

Fellowship Pledge

Recognizing that the American College of Surgeons seeks to exemplify and develop the highest traditions of our ancient profession, I hereby pledge myself, as a condition of fellowship in the College, to live in strict accordance with its principles and regulations. I pledge myself to pursue the practice of surgery with honesty and to place the welfare and the rights of my patients above all else. I promise to deal with each patient, as I would wish to be dealt with if I was in the patient's position, and I will set my fees commensurate with the services rendered.

I will take no part in any arrangement, such as fee splitting or itinerant surgery, which induces referral or treatment for reason other than the patient's best welfare. Upon my honor, I declare that I will advance my knowledge and skills, will respect my colleagues, and will seek their counsel when in doubt about my own abilities, in turn, I will willingly help my colleagues when requested. Finally, I solemnly pledge myself to cooperate in advancing and extending the art and science of surgery by my Fellowship in the American College of Surgeons.

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Schedule of Events

Thursday, June 16, 2005

6:30 P.M. Council Meeting and Dinner – Missouri Chapter
Valencia Rooms

Friday, June 17, 2005

7:00 – 7:45 A.M. Registration, Continental Breakfast, Technical Exhibits
Granada Foyer and Rooms

7:45 A.M. Welcome: Rob Wetzel, MD, FACS, President
Missouri Chapter American College of Surgeons

8:00 A.M. Elbert Kuo, MD – Washington University/Barnes Jewish
Hospital, “Influence of Viral Infection in the Murine
Orthotopic Tracheal Transplantation Model in the
Development of Obliterative Airway Disease (OAD)”

8:15 A.M. Steven Henry, MD – University of Missouri-Columbia,
“The Effect of Minocycline on Hypertrophic Scarring: A
Pilot Study”

8:30 A.M. Patricia Limpert, MD – St. Louis University, “Simultaneous
Liver-Kidney Transplantation: A Single Center Experience”

8:45 A.M. Benjamin Liess, MD – University of Missouri-Columbia,
“Successful Outcome Following a Double Bianchi
Procedure for Short Gut Syndrome: The First Reported Case
in the Literature”

9:00 A.M. Spencer Melby, MD – Washington University, “Do Surgical
Ablation Lesions Have to be Fully Transmural to Block
Conduction?”

9:15 A.M. Brent Sorensen, MD – University of Missouri-Columbia,
“Laparoscopic Repair of an Incarcerated Ventral Hernia and
Acute Small Bowel Obstruction: A Case Report”

9:30 A.M. C. A. Rice, MD – St. Louis University, “Arterial Steal
Syndrome Following Graft Placement for Hemodialysis”

9:30 – 11:00 A.M. *Spouse Event – Chef’s Cooking Demonstration/Tasting*

- 9:45 A.M. Break: Visit exhibitors and view posters.
- 10:00 A.M. First Trauma Speaker: Palmer Q. Bessey, MD, FACS
Professor of Surgery
Weill Cornell Medical College, New York
- 11:00 A.M. J. Gail Neely, MD, FACS
Professor and Director of Otology, Neurology, and Base of Skull Surgery, Director of Research, Department of Otolaryngology-Head and Neck Surgery
Washington University School of Medicine, St. Louis, MO
“How ‘Evidence-Based Medicine’ Techniques Make Keeping Up-to-Date More Fun and Efficient”
- 12:00 Noon Trauma Luncheon
Valencia Room
Supported by the Missouri Committee on Trauma

Introduction: Thomas S. Helling, MD, FACS
Chairman, Missouri Committee on Trauma
Kansas City, Missouri

Palmer Q. Bessey, MD, FACS
Professor of Surgery
Cornell, New York
- Afternoon* *Golf, Tennis, and Spa Activities – Attendees may make arrangements through the hotel.*

Horseback Riding
- 6:30 – 8:30 P.M. President’s Reception - Cruise on Tropical Island; Leaving from Dock at the Lodge of Four Seasons at 6:30 P.M. (Families and Invited Exhibitors)

Saturday, June 18, 2005

- 7:00 – 8:00 A.M. Registration, Continental Breakfast, Technical Exhibits
Granada Foyer and Rooms
- 8:00 A.M. Abdelrahman Nimeri, MD – Washington University,
“Thoracoscopic Sympathectomy for Palmaris Hyperhidrosis or Complex Regional Pain Syndrome”

- 8:15 A.M. John Aucar, MD – University of Missouri-Columbia, “A New Model for Coagulation Research Using Fractionated Blood Products”
- 8:30 A.M. Abdelrahman Nimeri, MD – Washington University, “5 mm Port Technique with Alternative Method for Mesh Insertion During Laparoscopic Incisional Hernia Repair”
- 8:45 A.M. Colleen Johnson, MD – University of Missouri-Columbia, “Mesenteric Venous Thrombosis Following Laparoscopic Roux-en-Y Gastric Bypass”
- 9:00 A.M. Break for Poster Presentation Session by Residents and Medical Students
- 9:30 A.M. R. Scott Jones, MD, FACS
Professor of Surgery, Chairman, Department of Surgery
University of Virginia Health Systems
Charlottesville, Virginia
“Quality Improvement in Surgery”
- Morning* *Horseback Riding*
- 10:30 A.M. Morning Break in Exhibition Hall
- 10:45 A.M. James W. Fleshman, MD, FACS
Washington University
St. Louis, Missouri
“Maintenance of Certification”
- 11:45 A.M. Missouri Chapter of American College of Surgeons
Business Meeting
- 12:00 Noon **Cancer Luncheon:** Supported by the American College of Surgeons Cancer Committee and Missouri State Surgical Society
- Introduction: Joseph A. Corrado, MD, FACS
Chairman, Cancer Committee, Missouri Chapter American College of Surgeons
Mexico, Missouri
- Todd Demmy, MD, FACS
Chief, Division of Thoracic Oncology
Roswell Park Cancer Center

Buffalo, New York
“Minimally Invasive Advances in Thoracic Oncology”

1:00 P.M.

2005 Minimally Invasive Surgery Panel

Moderator: Ivan Bertvas, MD, FACS
Washington University, St. Louis, Missouri

Panelists: Michael Brunt, MD, FACS

Steve Eubanks, MD, FACS

Roger de la Torre, MD, FACS

Brent Matthews, MD, FACS

Bruce Ramshaw, MD, FACS

J. Stephen Scott, MD, FACS

3:00 – 5:00 P.M.

