients had abnormal bolus transit (impedance), and 4 of these had normal manometric tracings.

CONCLUSION: This study shows that there is a group of patients in which manometry fails to identify defective bolus transit. Furthermore, patients with abnormal manometry occasionally have complete bolus transit. This may explain why manometry does not always predict the development of dysphagia after fundoplication. Direct measurement of bolus transit using MII provides for a more complete assessment of esophageal motility in patients with GERD.

<table>
<thead>
<tr>
<th>Normal Manometry/Normal Impedance</th>
<th>Normal Manometry/Abnormal Impedance</th>
<th>Abnormal Manometry/Normal Impedance</th>
<th>Abnormal Manometry/Abnormal Impedance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid Swallows (278)</td>
<td>231 (83%)</td>
<td>14 (5%)</td>
<td>25 (9%)</td>
</tr>
<tr>
<td>Viscous Swallows (252)</td>
<td>214 (85%)</td>
<td>15 (6%)</td>
<td>13 (5%)</td>
</tr>
<tr>
<td>Patients (27)</td>
<td>19 (70%)</td>
<td>4 (16%)</td>
<td>2 (7%)</td>
</tr>
</tbody>
</table>
M1885 Predictors of Impaired Quality of Life in Patients with Gastroesophageal Reflux Disease
Martin Fein, Joern Maroske, Marco Sailer, Karl-Hermann Fuchs, Department of Surgery, Wuerzburg, Germany, Markuskrankenhaus, Frankfurt, Germany

PURPOSE: Quality of life (Qol) is profoundly impaired in patients with GERD. The objective was to relate Qol to symptom assessment and diagnostic findings in these patients.

METHODS: GERD was defined by the presence of esophagitis or increased esophageal acid exposure on pH-metry (score > 14.72). Patients with previous antireflux surgery were excluded. 971 patients were included in the study (595 male, 47.6 +/- 13.8 years). All patients underwent symptom assessment with a standardized questionnaire, endoscopy, manometry, pH-metry, and bilirubin monitoring. Qol was assessed with a well validated tool, the Gastrointestinal Quality of Life Index (GIQLI) ranging from 0 to 144. Normal Qol scores 121 +/- 15. Severely impaired Qol was defined below 80. Symptom assessment and diagnostic findings were related to Qol in univariate and multivariate analysis.

RESULTS: Qol in GERD patients was significantly reduced (Score: 96.2 +/- 22.1, p<0.001). 218 patients had severely impaired Qol (22.5%). Symptoms predicting impaired Qol were the non-specific symptoms epigastric pain, nausea, diarrhoea or obstipation, and loss of appetite. Loss of appetite was the only significant parameter in multivariate analysis. The cardinal symptoms heartburn, regurgitation were only weakly correlated with Qol. Impaired quality of life was not predicted by any diagnostic finding: endoscopy including presence of esophagitis or hiatal hernia, Hp-status, manometry including sphincter characteristics and peristalsis, acid exposure on pH-metry, or bilirubin monitoring.

CONCLUSION: Quality of life in GERD is mainly affected by non-specific symptoms. Diagnostic assessment of the severity of the disease does not correlate with the subjective evaluation of Qol. Consequently, therapeutic decisions should not be based on Qol assessment alone.
M1886  Optimal Therapy for Barrett Esophagus with High Grade Dysplasia: Cost-Effectiveness Analysis
Mark K. Ferguson, Amy E. Durkin, Irving Waxman, The University of Chicago, Chicago, IL

BACKGROUND: Options for management of Barrett esophagus with high grade dysplasia (HGD) include surveillance endoscopy, endoscopic mucosal resection, and esophagectomy. Controversy exists as to which is the best choice in otherwise healthy patients.

METHODS: A decision analytic model employing a Markov process was created to evaluate these three management options for patients aged 35-74 years. The time horizon was 10 yrs. Costs were obtained from our medical center data, and outcomes were estimated from current literature. Costs and effects were discounted at 5% annually. The perspective was the medical center. The outcome measure was incremental cost-effectiveness ratio (ICER).

RESULTS: Base-case analysis demonstrated surveillance endoscopy to be the most cost-effective management for HGD, with an ICER of $27,500 per quality-adjusted life-year (QALY). Sensitivity analysis demonstrated that the outcome was influenced only if the annual risk of HGD progressing to cancer exceeded 0.27 (base-case value 0.13), at which point endoscopic mucosal resection became the most cost-effective management.

CONCLUSION: The optimal management for Barrett HGD remains controversial. From an economic perspective, surveillance endoscopy provides the best survival at a reasonable cost.
M1887  Prognostic Factors in Barretts Carcinoma: Results of 500 Consecutive Resected Adenocarcinoma of the Distal Esophagus

Marcus Feith, Hubert J. Stein, J. Ruediger Siewert, Department of Surgery, Munich, Germany

BACKGROUND: The standard therapy of adenocarcinoma of the distal esophagus, so called Barretts carcinoma, is a radical esophagectomy with systematic lymphadenectomy. Recently preoperative chemotherapy approaches in advanced carcinoma or limited distal resection of the esophagus for early carcinoma have been suggested. Prognostic factors with impact on survival are only reported from small study populations.

METHODS: We analyzed in a single-center five-hundred consecutive in curative intention resected adenocarcinoma of the distal esophagus between 1982-2003. Operative approaches were transthoracic or transmediastinal esophagectomy, or in early carcinoma (pT1a/b-category) a limited resection of the distal esophagus, always combined with systematic lymphadenectomy. Demographic patient data, tumor characteristics and surgical approaches were documented. Follow-up of the patients was completely in 96% of the patients. A multivariate analysis of possible prognosis related factors was performed. Results: Independent prognostic factors on multivariate Cox-Regression analysis for long-time survival were the age of the patients (p<0.02), the pTNM -category (p<0.001, p<0.001, p=0.002), the number of infiltrated lymph nodes (p=0.001) and the total number of resected lymph nodes (p=0.005). The surgical approach was without a statistical impact on prognosis.

CONCLUSION: Independent prognostic factors for long-time survival in adenocarcinoma of the distal esophagus are the pTNM -category and the number of lymph node metastases and the extend of lymphadenectomy.
Impact of Laparoscopic Nissen Fundoplication with Mesh-hiatoplasty on Esophageal Body Motility: A Prospective Randomized Trial

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AIMS: Crural closure with prosthetic material during laparoscopic antireflux surgery has been proven to decrease the occurrence of postoperative reherniation of the wrap. However, there are still controversies about postoperative esophageal body motility disorders after prosthetic hiatoplasty. Aim of the present study was to evaluate the impact of crural closure with a polypropylene-mesh on postoperative esophageal body motility for a follow-up period of one year.

METHODS: A group of 40 patients who underwent laparoscopic Nissen fundoplication (LNF) were prospectively randomized to either LNF with hiatal closure using a 1x3 cm polypropylene mesh (Group I) or LNF with hiatal closure with simple sutures (Group II). Main outcome criteria were localization, length and pressure of the lower esophageal sphincter (LES), DeMeester score, esophageal peristalsis, esophageal wave progression (EWP), slope of contraction waves (SCW), duration of contraction waves (DCW) and amplitude of contractions (AC) in wet swallows. Data were collected preoperatively, 3 months and 1 year after surgery.

RESULTS: Preoperatively, patients of both groups had a pathological lower esophageal sphincter (LES) pressure and pathological DeMeester scores. These values improved significantly (p<0.01) after surgery and remained stable up to 1 year after surgery. Patients of Group II had a significant lower LES pressure 1 year after surgery when compared to Group I patients. There were no significant differences in postoperative LES length (4.1cm vs. 3.75 cm), LES relaxation (93.4% vs. 92.4%), localization of respiratory inversion point (44.0 cm vs. 42.8 cm) and intrabdominal LES length (2.1 vs. 2.1). Group I patients had less simultaneous waves (0% vs. 10%) and interrupted waves (10% vs. 20%) at 1 year after surgery. There were no significant differences in EWP, SCW, DCW and AC of both groups up to 1 year after surgery.

CONCLUSION: Both LNF with or without mesh-hiatoplasty increase lower esophageal sphincter pressure and improve DeMeester score significantly when compared to preoperative values. LNF with mesh-hiatoplasty does not impair postoperative esophageal body motility significantly in comparison to LNF with simple suture hiatal closure for 1-year follow-up.
Obesity is Not a Contraindication to Laparoscopic Nissen Fundoplication

Matthew J. D’Alessio, Dean Arnaoutakis, Natalie Giarelli, Alexander S. Rosemurgy II, University of South Florida College of Medicine, Tampa, FL

PURPOSE: Obesity has been shown to be a significant predisposing factor for gastroesophageal reflux disease (GERD). However, obesity is also thought to be a contraindication to antireflux surgery. This study was undertaken to determine if clinical outcomes after laparoscopic Nissen fundoplications are influenced by preoperative body mass index (BMI).

METHODS: From a prospective database of 566 patients undergoing treatment for GERD, 257 consecutive patients undergoing laparoscopic Nissen fundoplication were studied. Patients were grouped by preoperative BMI; normal (<25), overweight (25-30), and obese (>30). Clinical outcomes were scored by patients utilizing a Likert scale. Data are reported as mean ± SD. Pre- and postoperative symptom scores were compared using the paired t-test. Groups were compared using Chi-square analysis for discrete variables and Kurskal-Wallace ANOVA for continuous variables. Patient information was handled in concordance with IRB protocol.

RESULTS: Laparoscopic Nissen fundoplication was accomplished in all 257 patients. Overweight and obese patients had more severe preoperative reflux, though symptom scores for reflux and dysphagia were similar among all weight categories. There was a trend toward longer operative times for obese patients. Mean follow-up was 26 months ± 23.9. Mean heartburn and dysphagia symptom scores improved for patients of all weight categories (p<0.001). Postoperative symptom scores and clinical success rates did not differ among weight categories.

CONCLUSIONS: Most patients undergoing laparoscopic Nissen fundoplication are overweight or obese with moderate dysphagia and severe acid reflux. Laparoscopic Nissen fundoplication is safe and effective therapy for chronic and medically refractory GERD. Clinical outcomes after laparoscopic Nissen fundoplication did not differ among patients stratified by preoperative BMI. Obesity is not a contraindication to laparoscopic Nissen fundoplication.

<table>
<thead>
<tr>
<th>Patient Demographics and Outcomes after Laparoscopic Nissen Fundoplication Stratified by Preoperative BMI</th>
<th>BMI &lt; 25</th>
<th>BMI 25-30</th>
<th>BMI &gt; 30</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>79</td>
<td>116</td>
<td>62</td>
<td>--</td>
</tr>
<tr>
<td>Gender (% male)</td>
<td>42</td>
<td>48</td>
<td>44</td>
<td>0.64</td>
</tr>
<tr>
<td>Age (y)</td>
<td>52 ± 17.5</td>
<td>54 ± 13.7</td>
<td>50 ± 13.5</td>
<td>0.24</td>
</tr>
<tr>
<td>DeMeester Score</td>
<td>44 ± 53.5</td>
<td>52 ± 44.0</td>
<td>51 ± 35.4</td>
<td>0.03</td>
</tr>
<tr>
<td>OR Time (min)</td>
<td>91</td>
<td>106</td>
<td>116</td>
<td>0.07</td>
</tr>
<tr>
<td>Reflux Score Preop</td>
<td>7 ± 3.1</td>
<td>7 ± 3.4</td>
<td>7 ± 3.6</td>
<td>0.78</td>
</tr>
<tr>
<td>Reflux Score Follow-up</td>
<td>2 ± 2.8</td>
<td>1 ± 2.1</td>
<td>2 ± 2.8</td>
<td>0.96</td>
</tr>
<tr>
<td>Dysphagia Score Preop</td>
<td>4 ± 3.9</td>
<td>5 ± 3.7</td>
<td>5 ± 4.1</td>
<td>0.12</td>
</tr>
<tr>
<td>Dysphagia Score Follow-up</td>
<td>2 ± 2.9</td>
<td>2 ± 2.9</td>
<td>2 ± 2.7</td>
<td>0.78</td>
</tr>
<tr>
<td>Excellent/Good Clinical Outcome</td>
<td>73%</td>
<td>84%</td>
<td>82%</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Extent of Preoperative Staging in Esophageal Cancer to Prevent Futile Explorative Surgery

Henderik L. Van Westreenen, Pierre A. M. Heeren, Hendrik M. van Dullemen, Eric J. van der Jagt, Pieter L. Jager, Henk Groen, John T. H. M. Plukker, University Hospital Groningen, Groningen, Netherlands

BACKGROUND: During exploration of curative intended surgery for esophageal cancer, distant metastases or locally advanced disease are frequently found, rendering the resection to be futile. Although improved staging modalities have reduced this problem, exact data are scarce. The aim of this study was to determine the proportion of futile exploratory surgery in patients selected for curative intended oesophagectomy. Furthermore, the influence of preoperative staging modalities on the number of futile surgical procedures was examined.

METHODS: A retrospective analysis was performed on patients with esophageal cancer selected for curative intended resection between 1992-2002. Curative intended surgery includes resection of tumors staged T1-3N0-1M0. Of these patients surgical procedures and preoperative work-up were examined. Results: A total of 203 consecutive patients (168 male/35 female) were selected for primary esophagectomy. Resection was not performed in 78 patients (38%), either because metastases were found at exploration (n=59; 29%), because both metastatic spread and locally advanced disease was determined (n=5; 2%), or because the tumor appeared to be locally irresectable (n=14; 7%). Futile surgical explorations occurred in 47 of 106 patients (44%) who were staged with Computed Tomography (CT) alone, in 18 of 36 patients(50%) staged with CT and Endoscopic Ultrasound (EUS), in 2 of 9 patients (22%) staged with CT and F-18-fluorodeoxyglucose Positron Emission Tomography (FDG-PET), and in 11 of 52 patients (21%) staged with CT, EUS and FDG-PET. In a logistic regression model with all of the diagnostic modalities and the year of examination entered as independent variables, FDG-PET was the only predictive factor for resection in curative intended surgery (P<0.001).

CONCLUSIONS: In patients selected for primary esophagectomy, curative resection cannot be performed in about one third of the patients, mostly because of metastases. Addition of FDG-PET, with or without EUS, seems to reduce futile surgery in these patients by approximately 50%.
M1891  

Dysphagia After Laparoscopic Antireflux Surgery Is Related to Inadequate Hiatal Closure and Not to Fundoplication
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AIMS: Postoperative dysphagia after laparoscopic antireflux surgery is usually transient and resolves after surgery but some patients develop permanent dysphagia. There is still debate whether postoperative dysphagia is caused by type or placement of the fundic wrap or mechanical obstruction of the hiatal crura. Aim of the present study was to review patients with recurrent or persistent dysphagia after laparoscopic antireflux surgery and to identify the morphological reason for this complication.

METHODS: Out of a prospective maintained database of more than 900 antireflux procedures including redo-procedures of patients who underwent primary laparoscopic Nissen or Toupet fundoplication at our surgical department or at other surgical departments, a sample of 88 patients who suffered from recurrent, persistent or new onset dysphagia after laparoscopic antireflux surgery were retrospectively reviewed to identify the morphological cause of postoperative dysphagia. All patients underwent routine esophagogastroduodenoscopy, esophago-gastric cinematographic x-ray (barium swallow). In 79 patients, data of esophageal manometry and 24-hours pH monitoring was available.

RESULTS: The following groups were identified: Patients who underwent pneumatic dilatation for hiatal stenosis (Group A, n = 43), patients who underwent laparoscopic redo-surgery for hiatal disruption or inadequate hiatal closure with consecutive intrathoracic migration of the fundic wrap (Group B, n = 40) and patients with postoperative dysphagia refractory to dilatation because of a too tight or misplaced fundoplication (Group C, n = 5). In all patients of Group A, intraoperative x-ray during pneumatic dilatation showed the typical sandglass phenomenon which is estimated to be pathognomonic for hiatal tightness. In Group B patients, EGD and barium swallow showed an intrathoracic wrap migration, therefore these patients underwent laparoscopic redo-surgery for anatomical correction. In all patients of Group C, a laparoscopic or open Nissen fundoplication was the first operation. In these patients, a too tight or misplaced wrap was the reason for dysphagia. These patients underwent laparoscopic Toupet refundoplication.

CONCLUSIONS: Postoperative dysphagia is one of the most frequent complications after laparoscopic antireflux surgery. In the majority of cases, postoperative dysphagia is either related to inadequate or to tight diaphragmatic crural closure, not to the fundoplication itself.
M1892  Distal Esophageal Adenocarcinoma: Does Presence of Barrett’s Mucosa Matter?

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BACKGROUND: The incidence of esophageal adenocarcinoma has been steadily rising in the last decades. It has been suggested that patients with Barrett adenocarcinoma have a better prognosis compared to those without. The aim of this study was to review our experience in treating patients with esophageal adenocarcinoma with/without Barrett’s esophagus (BE). Materials and methods: The study population consisted of 215 consecutive patients (173M:42F; median age 66.0 yrs, 26-91), who had esophagectomy for adenocarcinoma between 1992-2002. Patients receiving preoperative chemotherapy or radiation therapy were excluded from the analysis. Clinical presentation, stage of disease and survival rates were compared between patients with pathologic evidence of BE (n=142) and those without (n=73).

RESULTS: Several favorable prognostic factors were present in patients with evidence of BE, including smaller tumor size, earlier stage and degree of tumor differentiation. More patients in the BE group had completely resectable tumors, resulting in a better overall 5-year survival.

CONCLUSIONS: Esophageal adenocarcinoma without BE present as large and poorly differentiated tumors. They probably originate in a setting of BE but, by the time of diagnosis, the spread of the tumor has obscured any evidence of Barrett’s mucosa. This might explain the trend towards more advanced disease and worse prognosis in esophageal adenocarcinoma with no evidence of BE at diagnosis.

<table>
<thead>
<tr>
<th></th>
<th>With BE (n=142)</th>
<th>No evidence of BE (n=73)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysphagia or bleeding at diagnosis</td>
<td>40.1</td>
<td>84.9</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>BE surveillance or GERD at diagnosis</td>
<td>29.5</td>
<td>1.3</td>
<td>0.0002</td>
</tr>
<tr>
<td>Tumor length (cm)†</td>
<td>2.96 (2.78)</td>
<td>4.81 (2.79)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Early stage (I)</td>
<td>56.3</td>
<td>2.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Late stage (III-IV)</td>
<td>23.9</td>
<td>71.2</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>&gt;3 lymph node positive</td>
<td>19.7</td>
<td>49.3</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Incomplete resection (R1-2)</td>
<td>5.6</td>
<td>16.4</td>
<td>0.0098</td>
</tr>
<tr>
<td>Differentiation (well-moderate)</td>
<td>65</td>
<td>39.3</td>
<td>0.0007</td>
</tr>
<tr>
<td>5-year survival</td>
<td>57</td>
<td>23</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

†Mean (SD), all other data are expressed as percentage.
The Type of Reflux Does Not Influence the Outcome of Nissen Fundoplication

Carlos A. Galvani, Maria V. Gorodner, Marco G. Patti,
University of California San Francisco, San Francisco, CA,
UCSF, San Francisco, CA

BACKGROUND: It has been suggested that the efficacy of a Nissen fundoplication may vary depending on the type of gastroesophageal reflux shown by pH monitoring (upright, supine or bi-positional). Aims. To assess in patients with GERD (proven by pH monitoring): a) the prevalence of upright, supine, and combined reflux; b) the effect of the type of reflux on the outcome of a Nissen fundoplication.

PATIENTS AND METHODS: One thousand, one hundred and ninety-four patients with GERD proven by pH monitoring were categorized based on the type of reflux (upright, supine, bi-positional), and their esophageal motility was assessed by esophageal manometry. Of the 1194 patients, 232 (19%) underwent a Nissen fundoplication. Based on the type of reflux, they were divided in three groups: group A, 54 patients (23%), upright reflux; group B, 16 patients (7%), supine reflux; and group C, 162 patients (70%), bi-positional reflux. Median follow-up was 49 months.

RESULTS: Upright reflux was present in 330 patients (28%), supine reflux in 112 patients (9%), and bi-positional reflux in 752 patients (63%). When compared with the other 2 groups, in patients with bi-positional reflux the LES pressure and the amplitude of peristalsis were lower, they amount of reflux was more severe, and Barrett’s esophagus was more frequent. The outcome of a Nissen fundoplication was similar regardless of the type of reflux (A vs. B, B vs. C, A vs. C = NS). Table 1.

CONCLUSIONS: The results of this study show that: (a) by the time patients with GERD are referred for esophageal function tests, most of them have bi-positional reflux, worse esophageal motility and more severe reflux. As a consequence Barrett’s esophagus is more frequent; (b) a Nissen fundoplication is effective regardless of the type of reflux, and should be used at an early stage before bi-positional reflux develops.

Table 1: Symptomatic Assessment After Nissen Fundoplication.

<table>
<thead>
<tr>
<th></th>
<th>Upright GER</th>
<th>Supine GER</th>
<th>Bi-Positional GER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heartburn (% pts)</td>
<td>22</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>Heartburn Score (0-4)</td>
<td>0.5±0.9</td>
<td>0.1±0.5</td>
<td>0.3±0.8</td>
</tr>
<tr>
<td>Regurgitation (% pts)</td>
<td>6</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Regurgitation Score (0-4)</td>
<td>0.1±0.5</td>
<td>0.1±0.5</td>
<td>0.2±0.7</td>
</tr>
</tbody>
</table>
M1894 Patient Perception of a Clinical Pathway for Laparoscopic Foregut Surgery
Lorenzo E. Ferri, Christopher Andrew, Liane Feldman, Robert Baird, Donna Stanbridge, Gerald Fried, McGill University, Department of Surgery, Montreal, Canada, McGill University, Montreal, Canada

INTRODUCTION: Clinical pathways (CP) have been implemented for a number of surgical procedures, yet few data are available that explore the patients’ perception of these changes in clinical practice. We assessed the effect of introducing a CP for laparoscopic foregut surgery in a single payer system from the patients’ perspective.

METHODS: A CP was developed for laparoscopic foregut surgery (fundoplication, Heller myotomy, or paraesophageal hernia repair) and data (age, ASA, length of stay, opioid use, investigations) was prospectively collected from a cohort of patients undergoing surgery over a 12 month period (post group). This was compared to a group of controls operated on in the 12 months prior to the implementation of the CP (pre group). A questionnaire examining patient-based outcomes and perceptions (satisfaction, pain control, timing of discharge from hospital) was completed 6 weeks after surgery in the post group. Data presented as mean +/- SD; t-test or chi-squared determined significance (* p<0.05).

RESULTS: From November/01-November/03, 48 patients underwent laparoscopic foregut surgery, 26 prior to CP implementation and 22 after. There were no differences in age (52 +/- 15 pre, 55 +/- 16 post), gender, type of surgery, or ASA between the two groups. Parenteral opioid use (in morphine mg equivalent) diminished significantly (43 +/- 39 pre, 14 +/- 19 post)* without compromising the patients’ perceived pain control (88% felt they had adequate pain control). The number of patients undergoing post-op investigations diminished (17/26 pre, 5/22 post)*, as did length of stay (2.7 +/- 1.2 days pre, 1.5 +/- 0.7 days post)*. All 22 post patients deemed their discharge timing appropriate. 21/22 patients were satisfied or very satisfied with their care during their hospital admission. 10/22 in the post group deviated from the pathway, most of which were minor deviations.

CONCLUSION: A clinical pathway for laparoscopic foregut surgery was successfully implemented in a single payer system resulting in decreased utilization of hospital resources while maintaining high patient satisfaction.
During complex laparoscopic esophageal surgery (e.g. reoperative antireflux surgery (rLARS) or paraesophageal hernia (PEH) repair) one or both vagi may be divided in two scenarios. One, technical inability to identify and protect the vagus because of complexities in anatomy may make preservation impossible. Two, when faced with a foreshortened esophagus, selective division of one or both vagi provides significant esophageal length (1-2 cm), thus obviating the need for a gastroplasty. This study evaluates the consequences of vagotomy in these circumstances.

**METHODS:** One-hundred-and sixty-six patients underwent rLARS or PEH repair between 1/1998 and 6/2003 at our institution. Vagal division was performed in 38 (23%) of these patients. Clinical data was obtained from a prospectively maintained database and patient questionnaires. Follow-up was available for 82 (49%) of these patients, at a median of 19 months (range 6-69 mo). Mann-Whitney U test and Fisher’s exact test were used to determine statistical significance of differences between groups.

**RESULTS:** Forty patients underwent rLARS and 42 patients underwent PEH repair. Vagal nerve division was performed in twenty-eight patients (34%; rLARS = 16, PEH = 12). Twelve of these were intentional vagotomies performed to provide esophageal length. No patient underwent a concomitant drainage procedure. Eighteen anterior vagotomies, 6 posterior vagotomies, and 4 bilateral vagotomies occurred. At time of follow-up, the primary symptom had improved or resolved in 88% of patients after rLARS and 93% of patients with PEH repair, as well as for 89% of those with Vagotomy and 91% without Vagotomy. No patient required a subsequent operation for gastric outlet obstruction. There were no significant differences in reported post-op symptom severity whether or not a vagotomy was performed, even for those with bilateral vagotomy.

**CONCLUSIONS:** Complex esophageal surgery (rLARS and PEH) requires re-establishment of intraabdominal anatomy for effective repair of the hiatal anatomy. Success in these cases may be facilitated by or require vagal nerve division. Vagotomy, in this scenario, does not require a drainage procedure or adversely affect patient outcomes.

<table>
<thead>
<tr>
<th></th>
<th>Heartburn*</th>
<th>Abd Pain*</th>
<th>Bloating*</th>
<th>Diarrhea*</th>
<th>Early Satiety*</th>
<th>Dumping</th>
</tr>
</thead>
<tbody>
<tr>
<td>No vagotomy</td>
<td>2.1</td>
<td>1.5</td>
<td>1.7</td>
<td>3.3</td>
<td>1.9</td>
<td>23%</td>
</tr>
<tr>
<td>Vagotomy</td>
<td>1.9</td>
<td>1.6</td>
<td>2.5</td>
<td>2.3</td>
<td>2.6</td>
<td>40%</td>
</tr>
<tr>
<td><strong>p-value</strong></td>
<td>.82</td>
<td>.87</td>
<td>.29</td>
<td>.63</td>
<td>.26</td>
<td>.42</td>
</tr>
</tbody>
</table>

*Mean symptom severity score using a visual analog scale (0-none to 10-worst)
INTRODUCTION: This report represents a 2 year single institution experience with robotically assisted transhiatal total esophagectomy (RATE).

METHODS AND PROCEDURES: Between 9/2001 and 11/2003 data in relation to preoperative, operative and postoperative characteristics were prospectively collected for patients undergoing RATE. The abdominal and thoracic portions of the operations were undertaken with the robotic system, and one 5 mm laparoscopic assistant port. The cervical anastomosis was carried out with an open cervical incision in all cases.

