

**Department of Surgery
Research Day 2015**

Eleventh Annual Symposium
Celebrating the

**Lester R. Dragstedt
Visiting Professorship**

April 15, 2015

**Department of Surgery
Research Day Agenda**

7:30 AM—8:00 AM

Morbidity/Mortality Conference
HSC Auditorium Room 6120

8:00 AM—8:45 AM

Lester R. Dragstedt Lecture
HSC Auditorium Room 6120
Introduction: Kevin E. Behrns, MD

Richard H. Turnage, M.D.

Chair, Department of Surgery
Executive Associate Dean for Clinical Sciences
Interim Dean, College of Medicine
University of Arkansas for Medical Sciences

**“Public Reporting of Surgical Outcomes:
Codman to Consumer Reports ”**

9:00 AM—10:30 AM

Oral Research Presentations
HSC Auditorium Room 6120
Moderator: Alicia Mohr, MD

ABSTRACT #1111: MONOCYTE GENE EXPRESSION AND ITS RELATIONSHIP TO LOWER EXTREMITY VEIN GRAFT OUTCOME. J. Rehfuss

ABSTRACT # 1123: A NOVEL MUSCULAR INDEX PREDICTS TUMOR BURDEN AND SURVIVAL IN RESECTABLE PANCREATIC CANCER, D Delitto

ABSTRACT #1132: SMOOTH MUSCLE CELL (SMC) SPECIFIC ALK5 DELETION CAUSES AORTIC ANEURYSM FORMATION VIA EXAGGERATING ERK PHOSPHORYLATION, C. Fu

ABSTRACT #1113: THE GENOMIC RESPONSE AFTER BURN INJURY PREDICTS ORGAN DYSFUNCTION AND MORTALITY. S. Brakenridge

ABSTRACT #1147: MILD ACUTE KIDNEY INJURY (AKI) AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT IS ASSOCIATED WITH POOR OUTCOME, S.H. Aalaei-Andabili

ABSTRACT #1105: SPHINGOSINE-1-PHOSPHATE/S1P RECEPTORS MODULATE HEMATOPOIETIC PROGENITOR CELL MOBILIZATION FOLLOWING TRAUMA/HEMORRHAGIC SHOCK. IG Alamo

ABSTRACT #1118: FLUOROURACIL AND OXALIPLATIN SENSITIZE HEPATOCYTES TO ISCHEMIA/REPERFUSION INJURY. K. Go

ABSTRACT # 1107: PATTERNS OF GENE EXPRESSION AMONG MURINE MODELS OF HEMORRHAGIC SHOCK TRAUMA AND SEPSIS, B. Szpila

10:30 AM—11:45 AM

Quick-Shot Oral-Poster Presentation Session
HSC Auditorium room 6120
Moderator: Scott Berceli, MD

12:00 PM—1:15 PM

Awards Luncheon
South Tower Auxiliary Conference
Rooms 1204 & 1205
Moderators: Kevin E. Behrns, MD, Lyle L. Moldawer, PhD
Winners of the Research Career Development Award will be announced

1:15 PM—2:45 PM

Digital Poster Presentation Session
South Tower Auxiliary Conference
Rooms 1204 & 1205
Moderator: George Sarosi, Jr., MD

**The Lester R. Dragstedt
Visiting Professor Lecture**

Richard H. Turnage, M.D.

Chair, Department of Surgery
Executive Associate Dean for Clinical Sciences
Interim Dean, College of Medicine
University of Arkansas for Medical Sciences

**“Public Reporting of Surgical Outcomes:
Codman to Consumer Reports”**



Richard H. Turnage, M.D.

Dr. Richard H. Turnage is Executive Associate Dean for Clinical Sciences and Chair of the Department of Surgery in the College of Medicine at the University of Arkansas for Medical Sciences. He is currently serving as Interim Dean of the college through mid-July 2015 and will remain on hiatus from his post as Chair of Surgery through the end of the year to focus on a new, additional position as Chief Service Line Officer for UAMS Medical Center.

Dr. Turnage was recruited to UAMS as Professor and Chair of Surgery in 2008. He has accepted several additional leadership roles, including Interim Chair of the Department of Urology in 2010-2012 and Interim Chair of the

Department of Radiology in 2012-2014. As Chair of the Hospital Medical Board in 2012-2014, Dr. Turnage facilitated a heightened focus on improving quality, patient- and family-centered care, and patient satisfaction. As Chief Service Line Officer since February 2015, Dr. Turnage is leading the development and implementation of integrated patient-care service lines at UAMS. He began serving as Interim Dean of the College of Medicine on April 1.

Dr. Turnage has led clinical and academic surgical programs for the past two decades. From 1996 to 2001 he served as Chief of the Surgical Service of the Dallas VA Medical Center and Vice Chairman of the Department of Surgery at the University of Texas Southwestern School of Medicine. Dr. Turnage was Chair of the Department of Surgery at the Louisiana State University (LSU) Health Sciences Center in Shreveport from 2001 to 2008.

Among other leadership positions, Dr. Turnage served as Chairman of the Council of VA Chiefs of Surgery. He helped to develop Louisiana's statewide trauma system and the American College of Surgeons-verified Level 1 trauma center at LSU.

A general surgeon, Dr. Turnage's clinical interests have focused on acute gastrointestinal conditions such as intestinal obstruction and acute gastrointestinal hemorrhage. He has published more than 100 peer-reviewed manuscripts and textbook chapters on a variety of clinical and basic science topics. His laboratory work in microvascular function during acute inflammation has been funded by the American Heart Association, the Department of Veterans Affairs and the National Institutes of Health.

Dr. Turnage has been active in undergraduate and graduate medical education, receiving numerous teaching awards. He has also been active in interprofessional education, serving as a Commissioner for the Accreditation Review Commission for Physician Assistants, a Director for the National Commission for the Certification of Physicians Assistants, and Medical Director of the Physician Assistant training programs at LSU and UAMS.

ABSTRACT # 1101

BILATERAL BREAST MASSES AS A PRESENTATION OF CALCIPHYLAXIS OF THE BREAST

DJ Hall, LRP Spiguel*. Department of Surgery, University of Florida College of Medicine.

Introduction: Calciphylaxis, or calcific uremic arteriopathy (CUA), is a rare but particularly morbid condition involving systemic medial calcification of arterioles causing ischemia and subsequent tissue necrosis. CUA has rarely been reported in the literature to occur in the breast, especially in patients with end-stage renal disease (ESRD).

Description: We report a case of a 53-year-old female with dialysis-dependent ESRD and history of pulmonary embolism on warfarin who presented with a three-month history of enlarging bilateral palpable breast masses and overlying skin changes. Diagnostic mammography and core biopsy of the lesion facilitated the diagnosis of CUA and she was treated with medical therapy and local wound care of the right breast lesion. Despite diligent local wound care, frank necrosis and infection of the right breast lesion ensued requiring debridement.

Conclusions: Calcific uremic arteriopathy is a rare but morbid condition characterized by progressive vascular calcification and subsequent tissue necrosis. Treatment includes optimization of calcium-phosphate product, risk-factor modification, local wound care, antibiotics, surgical debridement, or mastectomy. The risks usually outweigh the benefits of surgical removal of the affected breast tissue. Therefore, once malignancy has been excluded, local wound care and prompt referral to Nephrology for medical optimization is recommended. Given the significant morbidity attributed to CUA, clinicians should be aware of this condition especially when managing patients with ESRD and its comorbidities, maintaining a high index of suspicion in the evaluation of any abnormal skin or soft tissue lesions, and avoid injury to the overlying skin if possible when performing diagnostic percutaneous biopsy.

ABSTRACT # 1102

PREDICTING A BAD DAY IN THE OR: OBJECTIVE PREDICTION OF A DIFFICULT PELVIC DISSECTION FROM PREOPERATIVE IMAGING

Aimal Khan, Ahsan Raza, Sanda Tan, Robert Zlotecki, Luis Chihray, Atif Iqbal*, Department of Surgery

Purpose: Tumor diameter, length, depth of penetration, distance from anal verge, deep and narrow pelvic dimension has been associated with outcomes in pelvic surgery. We aimed to identify the best preoperative radiological predictor of a difficult pelvic dissection with prognostic significance.

Methods: Patients who underwent low LAR or APR for a lesion within 10 cm of the verge between 2009 and 2014 were divided into 'Routine' or 'Difficult' cases. 'Velocity' software was used to generate 3D reconstructions and measurements in all preoperative CT scans. Measurements included a) Linear measurements b) Volumetric measurements c) Anorectal angle and d) Degree of sacrococcygeal curve.

Results: A total of 40 patients were included. There were 20 patients in each group (Routine vs. Difficult cases). Difficult cases were significantly associated with 12 pelvic measurements including a longer and narrower pelvis, lower pelvic volume, deeper pelvic floor, more curved sacrum and more acute anorectal angle. Of these, length from promontory to pelvic floor >130 mm, soft tissue pelvic volume <250 cm³ and lateral pelvic outlet diameter <95 mm were reliably able to predict a difficult pelvic dissection (R²=0.95) which took significantly longer in the OR, had higher blood loss, longer hospital stay and higher overall costs.

Conclusions: Preoperative imaging can be used to predict a difficult pelvic case and morbidity. Deep and narrow pelvic dimensions rather than rectal mass diameter play a role. Prospective application of these measurements is needed in the future.

ABSTRACT # 1103

OBJECTIVE PROGNOSTIC PREOPERATIVE PREDICTION OF A DIFFICULT PELVIC DISSECTION: 'PELVIC SURGERY DIFFICULTY INDEX'

Ahsan Raza, Aimal Khan, Sanda Tan, Steven Hughes, Atif Iqbal*, Department of Surgery

Purpose: Male gender, obesity, tumor diameter and distance from the verge, certain pelvic dimensions have been previously associated with outcomes in pelvic surgery. We aimed to develop an objective prognostic scoring model for preoperative prediction of a difficult deep pelvic dissection and morbidity.

Methods: Patients who underwent low LAR or APR for a lesion within 10 cm of the verge between 2009 and 2014 were divided into 'Routine' or 'Difficult' cases. Radiation Oncology Software 'Velocity' was used to obtain 16 pelvic measurements from preoperative CT scans.

Results: A total of 40 patients were included with a mean follow up of 15 months. Males, BMI >30 and history of pelvic radiation >3 months preoperatively were significantly related to difficult cases. Previous abdominal or pelvic surgery, tumor distance from the verge, type of procedure and surgical approach had no correlation with case difficulty. Difficult cases were significantly associated with 12 pelvic measurements. Five predictive variables with the strongest association to difficult cases were chosen. A practical and reliable prediction model was reached with a $p < 0.00001$ and coefficient of determination of 0.98 to predict a difficult pelvic dissection with 4 factors forming the 'Pelvic Surgery Difficulty Index' (PSDI). It included Male sex, BMI >30, Previous pelvic radiation (>3 months ago) and length from promontory to pelvic floor >130 mm.