Family Swimming Party

Lake View Patio

6:30 – 9:30 P.M.

Adventure Club Available for Kids

Evening

The evening is open for attendees to make dinner plans that fit their needs. For assistance, the hotel has provided a list of area restaurant names and phone numbers.

9:00 P.M.

Go Karts and Miniature Golf Option

Castle Rock Amusement

2620 Bagnell Dam Boulevard, Phone: 573.365.6559

Preprinted tickets (including one round of golf, one go-cart trip, and one bumper boat ride) are available through the hotel for \$15.00 per person (regular price is \$20).

Attendees are responsible for tickets and travel arrangements.

Sunday, June 19, 2005

8:30 – 9:30 A.M.

“Substance Abuse, Not Just a Simple Appendectomy!”

Craig Coenson, MD, Sigma Behavioral Health
Minneapolis, Minnesota

Coffee and Pastries Provided

Granada Room

9:30 A.M.

President’s Brunch

**Upon Your Return Home, Please Mark Your Calendars for
June 16-18, 2006
39th Annual Meeting at the Lodge of the Four Seasons**

ABSTRACTS PRESENTED

1. INFLUENCE OF VIRAL INFECTION IN THE MURINE ORTHOTOPIC TRACHEAL TRANSPLANTATION MODEL IN THE DEVELOPMENT OF OBLITERATIVE AIRWAY DISEASE (OAD)

Elbert Kuo, Jennifer Shih, Will Chapman, Wei Lu, Shawn Marshbank, S. Ramachandran, Michael Walter, T. Mohankumar
Barnes Jewish Hospital, Washington University

Hypothesis: Damage to airway epithelium by respiratory viral infections may result in obliterative airway disease (OAD) development in a murine orthotopic tracheal transplantation model.

Background: OAD is an animal model of bronchiolitis obliterans (BOS) in lung transplant (LTx) patients. Interestingly, murine orthotopic tracheal transplantations do not cause luminal obliteration despite major histocompatibility antigen mismatch. Our laboratory has shown that re-population of the tracheal allografts with recipient-derived epithelium confers a protective effect against OAD development. Clinically, respiratory viral infections post lung transplantation have been associated with an increased incidence of chronic rejection. Infection with sendai virus (SdV), a murine parainfluenza type I virus, causes reversible injury to the epithelial cells in the trachea. The purpose of this study was to determine if: 1) orthotopic tracheal transplantation shows signs of allograft rejection 2) injury to airway epithelial cells (AEC) by viral infections will lead to OAD development in the orthotopic model.

Methods: 20 isogenic (Balb/c to Balb/c) and 20 allogenic (Balb/c to C57Bl/6) orthotopic tracheal transplants were performed and mice were sacrificed on day 30 and 180. An additional 35 BALB/c tracheal allografts were orthotopically transplanted into C57BL/6 mice. 10 mice were infected on day 15 with a sublethal dose (5K) of SdV intranasally and sacrificed on day 30. Experiments altering the harvest time (day 60), infection time (infection on day 30, harvest on day 45), and viral dose (1K, 25K, UV SdV) were conducted with 5 mice in each group. H&E, trichrome, and immunohistochemistry staining was performed on the harvested tracheal grafts. Percent fibrosis and the lamina propria to cartilage ratio (LCR) was calculated with computer assistance. Lymphocytes harvested from the spleens were analyzed using mixed lymphocyte reaction and Elispot for INF-g production.

Results: Allografts showed significantly more fibrosis compared to isografts at both 30 (22.97% vs 18.93%, $p < 0.01$) and 180 (12.86% vs. 6.65%, $p < 0.001$) daytime points. Tracheal allografts harvested from infected recipients with SdV showed an initial decline in fibrosis (18.45% vs 22.97%, $p < 0.001$) at 30 days compared to non-infected recipients. An associated decrease in INF-g production (920 vs 349 spots/million, $p < 0.001$) and lymphocyte activity (14800 vs. 8962, $p < 0.001$) against donor antigens was noted on Elispot and MLR analysis of splenocytes at 30 days. At day 60, recipients infected with SdV showed an increase in fibrosis (26.95% vs. 22.97%, $p < 0.05$) compared to non-infected controls. Increasing the viral dose was associated with a decrease in fibrosis at 30 days (23.87% (UV SdV) vs. 23.26% (1K) vs. 18.45% (5K) vs. 13.93% (25K)). Fibrosis was not affected by altering infection time (18.45% vs. 18.09%).

Conclusions: Orthotopic tracheal transplantation results in increased fibrosis in allografts, but does not cause luminal obliteration. SdV infection caused an initial period of immunosuppression and decreased fibrosis, which subsides leading to increased fibrosis at 60 days post transplant. Damage to the respiratory epithelium post transplantation can lead to changes consistent with chronic allograft rejection.

2. THE EFFECT OF MINOCYCLINE ON HYPERTROPHIC SCARRING: A PILOT STUDY

Steven L. Henry, MD, Matthew J. Concannon, MD, FACS
University of Missouri-Columbia

Introduction: Matrix metalloproteinases (MMPs) are enzymes that serve to degrade the extracellular matrix, giving them a central role in the inflammatory process. MMP activity has been shown to be upregulated in various pathologic conditions, including hypertrophic scarring. The purpose of this study was to examine the effect of minocycline, a known MMP inhibitor, on hypertrophic scarring.

Methods: Multiple standardized wounds, through the excision of skin and perichondrium, were created on the ears of adult New Zealand white rabbits. Such wounds have been previously shown to heal predictably with hypertrophic scarring. A total of 64 identical wounds were created on 8 rabbits. Four of the rabbits received daily injections of minocycline, while the other 4 rabbits received saline injections. After 4 weeks, the resulting scars were harvested and their thickness measured using a micrometer. The thickness of the scars as a percentage of the thickness of the surrounding unscarred skin, termed the percent hypertrophy, was also determined.