RESULTS: A total of 9 patients have undergone RATE. Of the 9 patients, 7 were male. The mean age of patients was 51 years (range: 41-63), 7 of the 9 patients had a significant history of preoperative tobacco exposure. One patient was morbidly obese. Total operative time averaged 312 minutes (range: 245-360), including robotic setup time. Intraoperative blood loss for the combined robotic and open cervical portions of the operations averaged 43 mL (range: 10-60). There were no intraoperative complications and no patients developed laryngeal nerve injury postoperatively. All patients were sent to the intensive care unit (ICU) for postoperative monitoring, as per protocol. The average length of ICU stay was 1.75 days (range: 1-5). Eight patients were extubated in the recovery room or on ICU arrival; one patient remained intubated overnight for observation. One patient developed atrial fibrillation which was medically managed. No patients developed pneumonia. The average length of hospital stay was 8 days (range: 6-8). There have been no deaths. Our current average follow-up is 280 days (range: 45-531).

CONCLUSIONS: With minimal blood loss, short hospital and ICU stays, and no mortality, RATE has proven to be a safe and technically feasible operation at our institution.
Radiofrequency Energy Delivery to the Lower Esophageal Sphincter in Patients with Recurrent Reflux After Antireflux Surgery: Can Redo Surgery Be Avoided?

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**BACKGROUND:** Recurrent GERD following antireflux surgery (ARS) can be difficult to manage, especially in patients who also fail medical management. In these patients, redo ARS remains the only treatment option. Endoscopic radiofrequency energy delivery to the lower esophageal sphincter (Stretta, Curon, Sunnyvale, CA) has been shown to significantly decrease symptom scores and improve the quality of life in patients with gastroesophageal reflux. The aim of this study was to evaluate the use of the Stretta procedure in treating patients with recurrent GERD following ARS.

**METHODS:** Between March 2002 and September 2003, 8 patients with recurrent GERD following ARS underwent the Stretta procedure. All patients were asked to complete our standard symptom surveys pre-Stretta and at 1, 6, and 12 months after the procedure. Patients rated 7 reflux-related symptoms (heartburn, dysphagia, regurgitation, cough, voice changes/hoarseness, asthma, chest pain) on a 0 (none) to 3 (severe) scale. Data were analyzed using a Wilcoxon matched-pairs signed ranks test when appropriate. Results: Complete data were obtained for 7 of these patients with a median follow-up of 253 days (range 67-378). One patient was lost to follow-up and not included in our analysis. Symptom scores decreased significantly (1.41 ± 1.1 vs. 0.56 ± 0.77, p < 0.0001), with 6 patients noting both improved esophageal-related symptoms (1.46 ± 1.1 vs. 0.4 ± 0.66, p = 0.002) and extra-esophageal symptoms (1.38 ± 1.1 vs. 0.68 ± 0.76, p = 0.0017). Overall, 6 patients (85%) were satisfied with their results.

**CONCLUSION:** Based on this small series, the Stretta procedure significantly reduces patients' subjective symptoms of GERD. The Stretta procedure may serve an important role as an additional management strategy to help manage recurrent GERD after antireflux surgery.
Esophageal perforation is a rare, but deadly, entity that demands prompt diagnosis and treatment to ensure survival. The outcome of surgical management is generally considered to be a function of the interval between the clinical event and surgical treatment, with mortality approximating 40% for those treated after 24 hours.

METHODS: We retrospectively reviewed all patients treated surgically for the diagnosis of esophageal perforation from 1989-2003 (n=65), and determined morbidity and mortality as a function of the method of surgical management.

RESULTS: For all patients the 30-day operative mortality was 9.2%, rate of perioperative complications 41.5%, and mean length of stay (LOS) 27.5 days. Iatrogenic perforation was the most common etiology 60%, followed by spontaneous rupture 36.9%, trauma and tumor 3.1%. Most perforations occurred in the thoracic esophagus 58.4%, with 32.3% in the cervical esophagus, and 9.3% in the abdomen. Management varied with the location of the perforation, and the time to surgery. Perforations of the cervical esophagus were repaired primarily 23.8% of the time, and managed with drainage alone 71.4% of the time. Perforations of the thoracic esophagus were repaired with a T-tube 50%, primarily 31.6%, wide drainage alone 7.9%, esophagectomy 7.9%, and exclusion/diversion 2.6%. Perforations of the abdominal esophagus were primarily repaired in 83.3%. Of the thoracic perforations, those that were diagnosed within 24 hours underwent primary repair in 62.5%. A delay in diagnosis greater than 24 hours was managed with T-tube drainage in 63.6%. Overall, 20 patients were managed using a T-tube, with the primary indication being delayed diagnosis, and demonstrated a mortality of 10%. Of the patients who received a primary repair of the thoracic esophagus, principally patients with early diagnosis, the mortality was 9.1%. Of the two patients who underwent primary repair in the setting of delayed diagnosis, one died. As expected by the severity of surgical disease, the mean LOS for patients managed with a T-tube was 43.0 days, while the mean LOS for patients with thoracic perforations repaired primarily was 21.7 days.

CONCLUSIONS: 1) The use of a T-tube for the management of esophageal perforations is an effective alternative to primary repair. 2) In the setting where diagnosis is delayed over 24 hours, this technique results in the reduction of mortality to that characteristic of early presenting perforations.
INTRODUCTION: Inadvertent esophagotomy complicates laparoscopic Heller myotomy. This study was undertaken to determine if esophagotomy at myotomy can be predicted by preoperative therapy of Botox or pneumatic dilation, and if esophagotomy and/or its repair jeopardizes long-term outcome following myotomy.

METHODS: 222 laparoscopic Heller myotomies have been undertaken since 1992. Concomitant inadvertent esophagotomies occurred in 16 patients (7%), all treated by closure and anterior fundoplication. 60 concurrent patients who underwent laparoscopic myotomies without esophagotomy or fundoplication were utilized for comparisons of preoperative therapy, postoperative complications, and long-term outcomes. Dysphagia and reflux before and after myotomy were scored by patients on a Likert scale (0 = none, 5 = with every meal/constant). Excellent or good outcomes as noted by the patients were recorded as satisfactory outcomes. Follow-up (months) after myotomy with esophagotomy (median, mean +/- SD) was 40.5, 34.4 +/- 20.3 vs 46.3, 50.6 +/- 22.2 after myotomy alone.

RESULTS: All esophagotomies were immediately recognized and repaired (15 laparoscopically, 1 open). Preoperatively, patients that experienced esophagotomies were similar to concurrent controls in application of Botox (56% vs 77 %) or dilation (44% vs 65 %), years of dysphagia (7.3 vs 7.4), and mean Dysphagia Score (4.9 +/- 0.4 vs 4.8 +/- 0.4). Complications occurred in 2 patients, both after esophagotomy: 1 pneumonia and 1 persistent pneumoperitoneum. Patients experiencing esophagotomies had longer hospitalizations (5.2 days +/- 2.5 vs 1.5 days +/- 0.7, p<0.05) but were similar to concurrent controls in postoperative Dysphagia Scores (1.7 +/- 1.8 vs 2.1 +/- 1.4), Reflux Scores (1.6 +/- 1.7 vs 2.2 +/- 1.3), and satisfaction (85% vs 83%).

CONCLUSION: Esophagotomy during laparoscopic Heller myotomy is infrequent and cannot be predicted by preoperative therapy, duration of dysphagia, or severity of dysphagia. Furthermore, complications after esophagotomy with immediate closure and anterior fundoplication are infrequent and long-term success and patient satisfaction are indistinguishable from those of patients undergoing laparoscopic myotomy without esophagotomy.
INTRODUCTION: Laparoscopic Nissen Fundoplication (LNF) is a very good option for GERD with satisfactory results and overall reflux control in >95% of patients. Laparoscopic surgery has the inconvenience of video image control by the 1st assistant, that sometimes causes involuntary movements, lost of the surgical field, scope soiling, and distraction that delays the operation. For these reasons we decided to incorporate a robotic arm (AESOP Computer-Motion U.S.A.) for video laparoscopic image control by the surgeon voice.

METHODS: We compared two group of patients with pathological reflux (abnormal 24hrs pH-metry ) submitted to LNF. Group I: AESOP assisted 10 patients vs Group II : Human Assisted 10 patients; and measured global operative time, crural closure time, fundoplication suture time, hospital stay, and complications. The aim of the study was to evaluate applicability, efficiency and safety.

RESULTS: Global operative time was 72 min. in group I vs. 149.5 min in group II (p 0.05), the suture time in crural closure and fundoplication was 3.4 min vs 7.6 min (p 0.05) and 7.9 min vs. 12.8 min (p 0.05) respectively. Hospital stay was 48 hrs in both groups. There were no complications and any conversions to open surgery.

CONCLUSIONS: Using the AESOP is a very useful tool, that reduces operative time when compared with the conventional laparoscopic operation. Surgery is facilitated to the surgeon by and easy and more rapid visual control by his own voice that is reflected in a more friendly performance. The robotic arm demonstrated complete applicability and safety . With the AESOP the surgical team can be reduced to one surgeon and one nurse.
M1902  
**Dysphagia After Laparoscopic Partial Fundoplication**

Maud Lindeboom, Jan Ringers, Jan-Willem Straathof, Pieter van Rijn, Peter Neijenhuis, Ad Masclee, Leiden University Medical Center, Leiden, Netherlands, 't Lange Land Ziekenhuis, Zoetermeer, Netherlands, Rijnland Ziekenhuis, Leiderdorp, Netherlands

**BACKGROUND:** It has been suggested that dysphagia is less common after partial versus complete fundoplication. The mechanisms contributing to postoperative dysphagia remain unclear. Aim of the present study was to investigate LES and esophageal motility and the prevalence of dysphagia in patients who underwent laparoscopic partial fundoplication.

**METHOD:** Symptoms, LES characteristics and esophageal body motility were evaluated prospectively in 62 patients (33 women; age 21-71 yrs) before and after laparoscopic partial fundoplication for therapy resistant reflux disease. The patients filled in symptom questionnaires and underwent stationary and 24-hour ambulatory manometry before and after operation.

**RESULTS:** Excellent reflux control was obtained in 85%. A small but significant increase in LES pressure from 15 ± 1 to 18 ± 1 mmHg was seen after partial fundoplication (p<0.05). Neither LES length nor amplitude, velocity or duration of esophageal body motility were different post versus pre operation. Three months after operation dysphagia was present in 8 patients (13%). LESP in these 8 patients was not different from the other 54 patients: 14 ± 3 versus 18 ± 2 mmHg. Neither LES length nor esophageal peristalsis (stationary and ambulatory manometry) nor ramp pressure (9 ± 1 vs 8 ± 1 mmHg) were different between postoperative patients with (n=8) and without (n=54) dysphagia. Incomplete swallow induced LES relaxation was seen in 3 postoperative patients of whom only one had dysphagia. Six months after the operation dysphagia persisted in 3 patients (2 with mild and 1 with severe dysphagia). The patient with severe dysphagia was reoperated with dismantling of the crusplasty.

**CONCLUSION:** Laparoscopic partial fundoplication offers adequate reflux control with minimal postoperative dysphagia (5% at 6 months). No specific characteristics of the LES or esophageal body motility correlate with dysphagia.
M1903 Delayed Diagnosis of Esophageal Cancer Due to Psychiatric Disorders
Jed Robinson, Jason Andrus, Brian Diggs, Blair Jobe, Portland VA Medical Center, Portland, OR, Oregon Health and Science University, Portland, OR, Portland Veterans Medical Center, Portland, OR

BACKGROUND: The 5-year survival in patients with esophageal cancer is 10%; early detection and treatment are the best hope for survival. There is evidence to suggest that diseases in patients with coexisting psychiatric disorders are more difficult to diagnose, and that a delay in diagnosis may lead to greater mortality. A case-control study was designed to test our hypothesis that esophageal cancer patients with DSM IV (Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition) psychiatric diagnoses have more advanced disease upon initial diagnosis and a higher mortality rate than a similar population without psychiatric comorbidities.

METHODS: A retrospective review of 58 patients with esophageal cancer and one or more DSM IV diagnoses, and 105 patients with esophageal cancer and no DSM IV diagnosis was performed (total N=163). Demographic data, Body Mass Index, time from onset of symptoms to diagnosis, survival, and stage at diagnosis were recorded. Advanced disease was defined as the presence of metastatic involvement (M1a, M1b); regional disease was defined as any cancer of the esophagus without metastatic involvement. Both esophageal adenocarcinoma and squamous cell carcinoma were included.

RESULTS: Groups were similar in age, ethnicity, Body Mass Index, and history of tobacco and alcohol use. (see Table)

CONCLUSIONS: Patients with psychiatric illness have a delay in diagnosis and a more advanced stage of esophageal cancer compared to patients without psychiatric comorbidity; this may result in a higher mortality in this unfortunate group of patients. These findings emphasize the importance of prompt evaluation of foregut symptoms in all patient populations.

<table>
<thead>
<tr>
<th>Table 1.</th>
<th>Case Group</th>
<th>Control Group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced stage at diagnosis</td>
<td>41%</td>
<td>19%</td>
<td>&lt;0.01 *</td>
</tr>
<tr>
<td>Time from symptoms to diagnosis (days)</td>
<td>145</td>
<td>90</td>
<td>&lt;0.05+</td>
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<tr>
<td>4-year survival</td>
<td>10%</td>
<td>25%</td>
<td>P=0.12*</td>
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* Chi-Square + Mann-Whitney U
M1904 Outcome and Quality of Life After Esophagectomy for High Grade Dysplasia and Intramucosal Cancer
Robert J. Moraca, Donald E. Low, Virginia Mason Medical Center, Seattle, WA

INTRODUCTION: Barrett’s esophagus with high grade dysplasia is a well known risk factor for the development of esophageal adenocarcinoma. Esophagectomy remains the gold standard treatment due to the high incidence of invasive cancer (15-73%) found after resection. The reported morbidity and mortality associated with esophagectomy has led some patients to consider less invasive and possibly less effective treatments. The short and long-term morbidity and quality of life comparisons to the general population in patients undergoing esophagectomy for high grade dysplasia and intramucosal cancer are pertinent since these patients are expected to have a normal lifespan.

METHODS: We retrospectively examined the morbidity and mortality of all patients who underwent an esophagectomy by a single surgeon for either high grade dysplasia or intramucosal cancer at a high volume esophagectomy center, between January 1991 and December 2002. Self-administered quality of life surveys, the Short-Form 36 (SF-36) and gastrointestinal symptom specific questionnaires were completed by each patient at follow-up.

RESULTS: Thirty six (36) patients were identified. There were thirty three (33) men and three (3) women with a mean age 66 years (range 43-82). Histologic indication for surgery was Barrett’s esophagus with high grade dysplasia in twenty three (23,64%) patients and intramucosal cancer without invasion in thirteen (13,36%). There were fifteen (15,41%) minor complications and four (4,11%) major complications and no 30 day mortality. The mean and median follow-up was 4.9 years (range 0.5-12) and 4.0 years respectively. The average length of stay was ten (10) days (range 7-18). Twenty eight (28,77%) patients were alive at follow-up. Postoperative overall quality of life (SF-36) was comparable to national normal scores (79 vs. 79). In addition, >80% of patients reported being able “to eat normally” and 92% reported a stable weight over last 6 months.

CONCLUSION: Esophagectomy, at high volume centers for high grade dysplasia and intramucosal cancer can be accomplished with low morbidity and mortality. Perceived long-term quality of life is comparable to the national normal values.
M1905 Epidemiology of Symptoms Suggestive of Gastroesophageal Reflux Disease: A Population-Based Study in South China
Minhu Chen II, Lishou Xiong, Huixin Chen, Angao Xu, Pinjin Hu, The 1st Affiliated Hospital, Sun Yat-sen University, Guangzhou, China, huizhou central people's hospital, Huizhou, China

BACKGROUND AND OBJECTIVE: Gastroesophageal reflux disease (GERD) is considered a common disease in the western countries, but the detailed population-based data on GERD in South China are lacking. The objective of this study was to assess the prevalence of GERD in South China and its impact on health-related quality of life (HRQOL).

MATERIALS AND METHODS: A face-to-face interview was carried out in South China using a validated Chinese version Reflux Disease Questionnaire (RDQ) to assess the prevalence of GERD. RDQ was an instrument to collect the symptoms experienced over the previous month, which included the frequency and severity of heartburn, chest pain, acid reflux and regurgitation. Symptom frequency and severity were all measured on a 6-point scale. A subject would be classified as GERD if the score was more than 12. Random clustered sampling of permanent inhabitants aged 18 to 90 years was carried out under stratification of urban and suburban areas. The impact of IBS on HRQOL was evaluated using the Chinese version of SF-36.

RESULT: (1) A total of 3338 residents (male 1468, female 1870) were investigated. Mean age among the responders was 42.6yr. Response rate was 95%. (2) The prevalence of heartburn and/or acid reflux at least weekly was 6.2%. (3) The adjusted point prevalence of GERD in South China is 2.3% according to our definition (score>=12). (4) There was no difference in prevalence between male (2.6%) and female (2.4%). The subjects aged over 65 yrs had a higher prevalence (3.5%). But no relationship between prevalence and ages was found. The suburban inhabitants were predominant in GERD, and the ratio of urban to suburban was 1:1.65. (5) GERD was significantly associated with a decrement in HRQOL score.

CONCLUSION: GERD is a common disorder in South China, but the prevalence is lower than that reported in the western countries. It had a negative impact on HRQOL which deserves greater care.
BACKGROUND: Epiphrenic diverticula of the esophagus are often associated with a concomitant esophageal motor disorder, which has been postulated to be the cause of 1) most of the patient’s symptoms and 2) the diverticulum itself. In the past, epiphrenic diverticula were usually excised via a left thoracotomy, but that and other thoracic methods have been superseded by a laparoscopic approach.

Hypothesis: We hypothesized that: (a) a motor disorder is the underlying cause of the diverticulum, and (b) optimal treatment consists of laparoscopic resection of the diverticulum combined with a Heller myotomy and a Dor fundoplication.

SETTING: University hospital tertiary care center.

DESIGN: Retrospective study.

Patients and methods: Between June 1994 and December 2002, we evaluated 21 patients with epiphrenic diverticula. An associated motility disorder of the esophagus was found in 81% of patients (achalasia, 9%; diffuse esophageal spasm, 24%; non specific esophageal motility disorder, 24%; nutcracker esophagus, 24%). Esophageal motility was normal in the remaining patients. Seven (33%) of the 21 patients, all of whom had esophageal dysmotility, were referred to us for treatment. They underwent a laparoscopic operation that entailed resection of the diverticulum (using an endo-GIA stapler), a Heller myotomy (on the side of the esophagus opposite the diverticular neck), and a Dor fundoplication.

RESULTS: All operations were completed laparoscopically without complications. The operative time averaged 313±141 minutes. The postoperative course of 6 patients was uneventful. They were consuming an unrestricted diet at 44±10 hours and left the hospital after 72±21 hours. In one patient an acute paraesophageal hernia developed, which was repaired on the second postoperative day. Her subsequent recovery was uneventful. Late follow-up (median, 57 months) showed that all 7 patients were asymptomatic.

CONCLUSIONS: These data support the theory that: (a) a primary esophageal motility disorder is the underlying cause of most epiphrenic diverticula, and (b) laparoscopic treatment is highly successful and should be the method of choice. The diverticular neck can be exposed satisfactorily from the abdomen and a stapler inserted from this angle is better orientated, compared with the thoracoscopic access, to transect the neck. Furthermore, the myotomy and fundoplication are much more easily performed from the abdomen than from the chest.
M1907 Geographical Variation in Patient Expectations of Antireflux Surgery
Vic Velanovich, Thomas Kamolz, Rudolph Pointner, Sandro Contini, Henry Ford Hospital, Detroit, MI, Public Hospital of Zell am See, Zell am See, Austria, University of Parma, Parma, Italy

BACKGROUND: Patient expectations can affect patient satisfaction after operative procedures. As surgery for gastroesophageal reflux disease (GERD) is primarily done to relieve symptoms, expectations can play an important role. The purpose of this study was to determine if there are geographic variations in patient expectations, and if this affects patient satisfaction.

METHODS: Patients referred for antireflux surgery (ARS) in the USA, Austria and Italy were prospectively studied. All were evaluated with history and physical examination, as well as, objective studies of reflux. Preoperatively, they were asked 1. How do you expect the surgery to affect your symptoms? and 2. What do you expect the possible complications or side effects to be? These patients then underwent either open or laparoscopic ARS. At 2 to 3 months postoperatively, they were asked 1. Are you satisfied with your surgery? If so why? If not, why not? and 2. Did your surgery meet your expectations? If not, why not?

RESULTS: 20 patients in the USA, 24 patients in Austria, and 18 patients in Italy completed the study. Preoperatively, symptomatic relief was the most common expectation. However, only Austrian and Italian patients mentioned cancer risk reduction. There was variation in question #2 with Austrian and Italian patients more likely to mention conversion and postoperative side effects compared to American patients. Postoperatively, 90% of American, 88% of Austrian, and 89% of Italian patients were satisfied. Causes for dissatisfaction were postoperative complications, symptomatic recurrences, or side effects. 90% of American, 96% of Austrian, and 94% of Italian patients said their expectations of surgery were met. Neither, type of surgery nor preoperative physiologic testing correlated with dissatisfaction. Patients who did not mention the possibility of side effects or complications were more likely to be dissatisfied. CONCLUSIONS: There is geographic and probably cultural variation in patient expectations of ARS. Nevertheless, primary causes for dissatisfaction were similar, specifically side effects, complications or symptomatic recurrences. Patients who did not mention these as possibilities preoperatively were more likely to be dissatisfied.
M1908 Laparoscopic Paraesophageal Hernia Repair (LPEHR) with Biomaterial Mesh: Favorable Short Term Results.
Omar K. Danner, George M. Eid, Samer G. Mattar, Ramesh C. Ramanathan, Giselle G. Hamad, Daniel R. Cottam, Philip R. Schauer, University of Pittsburgh Medical Center, Pittsburgh, PA, University of Pittsburgh Medical center, Pittsburgh, PA

BACKGROUND: LPEHR has been associated with a high recurrence rate (17 to 40%). Esophageal lengthening procedures and crural fixation have been recommended to reduce recurrence. In this study, we review our results with crural fixation using small intestine submucosa (SIS). Patients and Method: We reviewed demographic, preoperative and postoperative data on 24 consecutive patients with greater than 12 months follow-up after LPEHR with SIS from July 1996 to August 2002. The technique involved gastric reduction and hernia sac excision. The crura were approximated and reinforced with SIS as an onlay patch. Collis-gastroplasty (CG) was performed on patients with an intra-abdominal esophagus less than 2 cm in length.

RESULTS: There were 18 females and 6 males. The mean age was 60 years (range 36 to 91). Presenting symptoms were heartburn (52%), epigastric pain (39%), and anemia (9%). The average size of the defect was 5.3 cm (range 4 to 10 cm) and 15 patients (65%) required CG. There were 3 esophageal tears repaired intra-operatively. One patient, age 91, died from multisystem organ failure. The average follow-up was 26.1 months (range 13 to 86). Sixteen patients (74%) had postoperative upper gastrointestinal series at least 9 months after repair, with 12 patients (75%) demonstrating no radiographic recurrence. Four patients (25%) had small (<2 cm), recurrent hiatal hernia, but only 2 patients had recurrent symptoms. No mesh related complications were identified.

CONCLUSION: Early experience of crural reinforcement with SIS mesh is safe and may reduce, early, clinically significant recurrence of LPEHR due to crural disruption.
**M1909** Non-Reflux Related Pain After Laparoscopic Nissen Fundoplication
Andrew J. Duffy, Nancy J. Hogle, Arnon Lambroza, Dennis L. Fowler, Weill Medical College of Cornell University, New York, NY, New York Presbyterian Hospital, New York, NY

**INTRODUCTION:** Laparoscopic Nissen fundoplication is a well-accepted and effective treatment option for patients with significant gastroesophageal reflux disease (GERD). Pre-operative testing, including a 24-hr esophageal pH measurement, is often employed to document disease and correlate symptoms to reflux episodes. The post-operative course may be marked by mild dysphagia and gas bloat. Occasionally, patients report sensations or pain similar to their pre-operative symptoms. In these cases, repeat esophageal pH measurement can be used to identify recurrent reflux as a possible etiology. We have noted a subset of patients who have undergone a laparoscopic Nissen fundoplication who have re-presented with similar symptoms. We hypothesize that a majority of these cases do not represent failure of anti-reflux surgery but rather esophageal hypersensitivity to ingested food.

**METHODS:** We reviewed our cases of fundoplication for GERD from October 2000 to September 2003. Patients who returned post-operatively with recurrent symptoms including heartburn, epigastric pain, or post-prandial pain were selected. Pre and post-operative esophageal studies were compared and symptoms were correlated with the presence or absence of post-operative reflux. Treatment plans and outcomes were noted.

**RESULTS:** 59 laparoscopic fundoplications were performed over this time period. Of these patients, 5 (8.4%) presented with post-operative symptoms suggestive of reflux. All of these patients underwent post-operative 24-hr esophageal pH measurement. One patient had recurrent reflux for a 1.6% documented surgical failure rate. This patient had radiographic and endoscopic confirmation of the adequacy of the wrap. Four patients (80% of those with recurrent symptoms) showed significant improvement in their DeMeester Scores post-operatively (64.8 versus 6.95 (p=0.02), pre and post-operatively, respectively). Alternate pain management strategies were considered for those whose reflux was eliminated by the fundoplication.

**CONCLUSIONS:** Recurrent GERD symptoms following laparoscopic Nissen fundoplication does not necessarily signify recurrent reflux. In our experience, 80% of these patients may have esophageal pain that is not related to refluxed gastric contents. Their symptoms may be related to esophageal hypersensitivity. Effective treatment may require alternative strategies such as pharmacologic management of chronic pain.
HEPATIC: CLINICAL

†M1910 The Oncologic Effect of the TissueLink™ Device on Liver Surface Tumors and Positive Margins
Eric S. Weiss, Michael S. Torbenson, Tracy J. Wanner, Barbara M. McGee, Jean F. Geschwind, Michael A. Choti, Johns Hopkins Hospital, Baltimore, MD

PURPOSE: Saline enhanced surface electrocautery using the TissueLink™ dissector is a modality being increasingly used for parenchymal division during hepatic resections. While this technique can achieve reduced blood loss, the oncologic effect of the associated local tissue destruction on close or positive tumor margins or surface tumors is unclear. The objective of this study was to determine the effect of surface ablation using this device on local recurrence in the rabbit model.

METHODS: 38 rabbits underwent liver VX2 tumor implantation during open surgery. In the first experiments, animals were reexplored 12 days later and the 1-cm diameter tumors were resected with positive histologic margins. In one group determined randomly, surface ablation of the resection margin was performed using the TissueLink™ 3.0 Dissector device and compared to a control group with only standard electrocautery of the resection margin. In the second group of experiments, 27 subcapsular tumors measuring 8-14 mm were created. Upon reexploration, surface ablation was performed using this device directly on the visible tumors to varying depths and duration. Rabbits were sacrificed 14 days later and livers were fixed and examined both grossly and microscopically for viable tumor.

RESULTS: Tumor sizes were consistent in all study groups and the animals tolerated the procedures. Margin or surface ablation was utilized for an average of 45 seconds in order to achieve thermal penetration beyond at least 1-cm depth. In tumor margin study, viable tumor was seen at the resection margin in only 1 of 7 animals treated with surface ablation (15%) compared 4 of 4 (100%) in controls (p=0.01). In the surface lesion study, 14 of 17 tumors (82%) in the experimental group showed complete eradication compared to 0 of 10 control tumors (p=0.01). The eradication rate did not vary significantly with size of initial tumor or power level.