Conclusions: Preoperative prediction of a difficult pelvic dissection and morbidity appears possible and can help surgeons identify high risk patients and better prepare for surgery. Prospective application of the score is needed in the future.

ABSTRACT # 1104

THE ROLE OF ERYTHROPOIETIN AND HEPCIDIN IN THE REGULATION OF PERSISTENT INJURY-ASSOCIATED ANEMIA

IG Alamo, KB Kannan, MA Smith, PA Efron, AM Mohr*,
Division of Acute Care Surgery, Department of Surgery,
University of Florida College of Medicine.

Introduction: The cause of persistent injury-associated anemia is multifactorial and includes blood loss, impaired erythropoiesis, altered erythropoietin (EPO) response, dysregulation of iron homeostasis, and chronic stress. Heparin plays a key role in iron homeostasis and EPO is a main regulator of erythropoiesis induced by hypoxia. Using a combined model of lung injury (LC)/hemorrhagic shock (HS)/chronic restraint stress (CS) to produce persistent injury-associated anemia, the aim of this study was to investigate the roles of hepcidin and EPO.

Methods: Male Sprague-Dawley rats were assigned into one of the four groups of rodent models: naïve, CS alone, combined LCHS, or LCHS/CS. On day 7, hemoglobin (Hb), EPO, bone marrow (BM) EPO receptors (EPO_r), hepcidin, iron, and ferritin levels were assessed.

Results: On day 7, LCHS/CS was associated with persistent anemia despite significant elevation of EPO. Within BM, LCHS/CS led to a significant decrease in EPO_r levels. LCHS/CS significantly decreased plasma hepcidin levels by 84% on day 7 as compared to LCHS alone. The addition of CS to LCHS led to a 35% decrease in plasma iron levels; yet, plasma ferritin levels remained significantly elevated when compared to LCHS alone (266±52** vs. 130±12 ng/mL).

Conclusions: Tissue injury, HS, and CS stimulate and maintain high levels of plasma EPO while hepcidin levels are decreased. In addition, iron availability is significantly reduced following LCHS/CS. The iron deficit and decrease in BM expression of EPO receptors may play a role in the ineffective EPO associated with persistent injury-associated anemia.

ABSTRACT # 1105

SPHINGOSINE-1-PHOSPHATE/S1P RECEPTORS MODULATE HEMATOPOIETIC PROGENITOR CELL MOBILIZATION FOLLOWING TRAUMA/HEMORRHAGIC SHOCK

IG Alamo, KB Kannan, H Ramos, PA Efron, AM Mohr*, Division of Acute Care Surgery, Department of Surgery, University of Florida College of Medicine.

Introduction: Following trauma and hemorrhagic shock (HS) there is increased mobilization of hematopoietic progenitor cells (HPC) to peripheral blood and sites of injury. Continued recruitment of HPCs following injury/stress is associated with dysfunctional wound healing, persistent elevation of G-CSF and SDF-1 at the site of injury. S1P, a bioactive lipid, and its receptors (S1Pr1-3) are new players in HPC trafficking. The aim of this study is to examine the role of S1P and its receptors in a lung injury (LC)/HS/chronic restraint stress (CS) model.

Methods: Male Sprague-Dawley rats were assigned into one of the four models: naïve, CS alone, combined LCHS, or LCHS/CS. S1P and S1P 1-3 receptor levels were analyzed by ELISA and PCR. Data presented as mean \pm SD in each group; ** $p < 0.05$ vs. LCHS by t-test

Results: There were significant BM S1P elevations in all models that correlated with increased injury severity. There is a significant 16, 25, and 31% increase in expression of BM S1Pr1, S1Pr2, and S1Pr3 in LCHS/CS as compared to naïve. However, only the expression of S1Pr2 and S1Pr3 in the BM are significantly increased in LCHS/CS, compared to LCHS alone ($106 \pm 4^{**}$ vs. 88 ± 7 , $74 \pm 11^{**}$ vs. 52 ± 10).

Conclusions: In models of varying degrees of HPC mobilization, there is an increase in BM S1P levels. S1Pr1-3 play a role in the mobilization of HPCs after LCHS/CS. S1Pr2 and 3 following LCHS/CS may play a key role in persistent HPC mobilization and its failure to home to the BM. Alleviating the prolonged mobilization of BM HPCs after severe injury is a potential therapeutic target to improve BM function.

ABSTRACT # 1106

ALUM AS A PREVENTATIVE THERAPY ABOLISHES MORTALITY IN MURINE NEONATAL SEPSIS BY IMPROVING EFFECTOR CELL FUNCTION AND BACTERIAL CLEARANCE

A.L. Cuenca, A.G. Cuenca, D.C. Nacionales, R. Ungaro, P.A. Efron, L.L. Moldawer, S.D. Larson.

BACKGROUND: Sepsis is a leading cause of infant mortality, especially in premature and low birth weight neonates. We have previously shown that sepsis survival in neonatal mice relies primarily on the innate immune response for protection. We have also shown that alum works independent of caspase-1 and we hypothesize that action of alum on effector cells improves survival (*Cuenca et al. Shock 2014*).

METHODS: C57BL/6 (WT) neonatal mice underwent a cecal slurry (CS) model of intra-abdominal sepsis. Neonates received either, no pretreatment (control), or 20 µg alum (IP) 24 hrs prior to CS administration. Peritoneal washes (PW) were harvested to determine absolute numbers for cell recruitment, phagocytic function, ROS production and bacterial clearance.

RESULTS: Mice treated with alum had significant expansion of hematopoietic stem cells 36 hours after sepsis in both spleen and bone marrow ($p < 0.0001$). There was a significant increase in the absolute number of monocytes, macrophages, dendritic, and natural killer cells 24 hours after sepsis in the treated animals compared to the untreated ($p < 0.05$). The treated animals also had improved neutrophil phagocytosis at 18 and 24 hours after sepsis ($p = 0.002$). At 24 and 36 hours after sepsis, alum treated animals had greater bacterial clearance in PW compared to untreated animals ($p < 0.0001$; $p = 0.002$). Mice pretreated with alum also had 100% survival compared to groups receiving CS alone and s.c. administration of alum also improved survival ($p < 0.001$).

ABSTRACT # 1107

PATTERNS OF GENE EXPRESSION AMONG MURINE MODELS OF HEMORRHAGIC SHOCK TRAUMA AND SEPSIS

BE Szpila, D Nacionales, M Lopez, HV Baker, LL Moldawer, P Efron*

Introduction: Murine models have received scrutiny for their ability to recapitulate human trauma and sepsis. In humans, it has been shown that the initial genomic response by blood leukocytes is remarkably similar between trauma and sepsis. This is believed to be due to an overlap in the early signals that initiate the inflammatory response. Here, we attempt to clarify whether the early genomic response to severe trauma is quantitatively similar to two models of sepsis, cecal ligation and puncture (CLP), and *Pseudomonas pneumonia* (Pp) 1 day following PT.

Methods: 6-10 week old B6 mice either underwent PT or CLP. These mice were then sacrificed at 2 hrs, 1 and 3 days. For the PT+Pp, mice were instilled with bacteria 1 day after PT and sacrificed at 1 day later. Leukocytes were isolated for genome-wide expression analysis and genes that were found to differ from control (FDR adjusted $p < 0.001$) were assessed for fold-change differences.

Results: For all time points combined (CLP, PT, PT+Pp), there were 10,805 total genes that were found to significantly differ from controls, consistent with a 'genomic storm'. Remarkably, at 2 hrs and 1 day, the changes in gene expression between sepsis (CLP) and trauma (PT) were highly correlated ($r = 0.91$ and 0.81 , $p < 10^{-6}$). When individual genes are examined, genes known to be associated with PAMP and DAMP signaling show similar patterns between PT and CLP at the earlier time points (eg. TLR 2, 4, 6, 13, NLRP3).

Conclusions: Although the genomic responses are markedly different from humans, this study shows for the first time that in mice that the early genomic response to sepsis and trauma are remarkably similar. We conclude that although the early genomic response to trauma and sepsis in mice may differ from humans, there is an early common pattern of leukocyte gene expression between trauma and sepsis.

ABSTRACT # 1108

SUCCESSFUL IMPLEMENTATION OF A PACKED RED BLOOD CELL AND FRESH FROZEN PLASMA TRANSFUSION PROTOCOL IN THE SURGICAL INTENSIVE CARE UNIT

BE Szpila, T Ozrazgat-Baslanti, J Zhang, S Brakenridge, P Efron*

Background: Blood product transfusions are associated with increased morbidity and mortality. The purpose of this study was to determine if implementation of a restrictive protocol for packed red blood cell (PRBC) and fresh frozen plasma (FFP) transfusion safely reduces blood product utilization and costs in a surgical intensive care unit (SICU).

Study Design: We performed a retrospective, historical control analysis comparing before (PRE) and after (POST) implementation of a restrictive PRBC/FFP transfusion protocol for SICU patients. Univariate analysis was utilized to compare patient demographics and blood product transfusion totals between the PRE and POST cohorts. Multivariate logistic regression models were developed to determine if implementation of the restrictive transfusion protocol is an independent predictor of adverse outcomes after controlling for age, illness severity, and total blood products received.

Results: 829 total patients were included in the analysis (PRE, n=372; POST, n=457). Despite higher mean age (56 vs. 52 years, p=0.01) and APACHE II scores (12.5 vs. 11.2, p=0.006), mean units transfused per patient were lower for both packed red blood cells (0.7 vs. 1.2, p=0.03) and fresh frozen plasma (0.3 vs. 1.2, p=0.007) in the POST compared to the PRE cohort, respectively. There was no difference in inpatient mortality between the PRE and POST cohorts (7.5% vs. 9.2%, p=0.39). There was a decreased risk of urinary tract infections (OR 0.47, 95%CI 0.28-0.80) in the POST cohort after controlling for age, illness severity and amount of blood products transfused.

Conclusions: Implementation of a restrictive transfusion protocol can effectively reduce blood product utilization in critically ill surgical patients with no increase in morbidity or mortality.

ABSTRACT # 1109

EFFECTS OF SILDENAFIL, A PHOSPHODIESTERASE INHIBITOR, AND BRAIN NATRIURETIC PEPTIDE (BNP - NESIRITIDE) ON ISCHEMIA/REPERFUSION INJURY IN RAT TYPE II PNEUMOCYTES

C. Matthews, J. Cobb, T.N. Machuca, T.M. Beaver*. Thoracic and Cardiovascular Surgery. University of Florida College of Medicine.