Results: All wounds healed with some degree of hypertrophic scarring. In the rabbits treated with minocycline, the scars averaged 0.43 ± 0.20 mm in maximum thickness, compared to 0.57 ± 0.21 mm in the rabbits treated with saline, a statistically significant difference ($p = 0.008$, by independent t-test). The percent hypertrophy of the scars of the minocycline-treated rabbits averaged $131 \pm 63\%$, compared to $175 \pm 65\%$, also a statistically significant difference ($p = 0.003$, by Mann-Whitney rank sum test).

Conclusion: Systemically administered minocycline reduces the severity of hypertrophic scarring in a rabbit model. Although not directly measured in this study, inhibition of MMP activity is postulated to explain this effect. Determination of the effect of different doses of minocycline and the direct measurement of MMP activity are the objectives of future investigations.

3. SIMULTANEOUS LIVER-KIDNEY TRANSPLANTATION: A SINGLE CENTER EXPERIENCE

Patricia Limpert, MD, Michael Diodato, MD, S. Lehner, MD, P. Dyk, MD, H. Solomon, MD, FACS, P. Garvin, MD, FACS
St. Louis University

Background: Experience with simultaneous liver-kidney transplantation (SLK) has increased; however, controversy remains regarding the exact indications for this procedure.

Patients and Methods: Between February, 1999 and February, 2004, 220 adult liver transplants were performed at our center of which 13 were SLKs. Analysis of clinical characteristics and outcome were performed and actuarial graft and patient survival were determined utilizing the Kaplan Meier Test.

Results: Mean follow-up time was 27.9 +/- 16.2 months. Patient, liver, and kidney graft survival at one and five years were 84.6%, 84.6%, 84.6% and 72.5%, 72.5%, 72.5%. Three patients died at 3.9, 11.7, and 27.9 months. Cause of death was sepsis, sepsis, and pancreatic carcinoma. Biopsy proven rejections occurred in 7 liver and 2 renal allografts. All patients (5) with hepatitis C had biopsy evidence of recurrence and 3 patients have biopsy evidence of chronic allograft nephropathy. As of February, 2005, 10 patients are alive with stable function at last follow up of the liver (mean bilirubin: 0.8 mg/dL, mean ALT: 37 units/L) and kidney (mean Cr: 1.5 mg/dL).

Conclusion: Our results demonstrate that SLK can be performed with acceptable long- term survival and that renal failure should not be a contraindication to liver transplantation.

4. SUCCESSFUL OUTCOME FOLLOWING A DOUBLE BIANCHI PROCEDURE FOR SHORT GUT SYNDROME: THE FIRST REPORTED CASE IN LITERATURE

Benjamin D. Liess, MD, Ajit K. Tharakan, MD, Venkataraman Ramachandran, MD
University of Missouri-Columbia

Short bowel syndrome has proven a challenge for patients and physicians alike. Discoveries in medical treatments and surgical therapies for this disease have improved the lives of affected patients. Our patient was born with gastroschisis and mid gut volvulus resulting in necrotic bowel necessitating end jejunostomy and a Hartman's procedure along with total parenteral nutrition (TPN) post-operatively. Intestinal continuity was later successfully restored. Due to poor intestinal motility and short bowel syndrome, the patient underwent a successful Bianchi procedure. Unfortunately, she remained TPN dependent due to malabsorption and intolerance of enteral feeds. This lack of clinical improvement and a diagnostic barium swallow which revealed sufficient dilation of the jejunum prompted the need for an additional therapeutic procedure, a second Bianchi. The child is presently a jovial active 6-year-old girl who receives her nutrition through a gastrojejunal feeding tube. Here we report the successful outcome of the first clinical application of a double Bianchi procedure in a child for the treatment of short gut syndrome.

5. DO SURGICAL ABLATION LESIONS HAVE TO BE FULLY TRANSMURAL TO BLOCK CONDUCTION?

Spencer J. Melby, Anson M. Lee, Richard B. Schuessler, Ralph J. Damiano, Jr.
Washington University

Background: Linear lesions created by ablation for the treatment of atrial fibrillation (AF) often are not completely transmural through the atrial wall. The purpose of this study was to determine the effect of residual gaps on both the conduction properties of atrial tissue and the propagation of wavefronts during induced AF.

Methods: Canine right atria (n=8) were isolated, perfused with Krebs-Henseleit buffer, and mounted on a 250-lead electrode plaque. Conduction velocity at varying pacing rates and AF frequencies were measured before and after ablation. The atrium was divided perpendicular to the crista terminalis using a bipolar radiofrequency ablation clamp, leaving a gap that was progressively narrowed. Conduction was assessed while pacing on the crista terminalis. AF was induced with an extra stimulus in the presence of acetylcholine.

Results: Gap widths from 8.2 mm to 1.1 mm were examined. Mean conduction velocity decreased $41\% \pm 14\%$ at a gap width of 3.0-4.0 mm. The conduction slowing was independent of pacing cycle length and pacing site. Normal conduction still occurred at gap sizes of $3.1 \text{ mm} \pm 1.3 \text{ mm}$. Loss of 1:1 conduction occurred at gaps of $2.7 \text{ mm} \pm 1.3 \text{ mm}$, and full block occurred at $1.8 \text{ mm} \pm 0.7 \text{ mm}$. AF conducted across gaps as small as 1.6 mm.

Conclusions: Technology used to create linear lines of ablation must produce conduction block. While conduction velocities were significantly slowed through narrow gaps in ablation lesions, propagation of AF still occurred. These data suggest that residual gaps over 1 mm may conduct AF.

6. LAPAROSCOPIC REPAIR OF INCARCERATED VENTRAL HERNIA AND ACUTE SMALL BOWEL OBSTRUCTION: A CASE REPORT

Brent Sorensen, MD, Bruce Ramshaw, MD, FACS
University of Missouri-Columbia

Ventral hernias are a known risk of abdominal surgery, and incarceration of bowel contents into these hernias can become a surgical emergency. This uncommon situation classically has been managed with laparotomy, reduction of the incarcerated hernia, and subsequent primary repair of the hernia. There has been little investigation of a laparoscopic approach for repair in the acute setting of incarcerated hernias.

This case demonstrates a laparoscopic approach to management of an incarcerated hernia containing small bowel. The patient presented with acute onset of small bowel obstruction with a clinically evident incarcerated ventral hernia. After the patient was adequately fluid resuscitated, laparoscopy was performed to attempt reduction of the incarcerated ventral hernia. At the time of surgery, the hernia was reduced, and the incarcerated segment of small bowel was evaluated with direct laparoscopic visualization. The bowel was found to be viable; therefore definitive laparoscopic repair of the hernia was performed using mesh with suture and point fixation.