CONCLUSION: Surface ablation using this saline-enhanced dissecting device appears to be effective at local destruction of viable tumor both as surface lesions and at positive resection margins in this rabbit model. Devices such as these, which are typically used for parenchymal dissection, may have an added oncologic benefit in cases of close liver resection margin or for small surface tumors.

† Poster of Distinction
Hepatic Resection for Incidentaloma

Chi-Leung Liu, Sheung-Tat Fan, Chung-Mau Lo, See-Ching Chan, Irene O. Ng, Wai-Kuen Tso, John Wong, Department of Surgery, The University of Hong Kong, Hong Kong, Hong Kong, Department of Pathology, The University of Hong Kong, Hong Kong, Hong Kong, Department of Diagnostic Radiology, Hong Kong, Hong Kong

With recent advances in diagnostic imaging techniques, incidental finding of liver tumors, or incidentalomas, are found in increasing number of asymptomatic and healthy individuals. However, little information is available in the literature regarding the underlying pathology and operative outcomes after hepatic resection. The aim of this study was to review a single-center experience in hepatic resection for patients who presented with incidental liver tumors. Between January 1989 and December 2002, 1011 patients underwent hepatic resection for liver tumors, among whom 107 (11%) asymptomatic individuals presented with incidentalomas. Incidentalomas were first detected by percutaneous ultrasound (n = 83), computed tomography (n = 23), or magnetic resonance imaging (n = 1). Fifteen (14%) patients had preoperative aspiration for cytology or biopsy for histology, and the results correlated with the final pathology in 12 patients. Fifty six (52%) patients underwent major hepatic resection with resection of three or more Couinaud's segments. Median postoperative hospital stays was 8 days (range, 3 to 66 days). The operative mortality was 1%, and the operative morbidity was 21%. Histological examination of the resected specimen revealed malignant liver tumors in 62 (58%) patients, including hepatocellular carcinoma (HCC, n = 48), cholangiocarcinoma (n = 8), lymphoma (n = 2), and others (n = 4). Benign pathologies were found in 45 (42%) patients, including focal nodular hyperplasia (n = 17), hemangioma (n = 12), angiomyolipoma (n = 5), cirrhotic regenerative nodule (n = 4), hepatic adenoma (n = 2), and others (n = 5). On multivariate analysis, male sex, age >50 years, and tumor size >4cm were the predictive factors for malignant disease. In conclusion, hepatic resection for patients with incidentalomas is associated with a low operative mortality and acceptable morbidity. The diagnosis of malignant disease especially HCC should be considered in male patients older than 50 years presented with large hepatic lesions.
M1912  Robotically-Assisted Radiofrequency Ablation of Liver Tumors: Comparison with Standard Manual Techniques

Michael M. Awad, Stephen B. Solomon, Alex Patriciu, Dan Stoianovici, Michael A. Choti, Johns Hopkins, Baltimore, MD

PURPOSE: Radiofrequency ablation (RFA) is a minimally invasive method for treatment of primary and metastatic liver tumors. This approach can often be limited by the ability to accurately and easily target the RFA probe using free-hand manual techniques. The purpose of this study was to evaluate the efficiency, accuracy, and safety of a robotically-assisted percutaneous RFA system for the treatment of liver tumors in comparison with conventional manual techniques.

MATERIALS AND METHODS: We compared treatment variables (number of probe passes, time to successful targeting, overall procedure time, radiation exposure, complications, pain score, and ablation completeness) of six patients who underwent robotically-assisted RFA using a remote center of motion, needle driver robot (RCM-ND) under CT guidance with the same data from a contemporaneous series of five patients who underwent conventional manual CT-guided RFA. The RCM-ND incorporates a robotic arm and a friction transmission with axial loading system to accurately position and insert a standard multi-electrode RFA probe into the liver.

RESULTS: All ablative procedures were well tolerated in all patients with no difference in the ability to achieve complete ablation (>90%) in the two groups. When comparing the RCM-ND with standard manual techniques, the mean number of probe passes was 1.0 vs. 3.2 (P = 0.001), time to successful targeting was 3.4 vs. 8.7 minutes (P = 0.03), and the overall procedure time was 40.7 vs. 67.1 minutes (P = 0.009). The procedures were tolerated better in the robotic group with lower perceived average pain score (P = 0.02) and lower pain medication requirement (P = 0.01). Moreover, both the physician and patient radiation exposure levels were significantly less in the robotic group (P = 0.001).

CONCLUSIONS: Robotically-assisted RFA is a feasible, safe, and efficacious method of performing CT-guided percutaneous ablation of liver tumors. This robotic RFA targeting system demonstrates significant advantages compared to standard manual techniques. These findings provide the groundwork for adapting such image-guidance systems for the treatment of liver cancer.
INTRODUCTION: Treating liver tumors by in situ ablation techniques like radiofrequency ablation (RFA) creates thermal lesions with an often complex lesion geometry. The fact that they cannot yet be predicted or monitored on-line increases the risk of local recurrence. The aim of this study was to develop a computer-simulated 3-D irradiation model for predicting the ablation volume and to evaluate RFA in vivo in porcine liver with normal and interrupted perfusion.

MATERIAL AND METHOD: Electric field distribution and heat transport were calculated by using the finite difference model. The parameters of the planned RFA (cooled applicator, applicator time/energy, perfusion or occlusion, physical tissue parameters) were defined for the computer-simulated irradiation model and a 3-D image of the coagulation volume was calculated. The simulation results (longitudinal and transverse diameter LongSim and TransSim as well as the volume VolSim) were correlated to those in vivo in 15 domestic pigs (bipolar RF applicator, 12 min., 60 W). The animals were randomized into 3 groups: normal hepatic perfusion (RFAmono), interrupted perfusion by the Pringle maneuver (RFAPringle), i.a. microembolization by starch microspheres (RFADSM). After intervention, the lesions were measured longitudinally (LongRFA) and transversally (TransRFA) and the volumes (VolRFA) were calculated.

RESULTS: Simulated or in vivo interrupted perfusion led to a 4.2/3.2-fold (DSM) or 5.7/4.1-fold (Pringle) increase in lesion volume. The deviation in the diameter between the simulation and in vivo data was 1.5% (RFAmono), 3.3% (RFAPringle) and 5.6% (RFADSM), corresponding to 0.3 mm, 1.2 mm and 1.8 mm. (see table)

CONCLUSIONS: The developed irradiation model shows very good agreement between simulated and in vivo data with prediction of the coagulation volume in RFA under normal and completely interrupted hepatic perfusion. This model is the first to yield data on the expected lesion geometry and required application parameters for reliable tumor volume destruction during interstitial in situ RAF ablation procedures.
**BACKGROUND:** Routine drainage is no longer utilised following many abdominal procedures. However the role of routine surgical drainage following hepatic resection is unclear. Of the 2 randomised trials published, 1 concluded drainage is unnecessary after hepatectomy while another concluded it could be utilised following major resections only.

**METHODS:** Between 1999 and 2002, 211 elective hepatic resections were performed by 2 surgeons at Auckland Hospital. Drains were used routinely by 1 surgeon (n=126) while another routinely did not drain (n=85). Patients undergoing a biliary reconstruction were not included in this analysis. Patient and clinical data was recorded prospectively and no outcome analysis was performed until 2003.

**RESULTS:** Demographic features were similar between the drained and undrained groups (table 1). There were no differences in length of hospital stay (no drain, 7 plusminus 0.8 days; drain, 7 plusminus 0.9 days; p=not significant (NS)), in mortality (no drain, 1.2%; drain, 1.6%; p=NS) or overall complication rate (no drain, 50.5%; drain, 54.7%; p=NS). Both groups had similar rates of post operative collection (no drain, 4 patients (4.7%); drain, 5 patients (4%); p=NS), however drained patients were more likely to have an infected collection (no drain, 1 patient; drain, 3 patients: p<0.05) and to require re-operation for sepsis (no drain 1 patient (1.1%), 6 patients (4.8%); p<0.01). Undrained patients were more likely to undergo percutaneous drainage of collections (no drain, 4 patients (4.7%); drain, 2 patients (1.6%): p<0.05). Multivariate analysis showed that intra-operative blood loss >2000ml (RR 1.57, 95% CI 1.4-1.7, p<0.01), number of segments resected (RR 1.4, 95% CI 1.2 -1.9, p<0.01) and presence of steatosis/fibrosis/cirrhosis (RR 1.6, 95% CI 1.0-2.1, p<0.05) to be predictive of post-operative complications. The presence of a surgical drain was not predictive of complications

**CONCLUSIONS:** Routine surgical drainage following elective hepatectomy is not necessary.

<table>
<thead>
<tr>
<th>Demographic features of drained and undrained patients.</th>
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<tr>
<td>n Male:Female Age (range) ≥4 Segments Resected</td>
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<td>Drained 126 65:61 61 yr (41 - 80)</td>
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<tr>
<td>Undrained 85 45:40 62 yr (39-79)</td>
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M1915  

NASH Risk Factors in Bariatric Patients

Ronald E. Moore, Atul K. Madan, Mark A. Carlson, Constantine T. Frantzides, Northwestern University, Ft. Lauderdale, FL, University of Tennessee—Memphis, Memphis, TN, University of Nebraska Medical Center, Omaha, NE, Northwestern University, Evanston, IL

PURPOSE: To identify risk factors for steatosis and/or nonalcoholic steatohepatitis (NASH) in patients undergoing bariatric surgery.

METHODS: This was a retrospective analysis of 177 nonalcoholic morbidly obese patients who underwent laparoscopic Roux-en-Y gastric bypass and liver biopsy. The histologic grade (0 = none; 1 = mild; 2 = moderate; 3 = severe) of steatosis and NASH was compared with preoperative body mass index (BMI), age, alanine aminotransferase (ALT), aspartate aminotransferase (AST) and alkaline phosphatase (AP) using ANOVA and cumulative logistic regression.

RESULTS. The mean BMI was 48.9 +/- sd 8.5; (range 31-86); the patients were divided into 3 groups by age: <36 (N =65); 36-45 (N =49); and >45 (N =63). The liver biopsy results are given in the Table. There was no two-way correlation between either liver disease vs. BMI. Evaluation of BMI, age, and disease in the regression analysis revealed that the risk for both pathologies increased with BMI in the <36 age group (p <0.02). There was no effect of BMI on liver pathology in the 36-45 age group; the risk for both pathologies actually decreased with increasing BMI in the >45 age group (p <0.02). Increased ALT or AST (but not AP) were associated with an increased risk for both pathologies (ANOVA, p <0.001).

CONCLUSIONS: There was a high incidence of steatosis and NASH in these bariatric patients. The risk for both steatosis and NASH increased with BMI in the <36 age group; this effect of BMI was reversed in the >45 age group. The latter finding may indicate a protective effect of increased BMI in the >45 age group. ALT and AST were each independent risk factors for both steatosis and NASH.

Results of liver biopsy in bariatric patients

<table>
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<th>disease</th>
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<td>71</td>
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<td>NASH</td>
<td>102</td>
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</table>
INTRODUCTION: Radiofrequency ablation (RFA) has been shown to be a safe and effective method of destroying “unresectable” colorectal liver metastases. Because the morbidity and mortality profile of RFA is 1/10th that of hepatic resection, an evaluation of RFA as a possible alternative to resection is warranted. This paper analyzes patients who had technically resectable colorectal liver metastases, but for medical or personal reasons had RFA as their primary treatment.

METHODS: Retrospective chart review of prospectively collected data. Between 1996 and 2003, 88 patients were treated for colorectal metastases to the liver. Of these patients, 44 could be considered to have surgically resectable disease based on unilobar (or limited bilobar) disease, no more than 4 lesions, and absence of extrahepatic disease. 31 went on to have RFA as a primary treatment due to poor medical condition or patient/physician preference. RFA was performed laparoscopically, under the guidance of intraoperative ultrasound. Concomitant procedures were performed in 18 patients. All values were reported as median (range).

RESULTS: There were no perioperative deaths. There were 2 major complications (hepatic abscesses) and 3 minor complications. The median hospital stay was 2.0 days (0.5 to 14) and no patients required admission to the ICU. Median operating time was 226 minutes (84 to 470). There were no unplanned conversions and no patients required blood transfusion. During a median followup of 17 months (4.5 to 43), 23 patients (74.2%) had recurrent disease, and among these patients disease-free survival was 12.75 months (3.5 to 32). 8 patients (25.8%) recurred at an RFA site; of these 8 patients, 4 also had regional or extrahepatic recurrences. Median time to local failure was 13.5 months (6 to 43). 11 patients (35.5%) had liver recurrences distant from the RFA site, and 16 patients (51.6%) had extrahepatic recurrences. 7 patients died (22.6%); among the deceased patients, median survival was 18 months (6 to 29).

CONCLUSION: RFA is a safe and effective treatment for hepatic colorectal metastases. Local recurrence rates are high. However, many of these local recurrences are accompanied by regional or extrahepatic recurrence, which would not have been removed by a resection. Survival is comparable with the published literature for surgical resection while morbidity and mortality rates are low. A randomized study comparing RFA to resection should be performed.
Randomized Controlled Trial of Pylorus-preserving Whipple Versus Duodenum-preserving Pancreatic Head Resection in Chronic Pancreatitid

Frank Makowiec, Hartwig Riediger, Ulrich T. Hopt, Ulrich Adam, Department of Surgery, University of Freiburg, Freiburg, Germany

BACKGROUND: The optimal form of surgical treatment of chronic pancreatitis (CP) of the pancreatic head is still under debate. Two studies comparing pylorus-preserving (PPPD) with duodenum-preserving (DPPHR) head resection showed some advantages of DPPHR but included few patients only. The present study compares perioperative and long-term outcome including quality of life (QOL) in 87 patients randomized to either PPPD or DPPHR.

METHODS: Eighty-seven patients with CP predominantly of the pancreatic head and indication for surgery (main indication: pain 62%, jaundice 21%, other 17%) were randomized to undergo PPPD (n=44) or DPPHR (n=43). Mean age was 44 years, 84% were male, median duration of CP was 34 months. The groups did not differ regarding demographic and disease-related data. Mean postoperative follow-up was 32 months and complete in 82 (94%) patients. Follow-up also included QOL-assessment (EORTC) and endocrine function tests.

RESULTS: Patients undergoing PPPD had longer operation times (median 435 vs. 368 mins for DPPHR; p<0.01). Operative blood loss (median 3 units) did not differ between the groups. Postoperative complications were comparable (41% in PPPD vs 35% in DPPHR; n.s.). Late local complications occurred in 18% after PPPD and in 14% after DPPHR (n.s.). Preoperative body mass index (BMI) increased 2.4 points until the last follow-up (p<0.05). BMI increased significantly more after DPPHR than after PPPD (p<0.02). This increase was predominantly seen in patients undergoing DPPHR with a preoperative BMI below 20. In the entire study population the median value of pain frequency decreased significantly (50 points preop vs. 12 points postop.; p<0.01). The median value of pain intensity also decreased significantly (58 points preop. vs. 8 points postop.; p<0.01). Both decreases were not different after PPPD or DPPHR. Preoperatively 27 patients (31%) had diabetes. At the end of follow-up, 60% of the patients had diabetes. There was no difference in the occurrence of new-onset diabetes between both groups. Median QOL (global health score) showed a significant increase postoperatively in both groups (50 points preop. to 67 points postop. in the PPPD-group, 52 points preop. to 68 points postop. in the DPPHR-group). QOL-improvement was not different between the groups.

CONCLUSION: In patients requiring pancreatic head resection for CP, PPPD or DPPHR are almost equally effective regarding the main long-term outcome parameters.
M1918  Risk Factors and Outcomes in Patients with Post-pancreaticoduodenectomy Pancreaticocutaneous Fistula
Taylor A. Sohn, John W. Lin, John L. Cameron, Charles J. Yeo, Keith D. Lillemoe, Johns Hopkins Medical Institutions, Baltimore, MD, Indiana University School of Medicine, Indianapolis, IN

BACKGROUND: A significant proportion of patients undergoing pancreaticoduodenectomy continue to develop a postoperative pancreaticocutaneous fistula. This study identifies risk factors for this complication, and delineates its effects on patient outcomes.

METHODS: A retrospective review of 1,968 patients undergoing pancreaticoduodenectomy at one institution from 1970 to 2003 was carried out. A pancreaticocutaneous fistula was defined as continued drainage of >50cc of amylase rich fluid on or after postoperative day 10.

RESULTS: Of the 1,968 patients undergoing pancreaticoduodenectomy, 218 (11.0%) developed a fistula. Patients with malignant disease (n=1,458) or chronic pancreatitis (n=173) had lower fistula rates than patients with other benign diseases (n=337; p<0.001). Male sex (p=0.007), longer operative times (p=0.002) and radical retroperitoneal lymphadenectomy (p=0.003) correlated with increased fistula rates. The dominant predictive factor was pancreatic texture at the transection site. Data on gland texture were available for 236 patients. A soft gland (n=93) was associated with a 22.6% fistula rate, a 20.4-fold increase in fistula risk over those patients with a medium (n=78) or firm (n=65) gland (95% CI, 4.7 to 90.9). No patient with a firm gland developed a fistula. In a multivariate analysis, only pancreatic texture remained predictive (p<0.001). Specific technical features of the pancreatic anastomosis and differences in stenting of the biliary system did not affect fistula rate. Of the 218 patients with pancreatic fistula, 214 (98.2%) closed without operative revision. Although 30-day postoperative mortality was not statistically different between patients with and without a fistula (1.4% vs. 1.7%), mean length of stay was increased (26.0 vs. 11.9 days, p<0.001). Several postoperative complications also were increased, including delayed gastric emptying, postoperative pancreatitis, bile leak, intra-abdominal abscess, and wound infection. Long-term survival in patients with pancreatic adenocarcinoma was not affected by the development of a postoperative fistula.

CONCLUSIONS: In this single-institution experience of 1,968 patients undergoing pancreaticoduodenectomy, pancreaticocutaneous fistula was most strongly predicted by pancreatic texture. Choice of anastomotic technique did not alter fistula rates. Pancreaticocutaneous fistula increased postoperative length of stay and morbidity, but did not increase postoperative mortality.
BACKGROUND/AIMS: In acute pancreatitis (AP) there is no information available on the circulating levels of endothelins during the progression of pancreatic inflammation. However, there are evidences that endothelin-1 (E1) is involved in the microcirculatory disturbance and in the development and progression of AP. Administration of E1 after caerulein injection decreased pancreatic blood flow significantly, aggravating microcirculatory disturbance. Topically, superfused E1 induced pancreatic microvascular deterioration and acinar cell injury similar to the induced by intraductal infusion of sodium taurocholate in rats. Studies have also shown that ETA receptor antagonist has a protective effect in microcirculatory disturbance of AP. The aim of this study was to explore the ability of neutrophils from AP patients to injure cultured endothelial cells in vitro and analyse the contribution of endothelins to this phenomenon.

PATIENTS AND METHODS: Peripheral blood human neutrophils collected from 19 healthy adult volunteers and 19 AP patients were cocultured with endothelial cell monolayers (ECV-304) to assess its integrity through detachment defined as percentage of O.D compared with an intact monolayer. Detachment was also measured in neutrophils collected from both groups treated with antagonist of endothelin type A receptor, BQ-123 or type B, BQ-788. P<0.05 was considered significant.

RESULTS: The neutrophils from AP patients caused significantly higher levels of detachment (fig 1) when compared to healthy donors (p<0.05). The endothelins receptors antagonists inhibited the endothelial cell detachment when neutrophils from healthy donors were used (fig 2)(p<0.05) but were ineffective on neutrophils from AP patients (fig 3)(p>0.05).

CONCLUSION: Detachment reduction determined by neutrophils pretreated with ETA or ETB receptor antagonists observed in healthy donors but not in AP patients suggests that endothelins play an important role in the endothelial injury. It is speculated that distant organ damage that may occur during AP could be attenuated by endothelins receptor antagonists thus making it a possible therapeutic tool in AP.
Pancreaticoduodenectomy for Pancreatic Adenocarcinoma: Impact of Margin Status on Pattern of Failure and Survival

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INTRODUCTION: The European Study Group for Pancreatic Cancer-1 recently reported that a microscopically positive resection margin was a biologic predictor of more aggressive disease in patients who underwent pancreaticoduodenectomy (PD) for pancreatic adenocarcinoma. To critically evaluate this hypothesis, we analyzed our experience that included prospective pathologic analysis of all PD specimens.

METHODS: All patients who underwent PD met objective CT criteria for resection, including no evidence of tumor extension to the celiac axis or superior mesenteric artery (SMA). Standard pathologic evaluation of the PD specimen included permanent section analysis of the retroperitoneal (RP) margin, defined as the soft tissue margin adjacent to the right lateral wall of the SMA. The status of this margin (positive or negative) was a required element in all pathology reports. Recurrences (first recurrence, all sites) were defined as local, regional, or distant.

RESULTS: PD was performed on 258 consecutive patients with pancreatic adenocarcinoma from 1992 to 2002. Five patients were lost to follow-up; all remaining living patients had a minimum follow-up of 12 mo (median 21 mo). The RP margin was microscopically positive (R1) in 36 patients (14%) and negative (R0) in 222 (86%); standard prognostic factors, patterns of recurrence, and survival were similar in the R1 and R0 patient groups (Table). Patients who underwent an R1 resection had a median overall survival (OS) of 21 mo compared to 27 mo in patients who underwent an R0 resection (p =0.35). Only lymph node metastases were associated with a significant decrease in disease-free (DFS) survival and OS.

CONCLUSIONS: There was no statistically significant difference in patient survival based on R status. However, this series is unique in the prospective evaluation of the RP margin, the absence of R2 resections, the small number of R1 resections, and the frequent use of multimodality therapy. To what degree these factors abrogate the potential biologic disadvantage of a microscopically positive RP margin remains speculative.

<table>
<thead>
<tr>
<th>RP margin</th>
<th>Total</th>
<th>Positive (%)</th>
<th>Negative (%)</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Total patients</td>
<td>258</td>
<td>36 (14)</td>
<td>222 (86)</td>
<td></td>
</tr>
<tr>
<td>Lymph node metastases</td>
<td>128</td>
<td>23 (64)</td>
<td>105 (47)</td>
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<td>Tumor size &gt; 2cm</td>
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<td>28 (78)</td>
<td>142 (64)</td>
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<td>189</td>
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<tr>
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<td>43</td>
<td>10 (28)</td>
<td>33 (15)</td>
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<tr>
<td>Local Recurrence</td>
<td>21</td>
<td>3 (8)</td>
<td>18 (8)</td>
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<tr>
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<td>Median DFS</td>
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<td>20 mo</td>
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<td>Median OS</td>
<td>21 mo</td>
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M1921 The Utility of Endoscopic Ultrasound in the Surgical Management of Pancreatic Disorders

Paul Vietzen, Shawn Mallery, Rebecca Lai, Timothy Sielaff, Univ Minnesota, Minneapolis, MN, Hennepin County Medical Center, Minneapolis, MN

The utility of endoscopic ultrasound (EUS) in the surgical management of pancreatic diseases is evolving. The hypothesis of this study is that endoscopic ultrasound is more accurate than axial imaging in the diagnosis and staging of pancreatic neoplasms and chronic pancreatitis (CP) in patients who undergo surgical exploration.

METHODS: A retrospective review identified ~325 patients in our GI Tumor Group who underwent axial imaging and EUS for diagnosis and evaluation of surgical resectability from March, 2000, to the present. EUS was performed to identify malignant lymphadenopathy outside the field of resection, to identify other metastatic disease, and to obtain tissue diagnosis. Sixty-nine patients warranted surgical exploration. Demographic data, CT/MRI, EUS, surgical and pathologic staging (T,N,M) were evaluated. This study was IRB approved.

RESULTS: Of the 69 patients explored, 51 patients had periampullary or pancreatic neoplasms. Twelve patients were unresectable at exploration; there was one positive margin. One of the 18 CP patients was unresectable. Regarding T stage of neoplasms, axial imaging underestimated 62% of tumors; 29% of these showed no lesion. EUS understaged 35% of tumors but failed to identify only 2/51 of lesions. In addition, axial imaging overstaged 18% of patients and incorrectly diagnosed malignancies in 3/18 patients with CP. EUS did not overstage any patients. Axial imaging understaged nodal status in 33% of the 39 resected lesions. EUS understaged 31% of such patients. EUS identified one patient with a presumed malignant lymph node which proved to be benign. EUS fine needle aspiration (FNA) of tumors was highly accurate with a correct histological diagnosis in 44 (94%) of 47 tumor biopsies. No false positive biopsies were noted. CP was correctly diagnosed by EUS criteria or biopsy in 17 of 18 patients.

CONCLUSIONS: In patients with surgical pancreatic diseases, endoscopic ultrasound is able to identify a higher percentage of tumors than axial imaging. EUS also provides a histologic diagnosis in 94% of pancreatic neoplasms. As endoscopic ultrasound does not overstage tumors, its true usefulness may lie in identifying contraindications to resection.
**INTRODUCTION:** Persistent post-operative anorexia can occur after pancreaticoduodenectomy. Several peptide hormones affect the nutritional homeostasis via the regulation of appetite. Recently the gastric hormone, Ghrelin, has been identified as an activator of appetite and food intake. The secretion of Ghrelin and its relationship to other gut hormones may, therefore, be altered after a Whipple operation.

**METHODS:** During the October 2002 through May 2003 18 patients (8 females, 10 males) underwent pancreaticoduodenectomy. After obtaining IRB approval, fasting serum blood samples were collected immediately preoperatively, postoperatively, and then again at 1 and 2 weeks postoperative. Radioimmunoassays were performed to measure ghrelin, glucagon, insulin, cortisol, GLP-1, NPY, and PYY levels. Body mass index (BMI) was recorded at each time interval. Results were compared to healthy volunteers, and patients undergoing other gastrointestinal operative procedures. Standard statistical calculations were performed.

**RESULTS:** Patients underwent pancreatectomy for either malignancy (n=13) or chronic pancreatitis (n=5). BMI and glucose levels were not significantly different amongst the different cohort of patients. Relative to healthy volunteer controls, patients undergoing pancreatectomy demonstrated a decrease in ghrelin levels preoperatively (70.1 pg/ml +/- 14.1 vs 162.5 pg/ml +/- 24.4, p < 0.01), postoperative (42.1 pg/ml +/- 5.2 vs 162.5 pg/ml +/- 24.4, p<0.001), and at one week (92.1 pg/ml +/- 15.5 vs 162.5 pg/ml +/- 24.4, p < 0.05). Ghrelin levels were similar to control levels at 2 weeks (108.5 pg/ml +/- 11.1 vs 162.5 pg/ml +/- 24.4, p=NS). In contrast, insulin levels demonstrated an opposite trend, being increased versus controls preoperatively (18.9 m units/ml +/- 3.9 vs 8.81 m units/ml +/- 0.7, p < 0.041) and reached control values at two weeks (8.07 m units/ml +/- 1.8 vs 8.81 m units/ml +/- 0.7, p <NS). Glucagon levels demonstrated an opposite trend to insulin. Surprisingly, GLP-1 and PYY (both known satiety factors) remained elevated at two weeks relative to controls. Results from patients undergoing other gastrointestinal operative procedures were similar to healthy controls.