Introduction: Lung transplantation is the standard of care and a life-saving therapy for end stage lung disease (1). Ischemia-reperfusion injury or "Primary Graft Dysfunction" (PGD) poses a threat to the success of transplantation (3-4). Sildenafil and Nesiritide induce the nitric oxide pathway to increase intracellular second messenger cGMP and attenuate I/R injury (14,15). Indirect effects of these drugs are hypothesized to upregulate autophagy (10). Our aim is to reveal a cytoprotective role in response to I/R injury in rat type II pneumocytes

Methods: Serial dilutions of Nesiritide or Sildenafil were made and added at varying time points; pre-ischemic, ischemic, and reperfusion intervals. Cytotoxicities following I/R injury were recorded as means with SEM. 2-tailed T-Tests with unequal variance were performed for statistical analysis for significance - comparing simulated reperfusion control cytotoxicities (7.4 KRH group) with treatment cytotoxicities.

Results: Cytotoxicity at 3 hours reperfusion was reduced by Sildenafil at ischemia treatment (at 0.1,1.0, 10.0, and 100 nM, $p < < 0.05$, n=5, 5, 5, 6; respectively) and pre-ischemic time periods (at 10, 100, 1,000 nM, $p < < < 0.05$, n=7,7,5; respectively). Sildenafil, added at pre-ischemic time point, showed a dose response relationship. Nesiritide reduced cytotoxicity when applied at ischemic time period at all concentrations.

Conclusions: With the advent of ex vivo lung perfusion technology and the opportunity to treat lungs in a functional state, Sildenafil and Nesiritide show promise in ameliorating I/R injury; improving on short and long term patient outcomes as well as medical costs.

ABSTRACT # 1110

A MULTI-DISCIPLINARY RIB FRACTURE MANAGEMENT PROTOCOL: SAFETY AND IMPACT

M. Rosenthal, S. Brakenridge, C. Croft, J. Zhang, B. Brumback, J. Jordan, A. Mohr, F. Moore, MD, A. Boezaart, L. Lottenberg* Division Acute Care Surgery, Department of Surgery, University of Florida College of Medicine.

Introduction: Rib fractures remain a significant cause of morbidity and mortality after blunt trauma. We evaluated our multi-disciplinary rib fracture management protocol and the effect of selective open reduction and internal fixation (ORIF) on inpatient outcomes.

Methods: Our protocol consisted of pain management with adjunctive neuraxial analgesia, pulmonary support, and selective ORIF. Indications for ORIF include anatomic disruption, flail chest, and refractory pain limiting productive cough and inspiratory capacity. A retrospective, propensity matched and adjusted analysis was performed to compare ORIF and non-operative inpatient outcomes.

Results: Between January 2007 and May 2014, our center managed 5,262 trauma patients with ≥ 2 rib fractures. Of these patients, 81 (1.5%) underwent ORIF. ORIF patients were more severely injured (ISS 28 vs 20, $p < 0.001$) and older (mean 51 vs 46 yrs, $p < 0.003$) than the non-operative cohort. Ventilator days (6.3 vs 3.1d), ICU (8.8 vs 3.6d) and hospital LOS (14.8 vs 7.9d) were significantly longer in the ORIF cohort ($p < 0.001$). Unadjusted mortality was lower in the fixation group than the non-operative cohort (1.2% vs. 8.6%, $p < 0.02$). However, both propensity matched and adjusted modeling to account for injury severity, age, gender, comorbidities, number of rib fractures and flail segment revealed no significant differences.

Conclusion: Operative rib fixation as part of a multidisciplinary management protocol, while safe, demonstrates no differences in inpatient outcomes, including pneumonia, ventilator days, ICU and hospital length of stay, and mortality. Future prospective investigations should attempt to discern which sub-populations may benefit most from ORIF, and focus on outpatient functional outcomes.

ABSTRACT # 1111

MONOCYTE GENE EXPRESSION AND ITS RELATIONSHIP TO LOWER EXTREMITY VEIN GRAFT OUTCOME

J. Rehfuss, K. DeSart, K. O'Malley, B. Schmit, Y. He, L. Moldawer, P. Nelson, S. Berceli*, Division of Vascular Surgery and Endovascular Therapy, Department of Surgery, University of Florida College of Medicine.

Introduction: Systemic inflammation following vein bypass grafting is an important regulator of early remodeling and long-term patency. Given the critical relationship between monocyte biology and vascular pathology, we sought to uncover the time-dependent changes in monocyte gene expression following vein grafting and identify key regulatory elements that are implicated in graft failure.

Methods: In 48 patients who underwent lower extremity vein bypass grafting, blood monocytes were isolated pre-op and at 1, 7 and 28 days post-op. Gene expression was determined by microarray. Mixed effects modeling showed time to be the dominant influence on gene expression, with 1870 genes changing over time (FDR<.001, Fig A). A custom clustering algorithm grouped these 1870 genes into 50 clusters, each with a unique, time-dependent expression pattern. Stringent selection criteria ($p < .05$, effect size > 0.5 and fold change > 1.4) identified 3 ($n=64$ genes) clusters which showed markedly different levels of gene expression between successful and failed grafts (Fig B). Major adverse limb events within the first post-operative year defined graft failure.

Results: Pathway analysis of this 64-gene set identified 10 upstream regulatory genes, the expression of which varied substantially between outcome groups and over time (Fig C). Ontology analysis revealed this to be a set of highly-interconnected regulatory genes with central roles in inflammation, cell growth, angiogenesis and neutrophil proliferation.

Conclusions: A key set of 64 genes that is highly associated with graft outcome has been identified. Controlling these genes are ten highly-interconnected, upstream regulators which are promising candidates for targeted therapy to modify inflammation-associated graft failure.

ABSTRACT # 1112

EFFECTS OF ARTERIOVENOUS FISTULA PLACEMENT ON CIRCULATING LEUKOCYTE GENOMICS

C. Kuppler, K. O'Malley, Y. He, S. Berceci*, Division of Vascular Surgery, Department of Surgery, University of Florida College of Medicine.

Introduction: Current estimates suggest that 20-60% of all arteriovenous fistulas fail to mature and become usable for hemodialysis access 6 months postoperatively. Prior studies have suggested that systemic inflammation after fistula creation can contribute to fistula maturation or failure. Here we evaluate the genome of circulating leukocytes in this new flow environment.

Methods: Circulating monocytes and neutrophils were isolated preoperatively and two weeks postoperatively following arteriovenous fistula placement. Gene expression was analyzed using a microarray chip. Significant changes in gene expression were probed using a paired t-test performed by BRB ArrayTools software. Heat maps and dendrograms of significant genes were created using DChip software.

Results: Circulating monocytes and neutrophils were found to have 1014 and 1594 genes which differed between preoperative and two week time points, significant at $p < 0.001$, respectively. When the dendrograms of the patient samples were analyzed, monocytes show a pronounced amount of patient-to-patient variation; neutrophil samples did not demonstrate a similar patient to patient variation.

Conclusions: The large amount of genes found at this statistical level is on par with the number described two weeks following major trauma. Given that fistula creation surgery is considerably less inflammatory than a large trauma, other potential causes for these large gene changes are being explored to account for this finding. Our current hypothesis is that the radically new flow environment with increased shear stress and turbulent flow is the cause for these gene changes.

ABSTRACT # 1113

THE GENOMIC RESPONSE AFTER BURN INJURY PREDICTS ORGAN DYSFUNCTION AND MORTALITY

Cecilia-Maria Lopez, Jianyi Zhang, Joseph Cuschieri, Ronald V. Maier, Frederick A. Moore, Phillip A. Efron, Henry V. Baker, Lyle L. Moldawer, Scott C. Brakenridge*. Department of Surgery, University of Florida College of Medicine.

Introduction: Genome wide expression analysis of blood leukocytes from severely injured trauma patients has revealed a “genomic storm” of both pro and anti-inflammatory genes. The genomic response to burn injury has been shown to be remarkably similar, but its association with prolonged organ dysfunction and poor clinical outcomes, is unknown.

Methods: Genome-wide expression analysis was performed on isolated blood leukocyte populations from 118 burn injured patients. Subsequent analysis consisted of identifying differences in gene expression and individual fold gene changes up to 28 days after burn injury. Epidemiologic data and clinical outcomes were compared for survivor and non-survivor cohorts.

Results: Genomic analysis revealed 1,965 unique genes, that exhibited significant expression differences from reference (DFR) between survivors and non-survivors ($P < 0.001$). Aberrant expression peaked between 4 to 7 days and revealed persistent, significant DFR over the 28 day sample period. A subset panel of 63 genes previously shown in trauma patients to predict persistent organ failure and complicated outcomes showed significant difference in expression between burn survivors and non-survivors. This “Sweet 63” screening panel was predictive of mortality after controlling for burn TBSA ($p = 0.004$).

Conclusion: Severe burn injury triggers a “genomic storm” of persistent, aberrant gene which is strongly associated with post-burn mortality. Genomic screening panels of specific burn-responsive genes may allow for early prediction of those at high risk of mortality.

ABSTRACT # 1114

3D CULTURED SVF SPHEROIDS SECRETED HIGH LEVEL OF GROWTH FACTORS WHICH INVOLVED IN ANGIOGENESIS

N. Yang, H. Shang, A. J. Katz*, Division of Plastic Surgery, Department of Surgery, University of Florida College of Medicine.

Introduction: Cells cultured as spheroid showed many unique characteristics than monolayer culture. Although many 3D cell culture methods and instruments succeeded on some cell lines, forming spheroid from human stromal vascular fractions (SVFs) is still difficult. We demonstrated that we formed spheroids from SVFs, and SVFs-spheroids secreted high level of growth factors which were involved in angiogenesis.

Methods: Subcutaneous adipose tissue was obtained from patients and approved by IRB, University of Florida. Cells were isolated using SVF-1 devices (the GID Group). Spheroids were formed in medium with ASC culture medium (LM1) and endothelial cell culture medium at ratio 1:1 with 5% methocel. Each spheroid was formed with 100,000 viable SVF cells in non-attachment round-bottom 96-well plate and was cultured for 14 days. Condition medium was collected at day 7 and day 14 by 24 hours secretion in culture medium without growth factor supplements.

Results: SVF spheroids formed in first 3 days during culture period. Luminex assay indicated that SVFs spheroids secreted high level of EGF, PLGF, Angiopoietin-2 and other growth factors. H&E staining demonstrated the presence of SVFs embedded within a self-generated extracellular matrix. CD31 staining indicated that CD31 positive cells localized in the center area of spheroid.

Conclusions: SVFs spheroid culture maintained cell viability and secreted many growth factors which involved in angiogenesis. These primary data indicated that SVF spheroids may stimulate the angiogenesis/vasculogenesis quickly occurred in vivo.