This case demonstrates that some incarcerated ventral hernias can be safely and adequately managed in the acute setting utilizing a laparoscopic approach.

A review of the literature and a management algorithm will be presented to assist in the evaluation and management of incarcerated ventral hernias.

7. ARTERIAL STEAL SYNDROME FOLLOWING GRAFT PLACEMENT FOR HEMODIALYSIS

C. Rice, M.D., M. Diodato, MD, P. Dyk, MD, D. Dauria, MD, P. Limpert, MD, H. Solomon, MD, FACS, P. Garvin, MD, FACS
St. Louis University

Background: The end stage renal disease (ESRD) population continues to expand and vascular access procedures are rapidly becoming the most common surgical procedures performed. With the increasing age and frequency of diabetes in ESRD patients, complications related to vascular access including arterial steal syndrome (ASS) are more frequent and can result in premature graft loss and/or limb ischemia.

Patients and Methods: Between August 2002 and March 2005, 428 consecutive patients underwent arteriovenous graft placement, utilizing PTFE at our center. A retrospective analysis of these patients was performed to determine the incidence, clinical characteristics, surgical management and outcome of the patients with ASS.

Results: Eighteen patients (4.2%) developed ASS requiring surgical intervention at an interval of 0.03 to 8.5 months (mean = 2.1 months) following insertion. Demographics included: female 72%, Diabetes Mellitus 67%, and mean age 59.7 ± 11.9 years. Eleven patients underwent ligation at a mean of 2.1 [0.07 - 8.5] months following insertion due to limb ischemia (6), concomitant arm venous hypertension (4), and improving renal function (1). Seven patients underwent graft salvage procedures at mean of 1.2 [0.03 – 5.6] months that included plication (3) and distal revascularization (4) resulting in continued graft patency without ASS symptoms in 6 of 7 patients for an additional 0.6 to 8.3 months (mean = 4 months) with three grafts continuing to function.

Conclusion: ASS following vascular access in the ESRD population is a risk factor for limb ischemia and premature graft loss. In select patients, graft salvage procedures can be successfully performed to alleviate symptoms and maintain graft patency.

8. THORACOSCOPIC SYMPATHECTOMY FOR PALMARIS HYPERHIDROSIS OR COMPLEX REGIONAL PAIN SYNDROME

Abdelrahman A. Nimeri, M.D., Brent D. Matthews, MD, FACS

Department of Surgery, Washington University School of Medicine, St. Louis, Missouri

Introduction: The purpose of this study is to evaluate the efficacy and outcomes of consecutive thoracoscopic sympathectomies. The indication for the procedure was either palmaris hyperhidrosis (PH) or complex regional pain syndrome (CRPS).

Methods: Patients undergoing thoracoscopic sympathectomy between July 1998 and June 2004 were identified. Medical records were reviewed and standard descriptive statistics were performed.

Results: There were a total of 50 patients that received 52 operations (two patients had a contralateral sympathectomy performed as a second procedure). Patients had a mean age of 29 years (M:F 20:30). Forty-eight procedures were performed for PH while 4 were for CRPS. The mean operating time was 78 minutes; mean blood loss, 50cc; and mean postoperative stay, 1.1 days. Forty-five procedures were performed for bilateral disease (87%). Nine patients developed a unilateral pneumothorax. Eight required tube thoracostomy (removed after 1.25 days) while 1 patient received percutaneous evacuation. One patient developed a chest wall hematoma at a trocar site that resolved spontaneously and one patient developed a transient Horner's syndrome. After a mean follow-up of 5.3 months, 59% (27/46) of patients treated for hyperhidrosis reported compensatory sweating. Forty-six (92%) patients (both PH and CRPS) were satisfied with their outcome. Four patients were dissatisfied due to excessive compensatory sweating. Three patients (75%) treated for CRPS were asymptomatic although all four patients reported satisfaction from the procedure.

Conclusion: Thoracoscopic sympathectomy is a safe and effective alternative treatment for PH and CRPS. Compensatory sweating occurred in >50% of patients although the majority of patients were satisfied with their short-term outcome.

9. A NEW MODEL FOR COAGULATION RESEARCH USING FRACTIONATED BLOOD PRODUCTS

John Aucar MD, FACS , Edan Isaak, Douglas Anthony, MD
University of Missouri-Columbia, Columbia, MO

Purpose: Complex and multiple interactions within the coagulation system make it challenging to predict the net effect of specific variables on the global coagulation status in the setting of acute trauma and massive transfusions. Current clinical laboratory methods for assessing coagulation have limitations. We designed a model to test the effect of controlled manipulation of specific variables on the global coagulation status. The Activated Coagulation Time (ACT) has been shown to correlate with the clinical risk of developing traumatic coagulopathy. We developed a new model for coagulation research using blood components as substrates and the ACT as the primary endpoint. This project was granted exemption status by the institutional review board under regulation 45 CFR 46.117 (c) (2).

Methods: We obtained a unit of Citrate/Phosphate/Dextrose (CPD), leukocytes reduced, packed red blood cells (PRBC type O, Rh+) and a unit of fresh frozen plasma (FFP type O, Rh+) from a single allogeneic donor. We also obtained a type specific unit of random donor platelets (RDP, type O, Rh+). Six distinct mixing sessions were performed on 5 different days, numbered 2, 3, 19, 20, and 33, referenced from the date of donation. PRBC and FFP were mixed in 3:2 ratio, by volume, approximating the volumes obtained before the components were separated. In one session, platelets were added to the mix with PRBC and FFP in a ratio of 1:3:2. Coagulation testing was performed, with three variations of the ACT (Hemochron Jr:LR, Hemochron Jr:Plus, and Model 801) after rapid recalcification and warming. Each trial compared one of the Hemochron Jr. methods (0.2cc sample) with the standard ACT (2 cc sample). Sample hematocrits were determined by capillary centrifugation and confirmed by clinical laboratory methods.