**CONCLUSION:** These results indicate that decreased ghrelin levels may be implicated in early post-operative anorexia. The mechanism for prolonged anorexia may be due to an increase in serum GLP-1 and PYY. Further controlled clinical studies need to be performed to better understand the mechanism of these hormonal changes.
Clinical Utility of 18-FDG PET in the Diagnosis and Management of Nonpancreatic Periampullary Neoplasms.
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18-Fluorodeoxyglucose positron emission tomography (18-FDG PET) has been investigated for diagnosis and staging of gastrointestinal malignancies including pancreatic adenocarcinoma. However, its role in the clinical management of non pancreatic periampullary tumors has not been studied so far. Aim of this study was to examine the clinical impact of 18-FDG PET in the diagnosis and follow-up of patients with periampullary neoplasms. Materials and Methods. Twenty-three patients (14 males and 9 females, mean age 65.1 years, range 41-83) underwent whole-body 18-FDG PET and abdominal computer tomography (helical CT). In all patients malignant or benign disease was confirmed pathologically after surgery. The 18-FDG PET was analyzed visually and semi quantitatively using the standard uptake value (SUV). Positivity was assumed when a focal uptake occurred with a SUV of at least 2.5. Results. There were 14 ampullary tumors (9 adenocarcinomas and 5 adenomas), 7 bile duct neoplasms (6 adenocarcinomas and 1 carcinoma in situ), and 2 duodenal tumors (1 adenocarcinoma and 1 leiomyoma). 18 patients underwent pancreaticoduodenectomy, 2 local excision, and 3 bypass surgery. 18-FDG PET showed increased focal uptake in 20 patients (87%): 11/14 (79%) of ampullary tumors, and 100% of bile duct and duodenal tumors. 18-FDG PET showed focal uptake in 11/12 patients without detectable mass at CT scan. 18-FDG PET showed also lymph node metastases in 5 patients. SUV value of 2.7 discriminated adenomas or non invasive cancers (n=6) from invasive malignancies (n=14). Follow-up including CT and 18-FDG PET was performed in 8 patients: 18-FDG PET showed recurrent disease not seen by CT in 4 patients, confirmed CT findings in 3. A patient underwent resection of the recurrence, two patients underwent palliative surgery, 4 patients did not undergo surgery. Finally a primary lung cancer was detected by 18-FDG PET and resected. Conclusions. 18-FDG PET showed high sensitivity for detecting periampullary neoplasms. 18-FDG PET may be useful in clinical practice when no mass has been identified by traditional imaging, to differentiate benign or border-line lesions from invasive tumors, and in the follow-up to identify recurrent disease.
M1924 Relevance and Classification of Pancreatic Leakage After Pancreatic Resection
Frank Makowiec, Ulrich Adam, Hartwig Riediger, Ulrich T. Hopt, Department of Surgery, University of Freiburg, Freiburg, Germany

BACKGROUND: In most centers leakage of the pancreatic anastomosis (PaLeak) represents a leading cause of morbidity after pancreatic resection. However, definitions and clinical relevance of PaLeak are not used consistently making comparison of data difficult. We, therefore, analyzed our prospectively documented experience with PaLeak and propose a classification depending on the clinical relevance.

METHODS: Since 1994 452 pancreatic resections (54% pylorus-preserving PD, 19% duodenum-preserving head resections, 14% Whipple, 11% distal resections and 2% other) were carried out for chronic pancreatitis (51%), malignancy (38%) and others (11%). The pancreatic anastomosis was always drained for at least five days. All patients received octreotide (3 x 100 microgr/day) for 5 to 7 days. Reconstruction after PD consisted of pancreateo-jejunostomy. PaLeak was defined as a) anastomotic insufficiency found during relaparotomy, b) need of a CT-guided drainage for symptomatic fluid collections with high amylase concentration or c) secretion of amylase-rich fluid (>three times serum amylase concentration) from the drainage beyond day six. The perioperative course was documented prospectively.

RESULTS: Mortality was 2.4%. Any complication occurred in 41%, surgery-related complications in 29% and PaLeak in 11.7% (n=53). PaLeak was more frequent in patients with tumors compared to chronic pancreatitis (15% vs 8.6%; p<0.04). The type of resection did not influence the leakage rate. Of the 53 cases with postoperative PaLeak, 26 (49%) had no symptoms requiring no further therapy other than prolonged drainage. Fourteen patients (26%) required a CT-guided drainage and 13 patients (25%) were reoperated. Mortality was zero and PaLeak healed in all 40 patients not reoperated. Of the 13 patients requiring reoperation seven underwent salvage pancreatectomy (three of those died). Two patients died after reoperation due to cardiac complications. All patients who died with PaLeak had malignant disease. Overall mortality of patients with pancreatic fistula, therefore, was 5/53 (9%). Mortality of PaLeak was 5/28 (18%) in malignant disease but zero in patients with chronic pancreatitis.

CONCLUSIONS: Because of their clinical presentation and prognostic consequences, leakages of pancreatic anastomoses may be classified as “biochemical” with no need for intervention and good outcome or “clinical” requiring further therapy. Patients with malignant disease requiring reoperation for PaLeak represent a subgroup with poor outcome.
M1925 Influence of Hospital Volume on Mortality in Pancreaticoduodenectomy: A Meta-Analysis
Tjarda Van Heek, Rutger Van Geenen, Steve De Castro, Huug Obertop, D. J. Gouma, Academic Medical Center, Amsterdam, Netherlands, Onze Lieve Vrouwe Gasthuis, Amsterdam, Netherlands

BACKGROUND: Few elective surgical procedures are associated with higher operative risk than pancreaticoduodenectomy (PD). Numerous studies have shown that higher hospital volume (HV) is associated with lower postoperative mortality after PD. Nevertheless, few signs of centralization have been seen in Europe, because the association between higher volume and better outcome for PD is still under debate. The aim of this study is to get the best evidence on centralization of PD by performing a meta-analysis of the available data.

METHODS: A systematic search for studies comparing outcome after PD in high- and low-volume hospitals was employed. Studies were reviewed independently for design features, inclusion and exclusion criteria, cut-off values for high and low volume, and outcomes. The primary outcome measure was in-hospital mortality. Meta-analyses were performed for all included studies using different cut-off values for high- and low-volume. A random effects model was used when the studies were heterogeneous, a fixed effects model was used when the studies were homogeneous.

RESULTS: Fifteen observational studies with a total number of 47,113 patients met the inclusion criteria and were included in a meta-analysis. Four hospital volume categories (I-IV) regarding PD were defined with cut-off values at 2, 5, 10, and 20 resections per year, respectively. The pooled odds-ratio (OR) was 0.57 (95% CI: 0.4-0.8) in HV category I, 0.4 (95% CI: 0.35-0.45) in HV category II, 0.42 (95% CI: 0.33-0.55) in HV category III, and 0.18 (95% CI: 0.04-0.8) in HV category IV. The mortality rate in patients undergoing PD was significantly lower in high-volume hospitals than in low-volume hospitals, independent of the arbitrary cut-off values.

CONCLUSION: The combined results of observational studies show an inverse relation between hospital volume and mortality in PD. Despite methodological shortcomings and case-mix in many studies, the best available evidence is in favor of centralization in PD.
BACKGROUND: Solid-pseudopapillary neoplasms of the pancreas, also known as Hamoudi tumors, are rare tumors. Currently our knowledge of the tumors comes from case reports and small series. Our institution reported a series of 7 such tumors in 1990 (Zinner, et al. Ann Surg 1990;108: 475-80). The purpose of this report is to update the Johns Hopkins Hospital experience since the time of the original report to help better define the clinical characteristics, management, and outcomes for these rare pancreatic tumors.

METHODS: The Johns Hopkins pathologic database was retrospectively reviewed from 1990 to 2003 and the medical records for all patients identified by standard pathologic criteria as having solid-pseudopapillary neoplasms of the pancreas. Pathology reports were reviewed to determine size, location, histological features and presence of invasion or metastases. Patients were also followed up at the time of this study to determine complications, recurrence and survival. These records were then compared to the previous report from this institution.

RESULTS: In 1990, we reported on 7 of these patients with mean age of 22 years, all were female and mean follow up time was 10 years. All patients had survived at follow up and only one patient, whose metastatic liver lesion had been deemed unresectable, had persistent tumor. Since our prior study, we have identified 13 more patients who underwent surgical resection for solid-pseudopapillary neoplasm of the pancreas. Of these, only one was male and the mean age of these 13 patients was 43 years. Tumor size ranged from 1.2 to 5.2 cm in contrast to the originally recorded patients whose tumor size ranged from 7 to 20 cm. Only two patients in our recent series had local invasion and none had metastasis. The previous study found 5 of 7 patients with invasion and 1 of 7 with metastasis. Our current follow up time was from 13 to 187 months with all patients alive and without known recurrence.

CONCLUSIONS: These 20 patients represent the largest single institution experience of solid-pseudopapillary neoplasms of the pancreas and support the current practice of complete surgical resection for cure of this low-grade tumor. Additionally, comparison between our two series shows a trend that these tumors are now being discovered at an earlier stage, perhaps due to earlier or better imaging techniques and to a more aggressive surgical approach. This series also suggests earlier diagnosis and surgical intervention may play a role in the decreased incidence of invasion and metastasis.
M1927 Expression of CEACAM6 is a Factor of Independent Prognostic Significance in Pancreatic Cancer
Evan Matros, Mark S. Duxbury, Mark Redston, Stanley W. Ashley, Edward E. Whang, Department of Surgery, Brigham & Women’s Hospital, Boston, MA, Department of Pathology, Brigham & Women’s Hospital, Boston, MA

Previously, we have demonstrated carcinoembryonic antigen-related cell adhesion molecule 6 (CEACAM6) to be an important oncoprotein in human pancreatic adenocarcinoma, but the clinical impact of CEACAM6 expression in pancreatic adenocarcinoma remains unknown. The purpose of this study was to test the hypothesis that expression of CEACAM6 represents an indicator of adverse pathological features and clinical outcome in pancreatic adenocarcinoma.

METHODS: CEACAM6 expression was determined by immunohistochemical analysis of paraffin-embedded tissue, employing the tissue microarray method, from 90 consecutive patients (42 male; 48 female) with pancreatic adenocarcinoma undergoing surgical resection with curative intent, using a monoclonal anti-CEACAM6 antibody. Patients were divided into two groups based on the level of CEACAM6 expression: a negative immunoreactivity group (CEACAM6 staining absent) and a positive expression group (CEACAM6 staining present). Overall survival was calculated using the Kaplan-Meier method. Hazard ratios were derived using Cox proportional hazard models.

RESULTS: Positive CEACAM6 expression was detected in 83 cases (92%). Positive CEACAM6 expression was associated with lymphovascular invasion (P=0.04), lymph node involvement (P=0.01) and disease stage (P=0.08). Multivariate Cox analysis, including sex, age, tumor site, stage, differentiation grade, treatment, and nodal status as covariates, showed that CEACAM6 expression independently predicted poor overall survival (P=0.007).

CONCLUSION: These results indicate that CEACAM6 expression is associated with tumor progression, thereby demonstrating, for the first time, a poor prognosis for a subgroup of patients undergoing surgical resection for pancreatic adenocarcinoma. CEACAM6 warrants further evaluation as both a marker of disease and a therapeutic target in pancreatic cancer.
M1928 A Clinically-Relevant Definition of Pancreatic Anastomotic Leak After Pancreticoduodenectomy
L. W. Traverso, Keita Wada, Hiroyuki Shinchi, Virginia Mason Medical Center, Seattle, WA

INTRODUCTION: Pancreatic anastomotic leak (LEAK) remains a persistent problem after pancreaticoduodenectomy (PD). The mean of published LEAK rates is 10%, however these studies have a variety of definitions for LEAK. The aim of the current study was to determine a working definition of a clinically relevant LEAK.

METHODS: From January 1996 to December 2002, 223 consecutive patients underwent PD with pancreaticojejunostomy by one surgeon. Indications for surgery were periampullary neoplasm (74%) and chronic pancreatitis (26%). To select all possible pancreatic leaks our broad definition for LEAK was if a total of > 30 ml/day of drainage from external drains also had an amylase-rich fluid (> 5X serum) on or after postop day 5. Then cases were divided into three groups No LEAK, Not Clinically-Relevant LEAK and a Clinically-Relevant LEAK. The latter were those with the broad definition of LEAK that required percutaneous drainage or had a prolonged length of stay (LOS). Prolonged LOS was defined as one S.D. beyond the mean LOS for all cases.

RESULTS: Postoperative mortality was zero. Mean postop LOS was 11.1 ± 6.1 days so prolonged LOS was set at >17 days. LEAK occurred in 13.5% (30/223). [See Table] The volume of daily drainage on postop days 5 to 8 for the Relevant LEAK group was significantly greater than the volume in the other two groups [See Graphic]. Surprisingly the amylase concentration in the daily drainage did not differ between the Relevant and Not Relevant LEAK groups (data not shown).

CONCLUSION: Measuring volume and amylase from external drains after PD may miss a few cases of pancreatic leak (0.5%). Drain amylase alone was not sufficient to predict a clinically relevant LEAK unless there was a volume of > 200 ml per day after postop day 5. Using the latter definition patients were more likely to have prolonged LOS, require percutaneous drainage, or need readmission. This definition may be useful to design clinical studies.

<table>
<thead>
<tr>
<th></th>
<th>No LEAK</th>
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<tbody>
<tr>
<td>N</td>
<td>193</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Perc Drainage</td>
<td>1 (0.5%)</td>
<td>0</td>
<td>13 (81.3%)</td>
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<tr>
<td>Prolonged LOS</td>
<td>7 (3.6%)</td>
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<td>9 (56%)</td>
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<tr>
<td>Readmission</td>
<td>7 (3.6%)</td>
<td>0</td>
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M1929  Stapled Laparoscopic Cystgastrostomy —
A Series with 15 Cases
Andrew Hindmarsh, Grace Lee, Michael P. N. Lewis, Michael Rhodes, Norfolk & Norwich University Hospital, Norwich, UK

INTRODUCTION: Persistent or symptomatic pancreatic pseudocysts require drainage. For mature pseudocysts in contact with the posterior wall of the stomach internal drainage by cystgastrostomy is the procedure of choice. However, significant bleeding from the cyst wall frequently complicates this procedure. The use of a haemostatic stapling device to fashion the cystgastrostomy may reduce the incidence of this serious complication. Our experience of stapled laparoscopic cystgastrostomy is presented here.

METHOD: A retrospective case note review of all patients who underwent stapled laparoscopic cystgastrostomy between January 1997 and December 2003. In all cases the cystgastrostomy was fashioned through a longitudinal anterior gastrotomy using a vascular ETS stapling device.

RESULTS: 15 patients underwent stapled laparoscopic cystgastrostomy by 2 different surgeons during the study period. 5 of these patients had a laparoscopic cholecystectomy, and one a pancreatic necrosectomy, at the same time. The median age of the patients was 62 years (range 26-79). The median time from acute pancreatitis to cystgastrostomy was 16 weeks (range 3-46). Stapled laparoscopic cystgastrostomy was completed successfully in 12 patients with a median operating time of 74 minutes (range 27-146). Three procedures were converted to open: 2 because the pseudocyst was not adherent to the posterior wall of the stomach, and 1 for dense peritoneal adhesions. The mean estimated blood loss for the procedure was 175 ml, and the median hospital stay was 7 days (range 4-21). There were no complications due to bleeding from the cystgastrostomy. Early complications included systemic sepsis (1), a bleeding gastric ulcer (1), and pseudocyst recurrence due to partial closure of the cystgastrostomy (2). No late recurrences or other complications have been found at follow up.

CONCLUSION: Stapled laparoscopic cystgastrostomy is a safe and effective procedure for draining pancreatic pseudocysts. The use of a haemostatic stapling device to fashion the cystgastrostomy may reduce the risk of catastrophic haemorrhage from the pseudocyst wall.
M1930  Perioperative Blood Transfusion and Disease-Site Other Than Pancreas Are Associated with Increased Incidence of Clinically Relevant Intra-Abdominal Abscess Formation Following Pancreaticoduodenectomy
Margo Shoup, Pamela Hodul, Gerard V. Aranha, Loyola University Medical Center, Maywood, IL

BACKGROUND: Anastomotic disruptions resulting in pancreatic or biliary leaks following pancreaticoduodenectomy are common complications but are usually not clinically significant. This study examines the incidence and predictors of clinically relevant intra-abdominal abscess following pancreaticoduodenectomy.

METHODS: Between 1995-2002, patients undergoing pancreaticoduodenectomy at our institution were identified. Clinicopathologic variables were analyzed including the co-morbidities COPD, coronary artery disease, and diabetes, perioperative octreotide use, blood transfusions required, and pathology. Chi-Square and Mann-Whitney U test were applied. Pancreatic leak and biliary leak were defined as a drain amylase greater than 3x serum with at least 50cc/day output and bilious drain output for greater than 7 days, respectively. Intra-abdominal abscess was defined as a purulent fluid collection requiring drainage.

RESULTS: During this time period, 284 resected patients were included in the study. Pancreaticoduodenectomy was indicated for pancreatic pathology in 150 (53%) cases and other pathology in 134 (47%) cases. Intra-abdominal abscess was noted in 20 cases (7%), requiring radiologic drainage in 10 (50%), and reoperation in 3 (15%). Pancreatic and biliary leaks were identified in 46/284 (16%) and 7/284 (2.5%) patients. Of these, 14 (30%) pancreatic leaks and 4 (57%) biliary leaks became abscesses, with two abscesses arising from small bowel leaks. Of all variables analyzed, a significant association was found between intra-abdominal abscess and disease site (non-pancreatic 10%, pancreatic 5%, p=.05) and the need for perioperative PRBC transfusion (12% with transfusion, 4% without, p=.01). Patients with an abscess had a longer median postoperative hospital stay (20 days, range 7-83) compared to those without an abscess (9 days, range 6-36) (p<.001), and a higher median estimated blood loss (1300cc vs 900cc, p=.03).

CONCLUSION: In our experience, a clinically relevant intra-abdominal abscess was noted in 7% of patients following pancreaticoduodenectomy, and was more likely to occur if the disease-site was not pancreatic or if a perioperative blood transfusion was necessary. Careful attention to hemostasis is imperative during this surgery, and minimizing blood loss may lead to a decrease in abscess formation and shorter length of hospital stay.
The role of endoscopic ultrasound (EUS) for known or suspected pancreatic pathology is poorly defined, but this has not deterred its application. Periampullary carcinoma often eludes early diagnosis when curative resection is most desirable. Resection can be difficult to recommend if the findings of a mass lesion by computed tomography (CT) is inconclusive. A retrospective review of EUS performed at the Cleveland Clinic was done to determine its utility in clarifying indeterminate or suspected lesions by CT.

A total of 194 pancreatic EUS were performed over a complete four year period ending June, 2003. Twenty six procedures (13%) were performed to clarify an indeterminate or absent pancreatic mass by surgical and/or radiologic review of a prior CT scan. Twenty patients (77%) had their CT scans performed at outside institutions and were of variable quality. Cholangiopancreatography revealed strictures suggestive of malignancy in 13 (50%): including eight with “double duct” sign. EUS demonstrated a hypoechoic mass in 21 (81%), no pancreatic pathology in two, pancreatic ductal stones consistent with chronic pancreatitis in one, and technically unsuccessful in two. The mean mass size was 2.3 (1.2 – 4.0) cm. Thirteen masses were located in the pancreatic head, four in uncinate, and four in body/tail. Endosonic evidence of unresectability due to vascular invasion was found in 10 (48%). Aspiration cytology was performed in 12: six were nondiagnostic, four adenocarcinoma, and two metastatic carcinoma. Nine patients (35%) were operated: Whipple in four, distal pancreatectomy in three, and laparoscopy detecting hepatic carcinoma in two. Resected specimens revealed adenocarcinoma except one with islet cell carcinoma. There were no endoscopic complications in these 26 patients.

In summary, endoscopic ultrasound is very accurate in detecting a pancreatic mass when carcinoma is suspected, but not confirmed by CT scan.
**M1932 Pharmacokinetics of the Antineoplastic Drug Mitomycin C in Regional Chemotherapy Using the Aortic Stop Flow Technique in Advanced Pancreatic Carcinoma**

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**BACKGROUND:** An isolated perfusion may lead to a higher concentration of cytostatics within the target tissue, which can be associated with a high response rate and longer survival in addition to a low rate of side effects in comparison with systemic palliative chemotherapy. The aim of the study was to investigate the pharmacokinetics of mitomycin C utilizing the aortic-stop-flow technique with commercially available tools in patients with advanced pancreatic carcinoma.

**METHODS:** Seventeen patients with irresectable or metastasized pancreatic carcinoma (diagnosed by histological investigation) underwent a 20-min hypoxic perfusion of the isolated abdominal compartment with 20 mg/m² mitomycin C (Mitomedac®, medac, Hamburg, Germany) 22 times. Cytostatic concentration was determined intrainterventionally within the systemic and regional compartment.

**RESULTS:** Mitomycin-C concentration was 10-fold higher within the regional compared with the systemic compartment at its maximum. The area under the curve (AUC) was 4.02 times greater. Toxicity was considerable: WHO grade I/II in 8/17, III/IV in 9/17 cases. Two treatment-related deaths were documented. The objective response rate was 17.6% (3 of 17 cases; 1x complete remission {CR}, 2x partial remission {PR}). In 3 subjects, a stable disease (SD) and in 11 individuals tumor progression (PD) was registered. The median survival was 4.1 months.

**CONCLUSION:** Though high concentrations of the cytostatic drug were achieved within the regional compartment, aortic-stop-flow technique was associated with a high toxicity rate but no improvement of tumor response and survival in comparison with systemic chemotherapy. Despite its pharmacokinetic advantages, aortic stop flow technique is currently not recommendable for routine use.
M1933 Long-term Results of Surgical Treatment of Vater Ampulla Neoplasms
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BACKGROUND: Vater's ampulla neoplasm are quite rare, however they account for 40% of resected bilio-pancreatic confluent tumors. Study aim was to review the results of surgical treatment of Vater's ampulla neoplasms.

METHODS: A retrospective review from 1993 to 2002 identified 55 patients admitted for Vater's ampulla neoplasm in our institution. Clinical, surgical, pathological and follow-up data were reviewed.

RESULTS: Among the Vater's ampulla neoplasm reviewed, 10 were adenoma (median age 71) and 45 adenocarcinoma (median age 69). 60% percent of the adenoma were treated surgically (ampullectomy 1, pancreaticoduodenectomy 5) with excellent long-term results. Among the Vater's ampulla adenocarcinoma the resecability rate was of 84%. 34 patients had a pancreaticoduodenectomy and 4 an ampullectomy. Seven were treated by endoscopy due to poor condition. Of note among the resected patients the rate of false negative during preoperative biopsies was of 45%. Actuarial five years survival after pancreaticoduodenectomy was of 68%, compare to 0% for ampullectomy and endoscopic treatment (p<0.01). After curative resection (pancreatoduodenectomy), the lymph node status significantly influenced survival (P<0.01). And disease free survival at 5 years was of 84% for N0 and of 27% for N1 (p<0.001). Among the pancreatoduodenectomies, 55% consisted of pylorus preserving procedure which did not influence prognosis compare to absence of pylorus preservation.

CONCLUSION: Treatment of Vater's Ampulla neoplasms through pancreatoduodenectomy is associated with good long-term results However, the prognosis of Vater's ampulla adenocarcinoma after curative surgical resection is dependant on the lymph node status.
Long Term Safety of Laproscopic Distal Pancreatectomy in Patients with Cystic Neoplasms of the Pancreas
Tauqeer Ahmad, Fazylov Rafeal, Theodoros Daskalakis, Joel Horovitz, Richard Lazarro, Jerzy Macura, Scott Tenner, Maimonides Medical Center, Brooklyn, NY, Downstate Medical Center, Brooklyn, NY

The incidence of cystic neoplasms of the pancreas is increasing. Due to the underlying malignant potential of these lesions, patients typically are treated with Distal Pancreatectomy. Advancements in minimally invasive surgery has allowed many of these patients to be treated laproscopically. We report the long term safety of this technique. We prospectively followed all patients at our institution who underwent laproscopic distal pancreatectomy for the treatment of cystic neoplasms between January 2000 and July 2003. Eight patients were followed, mean age 65.8 years (range 29-86). No conversion to an open procedure was performed. The median operative time was 3 hours (range 2-4 hours). Median intra-operative blood loss was 350 ml. Pathology demonstrated 1 microcystic adenoma, 1 serous cystadenoma, 6 mucinous cystadenoma. Minor post-operative complications including one case of hypertension, atrial fibrillation and symptomatic fluid collection occurred. There were no major complications, such as pancreatic leak, paralytic ileus. Splenectomy was performed in 2 cases. There was no mortality. Median hospital stay was five days (range 3-9 days). With a mean follow-up 18 months, all patients remain well. Repetitive imaging has identified no further cystic lesions, local disease, nor metastatic disease. In addition to minimal invasiveness, shorter length of stay, and decreased costs, our experience shows that laproscopic distal pancreatectomy is safe and effective in the treatment of cystic neoplasms of the pancreas.
M1935  Systematic Appraisal of the Management of the Major Vascular Complications of Pancreatitis
Srinivasan Balachandra, Ajith K. Siriwardena, HPB Unit, Dept of Surgery, Manchester Royal Infirmary, Manchester, UK

INTRODUCTION: Major vascular problems are infrequent but potentially lethal complications of pancreatitis. They occur across the spectrum of pancreatic inflammation, complicating acute (AP) and chronic pancreatitis (CP) including pseudocysts and are probably related to underlying intra-abdominal sepsis. This study undertakes a systematic appraisal of published evidence to identify recurrent themes and tests the hypothesis that evidence-based management criteria for low-incidence, high-risk problems can be derived from pooled data.

METHODS: computerised searches of the MEDLINE and EMBASE databases were undertaken for the period from 1980 to 2002 using the keywords “pancreatitis”, “haemorrhage”, “embolisation”, “pseudocyst” & “pseudoaneurysm”. The OVID search engine was used (Version 9, Ovid Technologies, NY, NY). EMBASE was searched separately and revealed no additional papers. Reports were restricted to those in English and papers reporting human studies. Searches identified 79 papers of which 66 provided detailed clinical course information on 208 individual patients and these constitute the dataset. Data were extracted on the following principal study measures: presentation, nature of bleed, index intervention (mesenteric angiography &/or surgery) and final outcome. Contingency tables were analysed by Fisher’s exact test with Yates correction.

RESULTS: The most frequent presentation was gastrointestinal haemorrhage (71%). There were 153 spontaneous bleeds (bleeding in the absence of surgery) and 41 post-operative. Etiology was CP in 34, pseudocyst in 134 and AP in 40. 167 (83%) underwent mesenteric angiography and 41 underwent surgery directly. 153 (92%) had a positive angiogram. Therapeutic embolisation was attempted in 113 (54%) but was not technically possible in 14 (13%). Of 99 completing embolisation, 85 (75%) achieved successful haemostasis with no further procedure required. Overall group mortality was 37 (17.7%): 22 (14%) in spontaneous bleed and 15 (37%) post-operative. Angiography as first intervention group had a 13% mortality compared to 14 (34%) deaths in surgery as first intervention (P<0.01).