ABSTRACT # 1115

HUMAN MYELOID DERIVED SUPPRESSOR CELLS INDUCE IMMUNE SUPPRESSION AFTER SEVERE SEPSIS

R. Ungaro, D. Nacionales, A. Roundtree, M. Lopez, F. Needell, J. Zhang, B. Szpila, B. Mathias, A. Cuenca, A. Mohr, A. Bihorac, C. Leeuwenburgh, F. Moore, S. Brakenridge, H. Baker, L. Moldawer, P. Efron*.

Introduction: Myeloid derived suppressor cells (MDSCs) have been suggested to play a key role in the immune responses of persistent infectious diseases, autoimmune diseases, and chronic inflammation. Little is known about MDSC's role after the onset of severe human sepsis or trauma. We hypothesized these cells have a prolonged presence after severe inflammation and contribute to an environment of persistent inflammation and immunosuppression.

Methods: Blood was obtained from 83 septic and 11 healthy subjects. Blood was drawn <12 hours and 1, 2, 4, 7, 14, 21 and 28 days after sepsis. Phenotyping was performed by flow cytometry and MDSCs were enriched as CD33+CD11b+HLA-DR-/low by cell sorting. Genome-wide expression analysis was performed on Days 7 and 14 ($p < 0.001$ f-test). T-cell suppression assays by MDSCs were also performed.

Results: Sepsis is associated with an increase of MDSCs, peaking at 12 hours and remaining elevated for 28 days ($p < 0.001$). Individual gene analysis of enriched MDSCs showed suppression of HLA gene expression and up regulation of ARG1 ($p < 0.001$). T cell suppression assays revealed >90% (mean and median) suppression index with MDSCs from septic patients.

Conclusion: Human severe sepsis/ septic shock are associated with an increase in the circulating MDSCs, and this increase contributes to both the persistent inflammation and immunosuppression. Further analysis of these cells and their role after severe infection may allow for interventions that could improve patient morbidity and mortality after sepsis or trauma.

ABSTRACT # 1116

FEASIBILITY AND SAFETY OF ADIPOSE-DERIVED WOUND PASTE IN A MURINE MODEL OF FULL THICKNESS WOUNDING

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Introduction: Our goal is to leverage adipose tissue into novel point-of-care therapies for full thickness wounds. Based on FDA guidance, we performed an initial safety study in mice using adipose-derived, 'point-of-care wound paste' in full thickness wounds. Primary outcome objectives were safety and cell migration. Secondary objectives were wound healing rate, wound contraction, angiogenesis, and scar quality.

Methods: Mice with full thickness wounds were randomized to 4 treatment groups: 1) secondary healing; 2) 'adipose-derived wound paste'; 3) wound paste with keratinocytes; and 4) acellular wound paste (matrix only). Wound paste was made using GFP labeled cells. Healing rates and wound contraction were measured using digital imaging at 1, 2, 3, 4 and 6 weeks. Scar quality was measured at week 6. Cell migration was evaluated with PCR and histology.

Results Wound paste did not have a detrimental effect on either animal survival. Adipose-derived cells survived real-time formulation into wound paste and implantation into open wounds, and proliferated over time. There were no significant differences between treatment groups for wound healing rate, wound contraction, or scar quality.

Conclusions: This initial in vivo feasibility and safety study confirmed that adipose-derived cells can be formulated in real-time into wound paste, applied to an open wound, and survive and proliferate in the wound over time. Although cells seem to remain localized to the wound and contribute to neo-vessels, they did not seem to alter healing kinetics or quality in this study. Future studies will evaluate both human-derived cells, as well as the effect of increasing cell dose.

ABSTRACT # 1117

DYSFUNCTIONAL PROTECTIVE IMMUNITY AND ABNORMAL MYELOPOIESIS FOLLOWING TRAUMA IN AGED MICE

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Introduction: The elderly are more likely to have poor outcomes after trauma. Current dogma argues that the elderly respond to trauma with an exaggerated inflammatory response. We investigated whether the increased mortality and morbidity in the aged after trauma is due to excessive inflammation or from a failure of protective immunity.

Methods: We analyzed both clinical data from the Glue Grant trauma database, as well as the bone marrow, blood, spleen and bronchoalveolar lavage (BAL) samples from young and aged mice after trauma and hemorrhagic shock (polytrauma, PT) (with and without *Pseudomonas pneumonia* (Pp)).

Results: Severe trauma and pneumonia is associated with worse outcomes in elderly humans versus the young ($p < 0.004$). Elderly mice have the same increased mortality after PT+Pp ($p < 0.05$). Analyzing plasma cytokines, the transcriptomic response of blood, bone marrow stem cells and BAL leukocytes, we found no evidence in elderly humans or mice of an exaggerated inflammatory response to trauma. However, BAL neutrophils from aged mice have impaired phagocytic ability ($p < 0.05$). In addition, the elderly are unable to effectively resolve their inflammatory response to trauma.

Conclusion: Rather than having an exacerbated inflammatory response after trauma, the aged have a dysfunctional 'emergency myelopoietic' response and do not effectively return to baseline levels of inflammation. Immunotherapy to alter this response could potentially improve their outcomes.

ABSTRACT # 1118

FLUOROURACIL AND OXALIPLATIN SENSITIZE HEPATOCYTES TO ISCHEMIA/REPERFUSION INJURY

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Introduction: Chemotherapy for colorectal liver metastases can induce chemotherapy-associated steatohepatitis (CASH) and sinusoidal obstruction in noncancerous liver leading to increased perioperative morbidity or mortality after hepatic resection. It is unknown how CASH enhances ischemia/reperfusion (I/R) injury. We investigate the effects of I/R on hepatocytes after chemotherapy administration.

Methods: Mouse hepatocytes were treated with 5 μ M of 5-fluorouracil (5-FU), or oxaliplatin (OXA) for 12, 24, and 36 hr. The changes in lipid droplet (LD) and mitochondrial membrane potential ($\Delta\Psi_m$) were assessed by confocal microscopy. Some hepatocytes were subjected to 2 hr ischemia after 5-FU or OXA treatment. Cell death after reperfusion was assessed by propidium iodide fluorometry.

Results: Both 5-FU and OXA significantly increased the number of LDs and markedly decreased $\Delta\Psi_m$ under normoxic conditions, suggesting mitochondrial dysfunction. Cell death assay revealed that either drug significantly induced necrosis after 2 hr of ischemia, a condition that is well tolerated by control cells.

Conclusions: 5-FU or OXA increases the number of LDs and sensitizes hepatocytes to I/R injury. Since the mitochondria are a key player in lipid metabolism and in I/R injury, mitochondrial dysfunction could be a mechanism underlying CASH-mediated hepatotoxicity.

ABSTRACT # 1119

ONCOLOGIC OUTCOMES FOLLOWING SELECTIVE APPLICATION OF LAPAROSCOPIC PANCREATICO-DUODENECTOMY FOR PERIAMPULLARY MALIGNANCIES

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Introduction: Recent literature supports laparoscopic pancreaticoduodenectomy (Lap PD) as feasible, safe and effective. However, data regarding patient selection criteria or evaluating long-term outcomes following selective application of Lap PD are lacking. Our primary aim was to compare long-term oncologic outcomes of Lap PD and Open PD following the application of consistent selection criteria in patients with periampullary adenocarcinoma.

Methods: Consecutive patients (11/2010 - 02/2014) undergoing PD for periampullary adenocarcinoma were reviewed (N = 138). Consistent selection criteria for Lap PD were applied to all patients presenting to an experienced minimally-invasive pancreatic surgeon (N = 77). Outcomes of patients undergoing Lap PD were analyzed against case-matched cohorts of patients undergoing Open PD (N = 61).

Results: Of 77 patients identified, 57 (74%) patients were offered Lap PD; 7 (9%) required intraoperative conversion to Open PD. The Lap PD group had smaller tumors (2.5 vs. 3.1 cm; P = .050) and a higher R0 resection rate (92% vs. 74%; P = .017). Lap PD was associated with significant reductions in blood loss (P < .001), wound infections (P = .038) and hospital stay (P = .027) compared to Open PD. Overall survival (OS) was not statistically different between groups (P = .864).

Conclusions: The selective application of Lap PD results in a high percentage of eligibility, an excellent R0 resection rate, and a low conversion rate. Long-term oncologic outcomes are comparable to Open PD.

ABSTRACT # 1120

CXCL10 WITHIN THE TUMOR MICROENVIRONMENT INDUCES GEMCITABINE CHEMORESISTANCE IN PANCREATIC CANCER CELLS

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Introduction: The systemic treatment of pancreatic cancer (PC) is hindered by the rapid development of chemoresistance to current cytotoxic therapies. Mechanisms governing the development of chemoresistance remain poorly characterized, particularly with respect to contributions from the tumor microenvironment

Methods: CXCL10 concentrations were evaluated within resected PC specimens and supernatants from co-cultures of PC cell lines and primary tumor-associated pancreatic stellate cells (PSCs). The effect of CXCL10 on viability, proliferation, and apoptosis of PC cell lines was then evaluated with and without gemcitabine treatment.

Results: CXCL10 levels were significantly increased in PC specimens compared to nonmalignant pancreatitis specimens. In addition, high intratumoral CXCL10 concentrations correlated with reduced overall survival (HR 6.9; P = .006). Co-culture of PC cells with primary tumor-associated PSCs consistently resulted in increased CXCL10 secretion compared to either cell type alone. While CXCL10 treatment had a small effect on the viability of PC cell lines, it significantly increased viability of these cells in the presence of gemcitabine. In addition, gemcitabine treatment induced the expression of the CXCL10 receptor, CXCR3.

Conclusions: Paracrine CXCL10 signaling between stromal, PC and inflammatory cells within the pancreatic cancer microenvironment may be responsible for the development of chemoresistance to gemcitabine.

ABSTRACT # 1121

THE INFLAMMATORY MILIEU WITHIN THE PANCREATIC CANCER MICROENVIRONMENT DEMONSTRATES NOVEL CORRELATIONS WITH CLINICOPATHOLOGIC PARAMETERS, CHEMORESISTANCE AND SURVIVAL

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Introduction: The tumor microenvironment impacts pancreatic cancer (PC) development, progression and metastasis. How intratumoral inflammatory mediators modulate this biology remains poorly understood.

Methods: Pancreatic specimens from normal pancreas (n = 6), chronic pancreatitis (n = 9) and pancreatic adenocarcinoma (n = 36, 10 of whom received neoadjuvant chemotherapy) were homogenized immediately upon resection. Homogenates were subjected to multiplex analysis of 41 inflammatory mediators.