Results: As experience with the model increased the reliability of obtaining “in range” results increased from 57% to 100%. The variation was lowest for the Hemochron JR:LR (standard deviation (SD)=13.7% of the mean), compared to the Hemochron JR:PLUS (SD=17.7% of the mean) and the Hemochron model 801 (SD=35.8% of the mean). During the last 4 mixing sessions, the Hemochron JR:LR showed standard deviations ranging between 1.8 % and 4.9% of the mean values. Comparing the 6th session to the 4th and 5th sessions, where all variables were held constant except for the age of the PRBC, a significant difference was noted (p=0.01) by Repeated Measures Analysis of Variance.

Conclusion: The model utilizing CPD PRBCs, FFP, and platelets with warming and recalcification reproducibly generates clotting detectable by the ACT. Variation in the Hemochron JR:LR is low compared to JR:Plus, and the standard ACT under the circumstances examined. The model is sufficiently sensitive to identify the statistically significant trend for prolongation of the ACT with progressive red cell age, when other factors are held constant.

10. 5MM PORT TECHNIQUE WITH ALTERNATIVE METHOD FOR MESH INSERTION DURING LAPAROSCOPIC INCISIONAL HERNIA REPAIR

Abdelrahman A. Nimeri, MD, Michael L. Brunt, MD, FACS
Department of Surgery and Institute for Minimally Invasive Surgery
Washington University School of Medicine, St. Louis, MO

Background: The standard approach to laparoscopic ventral hernia repair (LVHR) involves introduction of the mesh via a 10-12 mm or larger laparoscopic port site. This technique creates a fascial defect that must be suture closed and that can be the site of increased postoperative pain and of a new potential incisional hernia defect. We herein describe a new technique for LVHR that uses only 5 mm laparoscopic ports and an alternative method for insertion of the mesh.

Methods: A closed insertion technique is used for peritoneal access and three 5mm ports are placed lateral to the hernia in a standard fashion. After adhesiolysis and reduction of the hernia contents, a 2-2.5 cm incision is made over the existing hernia defect and is extended through the hernia sac into the peritoneal cavity. The mesh is inserted through this incision into the abdomen through the existing fascial defect and is positioned and anchored using standard techniques. The mesh insertion site is closed in two layers with absorbable suture; no port sites require fascial closure. Data (given as mean \pm S.D.) from patients undergoing LVHR utilizing this technique were collected prospectively and analyzed.

Results: LVHR for incisional hernia repair using 5mm ports exclusively was carried out in 17 patients. Mean patient age was 59.7 ± 10.1 years and the mean BMI was 33.5 ± 7.5 . Nine (52.9%) patients were operated on for recurrent incisional hernias. Mean operative time was 156 ± 45.0 minutes. Mean size of the defect repaired was 133.1 ± 150.2 cm² and the mean mesh size used was 364.0 ± 184.0 cm² (range 144-825 cm²). There were no conversions to open repair and the average length of stay postoperatively was 2.3 ± 1.4 days. Five patients developed a seroma; one was aspirated once and the other seromas resolved spontaneously. One patient developed Candida sepsis from a urinary source that led to secondary Candida peritonitis that required mesh removal. Over a mean follow-up period of 8 months, there was one hernia recurrence (the patient who had mesh removed) and there were no port site recurrences or complaints of prolonged port site discomfort.

Conclusion: This approach appears to be safe and can be utilized for most patients undergoing laparoscopic incisional hernia repair with acceptable morbidity and a short length of stay. The 5mm port technique eliminates the fascial defects associated with larger ports and should result in fewer port site hernias and possibly less postoperative pain as well.

11. MESENTERIC VENOUS THROMBOSIS FOLLOWING LAPAROSCOPIC ROUX-EN-Y GASTRIC BYPASS

**Colleen M. Johnson, MD, Roger A. de la Torre, MD, FACS, J. Stephen Scott, MD, FACS,
and Taylor Johansen, DO**
University of Missouri-Columbia

Mesenteric venous thrombosis accounts for 5-15% of all reported cases of acute mesenteric ischemia, and the initial mortality rates of 34% reported by Warren and Eberhard in 1935 remain relatively unchanged today. Currently, with the improved sophistication in testing for hypercoagulable states, the underlying cause can be determined in many of these patients.

We present the case of a 43-year-old male who was found to have developed mesenteric venous thrombosis three weeks following laparoscopic Roux-en-Y divided gastric bypass. This patient necessitated surgical resection of necrosed, distal small intestine, which was not in proximity to the bypass. Extensive postoperative workup revealed the patient to have a significant Protein S deficiency.

We review the pathophysiology, diagnosis and treatment of Mesenteric venous thrombosis, as well as the evaluation for hypercoagulable states.

ABSTRACT POSTER PRESENTATIONS

12. THE INCIDENCE AND MANAGEMENT OF SEROMA FOLLOWING ARTERIOVENOUS GRAFT PLACEMENT

D. Dauria, MD, M.D. Diadato, MD, P. Dyk, MD, P. Limpert, MD, C. A. Rice, MD, Paul J. Garvin, MD, FACS
St. Louis University

Introduction: The purpose of this study was to evaluate the incidence of seroma formation and describe the treatment of seromas following AVG in hemodialysis patients. There are approximately 300,000 people in the United States currently receiving long-term hemodialysis for ESRD. This number is expected to double by the year 2010. 60% of hemodialysis patients in the US depend on AVG for permanent access and in ESRD patients >25% of all hospitalizations are due to vascular access related problems. One of these problems is seroma formation. The incidence of seroma formation has been poorly defined in the current literature.

Methods: This study is a retrospective review of all patients (N=428) receiving an AVG in a single large urban academic center between August 2002 and March 2005. Follow-up occurred to a maximum of 12 months.

Results: Of the 428 patients undergoing AVG insertion during the study period, 7 patients (1.5%) presented with a seroma from 0.9-4.9 months (mean = 2.8 +/- 1.4 months) if following graft insertion. One patient had early seroma formation involving both incisions and the graft tunnel and underwent graft ligation and excision. Four patients underwent seroma evacuation and drainage with three recurrences resulting in graft excision for infection in two. Two patients underwent primary bypass of the involved graft segment resulting in long-term patency and are currently functioning at 10.5 and 14 months.