CONCLUSION: Pooled data can provide valuable cumulative information on disease management for low-incidence high-risk problems but interpretation must allow for positive skewed reporting by enthusiasts. Aggregated evidence suggests that there is a central role for angiography and embolisation in the management of vascular complications of pancreatitis.
Immunosuppression with Steroids or Azathioprine Does not Increase the Postoperative Complication Rate in Abdominal Surgery for Crohn’s Disease
Markus Kueper, Andrei Dinescu, Mario H. Mueller, Tobias Meile, Michael Kasperek, Joerg Glatzle, Ekkehard C. Jehle, Martin E. Kreis, Tilman T. Zittel, Dept of General Surgery, University of Tuebingen, Tuebingen, Germany

BACKGROUND: Patients with Crohn’s disease (CD) carry a high life-time risk for abdominal surgery. Some of these patients are on maintenance therapy with steroids and/or azathioprine, but there are only limited data on postoperative complication rates and immunosuppressive medication (IM) in patients with CD. SPECIFIC AIM: To investigate the influence of IM on the postoperative complication rate in patients with CD.

METHODS: We retrospectively reviewed 230 patient charts who underwent 283 abdominal operations for primary or recurrent CD between 1/96 and 8/02. 137 operations (48%) were performed with IM at the time of surgery (steroids, azathioprine or combination), while 146 operations (52%) were done without. 103 patients took 5-ASA at the time of surgery. Complications were differentiated into minor (wound infection, urinary tract infection, pneumonia) and major (thrombosis, anastomotic leak, intraabdominal abscess, peritonitis, relaparotomy, death).

RESULTS: We observed an overall complication rate (OCR) of 19.1% (54 operations with at least one complication). There were 15 major complications (MC, 5.3%; anastomotic leaks 2.8%). One patient died after being operated in a community hospital and being transferred to our hospital during septic shock (mortality 0.4%). The OCR was not influenced by IM (IM+ OCR 20.4%, MC 5.8%; IM- OCR 17.8%, MC 4.8 %, n.s.). Steroids only (n=86, OCR 19.8%, MC 7%), azathioprine only (n=18, OCR 11%, MC 6%) or a combination of both (n=32, OCR 19%, MC 3%) did not differ with respect to complication rates as well. IM did not increase the length of hospital stay (IM+ 16.4±4.3; IM- 13.6±10.9 days, n.s.). 5-ASA had no effect on the OCR (5-ASA+, n=103, OCR 17.5%, MC 4.9%; 5-ASA-, n=180, OCR 20%, MC 5.6%), as well as the combination of 5-ASA with IM (5-ASA+IM+, n=72, OCR 16.7%, MC 4.2%; 5-ASA+IM-, n=31, OCR 19.4%, MC 6.5%).

CONCLUSIONS: Abdominal surgery for CD is safe and carries a low risk of major complications or death in experienced centers. Perioperative IM does not increase the complication rates in patients with CD.
M1937 Analysis of 7090 Carcinoids in Florida Over the Last 20 Years
Sarah E. Snell, Nicole Hodgson, Leonidas G. Koniaris, Alan S. Livingstone, Dido Franceschi, University of Miami School of Medicine, Miami, FL

OBJECTIVE: Optimal treatment of gastrointestinal carcinoid tumors remain poorly defined. Outcomes vary greatly between series and based upon tumor location. Large cohorts are required to better define therapeutic approaches and outcomes in patients presenting with carcinoid tumors. The purpose of this study was to examine a large prospectively accrued cancer registry for outcomes of carcinoid.

METHODS: The Florida Cancer Data System (FCDS), Florida's statewide population based central incident cancer registry was reviewed from 1981 to 2001. All cases of malignant carcinoid tumors were identified and subjected to further analysis. Tumors were stratified into foregut, midgut, and hindgut categories. Descriptive statistics, age adjusted tumor incidence rates and survival statistics were determined.

RESULTS: A total of 7090 cases of malignant carcinoid tumors were identified. Gastrointestinal carcinoids composed 59.6% of all carcinoids encountered. There were 2864 patients with respiratory tree carcinoids. The mean age of the study population was 64 ± 0.15 SE. The male female ratio was 1:1. Stratified by location there were 3726 (52.6%) foregut carcinoids, 2554 (36.0%) midgut carcinoids and 810 (11.4%) hindgut carcinoids. The most common anatomical site was the small bowel. The total age adjusted incidence rate has increased from 0.79 per 100,000 in 1980 to 4.01 per 100,000 in 2001. The highest incidence rate was seen in the 75-79 years age group. Overall median survival was 26.2 months. The median survival was 19.4 months for foregut carcinoids, 37.6 months for mid-gut tumors and 22.7 months for hindgut carcinoids. There was a statistically significant better survival of midgut tumors when compared to the other groups (p < 0.001).

CONCLUSIONS: Carcinoids appear to be increasing in incidence over the last few decades. Overall survival remains poor with only 25.3% five year survival. Location is a strong predictor of mortality.
BACKGROUND: Gastric outlet obstruction is a late complication of pancreatobiliary and distal gastric malignancies. When these cancers first present, surgical gastrojejunostomy provides good palliation. However, when proximal gastrointestinal obstruction occurs late in the course of an unresectable or recurrent malignancy, reoperation is rarely associated with a good outcome. The first report of endoscopic placement of a self-expanding metallic stent (SEMS) for duodenal obstruction was published in 1995; however, the role of palliative gastrointestinal stenting has not been clearly defined. Aims: The aims of this report are to determine the morbidity and efficacy of SEMS for palliation of late malignant gastroduodenal and jejunal strictures.

METHODS: Medical records of patients having endoscopic placement of self-expanding metal stent(s) for palliation of proximal malignant gastrointestinal strictures at our university hospital and Veterans Affairs Medical Center for the past four years were reviewed.

RESULTS: Twenty-three patients with pancreatic (n=14), biliary (n=5), gastric (n=2), rectal (n=1), or breast (n=1) cancer had SEMS placed for late gastroduodenal (n=15) or jejunal (n=8) obstruction. The median age was 64 years, and 57% were female. Fourteen of the 23 patients (61%) had undergone prior resective (64%) or palliative (36%) surgery, and 14 patients (61%) had received prior chemoradiation. Sixteen patients (70%) also had endoscopic or percutaneous placement of biliary stents. No major complications resulted from SEMS placement. Median survival after SEMS placement was two months with a range of one to twelve months. Four patients (17%) developed reobstruction secondary to tumor ingrowth ranging from one to eight months after placement, and two of these patients were successfully managed with a second metallic stent.

CONCLUSIONS: Endoscopically placed self-expanding metallic stents are safe and provide good palliation for late malignant gastroduodenal and jejunal strictures. We conclude that palliative stenting of late gastric outlet obstruction is an excellent alternative to reoperation for unresectable or recurrent pancreatobiliary and distal gastric as well as metastatic malignancies.
A Modern Approach to Managing Superior Mesenteric Venous Thrombosis

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INTRODUCTION: Superior mesenteric venous thrombosis (SMVT) can have a subacute presentation hindering diagnosis. Inadvertent early surgery can lead to bowel resection because of extensive bowel edema. Newer radiological interventional treatment and intestinal/multivisceral transplant (MVTx) have enabled new approaches. We present an algorithm for treating patients with SMVT.

Material and Methods: 8 patients with SMVT were managed in an intestinal rehab and transplant unit using the algorithm shown.

RESULTS: 8 patients (4 M), mean age 37.3 +/- 8.2 yr, diagnosed with: PT 20210G-A mutation (1), Factor V Leiden both alone (1) and with myeloproliferative disorder (1), Protein C Deficiency (PcD) alone (1), with concomitant ATIII deficiency (1), and PcD and S deficiency (1), and unknown (2). 4 patients were seen as a transfer 6.5 +/- 2.3 d post diagnosis with SMVT. Anticoagulation, antibiotics and TPN were started, feeds was restarted 6.75 +/- 2 d after therapy. All were discharged off TPN with warfarin 9.75 +/- 5.1 d post transfer. One patient transferred 7 d post diagnosis had peritonitis and had total enterectomy followed later by isolated intestinal Tx. One patient presented 3 d post massive variceal bleeding and required MVTx. One patient presented 14 d post Budd Chiari syndrome and SMVT and awaits MVTx. One patient presented 12 h post diagnosis, was managed with percutaneous transjugular transhepatic thrombolytic therapy (PTTT), and was discharged on PO feeds and warfarin after 21 d. Using the algorithm, 75% of patients were treated non-operatively, (62.5% conservative, 12.5% PTTT), 25% required resection and intestinal Tx. Patient survival and freedom from TPN is 100%.

CONCLUSION: This algorithm allows conservative management in 75% of patients, avoiding initial exploration that often results in massive intestinal resection. Intestinal Tx is an option for those who require initial total enterectomy or who develop complications from chronic anticoagulation.
M1940  Predictive Factors for Surgery in Pediatric Patients with Crohn’s Disease

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BACKGROUND: Surgery is reported in 5 to 95% of adults and 28% of pediatric patients with Crohn’s disease (CD). We determined risk factors predisposing to surgery in a large registry of children with CD.

METHODS: Data in the Pediatric IBD Consortium registry collected between January 2000 and November 2003 were analyzed to determine risk factors for surgery in children, age 0-17 years at diagnosis, with CD, mean follow-up: 3.79 (range 0-19.8) yr.

RESULTS: Of 1011 children with CD, 134 (13.3%) underwent surgery. 14.4% of Caucasians and 11.2% of African Americans underwent surgery compared with 0% and 4.8% of Asian/Pacific Islanders and Hispanics, respectively (p=0.04). Presence of a stricture at disease diagnosis significantly predisposed to the need for surgery (p<0.0001). Anemia (Hgb <11.0g/dL) at time of diagnosis was associated with increased surgical rates (p<0.04); in contrast, the presence of rectal bleeding and diarrhea tended to be associated with lower risk for surgery. Extraintestinal manifestations were not related to increased surgical risk. Rates for surgery trended lower in patients on 6MP/Azathioprine (p=0.14) or 5ASA (p=0.15), while steroid use was not found to affect the prevalence of those requiring surgery.

CONCLUSIONS: In a group of pediatric patients with Crohn’s disease, the presence of a stricture or a low hemoglobin value at diagnosis is associated with increased risk of surgery. Use of 5-ASA and 6-MP may be protective against surgery and requires further investigation, while the initial use of steroids does not appear to be a predictive factor. (Supported in part by a grant from the CCFA and by NIH grants DK007762 and DK60617)

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<td></td>
<td></td>
<td>p value (95% CI)</td>
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<td>0.12 (8.7%, 0.6%)</td>
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<tr>
<td>Diarrhea</td>
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<td>14.8%</td>
<td>0.06 (8.3%, 0.1%)</td>
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<td>Hemoglobin (g/dL)</td>
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<td>(&gt;10) 8.3%</td>
<td>0.04 (0.1%, 11.4%)</td>
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Adenocarcinomas of the Jejunum and Ileum: A 25-year Experience

Mustafa M. Ugurlu, Oktar Asoglu, D. D. Potter Jr., Sunni A. Barnes, W. Scott Harmsen, John H. Donohue, Mayo Clinic, Rochester, MN

AIM: Adenocarcinomas (ACA) of the jejunum and ileum are rare tumors. Because few large published experiences exist, we reviewed patients with jejunal and ileal ACA treated at our institution over the last 25 years.

METHOD: Between 1/1976 and 12/2001, 77 patients had an operation for a jejunal or ileal ACA. Records were retrospectively reviewed for patient, tumor and treatment variables. Factors affecting disease recurrence and patient survival were investigated.

RESULT: 52 of the ACA (67%) occurred in the jejunum, 25 in ileum (33%). Mean patient age was 63±14 years with a slight male predominance (1.3:1). Presenting symptoms and signs included pain 66%, nausea and vomiting 51%, bleeding 19%, weight loss 18%, fatigue 18%, abdominal mass 9%, and diarrhea 8%. Diagnostic studies included one or more of the following: CT scan 48%, small bowel follow-through 45%, extended upper endoscopy 21%, plain X-ray 21%, contrast enema 8%, enteroclysis 8% colonoscopy 4%, and ultrasonography 4%. Segmental bowel resection, including some en bloc resections of adherent structures, was performed in 50 patients (65%) with curative intent. Palliative operative procedures including resection or bypass were performed in 27 patients (35%). Twenty patients (26%) had an emergency operation for perforation (n=1) or obstruction (n=19). One (1%) patient had stage I, 18 (23%) stage II, 19 (25%) stage III, and 39 (51%) stage IV ACA at diagnosis. Postoperatively 18 had palliative and 21 adjuvant chemotherapy (n=30), radiation therapy (n=3) or combination treatment (n=6). Median patient survival was 19 months. 66% of patients who had a curative operation relapsed. Tumor stage had a highly significant effect (p<0.0001) on median survival (72 months for stages I/II, 30 months for stage III, and 9 months for stage IV). T4 cancers (p<0.0001), tumor recurrence (p<0.0001) and weight loss (p<0.02) were also adverse prognostic indicators in univariate analysis of patients having curative treatment. Patient symptoms, emergency versus elective operation, and adjuvant therapy had no impact on patient survival. In multivariate analysis, tumor recurrence (p<0.001) and stage (p<0.01) were significant negative prognostic indicators.

CONCLUSION: Most patients with ACA of the jejunum or ileum present with advanced disease. Only tumor stage and the disease recurrence predicted patient outcome following a curative operation. Early recognition of these tumors requires a high index of suspicion. Improved outcome is unlikely without development of an effective combined treatment regimen.
Preoperative TNF-α Antagonist Therapy in the Surgical Management of Crohn’s Disease

Hari Nathan, Mark A. Talamini, Susan Gearhart, Mary Harris, Theodore Bayless, The Johns Hopkins University School of Medicine, Baltimore, MD

Although the TNF-α antagonist infliximab has enjoyed widespread use in Crohn’s patients, its role in the surgical management of Crohn’s disease remains undefined. To address this issue, we reviewed our experience with Crohn’s surgical procedures from 10/1999 to 11/2003 in patients who had received prior infliximab therapy. We identified 70 surgical procedures in 46 patients performed within 1 year following infliximab treatment, including 46 procedures in 29 patients within 12 weeks post-infliximab. Overall, 25 (54%) of the patients were female. The average age at the first post-infliximab operation was 40 ± 14 years, and the average duration of disease was 12 ± 8 years. Twenty-seven (59%) of the patients had undergone at least one previous Crohn’s operation. Preoperative medications included at least one immunomodulator (azathioprine, 6-mercaptopurine, methotrexate, or steroids) in 41 (89%) of the patients.

The spectrum of operations included bowel resection without fistula repair [27 (39%) procedures in 26 (57%) patients], rectal dilatation with or without abscess drainage or fistula procedure [20 (29%) procedures in 10 (22%) patients], bowel resection with fistula repair [9 (13%) procedures in 9 (20%) patients], and ostomy procedure without bowel resection [9 (13%) procedures in 9 (20%) patients]. Complications included 7 wound infections (10%), 3 bowel obstructions (4%), 1 postoperative hemorrhage (1%), and 1 abscess (1%). There were no mortalities.

For each patient, we categorized the disease manifestations targeted for infliximab treatment as either rectal or abdominal and as either fistulizing or non-fistulizing (Table).

Of the patients receiving infliximab for predominantly rectal symptoms, 6 had a prominent anorectal strictureing component of their disease, requiring an average of 3 post-infliximab rectal dilatations (range 1-5). Of these 6, 3 (50%) eventually required proctectomy and permanent stoma formation. Through a combination of bowel resection and careful pre- and post-operative infliximab administration, all 6 patients with aggressive abdominal fistulizing disease were able to successfully achieve fistula closure and avoid further surgery.

We conclude that infliximab can be effective as a surgical adjunct in managing aggressive abdominal fistulizing Crohn’s disease and can serve as a bridge to surgery in Crohn’s patients with anorectal strictureing disease.
Small Bowel Adenocarcinoma: Presentation, Treatment, Pathologic Characteristics, and Outcome  
Edward C. McCarron, John Gibbs, Marwan Fakih, Hector Nava, Ashwani Rajput, Roswell Park Cancer Institute, Buffalo, NY

**INTRODUCTION:** Small bowel adenocarcinoma is a rare and aggressive tumor. The purpose of this study was to evaluate the presentation, treatment, pathologic characteristics and outcome of patients diagnosed with primary small bowel adenocarcinoma.

**METHODS:** Records of patients with primary small bowel adenocarcinoma seen between 1971 and 2002 were reviewed retrospectively.

**RESULTS:** 60 patients were identified. The median age at diagnosis was 63 (17-87) and 38 patients were male. The most common symptoms were abdominal pain and weight loss. 21 patients had symptoms for greater than 3 months. A mass was palpated by examination in only 10 patients. CT scan and small bowel follow through assisted in the diagnosis of 48 patients. The duodenum (n=36) was most commonly involved followed by the jejunum (n=14) and ileum (n=10). Surgery was elective in 46 cases, urgent in 6 cases and not attempted in 8 cases. Of the 52 operative cases curative resection was achieved in 27 cases; 20 were margin positive and 5 patients had palliative bypass/biopsy. T3 and T4 tumors were found in 41 patients. Lymph node metastases occurred in 16 patients. Synchronous metastases were present in 25 patients: liver n=13; peritoneum n=6 and other n=6. Staging according to the AJCC 6th edition resulted in stage I (n=4), stage II (n=19), stage III (n=11), stage IV (n=25) and NOS (n=1) patients. The median overall survival by stage was 73 months (range 41-136) for stage I and 4 months (0-57) for stage IV. Recurrence occurred in 25 patients. The liver (n=10) was the most common site followed by the peritoneum (n=8). The median time to recurrence was 11 months (4 - 116).

**CONCLUSION:** Small bowel adenocarcinoma remains a disease plagued by delayed diagnosis and poor outcome. Early diagnosis and novel therapies are needed to improve outcome.
STOMACH: CLINICAL

†M1944 Marked Improvement of Gastroesophageal Reflux Disease (GERD), Hypertension, Diabetes, and Other Obesity-Related Illnesses Following a Gastric Restriction Procedure with an Adjustable Band
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Park Plaza Hospital, Houston, TX

BACKGROUND: Obesity-related illness is one of the primary health concerns of this century. This study was conducted to determine whether a minimally invasive adjustable gastric restriction procedure using the Lap-Band system impacts obesity-associated comorbidities.

METHODS: Between 11/2000 and 10/2003, 535 patients underwent Lap-Band surgery at our centers; 163 patients who completed at least 16 months of postsurgical follow-up were included in this study (84% available for follow-up). The mean follow-up period was 20 months (16-35). The mean age was 41 years (19-64); mean preoperative body weight was 109 kg (74-165). Data regarding comorbidities were obtained during office visits and telephone questionnaires. Obesity-related illness status was assessed by comparing medications prescribed for each comorbidity before surgery and at the follow-up time. Based on the type and doses of medications, a Resolved, Improved, or Not Improved scale was created.

RESULTS: The mean body mass index (BMI) decreased from a baseline of 45.8 kg/m² (35-61) to 36.7 kg/m² (25-53) (P<0.0001). A significant reduction was seen in triglycerides from 158.2 mg/dL to 119.9 mg/dL (P=0.0015), although total cholesterol did not decrease. Greater losses in weight were associated with greater reductions in triglycerides (r=0.39, P=0.0094). According to clinical and laboratory assessments, the procedure was not associated with malabsorption or malnutrition. The mean hospital stay was 1 day (0-7). Complications were minimal, mainly: 15 (9.2%) gastric pouch or esophageal dilatations that were treated conservatively with temporary band deflation and 7 (4.3%) gastric slippages that required laparoscopic repositioning. A total of 6 bands (3.7%) were removed due to complications or poor weight loss.

CONCLUSION: Adjustable gastric restriction surgery with the Lap-Band system provides good weight loss and significant reduction in obesity-related illness. Of note is the immediate and sustained improvement in GERD.

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Total Number</th>
<th>Resolved n(%)</th>
<th>Improved n(%)</th>
<th>Not Improved n(%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERD*</td>
<td>48</td>
<td>36 (73)</td>
<td>7 (15)</td>
<td>6 (22)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Hypertension</td>
<td>40</td>
<td>17 (43)</td>
<td>2 (5)</td>
<td>21 (52)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>16</td>
<td>10 (64)</td>
<td>0</td>
<td>6 (38)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Diabetes</td>
<td>12</td>
<td>4 (33)</td>
<td>4 (33)</td>
<td>4 (33)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Asthma</td>
<td>11</td>
<td>9 (82)</td>
<td>0</td>
<td>2 (18)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>9</td>
<td>3 (33)</td>
<td>0</td>
<td>6 (67)</td>
<td>N.S</td>
</tr>
</tbody>
</table>

† Poster of Distinction

*Improvement in GERD was seen immediately after surgery.
M1945  Clinical Response to Long-Term Gastric Electrical Stimulation in Patients with Post-Surgical Gastroparesis
Jameson Forster, Zhiyue Lin, Irene Sarosiek, Paul Wetzel, Richard W. McCallum, University of Kansas Medical Center, Kansas City, KS

The aim of this study was to report the clinical response at 1 year to high-frequency gastric electrical stimulation (GES; Enterra Therapy, Medtronic, Minneapolis, MN) in patients whose gastroparesis became evident following an abdominal surgical procedure. 12 patients (1M, 11F, mean age: 45 years) were identified. The specific surgeries were: fundoplication (4), Bilroth I (1), cholecystectomy (1), spinal surgery (2), vagotomy (2), and esophagectomy with colonic interposition (1) and distal esophagectomy (1). At surgery two electrodes were placed into the muscularis propria of the stomach along the greater curvature at 9.5 and 10.5 cm proximal to the pylorus in an intact stomach or 2 and 3 cm proximal to the gastric anastomosis in the case of a gastric resection. Data collected at baseline and at one year of Enterra Therapy included: 1) severity of 6 upper gastrointestinal (GI) symptoms (vomiting, nausea, early satiety, bloating, postprandial fullness, and epigastric pain) by using a 5-point symptom interview questionnaire (0= none to 4= extremely severe) and total symptom score (TSS, the sum of the severity ratings of 6 symptoms); 2) 4-hour standardized gastric emptying (GE) of a solid meal by scintigraphy; 3) nutritional status. In comparison to baseline, severity of all 6 upper GI symptoms were significantly reduced after 12 months of GES (see Table below). The mean TTS significantly decreased from 17.6±0.6 at baseline to 8.5±1.8 at one year (P<0.05). All patients had delayed GE at baseline (gastric retention >10% at 4 hours); only 2 normalized at one year and the mean percent of gastric retention at 4 hours was not significantly faster: 45.7±6.3% at baseline vs. 35.6±8.46% after GES. On average, patients gained 4 kg after 12 months of GES (P<0.05). At implantation, 4/12 patients required nutritional support. Three were able to discontinue at 2, 4 and 6 months after GES. One patient had the device removed after 12 months due to pouch infection. Conclusions: Long-term GES significantly improved upper GI symptoms and nutritional status in patients with post-surgical gastroparesis. Although vagal nerve damage had occurred in all these patients GES therapy was still effective and is a new option for the long-term management of post-surgical gastroparesis.

<table>
<thead>
<tr>
<th></th>
<th>Vomiting</th>
<th>Nausea</th>
<th>Early satiety</th>
<th>Bloating</th>
<th>Postprandial fullness</th>
<th>Epigastric pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>2.0±0.5</td>
<td>3.5±0.2</td>
<td>3.0±0.3</td>
<td>3.3±0.2</td>
<td>3.0±0.3</td>
<td>2.8±0.3</td>
</tr>
<tr>
<td>One year of GES</td>
<td>0.9±0.3*</td>
<td>1.4±0.3*</td>
<td>1.8±0.4*</td>
<td>1.6±0.4*</td>
<td>1.6±0.4*</td>
<td>1.2±0.5*</td>
</tr>
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*P<0.05 compared to baseline.
BACKGROUND: Early postoperative upper GI contrast studies following weight loss surgery are used by various centers in an attempt to detect anastomotic leaks. The utility of such an approach is debated and its impact on clinical outcome is unclear. This prospective study sought to determine the clinical value of routine early postoperative upper GI contrast studies in patients undergoing weight loss surgery.

METHODS: During a 4-year period, 378 consecutive patients underwent upper GI contrast studies after weight loss surgery. Procedures included 304 laparoscopic roux-en-Y gastric bypasses (77%), 41 open gastric bypasses (10%), 31 conversions from laparoscopic to open (7%), and 11 laparoscopic vertical banded gastroplasties (3%). Forty patients underwent redo weight loss surgery (10%). Sensitivity, specificity, positive and negative predictive values (PPV, NPV) for these upper GI contrast studies were determined. The impact they had on outcome was analyzed.

RESULTS: These 378 patients underwent 386 upper GI contrast studies, mostly on postoperative days 1 or 2. While fifteen patients (4%) had clinically identified leaks from all GI sources, only five were identified radiographically. These patients had a total of 21 contrast studies, with only 8 studies actually demonstrating a leak, yielding a sensitivity of 38%. There were 3 false positive studies, which translates to a PPV of 73%. Specificity of the studies was 99.2% and NPV was 97%. Even though most patients with a radiographically demonstrated leak were immediately re-explored, in only one patient did this intervention prevent prolonged hospitalization. All others required extensive and complex postoperative management. There were no deaths associated with any leaks.

CONCLUSION: Upper GI contrast studies in the early postoperative period after weight loss surgery may not be sensitive enough to identify all leaks. Moreover, the clinical course of most patients with anastomotic leaks does not appear to be altered by early radiographic detection. Upper GI contrast studies following weight loss surgery should only be used selectively.
M1947  Treatment of Stomal Stricture After Gastric Bypass with Endoscopic Balloon Dilation
Ramon E. Rivera, Sreenivasa Jonnalagadda, J. Chris Eagon, Washington University School of Medicine, St. Louis, MO

BACKGROUND: Endoscopic balloon dilation (EBD) is often required to treat gastrojejunostomy anastomotic stomal stricture (SS) after gastric bypass, but perforation is a concern and stricture may recur.

OBJECTIVES: To examine clinical variables that may affect outcome after EBD.

METHODS: Retrospective review was performed on prospectively collected data of all patients who developed SS after primary Roux-en-Y gastric bypass (RYGBP) from 1997 to 2003. In lap cases, the gastrojejunostomy anastomosis was performed using a 21mm EEA stapler and in open cases using a two layer hand-sewn technique. Patients vomiting more than twice a day on solids and liquids underwent endoscopy. SS was defined as inability to pass an upper endoscope through the anastomosis. All patients with SS were treated with TSS balloon dilation of varying diameters. Multivariate linear regression was performed to identify significant predictors of SS recurrence.

RESULTS: Gastric bypass was performed on 617 patients (Lap=330, Open=287). BMI was 55±11 (Mean± SD), age was 44±9 yrs, and 77% were women. Stomal stricture developed in 31 patients (5% (lap=12, Open=19)). All SS occurred between 24 and 197 days postop (Median 46 days, Interquartile range 36-71 days). Endoscopic assessment of SS showed a mean diameter of 5.1 mm (Range 3-10 mm) The strictures were dilated to 16±2.2 mm (Range 9-20 mm). No patients required treatment for bleeding and there were no perforations. 81% of patients with SS required only one EBD. Recurrent SS requiring repeat EBD occurred in 6 patients (19%) and one patient required surgical treatment after failure of 4 EBDs. Stricture diameter did not predict SS recurrence. Strong predictors of recurrent stricture were longer time from surgery to SS diagnosis and smaller balloon diameter (<15 mm) used in the initial dilation.

CONCLUSION: EBD is safe and effective in treating stomal stricture after gastric bypass. SS that occurs late (>8 weeks postop) may be more refractory to EBD than those occurring early. An aggressive approach to EBD with balloon diameter of 15-18 mm is associated with a lower SS recurrence rate without increased risk of significant bleeding or perforation.