Results: Twenty-three mediators were significantly elevated in adenocarcinoma specimens compared to nonmalignant controls. Neoadjuvant therapy was also associated with lower concentrations of IL-1 α (P = .006) but elevated concentrations of both Flt-3L (P = .005) and IL-2 (P = .008). Elevated levels of pro-inflammatory cytokines IL-1 β (P = .017) and TNF α (P = .033) were associated with a poor histopathologic response to neoadjuvant therapy. Univariate analysis demonstrated that elevated concentrations of G-CSF (P = .016) and PDGF-AA (P = .012) correlated with reduced overall survival. Conversely, elevated concentrations of FGF-2 (P = .038), TNF α (P = .031) and MIP-1 α (P = .036) were associated with prolonged survival.

Conclusions: The PC microenvironment has a unique inflammatory milieu that harbors the potential for diagnostic and prognostic value.

ABSTRACT # 1122

PATIENT-DERIVED XENOGRFT MODELS FOR PANCREATIC CANCER DEMONSTRATE RETENTION OF TUMOR MORPHOLOGY THROUGH INCORPORATION OF MURINE STROMAL ELEMENTS

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Introduction: Direct implantation of viable surgical specimens provides a representative preclinical platform in pancreatic adenocarcinoma (PC). Patient-derived xenografts consistently demonstrate retained tumor morphology and genetic stability. However, the evolution of the tumor microenvironment over time remains poorly characterized in these models.

Methods: A total of 25 histologically confirmed pancreatic adenocarcinoma specimens were implanted subcutaneously into NOD-SCID mice. Patient demographics, staging, pathologic analysis and outcomes were analyzed.

Results: PC specimens were successfully engrafted in 15 of 25 (60%) attempts. Successful engraftment does not appear to correlate with clinicopathologic factors or patient survival. Tumor morphology is conserved through multiple passages and tumors retain metastatic potential. Interestingly, despite morphologic similarity between passages, human stromal elements do not appear to expand with invading cancer cells. Rather, desmoplastic murine stroma dominates the xenograft microenvironment after the initial implantation.

Conclusions: Patient-derived xenografts are an effective method of investigating a representative population of PC specimens. Recruitment of murine stromal elements to support and maintain tumor growth represents a novel avenue for investigation into tumor-stromal interactions.

ABSTRACT # 1123

A NOVEL MUSCULAR INDEX PREDICTS TUMOR BURDEN AND SURVIVAL IN RESECTABLE PANCREATIC CANCER

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Introduction: The relationship between myopenia, nutritional status, and long-term oncologic outcomes remains poorly characterized in patients with anatomically resectable pancreatic cancer (PC). We hypothesized that the appropriate quantification of preoperative myopenia could serve as sensitive marker of systemic tumor burden with prognostic value in resectable PC.

Methods: Preoperative CT scans were available and suitable for analysis in 73 of 82 consecutive patients with PC undergoing pancreaticoduodenectomy (PD) between November, 2010 and February, 2014. The psoas index was computed from cross-sectional areas of psoas muscles normalized to vertebral body area at L3.

Results: Psoas index correlated strongly with preoperative hemoglobin and albumin levels ($P = .001$ and $.014$, respectively). High psoas index, albumin and hemoglobin levels associated with improved long-term survival (HR 0.014, $P < .001$; HR 0.43, $P < .001$ and HR = 0.80, $P = .014$). However, of these parameters, psoas index proved to be the only independent predictor of survival on multivariate analysis (HR 0.016; $P = .002$). Rapid declines in psoas index during neoadjuvant chemotherapy were associated with poor postoperative outcomes, as were declines in psoas index during the postoperative period.

Conclusions: The data indicate that the psoas index, a calculation derived from clinically mandated preoperative staging CT scans, is a statistically powerful predictor of survival in resectable PC when compared to tumor grade and stage as well as previously validated nutritional parameters.

ABSTRACT # 1124

STANDARDIZATION OF SURGICAL CARE IN A HIGH-VOLUME CENTER IMPROVES SURVIVAL IN RESECTED PANCREATIC HEAD CANCER

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Introduction: Durable clinical gains in surgical care are frequently reliant on well-developed standardization of practices. We hypothesized that the standardization of surgical management would result in improved long-term survival, which has not been demonstrated previously.

Methods: Seventy-seven consecutive, eligible patients representing all patients who underwent pancreaticoduodenectomy (PD) and received long-term postoperative care at the University of Florida were analyzed. Patients were divided into pre- and post-standardization groups based on the timing of partnership implementation and operative standardization.

Results: Major operative differences post-standardization included a significant increase in the mean number of lymph nodes obtained (17.6 vs. 9.1; $P < .001$), which resulted in increased predictive power of nodal staging on DFS and OS. Despite similar rates of 30-day postoperative complications, standardization resulted in a reduction in median length of stay (10 vs. 12 d; $P = .032$). Surgical standardization of PC management resulted in increased DFS (17 vs. 11 mo; $P = .017$) and OS (26 vs. 16 mo; $P = .004$). The improvement in OS remained significant on multivariate analysis (HR = 0.46, $P = .005$).

Conclusions: Standardization of surgical management of PC was associated with significant gains in long-term survival. These results suggest strongly that management of pancreatic head adenocarcinoma be standardized likely by regionalization of care at high performing oncologic surgery programs.

ABSTRACT # 1125

DOES THE PHYSICIAN QUALITY REPORTING SYSTEM (PQRS) SUCCESSFULLY DEMONSTRATE QUALITY OF CARE FOR ELECTIVE AORTIC ANEURYSM REPAIR?

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Introduction: Elective abdominal aortic aneurysm repair should have a low risk of complications/death and excellent 1-year mortality. The PQRS is a collection of quality measures developed by the Centers for Medicare and Medicaid Services to evaluate the quality of care delivered to patients. There are specific measures related to length of stay for patients undergoing elective aortic aneurysm repair, however, these measures have not been validated.

Methods: We examined the national Vascular Quality Initiative database for all patients undergoing open or endovascular aortic aneurysm repair. We calculated the proportion of patients who did and did not meet the CMS quality measures and compared complication rates and non-risk adjusted 1-year mortality rates.

Results: 60% of patients undergoing open AAA repair and 78% of patients undergoing endovascular repair met the CMS quality measures. Complication rates and 1-year mortality rates were higher for patients not meeting the measure after both open and endovascular aneurysm repair (complications after open 40.0% vs. 5.9%, $P<.0001$; complications after EVAR 18.4% vs. 2.3%, $P<.0001$; 1-year mortality after open 12.3% vs. 1.8%, $P<.0001$; 1-year mortality after EVAR 11.7% vs. 3.8%, $P<.0001$).

Conclusions: Failure to meet PQRS quality measures is associated with higher rates of complications and higher 1-year mortality after open and endovascular aortic aneurysm repair. Thus, these measures appear to be useful general indicators of quality of care and patient selection.

ABSTRACT # 1126

INTEGRATIVE MEDICINE AND PLASTIC SURGERY

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Introduction: Integrative medicine (IM) is currently utilized by 40% of Americans. Our objective was to determine the frequency of IM utilization in plastic surgery patients, and to evaluate their perceptions regarding the role of IM in their care.

Methods: In July 2014, 437 consecutive patients presented to plastic surgery clinics at the University, VA, and private practices in Gainesville, Florida. The patients were requested to complete a survey regarding utilization and attitudes towards IM.

Results: The survey completion rate was 75.5% (n=331). Respondents had an average age of 49.5 years, were primarily Caucasian (78%), married (52%) and educated with a college degree or higher (65%). The majority of respondents presented to the University (77%) versus Private Practice (12%) or VA (11%). An equal mix of reconstructive (52%) and cosmetic patients was noted (48%). The overall rate of IM utilization was 80% with 81% ingesting natural products and 79% utilizing therapies. IM utilization was associated with having a college degree or higher (p=0.0002). The rate of utilization between practice settings was noted to be 87% Private Practice, 76% University, and 71% VA (p=0.17). Cosmetic versus reconstructive usage was 81% vs 74% (p=0.56). 71% of patients expressed a strong belief in self-healing techniques (p<0.005) and 61% expressed that their physician should be familiar with these techniques (p<0.005).

Conclusion: IM utilization is highly prevalent and positively viewed by plastic surgery patients. A tremendous opportunity exists to study how IM can positively impact the care of these patients.

ABSTRACT # 1127

HIGH VOLUME HYDRODISSECTION FOR DIEP FLAPS: PROOF OF PRINCIPLE

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Introduction: Hydrodissection is a surgical technique initially described in ophthalmology. A novel method of high volume hydrodissection that provides both subfascial and intramuscular dissection of DIEPs has been safely demonstrated in animals. This manuscript serves as a proof of concept for translation to humans.

Methods: A retrospective review was performed of all abdominally based free flap breast reconstructions performed by the senior author (DS) at the University of Florida Medical Center from January to July 2014. All patients that underwent the high volume hydrodissection technique were included in the study and the charts were reviewed for demographic information, peri-operative data, and outcomes.

Results: Seven patients underwent 11 abdominally based free flap breast reconstructions during the study period utilizing the high volume hydrodissection technique. 6 DIEP flaps and 5 muscle sparing TRAM flaps were performed. The mean rectus volume was 207mL (range 184-253mL). A mean 261 mL of air (range 220 to 304mL) and 493mL of saline (range 442 to 607mL) were injected into each rectus sheath. No patients were lost to follow-up, ranging from 1.5 to 6 months. One patient presented with an abdominal bulge which was re-enforced at the time of nipple reconstruction. One patient developed a superficial cellulitis that was treated conservatively with antibiotics.

Conclusions: High volume hydrodissection is a safe technique to facilitate dissection of abdominally based free flaps for breast reconstruction. Translation of these findings to other perforator flaps and the utilization of vasoactive agents remains to be seen.

ABSTRACT # 1128

LYMPH NODE TRANSPLANTATION AND QUANTITATIVE CLEARANCE LYMPHOSCINTIGRAPHY

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Introduction: Lymphedema remains a serious burden of disease. The greatest challenge in lymphedema management, surgical and otherwise, is developing a reliable method of measuring lymphatic flow. We offer below the first known report of quantitative clearance lymphoscintigraphy in the evaluation of a lymph node transplantation.

Methods: A 61 year old female with an 8 year history of left upper extremity lymphedema following a left axillary dissection for breast cancer management presented to the University of Florida. A lymph node transplantation was performed based on the superficial circumflex iliac vessels in the right groin to the left wrist. Pre- and post-operative quantitative clearance lymphoscintigraphy was performed.

Results: Pre-operative quantitative lymphoscintigraphy demonstrated 18% removal of colloid from the injection site at 24 hours. At 3 months post-operatively, repeat injection at the same site 24 hours later revealed visualization of the transplanted node and 40% removal of colloid from the injection site. At one year, 83% removal of colloid was noted from the injection site at 24 hours.