Conclusions: Although the relative rate of seroma formation is small in our series it contributes to graft loss and increased morbidity in the ESRD patient. To minimize this complication, meticulous operative technique is required. However, even if this complication occurs, the graft may still be salvageable. Aggressive management including bypass of the involved segment can lead to prolonged graft survival.

13. “TREATMENT OF AIR EMBOLISM IN BLUNT THORACIC TRAUMA: A CASE REPORT AND REVIEW OF THE LITERATURE”

Timothy M. Geiger, MD, William R. Silliman, MD

University of Missouri-Columbia

Air embolism can be a serious consequence of surgery, trauma, diving, or aviation. This is the case of a 76-year-old male involved in blunt trauma to the chest. He presented with chest pain and shortness of breath. Once stabilized, a CT scan of the chest revealed a significant air embolism in the subclavian vein and the right atrium. A central line was introduced and 6cc of air was aspirated. Repeat CT scan showed resolution of embolism. We then review all of the published literature on air embolism after blunt trauma to the chest.

14. ASCARIDIASIS IN THE HEPATOBILIARY SYSTEM: LAPAROSCOPIC RESOLUTION

Juan Andres Astudillo, MD, Ruben Astudillo, MD, Bruce Ramshaw, MD, FACS
University of Missouri-Columbia

Immigration has become a very important issue for medicine in the U.S. There are people from all over the world coming here seeking a better future for them and for their families. Most of these people are from developing countries. Among other diseases that attack their quality of life, parasites are a very important pathology.

Most parasites are localized in the intestines, but sometimes they can migrate to other locations and cause atypical clinical presentations.

The purpose of this work is to show Ascariasis, a common pathology in developing countries, can present, causing hepatobiliary pathology.

In Hospital Latinoamericano, Cuenca, Ecuador, between February 1992 and December 2004, 1916 Laparoscopic hepatic and biliary surgeries were performed, 12 of these cases (0.62%) where ascariasis causing hepatobiliary pathology: We found 9 (75%) ascaris in the C.B.D, 2 as hepatic abscess (16.6%), and 1 in C.B.D and gallbladder (8.3%): 11 patients were women, 1 man, with an age between 22 and 78, most coming from rural zones. The clinical presentation varied between colicky abdominal pain in RUC with no response to anticholinergic medication (100%), nausea and vomiting in 8 patients (72%), mild jaundice in 7 patients (63%), and mild fever 6 patients (55%).

The diagnostic test performed was hepatic and biliary U/S, where parasites were found in 11 of the 12 patients (91%). 7 patients (55%) presented with acute cholecistitis and gallstones. We managed 4 of this 12 patients (33.2%) with endoscopic extraction in whom clinical management with albendazole and anticholinergic drugs was not effective, laparoscopic cholecystectomy + C.B.D exploration in 7 patients (57.4%) and *cholecystostomy* + parasite extraction followed by cholecystectomy in 1 patient (8.3%).

This type of pathology will be seen more often in the U.S. We recommend considering ascariasis in the biliary tree as a differential diagnosis in all patients with upper abdominal pain in patient populations at risk. Management options include medical therapy, endoscopic extraction and laparoscopic exploration with extraction combined with cholecystectomy.

15. DELAYED RUPTURE OF POPLITEAL PSEUDOANEURYSM AFTER PENETRATING TRAUMA

Patricia Limpert, MD, Aaron Scifres, MD
St. Louis University

While the incidence of pseudoaneurysm after penetrating trauma are low, the potential consequences including rupture may result in significant morbidity and potential mortality.

In the asymptomatic patient, this complication of penetrating trauma may go undiagnosed. We present a case of a twenty-eight year old male who suffered multiple gunshot wounds to his abdomen and right lower extremity. The patient initially presented in hemorrhagic shock and emergently underwent exploratory celiotomy. The patient was noted to have decreased pulses bilaterally in the lower extremities with a decreased ankle-brachial index on the right. Intraoperatively, the patient was noted to have extensive liver injuries with a suspected retrohepatic caval injury. The patient required damage control laparotomy with packing due to hemodynamic instability. The patient remained unstable and required multiple repeat explorations with packing in his abdomen. When the patient stabilized hemodynamically, the patient then underwent formal ankle-brachial indices, which normalized.

The patient continued to recover from his abdominal catastrophe. After eleven weeks of intensive care, the patient was medically fit for rehabilitation. Eighty-three days post injury, the patient developed acute swelling of his right thigh with paresthesia and paralysis of the right leg. The patient urgently underwent computed-tomographic angiography of his right lower extremity revealing a ruptured popliteal pseudoaneurysm. Emergent exploration confirmed the rupture, which was primarily repaired. Post procedure, the patient regained full sensation/function.

Ruptured pseudoaneurysms following penetrating injuries are rare. While initial ankle-brachial indices are used to screen arterial injuries, they may have abnormally high false-positive and false-negative rates in the polytrauma patient. There have been cases reported of undiagnosed pseudoaneurysms that present with delayed rupture. Even in the absence of hard signs of vascular injury, we believe a more aggressive vascular approach may be warranted to help prevent morbidity and mortality in this polytrauma patient.

16. EXPERIENCE WITH GRAFT PLACEMENT BASED ON A PRIOR ARTERIO-VEINUS FISTULA

M. D. Diodato, MD, P. Dyk, MD, C.A. Rice, MD, D. Dauria, MD, P. Limpert, MD, Paul J. Garvin, MD, FACS
St. Louis University

Background: Primary arterio-venous fistula (AVF) remains the optimal access for the end stage renal disease (ESRD) population. Following AVF creation, several factors may result in the inability to utilize the AVF resulting in inadequate dialysis, prolonged use of tunneled catheters and the need to construct an alternate access. With the goal of preserving vessels for future access in these patients, at our center, when feasible, arterio-venous graft (AVG) placement based on the malfunctioning AVF is attempted. The purpose of this study is to evaluate our experience with this approach.

Methods: A retrospective analysis was undertaken of patients undergoing AVG (PTFE) between August 2002 and March 2005. Actuarial graft patencies were calculated using the Kaplan-Meier method. There were two groups studied: Group 1: PTFE grafts based on a previous primary arteriovenous fistulae and Group 2: PTFE grafts placed after an initial fistula or graft utilizing a new site.