<table>
<thead>
<tr>
<th>Outcome of Endoscopic Balloon Dilation</th>
<th>Single stricture</th>
<th>Recurrent stricture</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Cases</td>
<td>25</td>
<td>6</td>
<td>31</td>
</tr>
<tr>
<td>Median Time to Diagnosis (Days)</td>
<td>42.5</td>
<td>66.5</td>
<td>46</td>
</tr>
<tr>
<td>Mean Stricture Size (mm)</td>
<td>4.9 ± 2.7</td>
<td>5.8 ± 2.8</td>
<td>5.1±2.7</td>
</tr>
<tr>
<td>Mean Initial Dilation Diameter (mm)</td>
<td>16.1 ± 1.9</td>
<td>13.1 ± 3.4</td>
<td>16±2.2</td>
</tr>
<tr>
<td>Number of Repeated Dilations</td>
<td>0</td>
<td>2–4</td>
<td></td>
</tr>
</tbody>
</table>

Comparison of patients with single stomal stricture vs recurrent stricture
OBJECTIVE: The prevalence of obesity has reached epidemic proportions. The treatment of obesity and associated co-morbid health problems is costly. Laparoscopic gastric bypass can help the morbidly obese to lose a significant amount of weight, and to greatly improve their health in the process. Despite its initial high cost, laparoscopic gastric bypass should eventually become cost effective for health insurance providers as a patient’s health improves. Specifically, monthly prescription medication costs should decrease quickly after surgery.

METHOD: Fifty consecutive laparoscopic gastric bypass patients at a university-based bariatric surgery program were retrospectively reviewed. Patient monthly prescription (not over-the-counter) medication costs prior to surgery and 6 months post-operatively were calculated. Retail costs were determined by a query on drugstore.com, an on-line pharmacy. Generic drugs were selected when appropriate. Costs for diabetic supplies and monitoring were not included in this analysis.

RESULTS: Patients were mostly female (86%). Mean body mass index pre-op was 51 kg/m². Mean excess weight loss at 6 months was 51%. Patients were on an average of 3.7 prescription medications pre-op, compared to 1.7 medications post-op (p<0.05). Monthly prescription medication costs averaged $217.60 prior to surgery. Average monthly medication cost post-op was $97.30 (p<0.05). All patients took non-prescription multivitamins, oral B12, and calcium post-operatively. Two patients developed a marginal ulcer and were placed on a proton-pump inhibitor. In one ulcer patient, this was a new medication.

CONCLUSIONS: Laparoscopic gastric bypass results in a significant improvement in co-morbid health conditions as early as 6 months after surgery. In an unselected group of patients, this resulted in a substantial overall mean monthly prescription medication cost savings. The overall financial burden to the health care system is likely even more dramatically decreased, both over this short interval, and over longer intervals, especially in those with GERD, diabetes, and hyperlipidemia.

<table>
<thead>
<tr>
<th>Condition</th>
<th>% pre-op</th>
<th>% post-op</th>
<th>$ pre-op</th>
<th>$ post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>26*</td>
<td>4*</td>
<td>64.9*</td>
<td>2.0*</td>
</tr>
<tr>
<td>GERD</td>
<td>32*</td>
<td>4*</td>
<td>110.6*</td>
<td>19.2*</td>
</tr>
<tr>
<td>Hypertension</td>
<td>46*</td>
<td>10*</td>
<td>45*</td>
<td>8.4*</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>26</td>
<td>0*</td>
<td>85.8*</td>
<td>0*</td>
</tr>
<tr>
<td>Depression</td>
<td>54</td>
<td>54</td>
<td>107.1</td>
<td>107.1</td>
</tr>
</tbody>
</table>

*p<0.05, $ pre-op = mean monthly prescription medication cost to treat condition prior to surgery; $ post-op = mean monthly prescription medication cost to treat condition in all who had condition pre-op.
INTRODUCTION: Gastric cancer is still a major cause of cancer death in Brazil. The purpose of this study is to analyze the frequency and pattern of lymph node metastases in early gastric cancer in a western country.

PATIENTS AND METHODS: Between 1971 and 2001 one thousand nine hundred eighty nine patients with gastric cancer were admitted at HCFMUSP for treatment. Two hundred ten patients have early gastric cancer. We excluded cancer arising in gastric stump and patients submitted to mucosectomy. One hundred seventy-eight patients are included in this study.

RESULTS: Mean age was 59.8 years; male-to-female ratio was 1.1. Eleven patients had no symptoms. Subtotal gastrectomy was the procedure of choice in the majority of patients, and Roux-Y reconstruction was employed most frequently. D2 Lymphadenectomy was performed in 154 patients, and an increase in adoption of this procedure was observed during the study period of time. The most common pathologic features were: tumor located at the lower third and lesser curvature, depressed types, Lauren Intestinal, Nakamura Undifferentiated and Gastric Iryia types and submucosa invasion. The mean size of the tumors was 3.0 cm; eight patients had more than one tumor. The mean number of lymph nodes dissected was 27, and an increase of this number was noted during the study period of time. When a D2 lymphadenectomy is employed a mean of 29 lymph nodes was observed. Twenty patients (11.2%) had lymph node metastasis (N1 = 7.9%, N2 = 2.8%, N3 = 0.5%). The mean number of metastatic lymph nodes in each patient was 2.5. The most affected sites were station 3, 4d, and 6. Features that were correlated with the presence of lymph node metastasis were: female gender, elevated or flat macroscopic types, Nakamura Undifferentiated type, submucosa invasion, pattern of invasion, and lymphatic invasion. The 5-years survival rates of patients with and without lymph nodes metastasis were 79 and 98%, respectively.

CONCLUSION: The presence of lymph node metastasis was correlated to poorest prognosis. Identification of features associated with increased risk of LN metastasis in early gastric cancer may aid in the selection of patients candidates for alternative treatment strategies not involving D2 lymph node resection.
Extreme Obesity and Outcomes Following Long-Limb Gastric Bypass
Thomas H. Magnuson, Michael Schweitzer, Johns Hopkins Bayview Medical Center, Baltimore, MD

BACKGROUND: Extreme Obesity (X-Ob), defined as a body mass index (BMI) of > 70 is associated with a variety of life threatening medical diseases. Gastric Bypass in this population has been noted to result in inferior weight loss compared to less severely obese patients. This has led to the recommendation that X-Ob patients should undergo bariatric procedures with greater malabsorption in order to augment weight loss. The main outcome measure for bariatric surgery, however, is resolution or prevention of obesity related medical disease. The resolution rates of medical disease after gastric bypass in the X-Ob compared to non X-Ob populations is largely unknown.

METHODS: Data from 388 consecutive patients undergoing Gastric Bypass was reviewed. Surgery was performed by a single surgeon using the same standardized procedure regardless of BMI (divided open gastric bypass, 20cc pouch with 150 cm long-limb). Weight loss was calculated as percent excess weight loss (%EWL) and complete resolution of medical disease was defined as the termination of medications and the normalization of appropriate clinical criteria.

RESULTS: Overall, 42 patients had X-Ob pre-op (BMI range 70 - 97) and 346 patients had BMI between 37 and 69 (non X-Ob; mean = 52.7). Average age was similar between the two groups. The prevalence of various pre-op medical diseases for X-Ob vs. non X-Ob groups were: Diabetes (36% vs. 24%), Hypertension (52% vs. 45%), Sleep apnea (45% vs. 26%), and Reflux disease (36% vs. 45%). Length of stay (6.4 vs. 4.8 days) and perioperative morbidity (21% vs 12%) were both significantly higher in the X-Ob vs. non X-Ob groups, respectively (p<.05). %EWL at 1 year and 2 years post-op was significantly less in the X-Ob group (50 and 55 percent, respectively) compared to patients with lower BMI (63 and 67 percent; p<.05). The complete resolution of medical disease in X-Ob vs non X-Ob groups were: Diabetes =85% vs. 78%, Hypertension =71% vs. 71%; Sleep Apnea =93% vs. 92%; Reflux disease =92% vs. 91%; (all ns.).

CONCLUSION: Although patients with extreme obesity demonstrate less percent excess weight loss compared to patients with lower BMI, resolution of medical disease including diabetes, hypertension, and sleep apnea are the same. Long-limb gastric bypass is effective in improving overall health in the X-Ob population and operations with greater malabsorption should be avoided as first line surgical therapy for morbid obesity.
M1951 Complications and Reoperations After Laparoscopic Adjustable Gastric Banding for Morbid Obesity - Long Term Follow-Up from an FDA Trial Center
Stewart E. Rendon, Kenneth G. MacDonald Jr., William H. H. Chapman, Bobbie L. Price, East Carolina University, Brody School of Medicine, Greenville, NC, Brody School of Medicine at East Carolina University, Greenville, NC

BACKGROUND: The efficacy of adjustable gastric banding for treatment of morbid obesity remains controversial. This report details the complications and reoperations at one of the original FDA trial centers over a 7 year maximum follow-up period. Methods: 47 patients underwent placement of the Lap Band under FDA protocol. Prospective data was collected from January 1996 to November 2003, including weight loss, complications and reoperations.

RESULTS: Maximum weight loss occurred 2 years after surgery with a mean EBW loss of 38.3% with a follow-up of 70%. Only 19% lost more than 50% EBW. Mean EBW lost at 7 years postop was 18.9% with 62% follow-up, although total numbers were small. Significant device-related complications occurred in 14 patients (29.7%), including: gastric slippage (8), port or tubing problems (3), a questionable autoimmune problem (1), pseudoachalasia (1) and an esophageal perforation. There was no band erosion or mortality. 11 patients (23% of total) have required reoperation with 15 procedures performed. 6 bands (12% of total) were explanted due to reflux problems, perforation at placement, poor weight loss and questionable autoimmune symptoms; 1 had replacement of new band and 1 had conversion to gastric bypass. 5 patients had laparoscopic posterior gastric wall fixation for slippage. 4 procedures were due to tubing or port problems. The intra-abdominal procedures were all performed laparoscopically other than the esophageal perforation.

DISCUSSION: Conclusions from this experience are hampered by small numbers and poor follow-up, but the poor weight loss and high reoperation rate over the 7 year period in an experienced Bariatric center participating in a rigidly controlled FDA protocol question the efficacy of adjustable gastric banding as treatment for morbid obesity.
Pyloroplasty with Fundoplication in the Treatment of Combined Gastroesophageal Reflux Disease and Bloating

Vic Velanovich, Henry Ford Hospital, Detroit, MI

BACKGROUND: Although gastroparesis does not influence gastroesophageal reflux disease (GERD) or antireflux surgery, many patients with GERD will also suffer from gastroparesis-induced bloating as a distinct symptom different from GERD-related symptoms. The purpose of this study was to assess whether a pyloroplasty with a fundoplication will improve bloating symptoms in these patients.

METHODS: A prospectively gathered database of all patients undergoing antireflux surgery was reviewed. All patients underwent history, physical examination, upper endoscopy, esophageal manometry and 24 hr esophageal pH monitoring, and selectively with contrast radiography. Patients who with symptoms of bloating also underwent gastric emptying scintigraphy. All patients completed the GERD-HRQL symptom severity questionaire. One of the items relates specifically to bloating. The item is scored from 0 (asymptomatic) to 5 (incapacitated) based on descriptive anchors. Patients with symptomatic GERD and objective findings by physiologic testing were offered antireflux surgery. Those with significant delayed gastric emptying, defined as T1/2 > 120 mins, were also offered a pyloroplasty. Operations performed included laparoscopic or open Nissen or Toupet fundoplications with Heineke-Mickulicz pyloroplasties. Postoperatively, patients completed the GERD-HRQL and had gastric emptying scintigraphy performed.

RESULTS: 369 patients underwent antireflux surgery, with 35 also having a pyloroplasty. 28 (80%) reported significant symptomatic improvement. The median preoperative bloating score improved from 4 to 1 postoperatively (p<0.05). The median T1/2 improved from 244 mins to 112 mins (p<0.05). CONCLUSION: Although gastroparesis may not contribute to the symptoms of GERD, it can contribute to symptoms of bloating. 80% of patients improved their bloating symptoms with the addition of a pyloroplasty. Therefore, a pyloroplasty is a reasonable addition to antireflux surgery in patients who suffer from both GERD and bloating due to gastroparesis.
M1953 Adjustable Gastric Banding as an Outpatient Procedure; A Multi-Institutional Experience of 700 Successful Patients
Santiago Horgan, Garth Jacobsen, Federico Moser, Fernando Elli, Jason Harris, Adam Goldstein, Robert Berger, Jaime Ponce, University of Illinois at Chicago, Chicago, IL, Hamilton Surgical Weight Center, Dalton, GA

BACKGROUND: The purpose of this multi-institutional study was to determine the efficacy and safety of laparoscopic adjustable gastric banding as an outpatient procedure.

METHODS: Between March 2001 and Oct 2003 700 adjustable gastric banding cases were performed as an outpatient procedure. Prospective data for complications, BMI, comorbidities and indications for outpatient candidates were collected. Special criteria for patient selection were applied. Patients with the following characteristics were excluded from outpatient surgery: BMI greater than 55 in one institution and greater than 70 in the other; cardiac disease and sleep apnea requiring c-pap. All patients underwent postoperative water soluble contrast study or trial of liquids before discharge depending on institution.

RESULTS: There were no conversions to an open procedure. Twenty patients selected for outpatient surgery had stoma obstructions revealed either by water soluble contrast study, or inability to tolerate liquids. All patients with evidence of postoperative obstruction were admitted for IV fluids, and stayed for 3-5 days. No patient that was discharged the day of surgery was readmitted in the immediate postoperative period. Length of stay following surgery averaged 4 hours.

CONCLUSIONS: We conclude that for carefully selected patients, adjustable gastric banding can be done safely as an outpatient procedure. Our results suggest that laparoscopic gastric banding may provide a much-needed outpatient alternative to inpatient bariatric surgery such as the gastric bypass in the treatment of morbid obesity.
M1954 Prognostic Factors in the Management of Primary Gastric Lymphoma
Heriberto Medina-Franco, Santos Soto-Germes, Carlos Chan, Carmen Lome-Maldonado, National Institute of Medical Sciences and Nutrition, Mexico City, Mexico

BACKGROUND: There is not a standard treatment of gastric lymphoma. This study aimed to establish some of the prognostic factors in the management of this disease.

METHODS: We reviewed the clinicopathologic characteristics of adult patients with the diagnosis of gastric lymphoma during the period between 1990 through 2000. The pathologic subtype was considered as the one given at the time of diagnosis and staging was performed with the Ann Arbor staging system. Overall survival and disease-free survival were the primary endpoints. Survival curves were constructed with the Kaplan-Meier method and compared with the log-rank test. Multivariate analysis was performed with the Cox regression model. Significance was considered at p<0.05.

RESULTS: We identified 41 patients, 22 of them (53.7%) were female. Mean patient age was 52.6 years (range 16-77). The most common presenting symptoms were weight loss in 37 (90.2%) patients, abdominal pain in 39 (95.1%) and gastrointestinal bleeding in 17 (41.5%). Fifteen patients were classified as large cell lymphoma (36.6%), 10 (24.4%) as MALT lymphoma and the rest as other subtypes. The series included 11 (26.8%) patients with stage I, 8 (19.5%) stage II, 7 (17.1%) stage III and 15 (36.6%) patients with stage IV. Twenty patients (48.8%) underwent surgical resection and 34 (82.1%) received chemotherapy, most commonly CHOP. Actuarial survival at 1 and 5 year was 77.8% and 71.17% respectively. On univariate analysis, variables associated with longer survival were early stage, surgical treatment, normal levels of LDH and good performance status. On multivariate analysis only normal levels of LDH and good performance status retained their significance. Histologic subtype and chemotherapy were not associated with overall survival. Regarding disease-free survival, on univariate analysis the same factors plus chemotherapy administration were associated with favorable prognosis. On multivariate analysis only normal levels of LDH were associated with longer disease-free survival: 131 months in patients with normal LDH serum levels vs 12 months in patients with LDH >197 mg/dl (p<0.0001).

CONCLUSIONS: Primary gastric lymphoma is a relatively uncommon disease. Optimal treatment is controversial but surgical resection appears to confer an advantage on overall survival. High LDH levels are associated with shorter overall and disease-free survival.
M1955 Vitamin and Iron Metabolism in Morbid Obese Patients Before and Two Years After Gastric Band
Jocelyn P. M. Roduit, Natascha Potoczna, Thomas Ricklin, Rudolf Steffen, Thomas Krech, Fritz F. Horber, Klinik Hirslanden, Zurich, Switzerland, Obex Institut, Bern, Switzerland, Institut fur Medizinische Labordiagnostik, Kreuzlingen, Switzerland

BACKGROUND: A recent study reported a case of Wernicke's encephalopathy a few days after adjustable gastric band implantation (AGB). The aim of our study was to determine the importance of laboratory surveillance of morbidly obese patients (MOB) before and 2 years after AGB.

MATERIAL AND METHODS: From 9/1996 to 9/2000, 749 MOB, f:m 3.8; age 42y±1 (SEM), BMI 42.5m2±0.2 were prospectively followed for two years after AGB. Additionally, 100 normal weight Swiss subjects (controls; f:m 4.0; age 45y±1, 21.8kg/m2±0.2) were investigated in the postabsorptive state. Ferritin and vitamins (V) A, E, B1 (stimulated), B2 (stimulated), B6 (stimulated), B12, D and folic acid (FA) were measured yearly.

RESULTS: are shown in the table below.

CONCLUSION: While at time of surgery Vitamin B2, B6, D and FA are lower in MOB than in controls, Ferritin, VA, B1, B12 and E are normal. In Contrast 2 years after weight loss of 30 kg, a decrease in Vitamin A and B1 occurred, whereas FA and Vitamin D increased but did not normalize. Therefore regular monitoring and differential replacement therapy of vitamins seems to be indispensable to protect patients against Wernicke's encephalopathy, peripheral neuropathy, osteomalacia as a result of pre-existing or weight loss induced hypovitaminosis in MOB with AGB.
Extended Resection for Locally Advanced Siewert's Type III Esophagogastric Junction Cancer: Is It Advisable? Results From a French Multicentre Study


INTRODUCTION-AIMS: Total gastrectomy with distal esophagectomy is the treatment of choice for Siewert’s type III adenocarcinoma, which are located between 2 and 5 cm below the esophagogastric junction (EGJ). For locally advanced tumors, enlargement of resection to the regional organs affords higher R0 resection and 5-year survival rates counterbalanced by higher mortality and morbidity rates. Here we compared the results obtained by extended (EG) and standard gastrectomy (SG) for Siewert’s type III adenocarcinoma of the EGJ.

PATIENTS AND METHODS: The data of 1192 patients who underwent surgical resection for EGJ adenocarcinoma from 1985 to 2000 in 36 French surgical centers were retrospectively reviewed. Extended gastrectomy included splenectomy, distal pancreatectomy, transverse colectomy and/or left hepatectomy. Mortality and morbidity rates, pulmonary complications and anastomotic leakage rates, median hospital stay, pT and pN stages, complete resection (R0) and 5-year survival rates were compared between both techniques.

RESULTS: Of the 1192 patients, 212 (17.8%) had Siewert’s type III adenocarcinomas of the EGJ. Comparative results between EG (n = 51) and SG (n = 161) are presented in table.

CONCLUSIONS: For Siewert’s type III adenocarcinoma of the EGJ, extended gastrectomy allows R0 resection and 5-year survival rates comparable to standard gastrectomy, without increase in postoperative mortality, morbidity or duration of hospital stay. Five-year survival after complete extended resection remains low (22%), probably due to an higher rate of advanced tumors (pT3-4 = 78% and pN1 = 86%).
M1957  Realistic Expectations: Outcomes After Roux-En-Y Gastric Bypass in Patients with BMI Over 55
Steven P. Bowers Jr., Donald H. Jenkins, Joel E. Goldberg, Wilford Hall Medical Center, San Antonio, TX, Wilford Hall Medical Center, Lackland AFB, TX

BACKGROUND: Recent studies have shown that the population with Body Mass Index (BMI) greater than 55 kg/m² is increasing faster than the rest of the obese population. Roux en Y gastric bypass (RYGB) is considered the standard operation to induce weight loss, restore quality of life and reduce obesity related illness in obese patients, but this operation has not been sufficiently studied in patients with BMI over 55. We sought to define realistic measures of success in this population.

METHODS: Between December 1999 and December 2001, 20 patients with BMI over 55 underwent open RYGB by a technique of circular stapled gastrojejunostomy anastomosis with 120 cm Roux limb. Patients underwent preoperative and postoperative quality of life assessment using the Medical Outcomes Study Short Form-36 questionnaire (SF-36) to calculate physical and mental component summary scores (PCS, MCS). Clinical outcome data were prospective entered into a computerized database.

RESULTS: Mean preoperative BMI was 60.3 +/- 4.5 kg/m² and patients had a mean age of 38.7 +/- 12.2 years. Preoperatively, patients had a median of three obesity related illnesses (range 1-5) and 70% required treatment for sleep-disordered breathing. There was no perioperative mortality, but one patient died of complications from protein malnutrition after one year. Six patients underwent later operation for ventral hernia repair. At two year follow-up, mean reduction in BMI was 21.7 +/- 6.6 kg/m², but all patients had BMI over 30, and 50% had BMI over 40. Quality of life significantly improved from preoperative measures (PCS = 31.3 +/- 10.3, MCS = 49.1 +/- 11.6) to equal that of the normal population at two years or greater (PCS = 45.7 +/- 10.7, p<0.01 by paired student’s t-test; MCS = 55.7 +/- 8.9, NS). All patients reported reduction in severity or elimination of all obesity related illnesses.

CONCLUSIONS: In patients with preoperative BMI over 55, RYGB results in greatly improved quality of life and improvement in the severity of weight related illnesses. However, all patients are still considered obese (BMI > 30) after surgically induced weight loss. RYGB in patients with BMI over 55 should be considered a palliative, but not curative, operation.
Christopher C. Thompson, David L. Carr-Locke, John Saltzman, David Lautz, James Slattery, Malcolm K. Robinson, Brigham and Women's Hospital, Boston, MA

PURPOSE: Roux-en-Y gastric bypass is an effective treatment for severe obesity, however the mechanisms for weight loss and weight loss failure are poorly understood. Intragastric staple-line dehiscence may be associated with poor outcomes including weight gain, pouch ulceration, and gastroesophageal reflux disease (GERD). Staple-line dehiscence is likely to become more common as the number of procedures has risen dramatically. Treatment of dehiscence has traditionally involved technically difficult surgical revision, which is associated with significant complications. We report a novel peroral endoscopic technique for repairing intragastric staple-line dehiscence.

METHODS: Eight roux-en-Y gastric bypass patients with confirmed intragastric staple-line dehiscence on EGD were included. Presenting symptoms were sub-optimal post surgical weight loss and/or severe GERD. A combination of endoscopic devices including the Bard EndoCinch, WilsonCook ESD, hemoclips, and an argon plasma coagulator were used to approximate and secure the tissue on opposing sides of the staple-line dehiscence. The goal was complete closure of the gastrogastric communication. Following staple-line closure the pouch was filled with water and the bypassed stomach was compressed to evaluate the integrity of the closure.

RESULTS: The average weight gain prior to procedure was 25 pounds from plateau. Four patients had significant GERD symptoms. The average length of dehiscence was 2.1cm. An average of 3 plications and 2 hemoclips were used for each procedure. Complete staple-line closure was achieved in 6 of the 8 procedures. Three of the 4 patients with significant GERD had complete resolution, and one had modest improvement. Five of the 6 patients with complete closure did not gain weight during an average follow-up of 6 weeks and mild weight loss was common. Both patients in whom closure was not achieved had dehiscence of the very proximal pouch requiring instrument retroflexion, which did not allow the currently available instruments to provide tissue apposition. Peri-procedure distension of the bypassed stomach occurred in two patients and both resolved spontaneously. There were no other complications.

CONCLUSION: Peroral endoscopic repair of staple-line dehiscence is technically feasible. Preliminary results suggest this procedure may offer a less morbid alternative to re-operation for staple-line dehiscence after roux-en-Y gastric bypass.
BACKGROUND: Laparoscopic gastric banding implanted for weight reduction in severely obese patients allows the reversible individualized adjustment of the amount of restriction during postoperative follow up. About 1 to 5 % of patients require reoperation for insufficient weight loss or device-related complications per treatment year. Whether preoperative age, sex and BMI might modulate outcome (i.e. weight loss or band related complications) after laparoscopic gastric banding is vastly unknown.

METHODS: Since 28 May 1997, 410 severely obese patients were prospectively investigated following placement of a Swedish Adjustable Gastric Band (SAGB). 404 patients (98.5 %) completed three-year follow up (318 women, 86 men, age 42±0.5 years [mean±SEM], range 16-71, weight 118.5±0.8 kg, range 79.5-174.6 kg, BMI 42.6±0.2 kgm2, range 32.7-55.2).

RESULTS: Three years after gastric banding BMI decreased by 11.1±0.2 kg/m2 (women 11.1±0.4 kg/m2, men 9.3±0.7 kg/m2, P<0.001). Younger women (<50 years) lost more weight compared to older men (>50 years; 11.9±0.3 kg/m2 vs 8.4±0.7 kg/m2, P<0.001), whereas older women (>50 years) and younger men (<50 years) lost similar amounts of weight (10.3±0.4 kg/m2 vs 10.1±0.6 kg/m2). Patients with a preoperative BMI >50 kg/m2 lost more weight than those with BMI <35 kg/m2 (15.3±1.1 kg/m2 vs. 6.6±0.5 kg/m2, P<0.001). 16.8 % of patients (n=68) had complications due to the gastric band system. Compared to women men had more band leaks (7.0% vs. 0.9%, P<0.001), older men (>50years) had more band slippage than older women (8.3% vs 1.2%, P<0.001). Interestingly, in patients with preoperative BMI >50 kg/m2 band related complications were lower than in patients with BMI below 50 kg/m2. (8.0% vs. 18.2%, p<0.050), but port and tube related complications were higher (16.0% vs. 5.5%, p<0.001).

CONCLUSIONS: Adjustable gastric banding is an effective treatment of severe obesity. Age, sex and BMI are important modulators of outcome and have to be considered, when evaluating patients with severe obesity for bariatric surgery.
M1960 The Impact of Bariatric Surgery on Resident Operative Experience
Jon D. Vogel, Michael A. Schweitzer, Thomas H. Magnuson,
Johns Hopkins Bayview Medical Center, Baltimore, MD

PURPOSE: To evaluate the impact of bariatric surgery on resident operative experience in gastric and complex laparoscopic surgery, in an academic general surgery residency program.

METHODS: From 1997 to 2002, the operative case logs of all categorical general surgery residents were reviewed. The total number of cases logged for each of the following categories of operations was recorded; non-bariatric gastric, open gastric bypass, laparoscopic gastric bypass, and complex non-bariatric laparoscopic.

RESULTS: Total annual resident experience in non-bariatric gastric operations (NB) ranged from 108-156 cases per year. The number of open gastric bypass operations (OGBP) increased from 0 to 118 per year. Laparoscopic gastric bypass operations (LGBP) increased from 0 to 98 per year. The total annual resident experience in complex laparoscopic surgery ranged from 50 to 147 cases per year, including 94 and 98 laparoscopic gastric bypass operations in the last 2 years of the study period, respectively.