Conclusion: In order to adequately compare procedures and results, surgeons undertaking physiologic procedures for lymphedema must develop standardized techniques to accurately quantify levels of success or failure. Although our experience is early, quantitative clearance lymphoscintigraphy appears to offer confirmation of lymph node viability, qualitative information regarding lymphatic flow patterns, and objective lymphatic clearance values.

ABSTRACT # 1129

TWO DECADES OF LUNG RETRANSPLANTATION: A SINGLE CENTER EXPERIENCE

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Introduction: The aim of this study was to identify preoperative risks factors affecting overall survival after pulmonary retransplantation (ReTX) at our institution before and after initiation of the Lung Allocation Score (LAS).

Methods: The United Network for Organ Sharing database was used to identify patients undergoing lung transplant at the University of Florida from 1994-2014. Of the total 533 lung transplants performed, 78 (14.6%) were retransplants. The primary outcome investigated was overall survival. Preoperative recipient and donor characteristics were subjected to multivariate Cox regression models to assess impact on survival.

Results: Of the 78 patients who underwent ReTX, median survival was 2 years. Estimated survival at 1, 3, and 5 years was 64% (95% CI: 52%-74%), 39% (95% CI: 28%-50%), and 21% (95% CI: 12%-32%), respectively. Predictors of overall survival on multivariate analysis include: Recipient age \geq 50-<60 (RR: 4.3, P=.03); time between previous and current transplant <2 years (RR: 3.8, P=0.01); and indication for ReTX as bronchiolitis obliterans/chronic lung allograft dysfunction (RR: 1.23, P=0.02), Indication for ReTX as primary graft failure or acute rejection (RR: 0.97, P=0.003) and recipient diabetes (RR: 0.2, P=0.001) were associated with poor outcome. Overall Survival of ReTX occurring after the initiation of the LAS in 2005 was not significantly different. Single lung ReTX vs bilateral ReTX trended toward decreased survival, but did not reach significance (P=0.06).

Conclusions: Lung ReTX is a complex therapy that should be considered only for well selected patients. Outcomes are worse than those observed for first-time transplants. The indication of lung ReTx for primary graft dysfunction and acute rejection should be viewed with caution. Moreover, recipient factors such as diabetes can also negatively impact on overall survival. Notably, ReTX after the start of LAS did not affect survival. There was a trend toward decreased survival with single lung ReTX versus bilateral ReTX.

ABSTRACT # 1130

TRANSPLANTATION OF ENDODERMAL PRECURSOR CELLS INTO THE SPLEEN

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Introduction: The spleen has been investigated in the past as a potential site for hepatocyte transplantation. Here, we attempt to refine the technique using endodermal precursor (EP) cells.

Methods: Induced pluripotent stem cells (iPSC) that constitutively expressed a Td tomato - luciferase fusion protein were differentiated into EPs via incubation with acidic FGF for 7 days. EPs were then injected directly into the spleens of mice after pre-treatment with CCL4 for 60 days. 14 days post-transplantation, post-transplanted mice were sedated and injected with luciferin via IP injection. Images were obtained via IVIS spectrum imager. Liver and spleens of these mice were subsequently harvested, fixed in 4% paraformaldehyde and flash frozen in OCT. Frozen sections were then examined under fluorescent microscopy.

Results: 1 mouse was found to be positive for engraftment in the spleen, based on IVIS imaging. IVIS images showed significant fluorescence in the left upper quadrant of the abdomen as compared to negative controls. Histological sections of the harvested spleen show gross morphological changes to the spleen with a decrease in size of the red pulp. Green fluorescent beads within cells could also be detected.

Conclusions: Transplantation of stem cell derivatives into the spleen is plausible in the setting of liver injury. Further studies will need to be performed to look at the differentiation of these transplanted cells and methods of optimization. Using the spleen as a site for cellular transplantation shows promise not only as an alternative to orthotopic liver transplantation, but also as a safety net for patients undergoing liver resections in the future.

ABSTRACT # 1131

CHARACTERIZATION OF TRANSPLANTED EARLY STEM CELL DERIVATIVES IN THE LIVER

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Introduction: Embryonic stem (ES) cells are often cited as a potential source of cells for cellular transplantation. Here we show that embryonic stem cell derivatives can robustly engraftment and differentiate in vivo into hepatocyte - like cells in quiescent liver.

Methods: ES cells constitutively expressing GFP were differentiated into endodermal precursor (EP) cells via incubation with aFGF for 7 days. EP cells were injected into the liver of C57/B6 mice via the portal vein. After 30 days, hepatocytes were isolated via collagenase perfusion. GFP positive cells were isolated via FACS. Gene expression profile of GFP positive cells were analyzed using qPCR. Gene expression levels were compared to native hepatocytes via Student's t-test.

Results: At 30 days, 3 mice were showed definitive GFP positive cells. Liver repopulation is estimated to range from 4 -7.8% of the total isolated hepatocytes. qPCR analysis of GFP+ cells showed significant expression of hepatic markers - albumin, CYP3A, HNF4 α , transferrin, A1AT. The expression level of these genes were not statistically different from the gene expression of native hepatocytes, but were significantly different from the original EPs

Conclusions: Significant liver repopulation can be attained using EPs. Transplanted EPs are able to differentiate into hepatocyte - like cells in the normal mouse after 30 days. Future studies include studying the differentiation kinetics of EPs in both normal and liver - injury model and functional studies to look at ability of these EPs to differentiate into functional hepatocytes.

ABSTRACT # 1132

SMOOTH MUSCLE CELL (SMC) SPECIFIC ALK5 DELETION CAUSES AORTIC ANEURYSM FORMATION VIA EXAGGERATING ERK PHOSPHORYLATION

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Introduction: TGF- β signaling disorder has been tightly linked to aortic aneurysm formation though the underlying mechanisms are poorly understood. We have previously shown that loss of the TGF- β type I receptor *Alk5* triggers an aberrant signal that relies on the function of type II receptor *Tgfr2* and causes aortic aneurysms and dissections. The current study sought to define the pathways that are activated by the non-*Alk5* *Tgfr2* signal to promote aortic pathology.

Methods: SMC specific deletion of *Alk5* (*Alk5^{iko}*), *Tgfr2* (*Tgfr2^{iko}*), or both (*Alk5^{iko} Tgfr2^{iko}*) was achieved via an inducible Cre-loxP system driven by *myh11* promoter and the *Alk5^{f/f}* mice served as controls. The level of gene of interest was quantified with qRT-PCR and western blotting assays, respectively. RDEA119 was orally administered to inhibit ERK phosphorylation while LDN-193189 was injected i.p. to inhibit SMAD1/5/8 phosphorylation. Aortas were monitored with Ultrasound scan and the pathology evaluated at 4wks.

Results: compared to *Alk5^{f/f}* controls, *Alk5^{iko}* aortas displayed higher level of pSMAD1/5/8 and pERK, but lower amount of pSMAD2. The *Alk5^{iko} Tgfr2^{iko}*, which rescued the phenotype of the *Alk5^{iko}* aortas, also brought the level of pERK below that of the *Alk5^{f/f}* controls. Inhibition of Smad1/5/8 phosphorylation was unable to prevent aortic pathology. Interestingly, RDEA119 treatment inhibited ERK activation in *Alk5^{iko}* aortas and significantly attenuated aortic dilation ($P < 0.05$).

Conclusions: Loss of *Alk5* leads to a gain of non-*Alk5* but *Tgfr2* dependent signal in SMCs. Activation of this abnormal TGF- β function exaggerates ERK activation, causing aortic dilation and dissection.

ABSTRACT # 1133

ALTERATED MIRNA EXPRESSION PROFILES IN INTERACTION OF CANCER-ASSOCIATED STROMA WITH PANCREATIC CANCER CELLS

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Introduction: Role of microRNA regulation in tumor microenvironment in pancreatic cancer progression and metastasis has remained underexplored. We sought to investigate the influence of miRNA in the cross-talk between pancreatic cancer cells and stroma.

Methods: A total of three cancer-associated stroma (CAS) lines were co-cultured with PDAC cell line L3.6pl, two types of cells were then separated by epithelial surface marker EpCam using FACS sorting. Total RNA containing miRNA was extracted and expression of miRNA were determined and analyzed by nCounter miRNA Expression Assay.

Results: We observed over 300 miRNAs that are differently expressed in PC cell L3.6pl in comparison with CAS. 116 and 207 altered miRNA expression (> 2-fold change) was identified in CAS and PC cell L3.6pl respectively before and after direct contact co-culture. These included miR-200 family members (miR-200b/c, miR-429, miR-141), miR-205, miR-196b, miR-199a/b, and miR-23c, which were aberrantly expressed in PDAC compared to healthy pancreas. Co-culture with PC cell L3.6pl dramatically increased miR-200b/c and miR-205 express in CAS (>50- fold), these miRNAs are verified controllers in EMT/MET (epithelial to mesenchymal transition) and cancer stem cells self-renewal process.

Conclusions: Our data provided the evidence that miRNAs in cancer associated stroma can be affected by neighboring cancer cells, implying the involvement of microRNA in cancer cell / cancer stroma interplay. Future work is needed to further determine the role of miR-2

ABSTRACT # 1134

INCREASED COLLAGEN, MATRIX PRESENCE COMPARED TO DECREASED NUCLEAR DENSITY IN LOW SHEAR STRESS TREATED VEIN GRAFTS

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Introduction: Vascular adaptation following local injury contributes to the development of intimal hyperplasia and an occlusive phenotype. These adaptations are thought to include changes in extracellular matrix and structural protein distribution as well as smooth muscle cell orientation. Through staining, confocal microscopy, and computer analysis, we studied these changes in our rabbit vein graft model.

Methods: Vein grafts were implanted and harvested at 7, 14, and 28 days post-implantation. Thick sections of these tissues were stained with Hoechst, Phalloidin, and Sirius Red solutions and optically sectioned using confocal microscopy. Volumetric and areal measurements of matrix, collagen, and nuclear density were obtained.

Results: By 28 days, grafts exposed to a low shear stress environment experienced a 4-fold increase in intimal area. In these grafts, there was a significant decline in intimal nuclear density over time (4.75e-4 nuclei/mm³ at 7 days vs. 3.68e-4 nuclei/mm³ by 28 days) inversely correlated to increases in collagen presence and matrix volume. Decreased cellular density and increased structural protein and matrix presence relates to previously gathered data showing a decrease in intimal elasticity from 7 to 28 days.

Conclusions: During the vein graft remodeling process, intimal expansion may be less the result of spikes in cellular proliferation than a total rearrangement of cells and intercellular space. Monitoring these time-dependent changes in cellular kinetics will add data to our multiscale modeling database, aimed at linking gene expression to pathologic vascular remodeling.