Results: A total of 428 consecutive patients who underwent AVG insertion during this interval were identified. There were 165 patients who underwent AVG placement after failure of their first access; 69 patients in Group 1 and 96 patients in Group 2. There was no statistical difference between groups in patient age, number of previous catheters or diabetes. The 1-year graft patency of grafts rate was 74.3% and 74.3% respectively. In Group 1, 18 of 69 (26%) grafts failed. The most prevalent reasons for failure were infection (8/18) and thrombosis (9/18). For Group 2, there were 23 failures (23.9%), 17 (73.9%) of which were caused by thrombosis. Several patients in each group had failures of their grafts but were not referred for surgical intervention.

Conclusion: Our results demonstrate that an AVG based on a prior AVF provides comparable results to de novo AVGs. As a result, malfunctioning AVFs should not be abandoned without attempted revision, an approach that would conserve vessels for future access.

17. LAPAROSCOPIC TRANSGASTRIC PANCREATIC CYSTGASTROSTOMY FOR PANCREATIC PSEUDOCYSTS

Abdelrahman A. Nimeri, MD, Brent D. Matthews, MD

Department of Surgery, Washington University School of Medicine, St. Louis

Purpose: Minimally invasive surgical techniques to manage diseases of the pancreas are performed infrequently. The purpose of this study is to evaluate the outcomes for laparoscopic pancreatic cystgastrostomy for pancreatic pseudocysts.

Methods: Prospective database of patients undergoing laparoscopic transgastric pancreatic cystgastrostomy for pancreatic pseudocysts from January 2001 to March 2005.

Results: Twelve patients underwent laparoscopic transgastric pancreatic cystgastrostomy. There were 6 males and 6 females with a mean age of 43.1 years (range, 22-76) and mean BMI of 29.5 kg/cm² (range, 21.4-49.1). The etiology of the pancreatic pseudocyst was gallstone pancreatitis (5), alcoholic pancreatitis (5), ERCP-induced pancreatitis (1) and idiopathic pancreatitis (1). The mean time from the index case of pancreatitis and laparoscopic internal drainage was 23.2 weeks (range, 11-72). All patients had preoperative abdominal CT scans and the mean size of the pancreatic pseudocyst was 7.3 cm x 9.6 cm. The mean operative time was 117.5 minutes (range, 45-185). A concomitant laparoscopic procedure was performed in 7 patients [cholecystectomy (6), adhesiolysis (1)]. The mean EBL was 55.4 cc (range, 20-125) and there were no intraoperative complications or conversions to open surgery. There were 4 postoperative in hospital complications (pneumonia, DVT, UTI and UGIB requiring 2u PRBC transfusion but no intervention). The mean LOS was 5.7 days (range, 3-8 days). One patient developed a duodenal ulcer on POD #21. There were no 30-day mortalities. No recurrences of the pancreatic pseudocysts have been documented at a mean follow-up of 18.4 weeks (range, 6-56).

Conclusion: Laparoscopic transgastric pancreatic cystgastrostomy is an effective technique to manage selective patients with chronic pancreatic pseudocysts.

18. LIVER TRANSPLANTATION AND CHEMOTHERAPY IN CHILDREN WITH UNRESECTABLE PRIMARY HEPATIC MALIGNANCIES: DEVELOPMENT OF A MANAGEMENT ALGORITHM

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Background: Complete surgical resection and adjunctive chemotherapy (CTx) are cornerstones of treatment for primary hepatic malignancies in children. However, when tumors are neither resectable nor responsive to CTx, they pose major management problems.

Methods: We have developed a management algorithm based on our single-center experience and multi-center data from the Studies in Pediatric Liver Transplant (SPLIT) database.

Results: Of our 7 patients who had liver transplantation (LT) (median age 35mo, range 6-114mo), 5 hepatoblastoma (HB) and 2 undifferentiated mesenchymal sarcoma (UMS), 6 were assessed unresectable at presentation. All had CTx. One was unresponsive to CTx. Four partially responded, but remained unresectable. One developed acute liver failure during CTx, necessitating emergent LT. One patient, deemed resectable, developed recurrence despite initial resection with negative margins. Six (86%) are alive, including both with UMS (20 and 36 mo post-LT). One died from metastases 1 year after LT. Of note, 4 survivors had late complications from preoperative CTx, including hearing loss (n=3) and cardiac dysfunction (n=1). The SPLIT outcome data (101 patients listed, 87 transplants) reveals a 5.9% probability of death on the waiting list (cardiopulmonary failure, metastatic disease, liver failure), and a 70% 1 year post-LT survival with recurrence or metastases accounting for 75% of deaths.

Conclusions: Timely LT is largely successful in children with unresectable tumors. Continuing CTx in unresponsive and unresectable tumors should be discouraged due to the adverse effects of CTx and risk of allowing metastases to occur before LT. The outcome following LT in patients with UMS, hitherto very poor, is encouraging. We advocate early (pre-CTx) consultation with a LT program so that LT can be considered as a primary treatment option in children with selected hepatic malignancies.

19. PRIMARY SMALL BOWEL OBSTRUCTION CAUSED BY HERNIATION THROUGH THE BROAD LIGAMENT OF THE UTERUS: A CASE REPORT

Michael D. Diadato, MD, Stanley A. Sakabu, MD
St. Louis University

Background: Hernias are a minority cause of small bowel obstruction in the United States. We present a case of a primary small bowel obstruction due to a broad ligament hernia.

Case: An 88-year-old woman resident of an assisted living nursing home presented to the emergency room with a 24 to 36 hour history of nausea, vomiting and constipation. She previously had regular bowel movements and denied any change in bowel habits or caliber of stools. She complained of abdominal pain and fatigue and denied any history of previous abdominal surgery or symptoms referable to gynecologic pathology. On physical exam, the patient's abdomen was soft and tender with mild distension. She had guarding but no rebound tenderness. She had audible bowel sounds. Her rectal exam showed normal tone with absence of stool in the rectal vault. Her white blood cell count was mildly elevated. CT scan of her abdomen showed a small bowel obstruction with edema. Incidental uterine calcifications were seen. She was taken to the operating room for exploration of a primary small bowel obstruction. One half of the midportion of the ileum was herniated through a 2-3 cm defect in the left broad ligament. The small bowel was initially dusky, but rapidly improved and peristalsis was present. The uterus was severely tipped to the right attenuating the left broad ligament. An urgent Gynecologic consultation recommended a total abdominal hysterectomy and bilateral salpingo-oophorectomy, which was uneventfully performed. No gross abnormality was seen in situ or on examination of the extirpated specimen. Histologic examination of the uterus demonstrated endometrial cancer.