CONCLUSIONS: Resident training in gastric surgery has dramatically increased with the introduction of bariatric surgery. This type of surgery now accounts for the majority of gastric operations and laparoscopic gastric bypass has become the most commonly performed complex laparoscopic operation. Bariatric surgery has had a major positive impact on resident training in an academic general surgery residency program.
Resolution of Diabetes After Roux-en-Y Gastric Bypass
Carson D. Liu, Christina Y. Kim, Greater Los Angeles Veterans Administration Hospital, Los Angeles, CA, Century City Hospital, Los Angeles, CA

Adult onset diabetes is a widespread disease causing morbidity and mortality in the obese patient. Quality of life is greatly affected with long term complications including retinopathy, cardiovascular disease and infections. Patients with diabetes were followed before and after weight loss surgery and the timing of resolution of diabetes recorded.

METHODS: Patients with adult onset diabetes who underwent a laparoscopic gastric bypass Roux en Y procedure by one surgeon within a two year span were contacted N=53. A total of 53 patients out of 215 patients operated upon had either type I or type II diabetes. Patients were asked whether diabetes was resolved and the timing of resolution via clinic visits, mail, email and interactive website diaries.

RESULTS: 49/53 patients were contacted. Two patients had type I diabetes and decreased their insulin requirements by ten fold. Of the remaining 47 Type II diabetic patients contacted, 39/47 (83%) of patients had complete resolution of diabetes. 8/47 (17%) of patients had stopped insulin and were maintained on less than half the dose of oral hypoglycemic agents. 35/39 (89.7%) patients were able to stop all medication immediately upon discharge from the hospital on postoperative day 2 or 3. 6/8 patients requiring reduced medications post-operatively were on high doses of insulin pre-operatively. Mean body mass index was 46 pre-operatively. No patients had wound infections at the trocar sites. Average weight loss was 89 pounds at one year follow-up (mean of 55% excess weight loss). All patients who stopped their diabetes medications continue to be off of medication one to two years after surgery.

CONCLUSIONS: Adult onset diabetes, type II, is resolved in 9 out of 10 patients almost immediately upon discharge from the hospital. Although only two patients had type I (juvenile) diabetes, these two patients greatly reduced their insulin requirements in the post-operative period. Physicians should be aware that patients should not be restarted on oral hypoglycemic agents post-operatively if blood sugar normalizes while in the hospital. Laparoscopic Roux en Y gastric bypass creates reversal of diabetes in adult onset diabetes and greatly improves juvenile diabetes in the morbidly obese patient with minimal co-morbidities. The improvement in blood sugar occurs before any weight loss is measured.
M1962 Perioperative and Postoperative Changes in Body Composition After Gastrectomy
Teruo Kiyama, Takashi Tajiri, Akira Tokunaga, Toshiro Yoshiyuki, Takashi Mizutani, Takeshi Okuda, Itsuro Fujita, Shunji Kato, Adrian Barbul, Nippon Medical School, Tokyo, Japan, Johns Hopkins Medical Institution, Baltimore, MD

BACKGROUND: Nutritional status is one of the most important clinical determinants after gastrectomy. The aim of this study was to compare changes in body composition in patients undergoing laparoscopy-assisted gastrectomy (LAG), distal gastrectomy (DG), or total gastrectomy (TG).

METHODS: Total body protein (BPM) and fat mass (FM) were measured with a multifrequency bioelectrical impedance analysis (BIA) using an inBody II machine (Biospace, Tokyo, Japan) in 109 patients (73 males, 36 females) who had undergone LAG (n=25), DG (n=39), or TG (n=45). The mean preoperative body weight of the subjects was 57.6+/−10.7 kg, the mean BMI was 22.5+/−3.4 kg/m², and the mean fat% was 24+/−7%. Changes between preoperative data and results obtained on postoperative day 14 or 6 months after surgery were evaluated.

RESULTS: In the immediate post-operative period (14 days), body weight loss in the LAG group was significantly lower than that in the DG and TG groups (2.5+/−0.9kg vs. 3.5+/−1.8kg and 4.0+/−1.9kg, respectively; p<0.01). Body composition in the subjects demonstrated loss of BPM, rather than FM. At 6 months, body weight was not significantly different from preoperative values in the LAG and DG groups (-1.2+/−3.8 kg and -1.8+/−4.7kg, respectively) but decreased by 9.2+/−5.0 kg in the TG group (p<0.01). Body composition analysis revealed a loss of FM in the DG and TG groups.

CONCLUSION: Patients who undergo gastrectomy lose BPM in the early post-operative period, and the loss of body weight was significantly smaller in the LAG group than in the DG and TG groups. At 6 months, there was recovery of body weight in the LAG and DG groups, but a further decrease occurred in the TG group. The main postoperative change in body composition was a loss of FM in the DG and TG groups. BIA can be used to assess body composition and may be useful for nutritional assessment in patients who have undergone a gastrectomy.
M1963 Laparoscopic Resection of Gastric Stromal Tumours — A Series with 29 Cases
Andrew Hindmarsh, Brendan Koo, Grace Lee, Michael P. N. Lewis, Michael Rhodes, Norfolk & Norwich University Hospital, Norwich, UK

BACKGROUND: Gastrointestinal stromal tumours (GIST) are neoplasms with low malignant potential. Resection of the tumour with negative margins is the accepted treatment of primary GIST. Gastric GISTs are amenable to laparoscopic resection. We have reviewed the surgical outcomes for all patients undergoing laparoscopic resection of gastric GIST in our unit.


RESULTS: 29 patients underwent laparoscopic resection of presumed gastric GIST by 2 different surgeons during the study period. The median age and weight of the patients was 66 years (31-87) and 78 kg (44-104) respectively. Initial diagnosis was made by a combination of imaging and endoscopy. Deep endoscopic biopsy confirmed the diagnosis of GIST in only 4 patients (13.8%). Laparoscopic resection was completed successfully in 22 patients with a median operating time of 70 minutes (33-160). Seven procedures were converted to open: 3 because the tumour was deemed too large for laparoscopic resection, 2 because the tumour could not be identified, 1 for dense peritoneal adhesions, and 1 due to bleeding. The mean estimated blood loss for the procedure was 211 ml, and the median hospital stay was 5 days (1-11). Pathological analysis of resected specimens revealed 21 GISTs, 3 inflammatory fibroids, 2 submucosal lipomas, and one nest of heterotopic pancreatic tissue. The median GIST diameter was 4.0 cm (1.5-9.0). Risk categorisation for aggressive behavior of the GISTs was: Low 10, Intermediate 4, High 3, Uncertain 4. To date there have been two cases of distant recurrence presenting at 16 and 17 months after the initial resection, one of which had been converted to an open procedure due to the tumour size. In both cases the tumour was categorised as high risk for aggressive behavior after primary resection.

CONCLUSION: Laparoscopic resection of gastric GIST is both safe and effective. Pre-operative diagnosis can be difficult. Deep endoscopic biopsy of suspected GIST is unreliable and adds little to the diagnostic work up in these patients.
**M1964 Metabolic Syndrome and the Impact of Gastric Bypass Surgery**  
Thomas H. Magnuson, Michael Schweitzer, Jon Vogel, Johns Hopkins Bayview Medical Center, Baltimore, MD

**BACKGROUND:** The metabolic syndrome (MSx) represents a cluster of diseases including obesity, hypertension, and diabetes that, when combined, significantly increase the risk for cardiovascular disease and early death. Gastric Bypass (GBP) has been demonstrated to favorably impact a variety of medical problems. The effect of GBP on patients with the metabolic syndrome, however, is unclear.

**METHODS:** We reviewed the records and outcomes of 396 consecutive patients undergoing GBP by a single surgeon using a standardized operative procedure (divided, open GBP with 20 cc pouch and 150 cm roux). Patients with the MSx were identified by the coexistence of morbid obesity, hypertension, and diabetes.

**RESULTS:** Overall, 66 patients were noted to have the MSx and 330 did not. MSx patients were significantly older than non-MSx patients (46 +/-9 vs 40 +/-9 years old; p<.05). Pre-op body mass index was similar between the two groups (MSx =56.7 +/-11; non-MSx =55.2 +/-10). Perioperative morbidity and length of stay were also not significantly different. MSx patients had significantly higher rates of steatohepatitis on intraoperative liver biopsy (80% vs. 61%; p,.05) as well as higher rates of pre-op sleep apnea (37% vs. 24%; p,.05) compared to the non-MSx group. By two years post-op, MSx patients had lost an average of 60 +/-18 percent excess body weight, compared to 65 +/-20 for the non-MSx group (ns). Interestingly, the rate of complete resolution of diabetes and hypertension in the MSx group was 72% and 64%, respectively; not significantly different than the resolution rates seen in non-MSx patients (78% and 71%).

**CONCLUSION:** These data suggest that patients with MSx are excellent candidates for GBP and achieve outcomes similar to non-MSx patients. Sleep apnea and steatohepatitis appear to be associated with the metabolic syndrome, both of which are favorably impacted by weight loss. Diabetes and hypertension resolve after GBP in the majority of patients with MSx, although the long-term impact on cardiovascular disease remains to be determined.
**M1965 Management of Failed Adjustable Gastric Banding**
Rudolf Steffen, Laurent Biertho, Ruth Branson, Natascha Potoczna, Thomas Ricklin, Grazyna Piec, Fritz F. Horber, Klinik Beau-Site, Bern, Switzerland, Obex Institut, Bern, Switzerland, Klinik Hirslanden, Zurich, Switzerland

**BACKGROUND:** About 100,000 adjustable gastric band placements have been performed worldwide, but over 10% of patients require reoperation for insufficient weight loss or device-related complications. This study investigates the complications following gastric banding, and the outcome using a structured management strategy.

**METHODS:** From April 1996 to January 2002, 824 patients (mean BMI $43\pm1\, \text{kg/m}^2$ [mean $\pm$ SEM], age $43\pm1$ years, 77% women) underwent gastric banding in a single institution, and were followed prospectively. Complications, insufficient weight loss and their treatment were analyzed over five years.

**RESULTS:** During five-year follow-up excessive weight loss (EWL) was $57\pm2\%$, and by the fifth treatment year 59.3% of patients attained EWL of at least 50%. Mean rate of band-related complications was 5.0% per year, and major reoperation rate was 4.7% per year. Following major reoperation, mean band- and bypass-related complication rates ranged from 2.0% to 10.1% per year. In total, three deaths occurred, one following reoperation and two due to pre-existing cardiovascular disease.

**CONCLUSIONS:** In the present study, 59.3% of patients lost at least 50% EWL following gastric banding. When gastric banding fails, a strategic approach to reoperation yields acceptable post-operative morbidity and low mortality.
Age Alone Does Not Have a Significant Impact on the Short and Long-Term Outcome of Roux-En-Y Gastric Bypass for Morbid Obesity
Ioannis S. Raftopoulos, Julie A. Ercole, Anthony O. Udekwu, James D. Luketich Sr., Anita P. Courcoulas, University of Pittsburgh Medical Center, Shadyside Campus, Pittsburgh, PA

OBJECTIVE: To compare the complication rates, excess weight loss (EWL), and improvement of co-morbidities after Roux-en-Y gastric bypass (RYGBP) for morbid obesity in patients older or younger than 50 years.

METHODS: Between January 1995 and July 2003, 825 morbidly obese patients underwent RYGBP in our institution. There were 604 patients less than 50 years old (group A) and 221 patients aged 50, or older (group B). An open RYGBP was performed in 564 patients and a laparoscopic RYGBP in 261 (31.6%) patients. Data regarding length of stay (LOS), early major/ minor, late major/ minor complications, mortality, body mass index (BMI), % EWL, and co-morbidities were prospectively collected in our database.

RESULTS: There were no significant differences in gender, race, preoperative BMI (A: 54.8 vs. B: 52 Kg/m²) and type of access between the two groups. LOS (A: 4.9 vs. B: 5.1 days) and complication rates were similar in both groups except from late minor complications which were higher in older patients (p<0.0001). There was a trend towards a higher mortality rate in group B (A: 0.63% vs. B: 1.28%). No significant difference in BMI (1yr A/B: 36.3/ 33.9, 3yr A/B: 36.9/ 34.0, 6yr A/B: 35.0/ 37.4 Kg/m²) and %EWL (1yr A/B: 62.7%/ 64.4%, 3yr A/B: 59.1%/ 64.7%, 6yr A/B: 58.8%/ 54.6%) was noted during a mean follow-up of 18 (1-84) months. The percent improvement, or resolution of hypertension (A: 70.7% vs. B: 54.5%), sleep apnea (A: 82% vs. B: 80.6%), diabetes (A: 85.3% vs. B: 92.6%), gastro-esophageal reflux (A: 80.3% vs. B: 70%), arthritis (A: 47.3% vs. B: 35.9%), hypercholesterolemia (A: 61.5% vs. 80%) and asthma (A: 52% vs. B: 57.1%) was similar in both groups.

CONCLUSION: RYGBP is safe and equally effective in morbidly obese patients older than 50 years. Older patients should not be denied surgical treatment for morbid obesity on the basis of age alone.
The Preoperative Serum Albumin Level Is a Prognostic Indication for Adenocarcinoma of the Gastric Cardia

Yung-Chang Lien, Chih-Cheng Hsieh, Yu-Chung Wu, Han-Shui Hsu, Wen-Hu Hsu, Liang-Shun Wang, Min-Hsiung Huang, Biing-Shiun Huang, Department of Surgery, Taipei-Veterans General Hospital, Taipei, Taiwan, Department of Surgery, Taipei-Veterans General Hospital, Taipei, Taiwan

BACKGROUND & AIMS: Serum albumin is synthesized in the liver and the level of serum albumin has a high correlation with the nutritional status. In patients with adenocarcinoma of the gastric cardia, we noted a longer survival time when pre-operative serum albumin levels were higher. In this study, the serum albumin level was evaluated as a prognostic factor to predict patients' survival.

MATERIALS AND METHODS: From 1987 to 1997, 606 patients with adenocarcinoma of the gastric cardia were treated in our service. All the clinical data were collected. The serum albumin level for each patient was evaluated on the second day after admission without any prior nutritional support. Patients were divided into two groups - normal serum albumin (serum > 3.5 gm/dl) and abnormal serum albumin to evaluate the long-term prognosis for cancer of the gastric cardia following surgical resection.

RESULTS: 339 patients underwent curative surgery. The surgical mortality and morbidity were 7.4% (25/339) and 23.3% (79/339), respectively. The surgical resectability rate was significantly better in the patients with a normal albumin level (p<0.001). The 5-year overall survival rate of patients with a normal serum albumin was also better than those with an abnormally low serum albumin (38.4% vs 19.1%, p=0.0003). In each cancer stage, the 5-year survival rate of patients with normal albumin level was better than those with hypoalbuminemia. By multivariate analysis, serum albumin level and the pathological T, N status were independent factors that correlated with prognosis.

CONCLUSIONS: Preoperative serum albumin level is a good prognostic indicator and correlated highly with resectability and survival. The patients with abnormal serum albumin had a worse survival than those with a normal serum albumin in the study group.
**INTRODUCTION:** IVP is currently approved for the inpatient treatment of GERD and ZES as a 15-minute infusion. An objective of this study was to compare 2 minute and 15 minute infusion times of IVP in perioperative patients. The primary efficacy endpoint was the inhibition of gastric acid secretion.

**METHODS:** Eligible adult pre-operative patients were randomized to one of six IVP regimens: 40mg QD, 40mg Q12h or 80mg Q12h administered as either a 2 or 15 minute infusion. The first dose of IVP was administered 1 hour prior to surgery. Gastric samples were collected from patients at 15-minute intervals via NG/OG tubes over a 60 minute period prior to and following administration of medication. Subsequently, the surgical procedure was performed with a NG/OG tube in place and gastric samples were collected at half hour intervals for the remainder of the study.

**RESULTS:** 26 patients (17 M and 9 F, ages 25-81) had data available for volume and gastric acid output pre and post dosing. Table 1 presents the median volume (cc/hr) and median acid output (mEq/hr) at pre-dose, 1hr, 2hrs, and 6-12hrs post-study drug administration for both the 2 and 15 minute regimens. At all time points, acid volume and acid output were lower than the baseline value regardless of dosing regimen. Between hours 6 and 12, results appeared similar across groups.

**CONCLUSIONS:** These data suggest that in this population of elective surgical patients, intravenously administered pantoprazole delivered as either a 2 minute or a 15 minute infusion reduced overall gastric volume and gastric acid output.

<table>
<thead>
<tr>
<th>Dose</th>
<th>Median Volume (cc/hr)</th>
<th>Median AO (mEq/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-dose</td>
<td>1 hr</td>
</tr>
<tr>
<td>40mg/15min</td>
<td>7</td>
<td>70.0</td>
</tr>
<tr>
<td>40mg/2min</td>
<td>10</td>
<td>27.4</td>
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<tr>
<td>80mg/2min</td>
<td>4</td>
<td>45.8</td>
</tr>
</tbody>
</table>

* significant decrease from baseline, p<0.05
M1969 Characterization of Psychosocial and Demographic Predictors of Outcome Following Weight Loss Surgery
MercedesBaghia,LeenaKhaitan,DavidA.McCluskyIll,
NanaGletsu,StanleyL.Chapman,C.DanielSmith,Emory
EndosurgeryUnitandEmoryBariatrics,EmoryUniversity
SchoolofMedicine,Atlanta,GA

BACKGROUND: As in most other weight loss strategies, the patients' compliance to strict lifestyle change contributes highly to the success after weight loss surgery. The aim of this study was to identify psychosocial and demographic factors that may predict postoperative outcome.

METHODS: Between July 2002 and April 2003 we prospectively collected socio-economic demographic information on all patients undergoing bariatric procedures. All patients routinely completed a preoperative psychological evaluation. A number of preoperative demographic and psychosocial variables including education level, income, marital history, work history, history of substance abuse, physical and sexual abuse, adherence to medical treatments, and previous psychiatric history were analyzed against postoperative changes in BMI. The data were analyzed using Kruskall-Wallis and linear regression tests.

RESULTS: Complete psychological and socioeconomic information was compiled in 77 patients (65 women, 12 men) with 6.4 ± 3.2 mo follow up. Average age was 42.8 ± 9.46 yrs with a mean preoperative BMI of 48.01 ± 4.94. At the time of surgery 22% were unemployed, 44% had a psychiatric history, 33% were divorced and 5% had a history of substance abuse. None of these factors, or the education level, race or sex correlated with weight loss. The most important positive predictor of weight loss was knowledge of the surgery and its demands (p=0.007). Previous history of adherence to medical treatment demonstrated a trend toward better weight loss. Interestingly, patients with an annual income of > $80,000 had significantly less weight loss (p=0.045) than those with lower salaries despite comparable preoperative BMIs and follow up.

CONCLUSION: Based on these results, patients' baseline knowledge of surgery and its demands and their prior history of adherence to medical treatment are the most important psychosocial predictors of positive outcome. These should be assessed and considered when evaluating patients for weight loss surgery.
OBJECTIVES: The purpose of this study was to evaluate the outcome of high-risk patients undergoing laparoscopic Roux-en-Y gastric bypass (LRYGBP).

METHODS: A review of prospectively collected clinical outcome measures of our first 105 patients.

RESULTS: One hundred and five patients (78 women; mean age 41 yrs; mean BMI of 48.5) underwent LRYGBP between 7/97 and 2/99 rendering an average postoperative period of 64 months. Their pre-operative ASA classes were II (7), III (39) and IV (59) with each class having a mean of 1.7, 4.3 and 8.7 co-morbidities respectively, with BMI of 44.4, 47.9 and 48.7 respectively. Their in-hospital outcome measures are summarized in the table below. There was no downgrading in ASA class in any patient. At follow-up, there was a 37% reduction in the number of co-morbidities in ASA IV patients, resulting in an improvement in their ASA class to class I (13%) or class II (77%). The 5-year mortality in the class IV group was 6.8% (all deaths were from unrelated causes) and there were no deaths in Class II and III patients.

CONCLUSION: LRYGB can be performed safely in ASA IV patients. They benefit by a reduction in their co-morbidities and this translates to a marked improvement of their ASA status.

Results: Summary of in-hospital outcome measures.

<table>
<thead>
<tr>
<th></th>
<th>ASA Class II (n=7)</th>
<th>ASA Class III (n=39)</th>
<th>ASA Class IV (n=59)</th>
<th>p Value</th>
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<tr>
<td>Total hospital stay (days)</td>
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<td>2.7</td>
<td>2.9</td>
<td>NS</td>
</tr>
<tr>
<td>ICU stay</td>
<td>0</td>
<td>0</td>
<td>0.3</td>
<td>NS</td>
</tr>
<tr>
<td>Days to return to activities of daily living</td>
<td>6.7*</td>
<td>8.9</td>
<td>11.5*</td>
<td>p=0.016*</td>
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<tr>
<td>Major complications</td>
<td>0*</td>
<td>6 (15%)</td>
<td>9 (15.3%)*</td>
<td>p=0.02*</td>
</tr>
<tr>
<td>Minor complication</td>
<td>4 (57%)</td>
<td>26 (66%)</td>
<td>42 (71)</td>
<td>NS</td>
</tr>
<tr>
<td>Deaths (in-hospital)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>% Excess weight</td>
<td>71%</td>
<td>66%</td>
<td>63.4%</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Indicates the groups compared
Depressive Illness and History of Sexual Assault in Bariatric Surgery Candidates

Steven C. Poplawski, Patricia Choban, Jon Schram, Jessica Schram, Nikhil Dhurandhar, Forest Health Medical Center, Inc., YPSILANTI, MI, Bariatric Treatment Centers of Ohio, Groveport, OH, Bariatric Treatment Centers of West Michigan, Grand Haven, MI, Wayne State University, Rochester Hills, MI

The effect of a history of sexual assault (SA) or its absence (NSA) on outcome in 764 patients evaluated to receive bariatric surgery was studied. Patients were evaluated over a 12-month period by a single surgeon (SCP). Medical, surgical and psychosocial history was obtained with a specific query about a history of sexual assault, either childhood molestation, or rape. A history of sexual assault (SA) is common (39% Female, 11.2% Male) in these patients evaluated for bariatric surgery. This group had a significantly greater use of antidepressant medication and history of hospitalization for psychiatric illness. Age and baseline BMI did not differ for the two groups. 24.8% and 30.4% of the patients with history of SA and NSA, respectively, underwent bariatric surgery (p = 0.09). Patients with a history of sexual assault were directed into counseling during their bariatric evaluation and treatment process. Within the SA group, those undergoing surgery had a significantly lower BMI than those not having surgery (47.4 +/- 6.4 Vs 50.0 +/- 9.1; p=0.01). This difference was not seen in the NSA group. Table 1 shows % excess weight loss in the patients with available data. Readmission rate and post op follow-up compliance was not different for the groups.

CONCLUSION: SA and depression are common among patients considering bariatric surgery. With effective counseling, past history of SA does not negatively influence the number of patients receiving surgery, or their progress as measured by postoperative weight loss. Therefore, past history of SA need not be considered a barrier for receiving benefits of a bariatric surgery.

<table>
<thead>
<tr>
<th>% Excess Weight Loss Mean SD (N)</th>
<th>SA</th>
<th>No SA</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Month Post Op</td>
<td>30.5 9.9 (49)</td>
<td>32.5 8.9 (129)</td>
<td>0.17</td>
</tr>
<tr>
<td>12 Month Post Op</td>
<td>62.8 16.1 (22)</td>
<td>63.7 15.1 (63)</td>
<td>0.82</td>
</tr>
<tr>
<td>Depression w/meds</td>
<td>44.7% (117)</td>
<td>24.0% (112)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Hospitalized for psychiatric treatment</td>
<td>18.3% (48)</td>
<td>3.4% (16)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>
Relationship Between Dyspeptic Symptoms, Gastroduodenal Lesions and H. Pylori Infection in Chronic Renal Failure

Gerardo Nardone, Alba Rocco, Maria Fiorillo III, Marisa Del Pezzo, Giovanni Autiero, Antonietta Lambiase, Gabriele Budillon, Bruno Cianciaruso, Department of Clinical and Experimental Medicine, University Federico II, Napoli, Italy, Department of Sperimental and Clinical Medicine, Napoli, Italy, Department of Nephrology, University Federico II, Napoli, Italy, Department of Cellular and Molecular Biology and Pathology L. Califano, University Federico II, Napoli, Italy, Dipartimento di Medicina Clinica e Sperimentale, Gastroenterologia, Napoli, Italy

Patients with chronic renal failure (CRF) may frequently develop peptic diseases or digestive disorders leading sometimes to severe gastrointestinal complications.

AIM: to evaluate the incidence of upper gastroduodenal lesions and the related symptoms in uremic patients. Secondary aim of the study was to evaluate whether uremic status may affect the diagnostic efficiency of 13C-urea breath test (13C-UBT), a non invasive test routinely used in the diagnosis of H. pylori infection.

PATIENTS AND METHODS: Fifty patients with chronic renal failure (39 non dialyzed -CRF- and 11 dialyzed -HD-) and 93 dyspeptic patients were consecutively enrolled. All patients underwent: an oriented and validated questionnaire scoring dyspeptic symptoms, upper endoscopy with multiple bioptic specimens for rapid urease test and histological examination, 13C-UBT and H. pylori Stool Antigen (HpSA) test, an other non invasive test routinely used in the diagnosis of H. pylori infection.

RESULTS: Mild or even absent total symptoms score (4±3) but a higher frequency of gastro-duodenal peptic lesions (overall 77%) were observed in uremic patients (non dialyzed and dialyzed) versus dyspeptic controls (symptom’s mean score 8±5; prevalence of peptic diseases 10%) in spite of H. pylori infection. The diagnostic accuracy of 13C-UBT was greater than HpSA in all studied groups.

CONCLUSION: In our study 1. patients with chronic renal failure in respect to dyspeptic patients had a mild or even absent upper gastrointestinal symptoms but a high prevalence of severe gastroduodenal peptic lesions irrespective of H. pylori infection and 2. the uremic status of patients with CRF did not affect the diagnostic accuracy of 13C-UBT. Therefore, upper endoscopy is suggested in patients with chronic renal failure even in absence of specific symptoms to avoid several upper GI complications.

<table>
<thead>
<tr>
<th></th>
<th>sensitivity %</th>
<th>Specificity %</th>
<th>DA %</th>
<th>sensitivity %</th>
<th>Specificity %</th>
<th>DA %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTROLS</td>
<td>96</td>
<td>98</td>
<td>97</td>
<td>90</td>
<td>98</td>
<td>94</td>
</tr>
<tr>
<td>CRF</td>
<td>95</td>
<td>95</td>
<td>95</td>
<td>81</td>
<td>94</td>
<td>98</td>
</tr>
<tr>
<td>HD</td>
<td>86</td>
<td>100</td>
<td>93</td>
<td>71</td>
<td>75</td>
<td>73</td>
</tr>
</tbody>
</table>

C 13 UBT HpSA
BACKGROUND: Gastrointestinal stromal tumors (GISTs) are rare tumors. We aimed to characterize the clinical behavior, pathological features, and surgical outcomes of gastric GISTs.

METHODS: Between 1975 and 1997, 89 patients underwent surgical resection of gastric GISTs. Their medical records were retrospectively reviewed for their presentation, operation and pathology. Overall and disease-specific survival rates were calculated by the Kaplan-Meier method.