ABSTRACT # 1135

THE IMPACT OF SPORTING EVENTS ON THE VOLUME OF FACIAL TRAUMA

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Background: Based on anecdotal experiences, we hypothesized that there is a correlation between the volume of facial trauma injuries treated at UF Health and weekends when the University of Florida football team is competing.

Methods: A retrospective review of 1,536 emergency department admissions UF Health was performed over 2 football seasons (2012, 2013). 18 consecutive weekends per season were studied and included 6 home, 6 away, and 6 "bye" weekends. Patients with documented facial fractures were analyzed for demographics and fracture characteristics. These findings were correlated to game details.

Results: We identified 140 patients with 182 facial fractures. The population was predominately male ($p < 0.005$) with a mean age of 35.6 years. Assault was the most common etiology (33%). Nasal and midface fractures were the most common injury, and the facial fractures tended to be non-operative ($p < 0.005$). An increase in facial fractures correlated with weekends when the Florida Gators played ($p < 0.005$), won the game ($p < 0.005$), had a winning season ($p < 0.005$), kicked off at mid-day (e.g. 3 pm) ($p < 0.005$), played an SEC opponent ($p < 0.005$), and if the Gators were nationally ranked the week prior to the game ($p < 0.005$). No statistical correlation was found with home versus away games nor the rank of the opponent.

Conclusion: To our knowledge, this is the first description of a definitive correlation between the volume of facial fracture consultations and the outcomes of a football team. This data can be harnessed to allocate necessary hospital resources to meet anticipated demands.

ABSTRACT # 1136

CHARACTERIZATION OF ADIPOSE-DERIVED STROMAL VASCULAR FRACTION (SVF) CELLS ISOLATED WITH A NOVEL DISPOSABLE, CLOSED-SYSTEM DEVICE

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Introduction: Adipose-derived cells lend themselves to a variety of translational strategies – especially autologous “point-of-care”(PoC) strategies using uncultured cells. The purpose of this study was to characterize the identity, purity and reproducibility of adipose-derived stromal vascular fraction (SVF) cells isolated using a novel, scalable closed system ‘point-of-care’ disposable device.

Methods: Liposuctioned adipose tissue was obtained under IRB approval. The tissue was subjected to enzymatic digestion to isolate and concentrate SVF cells. Cell identity was evaluated by measuring cell yield, % viability, and cell surface phenotype using flow cytometry. Purity was evaluated by assays of endotoxin, gram stain and residual collagenase.

Results: Tissue was harvested from 23 patients, with an average age of 44, an average BMI of 28. The average initial yield of viable nucleated cells was $9.55E+05$ cells/gram of dry tissue processed, with an average viability of 81.5%. WBCs constituted approximately 14% of total viable nucleated cells and nearly 10% of cells stain with markers that are suggestive of endothelial cells/*progenitor* cells. An average of 16% of cells stains positive for CD34, making the putative adipose stem/ progenitor cell. All isolates but one was negative for endotoxin and final residual collagenase levels were minimal in the final cell suspension.

Conclusions: We show that the isolation of SVF cells using a novel disposable ‘point-of-care’ device and standardized methods is safe, yielding a viable but mixed population of cells that are free of microbial contaminants.

ABSTRACT # 1137

COMPARISON OF COLLAGENASE NEUTRALIZATION METHODS FOR ADIPOSE DERIVED CELL ISOLATION

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Introduction: Adipose-derived cell therapies are progressing toward the clinic for a variety of clinical indications. The isolation of good quality cells is critical for efficacy and reproducibility. Finding a simple and safe way to neutralize collagenase enzyme is a key step in cell isolation. Human serum albumin (HSA) is a suggested neutralizer but very expensive. EDTA is another way to neutralize enzyme activity but it may be associated with additional regulatory hurdles. We explored sample/enzyme dilution as a cheap, simple way to reduce enzyme activity.

Methods: Three neutralization methods were evaluated in parallel: HSA, EDTA and double volume dilution. Outcome measures included cell yield and cell viability and cell surface marker expression of CD45, CD31, CD34, CD146 and CD140b. Residual collagenase levels were quantified and compared for the three methods. Single factor ANOVA test was used for statistical analyses.

Results: There is no significant difference ($P>0.05$) between the three neutralization methods tested when evaluated for cell yield and viability. Percentage of white blood cells (CD45+ cells) and endothelial progenitor cells (CD45-CD31+CD34+) in total viable cells showed no significant difference ($p>0.05$) between the neutralization methods. Residual collagenase levels were less than 10CDU for all groups, with no significant difference between the three neutralization methods tested.

Conclusions: Dilution is as effective in neutralizing collagenase enzyme activity as more expensive serum albumin or EDTA methods. This finding may help facilitate the translation of adipose-derived therapies, with less cost burden.

ABSTRACT # 1138

SAFETY OF PRE-OPERATIVE CHEMOPROPHYLAXIS IN PLASTIC SURGERY

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Introduction: Venous thromboembolism (VTE) is a serious complication in post-operative patients which can have life-threatening and debilitating consequences. Current recommendations for VTE prophylaxis in plastic surgery patients are for SCDs in the OR and optional use of unfractionated or low-molecular weight heparin *after* surgery. However, in other disciplines, optimal prophylaxis is achieved with preoperative heparin administration, due to the highest risk for VTE being the time under anesthesia and immediately thereafter. This study was done to determine the safety of preoperative administration of chemoprophylaxis in plastic surgery patients.

Methods: All patients undergoing breast reduction at the study institution from 1/3/2011 to 12/20/2012 and all patients undergoing abdominoplasty from 1/1/2005 to 1/1/2012 were retrospectively reviewed. All patients' charts were reviewed for preoperative VTE prophylaxis, demographic data, and complications.

Results: 151 abdominoplasty patients and 83 breast reduction patients received pre-op chemoprophylaxis. The overall complication rates were 17.3% for the abdominoplasty patients and 14.5% for the breast reduction patients. The overall incidence of bleeding complications was 0.7% in the abdominoplasty group and 4.8% in the breast reduction group. 2 patients in the breast reduction group required return to the OR for hematoma evacuation and 0 in the abdominoplasty group.

Conclusions: The use of *preoperative* chemoprophylaxis in patients undergoing abdominoplasty and breast reduction can be done without an increase in bleeding complications. Preoperative chemoprophylaxis should be considered as a means of maximizing VTE prophylaxis.

ABSTRACT # 1139

THE USE OF A BREAST FLAP IN PATIENTS WITH MACROMASTIA AS A RECONSTRUCTIVE OPTION

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Introduction: The level of obesity in the US continues to rise at an epidemic rate. With this rise, we have seen an increase in patients who concomitantly have symptomatic macromastia in our practice. With a growing number of these patients, we have found that some of these women have soft tissue reconstruction needs. We present two cases in which part of the large pendulous breast is used for soft tissue reconstruction using expendable tissue in patients who would benefit from reduction mammoplasty.

Case#1: 48YOF with multiple medical comorbidities and large pendulous breasts underwent CABG. She had a sternal infection which required repeat debridements and she subsequently broke down a bilateral pectoralis flap reconstruction. An inferio-medial fasciocutaneous flap was fashioned from her breast and used to fill the defect. The patient did well post-operatively and her wound has healed. She is scheduled for breast reduction in the near future.

Case#2: 35YOF with a Gustilo IIIB open radial shaft fracture due to a shotgun blast with large soft-tissue defect. The patient underwent ORIF and pedicled left breast flap as soft tissue coverage for her forearm injury. The wound has healed well since being detached. She has subsequently undergone reduction mammoplasty with good result.

Conclusion: In patients with macromastia, excess breast tissue can be used as a reconstructive option for soft tissue coverage using unneeded tissue that would be discarded during their reduction.

ABSTRACT # 1140

PHASE I/II STUDY OF AUTOLOGOUS FAT TRANSFER (AFT) FOR SCAR PREVENTION AND REMODELING: STUDY DESIGN AND PRELIMINARY RESULTS

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Introduction: Emerging evidence suggests that AFT may have beneficial effects on overlying scar or skin. However, this premise has never been evaluated in a randomized, blinded study. The goals of this clinical trial are to determine the ability of AFT to positively enhance the quality and appearance of a scar, and to determine the impact of AFT 'dose' on scar quality and appearance.

Methods: Enrolled subjects had two study sites delineated. These sites were randomized to treatment with AFT, or with saline (placebo). Initial safety studies involved escalating cell dose (mL/cm²). Subjects are enrolled in one of two cohorts: early or late treatment. Study sites are evaluated before and for 12 months after treatment using subjective and objective (e.g. color, firmness, histology) metrics.

Results: At this time, 22 of a targeted 26 patients have been enrolled in the late treatment cohort. No adverse events have been reported. Thirteen of these 22 patients have completed their 1-year follow-up and their data has been unblinded for initial analysis. Four subjects have enrolled and completed follow-up in the early cohort, with no adverse events reported. Preliminary findings from the un-blinded data will be summarized.

Conclusions: The logistics of executing a multi-site clinical trial are challenging and subject enrollment rates were grossly underestimated. AFT for scar remodeling appears to be a safe procedure, based on dose escalation parameters. Definitive conclusions about efficacy remain uncertain until additional subjects complete follow

ABSTRACT # 1141

TONGUE-LIP ADHESION AS PRIMARY TREATMENT OF AIRWAY OBSTRUCTION IN PIERRE ROBIN SEQUENCE

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INTRODUCTION: Infants with Pierre-Robin Sequence (micrognathia, glossoptosis, cleft palate) may have significant airway compromise. Treatment options include prone positioning, tongue-lip adhesion (TLA), tracheostomy, or mandibular distraction. Tracheostomy and mandibular distraction are often proposed as first-line therapy but can be associated with postoperative complications and prolonged hospital stay. Therefore, we propose the use of tongue-lip adhesion as the initial surgical treatment in the neonate with Robin Sequence and airway obstruction, avoiding the morbidity of tracheostomy or distraction. We have developed a protocol to better standardize the management of these patients at our institution.

METHODS: Infants with features suggesting Pierre-Robin are identified by the neonatology team and early plastic surgery consult is encouraged. TLA (Figure 1) is performed as the initial treatment for infants with micrognathia and breathing difficulties. If the airway obstruction is not relieved by TLA, evaluation for tracheostomy or distraction ensues. Takedown of TLA is performed at the time of palatoplasty. Our algorithm is shown in Figure 2.

RESULTS: A total of 4 patients were treated with our protocol from 2012-present. All but 1 were successfully managed with TLA alone; one required subsequent tracheostomy. One patient required revision after dehiscence due to aggressive suctioning.

DISCUSSION: Management of airway obstruction in infants with micrognathia is a challenging paradigm, as definitive surgical maneuvers to correct the airway (mandibular distraction, tracheostomy) are invasive and associated with significant morbidity. Our algorithm utilizes TLA, a quick, minimally-invasive surgical procedure, as the default approach for addressing airway obstruction. In our series, all but one of the infants treated with this approach avoided tracheostomy and had successful long-term relief of airway obstruction. TLA should be first-line therapy for patients with micrognathia and airway obstruction.