Conclusions: Less than 1% of small bowel obstructions are due to internal hernias. Furthermore, it has been estimated that only 4-7% of internal hernias are through a defect in the broad ligament. We believe that early diagnosis of such cases is vital. Although exceedingly rare, surgeons need to be aware of this type of hernia and have a high index of suspicion in female patients who present with small bowel obstruction and have no history of operations in the past.

20. SURGICAL TREATMENT FOR PROSTATE CANCER IN PATIENTS WITH PRIOR SPINAL CORD INJURY

Steven R. Gammon, B.S., Kimberly C. Berni, MD, Katherine S. Virgo, Ph.D., Frank E. Johnson, MD, FACS
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Background: Limited published information is available concerning the clinical course of spinal-cord-injured (SCI) patients who develop prostate carcinoma and subsequently undergo radical surgery. We hypothesized that the choice of surgical treatment and the technical conduct of radical surgery would be influenced by sequelae of SCI, and that poorer outcomes would result in this population, as compared to neurally-intact patients.

Methods: A nationwide study was conducted of all SCI veterans receiving care at Department of Veterans Affairs Medical Centers who subsequently developed prostate carcinoma and underwent curative-intent radical surgery between 1993 and 2002. Only patients with complete SCI due to trauma who met American Spinal Association type A criteria were analyzed. The unpaired t-test was used to analyze data.

Results: Of 16,878 patients who underwent radical surgery for prostate cancer, 55 had pre-existing diagnostic codes for SCI. After record review, 14 met all inclusion criteria. The mean age was 57. All were asymptomatic with clinically organ-confined disease diagnosed by elevated PSA or abnormal digital exam. Comorbid conditions were present in 9/13 (69%). Twelve underwent radical prostatectomy and two underwent cystoprostatectomy. There were no operative deaths, but 8/14 (57%) had complications ($p < 0.05$). The mean length of stay (16 days) was significantly longer ($p < 0.05$) than in neurally-intact patients.

Conclusions: SCI patients tended to be younger than neurally-intact patients with prostate cancer and the rate of cystoprostatectomy was high. The complication rate and length of hospital stay were both significantly greater than in neurally-intact patients.

21. CASE REPORT OF SPLENIC TORSION AND A CURRENT REVIEW OF THE LITERATURE

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General Surgery Clerkship Director, Saint Luke's Hospital

Splenic torsion is a rare condition, which is difficult to diagnose and requires a high level of clinical suspicion along with its vague characteristic findings by imaging studies. This is the case of a thirty-nine year old white female who presented with a three month history of an intermittent left upper quadrant abdominal pain who was diagnosed with splenic torsion and underwent a laparoscopic splenectomy. Given the rare presentation of this condition and the delayed, difficult diagnosis in our patient, the purpose of the paper was to provide a new case presentation with a review of the literature on this topic to promote awareness and education about splenic torsion. We describe the patient's hospital course including the work-up, which led to the diagnosis, the operation and the outcome. A PubMed search was used to identify twenty-five pertinent papers over the past twenty-seven years about splenic torsion. There are only approximately two hundred cases reported in the literature. Several synonymous terms were identified including splenic volvulus and wandering spleen. This review includes a discussion about the diagnostic clues, possible etiologies, and multiple treatment options for splenic torsion.

22. NEAR-TOTAL CLAVICULECTOMY IN SUPRASCAPULAR SPACE TUMORS

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Howard Rosenthal, MD, FACS, Department of Surgery, Section of Orthopedic Surgery, Menorah Medical Center

Emily Smart-Dowdy, MSIII, Kansas City University of Biomedical Sciences

Excision of tumors of the suprascapular space is often problematic. It is generally regarded as a transition area between the Head and Neck surgeon and the Thoracic surgeon. Access is limited secondary to anatomical constraints including: the brachial plexus, the great vessels of the neck, the Vagus nerve, the Thoracic duct, the pleural dome, and the clavicle. The authors have found that a combined approach incorporating a near total claviclectomy allows for excellent exposure facilitating otherwise difficult tumor removal. Since 1999 six patients have undergone near total claviclectomy for suprascapular tumor excision. The surgical anatomy, indications, surgical technique, complications, and long term follow up are the subject of this presentation.

23. VACUUM-ASSISTED CLOSURE: A UNIVERSITY EXPERIENCE

Scott J. Engel, MD, Christian E. Paletta, MD, Charleen Lee, MD
St. Louis University

Negative pressure wound therapy (NPWT) has become a mainstay in wound care management. In the university setting, the vast array of wounds that are encountered provide an opportunity to utilize the various treatment methods available to the wound care team to achieve wound healing. The Vacuum-Assisted Closure device (VAC) is a key adjuvant treatment method to promote wound healing. Between the years of 2000 and 2004, the Department of Plastic and Reconstructive Surgery at St. Louis University Hospital has compiled a database of 127 patients in which the VAC was used. Wounds treated included: sternal dehiscence, chronic pressure ulcers, skin grafts, traumatic wounds (including open fractures, degloving, burns, amputations, gun shot wounds), breast wounds, hemipelvectomies, hemicorporectomies, post radiation wounds, and hidradenitis suppurativa. Patients ranged in age from 5 to 74 years old. A total of 59 patients (46%) were female, and 68 patients (54%) were male. Our intentions are to present a university experience with the use of the VAC and the impact that it has made in treating a large variety of wounds.

24. LAPAROSCOPIC REPAIR OF A LEFT DIAPHRAGMATIC HERNIA

Robert Antonetti, MD, James Kraatz, MD, FACS

University of Missouri-Columbia

This is a case presentation of a middle aged man that presented with acute symptoms of a diaphragmatic hernia several years after blunt abdominal trauma. The hernia was diagnosed on plain film and CT scan. The patient underwent laparoscopic repair of this defect using Gortex mesh. The patient had a satisfactory outcome from this procedure. Laparoscopic diaphragmatic hernia repair is safe and provides good exposure to the defect.

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