RESULTS: Fifty-three (60%) men and 36 (40%) women underwent surgical resection of gastric GISTs at a mean age of 65 years. The majority (73%) was symptomatic at presentation, most commonly with gastrointestinal hemorrhage (45%). Diagnosis was confirmed by endoscopy (61%) and/or computed tomography (49%). Eighty-eight patients (99%) underwent gross total surgical resection with negative margins. Resection of adherent organs was required in 20 patients (22%). Post-operative chemoradiation therapy was delivered to 20 patients (23%). Mean tumor dimension was 10 cm (range, 0.6 to 37 cm). Based upon size and mitotic activity, tumors were classified as low (18.5%), intermediate (29%), and high (52.6%) risk. Four (4.5%) had nodal metastases. Synchronous metastases were present in 14 (16%), most commonly in the liver (57%). Eighteen (20%) developed metachronous metastases while 14 (16%) recurred locally at mean times of 2.7 and 1.7 years post resection. With a mean follow-up of 7.1 years, 30% have died of disease, 2% remain alive with disease, while 32% are alive with no evidence of disease, and 36% died of unknown or other causes. The 5- and 10-year overall survival rates were 60% and 44%, respectively. Five- and ten-year disease-specific survival rates were 72% and 70%. Patients with high risk GISTs had significantly decreased 5-year disease-specific survival (45%) when compared to low (100%) or intermediate (100%) risk tumors (p<0.01). Preoperative symptoms (66% vs 91%, p=0.02), additional organs resected (36% vs 82%, p<0.01), synchronous metastases (32% vs 79%, p<0.01), use of post-operative chemoradiation (17% vs 76%, p<0.01), and large tumor size (p<0.01) also adversely affected 5-year disease-specific survival.

CONCLUSION: A disease-specific 10-year survival rate of 70% can be achieved after aggressive and complete surgical resection of gastric GISTs. High risk and symptomatic GISTs predicted poorer patient prognosis. Adjuvant therapy with agents such as Imatinib should be considered for poor risk patients.
Roux-en-y Gastric bypass (RYGBP) is an established surgical therapy for morbid obesity both as a remedial procedure when simpler methods fail and as a primary method. We wanted to compare our 5-year results in patients undergoing a revision procedure with those in patients having RYGBP as their first bariatric procedure. In 1996 we abandoned gastric restrictive procedures (VBG, Gastric banding) due to frequent complications and side effects like esophagitis and band erosion. Instead we recommended RYGBP for all patients with morbid obesity. During the first years (1996-1998) with this policy we had as many as 70 re-do patients (63 females, mean age 41 years, BMI 37 kg/m²) while 93 procedures were performed in patients (80 females, 39 years, 44 kg/m²) not previously operated on for obesity. Two patients (1.2 %) died in connection with surgery of a pulmonary embolus and malignant hyperthermia, respectively. At 5 years 6 additional patients had died of causes considered unrelated to surgery. Two patients could not be traced and 4 patients refused to participate in this study. We sent a mail questionnaire to all patients after 5 years containing simple questions regarding their present health. Altogether 149 patients returned a complete questionnaire. Thus follow up was 96 % complete among surviving patients. The mean BMI in the whole material was 31 kg/m². The weight reduction in the primary group was by 12 steps on the BMI scale. Interestingly, the patients in the primary group answered more often that they were very satisfied in global self-evaluation in comparison with patients in the revision group (80.2 versus 58.7 percent, p < 0.01). Revison patients complained more often of heartburn, used more proton pump inhibitors and came back more often for gastroscopy (38.1 versus 17.4 percent, p < 0.01), in comparison with patients in the primary group. In patients reoperated due to esofagitis 42 percent complained of heartburn 5 years later while patients reoperated for erosion of an adjustable silicone band and staple line disruption after VBG complained of heartburn in 10 and 23 percent, respectively. RYGBP appears to give excellent and durable results both as a first-time treatment for morbid obesity and as a revision procedure. We speculate that the lower degree of patient satisfaction in the revision group is partly caused by the well-known difficulties to construct a sufficiently small proximal pouch in patients having had their anatomy of the proximal stomach disturbed by previous restrictive procedures.
M1975  Preoperative Nutritional Status of Patients Undergoing Roux-en-Y Gastric Bypass for Morbid Obesity
Tihesha Wilson, Victoria Drake VI, Toni Colarusso, Louis Flancbaum, St Luke's Roosevelt Hospital Center, New York, NY

BACKGROUND: Patients undergoing Roux-en-Y gastric bypass (RYGB) as treatment for morbid obesity are at risk for numerous vitamin and mineral deficiencies postoperatively. With the tremendous rise in the number of bariatric surgery procedures being done annually, there is concern that these nutritional complications may be underdiagnosed and undertreated. Few studies have evaluated the preoperative nutritional status of these patients in a systematic manner.

AIM: The aim of this study was to evaluate the status several vitamins, nutrients and nutritional markers preoperatively in patients having RYGB.

METHODS: Retrospective review of 200 consecutive patients, 40 women and 160 men, mean BMI 57 kg/m^2, having RYGB in 2003. Preoperative values of serum albumin, serum calcium, 25-OH vitamin D, serum iron, ferritin, hemoglobin, vitamin B12, and thiamine (Vit B1) were examined and the incidence of deficiencies noted.

RESULTS: The results are summarized in Table 1. Significant preoperative deficiencies were noted for iron (12%), ferritin (20%), hemoglobin (33%; 38% women, 15% men), thiamine (24%) and 25-OH vitamin D (84%).

CONCLUSIONS: Patients undergoing RYGB do not suffer from protein-calorie malnutrition, nor are they deficient in calcium. However, preoperative iron and ferritin deficiencies are common and correlate with the presence of anemia (33%), while vitamin B12 levels are almost always normal. Of greater significance is the high prevalence of thiamine and 25-OH vitamin D deficiency which may predispose these individuals to serious neurologic and metabolic complications postoperatively if not identified early and corrected.

<table>
<thead>
<tr>
<th>Nutrient</th>
<th># Abnormal</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albumin</td>
<td>1/193</td>
<td>0.5</td>
</tr>
<tr>
<td>Calcium</td>
<td>5/193</td>
<td>2.6</td>
</tr>
<tr>
<td>25-OH Vitamin D</td>
<td>62/74</td>
<td>84</td>
</tr>
<tr>
<td>Iron</td>
<td>23/193</td>
<td>12</td>
</tr>
<tr>
<td>Ferritin</td>
<td>38/193</td>
<td>20</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>66/200</td>
<td>33</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>7/193</td>
<td>3.6</td>
</tr>
<tr>
<td>Thiamine (Vit B1)</td>
<td>18/74</td>
<td>24</td>
</tr>
</tbody>
</table>
Incidental Gastroscopic Findings in Morbidly Obese Patients
Dan Azagury, Gilles Chassot, Jean-Marc Dumonceau, Philippe Morel, Olivier Huber, University Hospital of Geneva, Geneva, Switzerland

AIM: To determine the prevalence of upper digestive lesions and HP infection in morbidly obese patients with no upper gastrointestinal symptoms.

METHODS: Standard evaluation before Roux-en-Y gastric bypass in our centre includes an upper endoscopy (UE). We reviewed UE findings in the 344 patients we operated on between 1997 and 2003, including Helicobacter Pylori (HP) status for every patient, and histological findings when available.

RESULTS: On the 266 UE available, 20 were excluded because of significant digestive symptoms or previous bariatric surgery. Of 246 UE, 157 were macroscopically normal and 89 abnormal.

The macroscopic lesions encountered are described below:
- 27 in the oesophagus: 21 stage I peptic lesions, 1 stage III lesion, 4 Barrett’s, 1 submucosal lesion
- 73 in the stomach: 66 gastritis, 5 polyps, 2 submucosal lesions, 1 ulcer
- 10 in the duodenum: 8 duodenitis, 2 ulcers

18 patients had lesions in more than one location. Sliding hiatal hernias were identified in 34 patients (14%).

We reviewed histological results from 130 patients: 89 were abnormal, half of them (45) were taken from a macroscopically normal mucosa. Biopsies made in a macroscopically abnormal mucosa were normal in 12 of 56 cases (20%), 11 of them in HP negative patients.

The microscopic lesions encountered were:
- Oesophagus: 3 reflux oesophagitis, 2 peptic ulcers, 1 Barrett’s, 1 granulomatous cell tumor
- Stomach: 78 gastritis, including 10 intestinal metaplasias, 3 glandulo-cystic polyps, 1 pancreatic heterotopy
- Duodenum: 1 eosinophilic inflammation

HP status was positive in 86 patients, negative in 148 and untested in 12 patients. In HP positive patients, UE was macroscopically abnormal in 38%, but histologically abnormal in 92%. In HP negative patients, 34% of them had abnormal UE and 54% of the biopsies taken were abnormal.

CONCLUSIONS: There is a very high prevalence of significant oesophageal and gastric lesions in asymptomatic morbidly obese patients, including severe pathologies warranting operative technique modifications: we had to perform 2 subtotal gastrectomies because of multiple polyps. HP presence (in 37% of patients) was closely associated to abnormal histological findings (92%), but not to macroscopic lesions (38%).
COMBINED SCIENCE

OTHER/MISCELLANEOUS

M2120  A New Optical Method of Evaluating Tactile Sensation for Robotic Surgery: Use of IHb in the Analysis of Tissue Blood Flow

Soji Ozawa, Junya Oguma, Yasuhide Morikawa, Toshiharu Furukawa, Masaki Kitajima, Department of Surgery, School of Medicine, Keio University, Tokyo, Japan

BACKGROUND: Since 2000, we have employed daVinci robotic system for general surgery and cardiac surgery in 70 cases. We found a problem associated with this robotic system: it is difficult to obtain tactile sensation through hand instruments. To solve this problem, we are now attempting to provide hand instruments with a function of detecting tactile sensation. Although no one has ever developed a method of determining the ligation force in a ligation and suturing procedure, analysis of blood flow function has been tried by reprocessing information from images obtained with a videoscope. In other study, the Index of Hemoglobin (IHb) was calculated by using the formula: IHb = 32 x log₂ R/G, and the hemoglobin concentration in the gastric mucosa was quantitatively analyzed and reprocessed.

AIM: To explore the possibility of monitoring the ligation force applied by analyzing blood flow around the ligated area from IHb data obtained from endoscopic images during the ligation and suturing procedure of an endoscopic operation.

MATERIALS AND METHODS: Under general anesthesia abdominal surgery was performed on a beagle dog (10 kg), and the intestinal wall was ligated with 3-0 absorbable suture material. Ligation force was varied within the 0.5 - 5 N range, and images of the intestinal wall around the ligation point were taken with a surgical endoscopic imaging system (OTV-S7). The IHb data obtained with IHb reprocessing software (OLYMPUS) were processed according to an algorithm to assess the relationship between the IHb value and the ligation force. The ratio between the number of active pixels in an area in which the number of pixels was equal to or below a cutoff level and the number of all active pixels in an area of analysis was calculated.

RESULTS: The best characteristic curve for determining the most appropriate ligation force (2N or less) was obtained when the cutoff IHb was 36. The area of 150 x 150 pixels was substantially superior to the area of 250 x 250 pixels in terms of the variance of index quantity. In order to detect only the number of active pixels, the number of pixels should meet the following criteria: upper limit [R 240, G 192], lower limit [R 64, G 32].

CONCLUSIONS: The most appropriate ligation force to apply could be determined by tissue blood flow analysis based on IHb data by setting the area of analysis at 150 x 150 pixels and the cutoff value at IHb 36. Thus, the results suggested the possibility of developing surgery-assist robotic systems that incorporate the information from endoscopic images.
M2121  Results of Primary Surgical Treatment of Gastrointestinal Stromal Tumors
Pascal Bucher, Peter Villiger, Jean-Francois Egger, Leo Buhler, Philippe Morel, Department of Surgery, Geneva, Switzerland, Department of Pathology, Geneva, Switzerland

BACKGROUND: Gastrointestinal stromal tumors (GIST) are mesenchymal tumors of the digestive tract characterized by overexpression of the tyrosine kinase receptor KIT.

AIM: Study aim was to assess the results of primary surgical treatment of GIST.

METHODS: A retrospective review from 1993 to 2002 identified 80 patients (median age 58) treated for GIST in our institution. We used the following post-resection prognostic scale: minor criteria: tumor size >5cm, mitotic count >5/HPF, presence of necrosis, invasive component (to mucosa or serosis) and Mib1 >10%; and major criteria: presence of lymph node invasion or metastasis. Presence of four of the five minor or one major criteria was diagnostic of high malignant potential GIST.

RESULTS: Among the eighty GIST reviewed, 46 originate in the stomach, 30 in the small bowel, 2 in the colon and 2 in the mesentere. Tumor location did not influence prognosis. Resections were complete in 71 cases (89%). Completeness of surgical resection correlated with prognosis (p<0.01). At diagnosis, 92% of cases presented only localized disease, 5% with blood born metastasis and 3% lymph node invasion and blood born metastasis. Sixty-one GISTs were classified as low malignant potential (median of follow-up 60 months, range 12-132) and 19 as high malignant potential (median of follow-up 27 months, range 1-50). There was a significant correlation between survival and classification as low or high malignant potential GIST, with 5 years actuarial survival of 95% and 21%, respectively (p<0.001). Among high malignant potential GIST, 17 recurred or progressed after primary surgical treatment, while no recurrence were observed in the low malignant potential GIST. Recent cases with recurrence or metastasis have been treated with imatinib mesylate with excellent results.

CONCLUSION: Radical lymphatic dissection for GIST is not mandatory as lymph node invasion seems to be a late events in their natural history. Prognosis of low malignant potential GIST after surgical treatment is excellent. High malignant potential GIST have a high rate of recurrence after primary resection and would probably benefit of adjuvant treatment.
M2122  Da Vinci Robotic Surgical Experience at a University Setting: First One Hundred Cases
Brian Zebrowski, Sonja Kinney, Cori McBride, Dmitry Oleynikov, University of Nebraska, Omaha, NE

INTRODUCTION: The da Vinci Robotic System (dVRS) is the latest advancement in laparoscopic surgery allowing the surgeon more accurate and precise control of instrumentation with an added 3-D image. We wanted to review the usage and real life experiences with the dVRS from its origin at our medical center to the present incorporating the first 100 surgical cases. The aim of this study is to determine patterns of use in a large academic institution.

METHODS: We reviewed 100 dVRS surgical procedures from June of 2000 until November of 2003. We examined those procedures and designated them by surgical service and further scrutinized them for length of stay, and cost. We also reviewed trends in usage, academic and public relations components with this cutting edge technology.

RESULTS: The first 100 consecutive operative procedures using the dVRS at our institution were reviewed. General Surgery comprised 41% of the volume with bariatric surgery constituting approximately 50% of these cases. Urology used the dVRS in 38% of the cases and greatly increased its usage to 80% of the procedures done in the last year. Cardiothoracic 12%, Ob/Gyn 8% and vascular surgeries 1% were the other departments that used the dVRS. A total of 12 surgeons were trained on the machine and only one has yet to perform a procedure and 4 have performed over 5 procedures, with the busiest surgeon performing 34 cases. Complex urologic procedures had an average of $43,292 in charges with dVRS and $48,619 without. Length of stay was also reduced by 2 days. This was not observed when Laparoscopic procedures where compared to dVRS procedures with increase in charges by an average of $1800.

CONCLUSION: The dVRS was utilized primarily by general and urologic surgeons. General surgeons were the early adopters of the new technology, the greatest growth and utilization of the equipment has been in urologic procedures, which has outpaced general surgery in the past year. These trends correlate with the national data suggesting that application of the dVRS in general surgery appears to have peaked, while other surgical services such as cardiac and urological usage are on the rise. Cost analysis shows a subtle benefit with a reduced length of stay by an average of 2 days. The effects of the dVRS are vast reaching and are fundamental to the growth of an academic institution and continued progress in surgery.
Does the Pneumoperitoneum with CO₂ Alter the Ultra-Structuture of the Mesothelium?
Marcos T. A. Rosario, Ulysses Ribeiro Jr., Carlos E. P. Corbett, Alberto Ozaki, Claudio Bresciani, Bruno Zilberstein, Joaquim J. Gama-Rodrigues, University of São Paulo, São Paulo, Brazil

The pneumoperitoneum may be responsible for ultra-structural alterations in the mesothelium during laparoscopy. It is not completely clarified if such alterations are dependent on the gas utilized. Aim: To characterize the effect of pneumoperitoneum on the mesothelial cells with CO₂ and compressed air; and to compare with laparotomy and control group (anesthesia only).

METHODS: Forty C-57 mice were divided in 4 groups of 10 animals each: CO₂, air, laparotomy, and control group. All the animals were anesthetized with halothane. The animals were submitted to pneumoperitoneum at 8 mmHg during 30 minutes, with the CO₂ or compressed air. In the laparotomy group, the animals underwent a 5 cm medium laparotomy during 30 minutes. In the control group, the animals were only anesthetized for 30 minutes. Five animals of each group were sacrificed 2 and 24 hours after the procedure. Fragments of parietal peritoneum were collected and processed for scanning electron microscopy.

RESULTS: In the control group it was observed uninterrupted mesothelial cells, without any evidence of cellular limits; close contact between the cells; absence of intercellular clefts and presence of microvilli. In the laparotomy group it was observed similar results to the control group, but decreased microvilli was noted. The pneumoperitoneum with air was associated with alterations in the morphology of the mesothelial cells, clear cellular limits were detected, cells with spherical and fusiforme formats, however, was not observed intercellular clefts. In the CO₂ pneumoperitoneum group the mesothelial cells had clear cellular limits, predominantly spherical cellular format, and intercellular clefts that allowed the visualization of the exposed basal membrane. These alterations were more intense after 24 hours. There was a statistical significance between CO₂ group (2 and 24 h) compared to the control group and laparotomy for cellular limits, intercellular clefts and microvilli, p <0.0001.

CONCLUSIONS: Pneumoperitoneum causes damage in the mesothelial ultra-structure, which differs from the laparotomy group. CO₂ pneumoperitoneum is more harmful to the mesothelium than the air.
Squamous Cell Carcinoma of Anal Canal - A Changing Entity in Era of HIV Disease?
Rabi Kundu, Franco Niccini, David Henry, Scott Fisher, Deborah Nagle, Susan Gordon, Graduate Hospital, Philadelphia, PA, Pennsylvania Hospital, Philadelphia, PA, Frankford Hospital, Philadelphia, PA

BACKGROUND: Squamous cell carcinoma (SCC) of the anal canal is rare; it comprises less than 1% of all GI tract cancers. The expected annual incidence is 0.9 cases per 100,000 population. Historically, Caucasian women in the 6th decade were most commonly affected. In the era of HIV disease, an increasing incidence of anal SCC is projected. This study reviews our experience with HIV- and HIV+ anal SCC over a 14 year period.

METHODS: Retrospective chart review of all patients diagnosed with anal SCC treated at Graduate Hospital between 1989 and 2003. Demographic profile, clinical presentation, HIV disease status, clinical course and outcome were evaluated. The era of highly-active anti-retroviral therapy (HAART) was defined as 1997-present.

RESULTS: A total of 29 treated patients were identified in this 14 year period. 15/29 patients were HIV-. Of these, there were 7 men and 8 women. 14/29 patients were HIV+ (6 pre-HAART; 8 post-HAART); all these patients are male. The mean age at diagnosis of HIV- patients was 58.4 years (range 44-75); for HIV+ patients it was 39.6 yrs (range 32-50) (p<0.001). Clinical presentation was similar for both groups: anal mass, pain, bleeding or discharge. However, 6/8 (75%) diagnosed since 1997 had had anal condyloma excised on one or more occasions. Only 1/15 HIV- patients had precursor anal condyloma. The majority (18/29) patients were Stage II or III at presentation. After 1997, all HIV+ patients except 1 had HAART therapy (7/8 or 87.5%). The non-HAART patient had HIV diagnosed after diagnosis of anal SCC. The time to diagnosis of anal SCC in HIV+ patients was significantly different in the HAART-era patients (pre-HAART 2.8 years vs. post-HAART 10.8 yrs, p<0.016). The mean CD4 count for the HIV+ was 275.9/mm3. The average dose of radiation was 5781 cGy for HIV- pts and 6104 cGy. Chemotherapy most commonly consisted of 5FU and Mitomycin. 2/14 HIV+ patients had performance status that precluded chemotherapy in pre-HAART era. The tolerance of combined chemoradiation was better (fewer treatment breaks, lower grade toxicities) for HIV+ pts on HAART with higher CD4 counts. The rate of diversion (colostomy) was 4/14 HIV+ pts and 3/15 HIV- pts. There were 7 deaths: 5 in HIV+ group, 2 in HIV- group. 2/5 deaths were disease-related in HIV+ pts.

CONCLUSIONS: Anal SCC is a rare clinical entity that appears to be increasing in incidence among HIV+ males. There is a significant increase in time to diagnosis of anal SCC from diagnosis of HIV in HAART treated patients. Chemoradiation is better tolerated in patients on HAART.
Changing Trends in Iliopsoas Abscess

Dennis K. Schimpf, Krishnan Raghavendran, Rebecca Read, Muhamad Kulaylat, university at buffalo, hamburg, NY, university at buffalo, buffalo, NY

BACKGROUND: Iliopsoas abscesses (IPA) are categorized as either primary or secondary. The majority being of the secondary type, historically arising from tuberculous disease (TB) of the spine. The advent of anti-tuberculosis drugs has drastically reduced the prevalence of TB. Objective: To review patient presentation, disease process, bacteriology and treatment of IPA.

METHOD: A retrospective chart review of patients from 1999 to 2003 with a computer aided tomography (CAT scan) diagnosis of an intrabdominal/retroperitoneal abscess was conducted.

RESULTS: One hundred and sixty eight patients with intra-abdominal/retroperitoneal abscesses were identified, ten of which (6%) had IPA. The average age at presentation was 54 years (range 22-88), with 5 females and 5 males. Abdominal pain was the most common presenting complaint (70%) while back pain and fever were present in 50% of the patients. Eight patients presented with a secondary iliopsoas abscess, 3 were associated with Crohn’s disease, 2 with appendicitis, 2 with peripnephric abscess, 1 with osteomyelitis of the lower spine, 1 with necrotizing pancreatitis, and 1 with vulvar carcinoma. The underlying pathogen was E. coli in 5 cases, MRSA in 2 patients, and mixed flora in 3 cases. One patient refused treatment and died from sepsis. Five of the 9 patients under went CT guided drainage of the abscess as the initial form of treatment. Successful drainage was only achieved in one patient who had Crohn’s disease. The remaining 4 patients, 2 with Crohns disease, one with osteomyelitis of the spine, and one with appendicitis required operative drainage of the abscess in addition to treatment of underlying primary disease process. Four patients under went immediate surgical exploration without initial percutaneous drainage; one with parastomal hernia had associated bowel obstruction, one had infected necrotizing pancreatitis, and two had acute appendicitis. Three patients developed recurrent IPA following surgical drainage and required re-exploration, one with presumptive diagnosis of appendicitis, proved to have metastatic vulvar carcinoma. Two of the 9 patients died, one with necrotizing pancreatitis and one with vulvar carcinoma.

CONCLUSION: Iliopsoas abscess is a rare entity carrying a significant morbidity and mortality. Today, IPA are most commonly of the secondary variety, often associated with intrinsic disease of the bowel. The most common pathogen is E.Coli. While CT guided drainage is often the initial treatment; surgical drainage and debridement remain the definitive form of treatment.
INTRODUCTION: It has been reported as contact endoscopy, in the gynecological and area using a microscope after staining with methylene blue the cells and nuclei of the superficial layer of the squamous mucosa have been able to observe. In the field of the gastroenterology, similar study was also reported by Ohe et al. In this study, we applied this principle to the lymph node from the surgical specimen from the gastrointestinal tract and investigated a simple technique to acquire histopathological image directly without special treatment to the specimen. And the result is compared with conventional frozen-section diagnosis.

AIMS & METHODS: The aim of this study is to obtain immediate microscopic images from untreated fresh lymph node of the surgically resected specimen and make a histological diagnosis. Totally 50 lymph nodes from surgically resected specimens (in 20 cancer patients) of the digestive tract were prospectively analyzed. The specimen was immediately placed on the plastic board without any preparation and 1% methylene blue was dropped onto it, and then a cover glass was attached to it. It was examined with ordinary optical microscope at magnification of 400 to 500 times. The light source was applied from outside. The authors analyzed the obtained images, without knowledge of the surgical findings, then made a diagnosis of cancer or non-cancer. Thereafter the specimen was submitted to the pathologist, and previously obtained images with the contact microscope method were then compared with the findings of the corresponding conventional histologic sections.

RESULTS: With this method it allowed direct visualization of the cell and nuclei. In this study the images could be obtained from all specimens and average consuming time was almost 3 minutes, respectively. The obtained images corresponded well to the conventional H&E staining histological findings. The over all diagnostic accuracy for cancer with this method was over 90%. This result is comparable with conventional frozen section.

CONCLUSION: Fresh lymph node specimen from gastrointestinal cancer lesion can be investigated with this simple and low-priced method, and it allows for an accurate and reliable diagnosis. We suggest that methylene blue staining contact microscope method is promising for immediate intra-operative diagnosis of lymph node. And this method also can be applied for immediate analysis of the cut-end of surgically resected specimen of cancer lesion.
In the last decade surgery has progressed rapidly since the introduction of the video-laparoscopic surgery (VLS). It has been demonstrated that its applicability is extended to many abdominal procedures, with the advantages of minimal postop. pain, short hospital stay and rapid return to physical activity. However, although it has been widely accepted, the majority of surgeons feel that their dexterity has been challenged. This is in part because of the lost of the vision control that is literally in the hands of the first assistant, who unintentional moves erroneously and causes lost of the surgical field, lost of horizontality, soils the scope, delays the operation and distract the surgeon. For this reasons we decided to incorporate a robotic arm, which was developed as an endoscope positioner controlled by the surgeon voice: AESOP-Computer Motion, USA. with the aim of evaluate its applicability, efficiency and safety in our patients.

METHODS: Since 2000 we began our training in robotic surgery with different devices including AESOP, ZEUS, and Da VINCI. From May 26, 2003 to Oct. 24, 2003 we included 105 patients for robotic -assisted VLS with AESOP. All the procedures were consecutive patients submitted to: chole-lap 44, Nissen 27, Inguinal hernia repair 10, hemicolectomy 5, appendectomy 5, common bile duct exploration 4, gastric band 3, ovary cyst 2, hepatic and pelvic abscess 2, liver biopsy 1, hysterectomy 1, and splenectomy 1.

RESULTS: We evaluated the advantages of incorporating AESOP to the VLS and commonly agreed: 1) Total image control by the operating surgeon with better procedure performance with less errors. 2) Shortening of the operation time by 30-45 min average/procedure. 3) Complete security, with no conversions to open surgery related to malfunction of the robotic-arm. 4) Applicability to all the surgical procedures performed in an unselected and consecutive manner during the study period. 5) Less number of surgical assistants in the operating room.

CONCLUSIONS: In this consecutive serie of patients submitted to VLS we have demonstrated that incorporating a robotic arm as the AESOP has advantages: The surgeon gains control of the surgical image, with better procedure performance that is reflected in shortening of the operation time. Applicability embraces all our common practice surgical procedures. Performing laparoscopic surgery with the robotic device is a safe practice. We concluded that incorporating a robotic arm is very important in this new and exciting surgical era.
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