ABSTRACT # 1142

BLUNT TRAUMA RELEASES CELL FREE NUCLEIC ACIDS, BUT ITS PROGNOSTIC RELEVANCE DOES NOT SURFACE UNTIL THE FOLLOWING DAY

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Introduction: The purpose was to determine if immediate and early measures of circulating nucleic acids could be useful in predicting early leukocyte genomic changes and clinical outcomes in trauma patients.

Methods: Plasma samples from a subset of 24 trauma and 6 healthy control subjects enrolled in the Genomics Based Prognostic Study were analyzed. Plasma was collected from patients within 12 hours following trauma, and again at 24 hours. The plasma was divided into an unfiltered and 0.1 μm filtered group. The copies/ml of mitochondrial (mt) and nuclear (nc) DNA in the plasma were determined by qPCR, and blood leukocyte genomics were determined by NanoString.

Results: The levels of freely circulating mt and nc DNA in the plasma of trauma patients is elevated at 12 and 24 hours compared to healthy controls ($p=0.004-0.02$) The levels of mt and ncDNA are correlated in trauma patients at 12 and 24 hours ($r=0.58-0.68$). There appears to be a moderate correlation between the levels of mt and ncDNA at 24 hours, and both 24 hour leukocyte gene expression (mt, $r=0.31$) and patient recovery outcome (mt, $r=0.35$). 0.1 μm filtration of plasma does not affect the mt and ncDNA levels in trauma any differently than in healthy control populations.

Conclusions: Blunt trauma results in the immediate release of nucleic acids. Both mt and ncDNA concentrations are positively correlated with changes in leukocyte gene expression and clinical outcomes at 24 hours. The findings suggest that the level of DNA release may regulate gene expression and subsequent clinical trajectory.

ABSTRACT # 1143

MOLECULAR CHARACTERIZATION OF SIRTUIN 1-MITOFUSIN 2 INTERACTION

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Introduction: Ischemia/reperfusion (I/R) in the liver causes depletion of the deacetylase sirtuin-1 (SIRT1), leading sequentially to impaired autophagy, mitochondrial dysfunction, and ultimately cell death. We recently identified mitofusin-2 (MFN2) as a new target of SIRT1. MFN2 is a mitochondrial GTPase with 5 putative acetyl residues. However, it is unknown how SIRT1 deacetylates MFN2.

Methods: To investigate if SIRT1-dependent deacetylation affects MFN2 function, acetylation status and GTPase activity were assessed in MFN2 knockout (KO) and MFN1/2 double KO cells. To identify the deacetylation site(s) of MFN2, deletion and point mutants of MFN2 (D2-92, D262-392 and K109A) were tested in HEK293T cells.

Results: Increasing SIRT1 levels decreases MFN2 acetylation, confirming that MFN2 is a target for SIRT1. Confocal imaging of mitochondrial morphology, an indicator of GTPase activity, revealed that dual overexpression of SIRT1 and MFN2 recovers normal mitochondrial morphology in MFN2-null cells, implying a functional intactness of deacetylated MFN2 by SIRT1. However, SIRT1-overexpression can also impact mitochondrial dynamics in an MFN2-independent manner. Immunoprecipitation analysis demonstrated an interaction between SIRT1 and all three MFN2 mutants, suggesting an importance of C-terminal domains of MFN2 in SIRT1-MFN2 interaction.

Conclusions: SIRT1 protects hepatocytes against I/R injury, which may be implemented through its post-translational modification of the C-terminus of MFN2. This SIRT1-MFN2 axis may be a new therapeutic target for enhancing liver function after I/R.

ABSTRACT # 1144

ELEVATED WALL SHEAR STRESS PREDICTS BRANCH GRAFT FAILURE FOLLOWING CHIMNEY EVAR

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Introduction: The aim of this study is to determine the anatomic and hemodynamic changes after chimney technique for endovascular aortic repair (ChEVAR) and to define the critical parameters that correlate to stent graft thrombosis.

Methods: Pre- and post-op CT scans from 5 patients with ChEVAR were used to construct paravisceral aortic 3D models. Computational fluid dynamic (CFD) simulations let evaluate the temporal changes in cross-sectional areas (CSA), intraluminal pressure, and wall shear stress (WSS) of superior mesenteric (SMA) and renal arteries.

Results: The conformational changes in the SMA, with natural caudal orientation, were usually modest and resulted in only modest changes in local flow. In contrast, dramatic changes in the 3D configuration of the often perpendicular renal arteries were observed, with the stents forcing the vessels into a caudal orientation. Despite striking anatomic and hemodynamic changes from pre-op, only 3 of 11 branch grafts occluded within the follow-up period. An analysis of the hemodynamic factors associated with graft thrombosis demonstrates that maximum change from Pre-Op of wall shear stress greater than 35 Pa (350 dynes/cm²) was correlated with branch graft occlusion (p-value 0.06). Maximum change in intraluminal pressure greater than 1700 Pa, reduction of lumen areas greater than 15 mm², and reduction of centerline's minimum angle greater than 4.5% were not associated with graft thrombotic failure.

Conclusions: Placement of intravascular stents in aortic branch vessels often leads to an unavoidable change in vessel conformation, causing significant modifications in local flow. In particular, marked elevations in wall shear appear to be predictive of impending branch

ABSTRACT # 1145

THORACOSCOPIC ABLATION WITH APPENDAGE LIGATION (TPVIAL) VERSUS MEDICAL THERAPY FOR STROKE PREVENTION: A PROOF OF CONCEPT RANDOMIZED TRIAL

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Introduction: The objective of this study was to demonstrate proof of concept that Thoracoscopic Pulmonary Vein Isolation and Atrial Appendage Ligation (TPVIAL) could prevent recurrent stroke, and improve QOL in AF patients with a prior stroke.

Methods: The study was a NIH funded single center proof of concept design that randomized 23 patients with AF related stroke to TPVIAL (n=12) or medical management (n=11). The medical management arm employed heart rate control and anticoagulation. Endpoints included QOL, recurrent stroke, normal sinus rhythm, surgical adverse events and mortality.

Results: Though the QOL summary index was negative, subscores at 3 and 6 months revealed improvements in energy and decreases in fatigue in the TPVIAL arm at 3 month and 6 months ($p \leq 0.03$). At 12 months follow-up there were no recurrent strokes in the TPVIAL group; while in the medically treated arm, 2 patients at 6 months ($p=0.22$), and 3 total patients at 12 months ($p=0.09$) had recurrent ischemic stroke, including one death from stroke. In the TPVIAL arm, No AF recurrence occurred in patients with paroxysmal AF and one patient with persistent and long standing AF had recurrence (table 1). Seven patients in the TPVIAL arm were able to stop warfarin therapy for secondary stroke prevention figure.

Conclusions: In this small proof of concept study TPVIAL revealed improvements on two QOL subscores, restored normal sinus rhythm in all but one patient, and it showed the possibility as an approach to prevent secondary stroke. A larger study will be needed.

ABSTRACT # 1146

EVEN REDO ISOLATED ASCENDING AORTA REPLACEMENT HAS LOW MORTALITY IN ELECTIVE SETTING

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Introduction: Mortality for emergent repair of aortic dissection remains 14-20% at major centers. We examined the safety for both primary and redo elective aorta replacement for isolated ascending aortic and aortic arch aneurysms at our institution.

Methods: Between July 2007 to May 2014, 1970 patients at our center underwent ascending and ascending hemi-arch replacement of which 114 had elective isolated ascending replacement. The Society of Thoracic Surgeons' (STS) National Database was used to identify risk factors, complications, and outcomes. Patients were followed up for 30 days after surgery.

Results: Of 114 patients 84 (73.7%) were primary and 30 (26.3%) were reoperations (REDO). REDO had more peripheral arterial disease and higher creatinine (Table 1). Aortic dimensions for REDO were significantly larger than primary (62.25 ± 9.77 mm versus 52.41 ± 7.65 mm, $p=0.00$). Creatinine level increased after surgery primary group only ($p=0.052$). Post-operative Dialysis, superficial wound infection, and cerebrovascular accident (CVA) was 0.87% (1/114). Operative mortality was zero and 30 day hospital mortality was 1.75% ($n=2$): one patient (1.19%) primary due to cardiogenic shock and one REDO (3.33%) secondary to sepsis and multi-organ failure ($p=0.45$). ICU stay admission 80.62 ± 101.96 hours, and hospital stay 8.47 ± 7.1 days was not significantly different between the groups ($p=0.53$). Readmission within 30 days of discharge occurred in 5 primary (5.95%) 3 REDO patients (10%) ($p=0.43$). No procedure was performed during readmission.

Conclusion: Contemporary elective reconstruction of isolated ascending aorta and aortic arch aneurysm is safe and effective in patients with or without previous cardiac surgery

ABSTRACT # 1147

MILD ACUTE KIDNEY INJURY (AKI) AFTER TRANSCATHETER AORTIC VALVE REPLACEMENT IS ASSOCIATED WITH POOR OUTCOME

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Introduction: Acute Kidney Injury (AKI) during TAVR from preoperative and procedural contrast and peri-procedure injury can hinder outcomes.

Methods: 290 consecutive patients (March 2012- December 2014) underwent TAVR (Sapien, Sapien XT). VARC-I criteria for AKI diagnosis at 72h, and VARC-II criteria at 7 days. Twelve dialysis (HD) patients were analyzed separately, and 14 pts were excluded.

Results: Overall AKI incidence was 24.62% (65/264, stage 1=63 and stage 2=2); 50 patients at 72h and 15 patients at 7 days.. Determinants for AKI at 72hrs on multivariate logistic regression were transapical approach [OR: 4.46 (95% CI: 1.37-7.63), p-value=0.007] and pre-procedural GFR less than 45 (stage 3B CKD) [OR: 3.47 (95% CI: 1.35-14.70), p-value=0.008] and at 7 days AKI was associated with prior CABG [OR:3.02 (95% CI: 1.007-9.09), p=0.048] and peripheral artery disease (PAD) [OR: 3.53 (95% CI: 1.06-11.62), p=0.045]. In-hospital and 30-day mortality was higher in AKI patients (Table-1). Non-AKI patients survival was 93% at 6 months, 89% 12 mo and 86% 24 months, whereas with survival in AKI at 72hrs was 66% at 6, 12 and 24 mo (HR AKI vs. no AKI: 3.9 (CI: 2.0-7.6), p<0.001) and for AKI at 7 d 64% at 6, 12 and 24 mo, and HR: 3.13 (CI: 1.42-6.92), p=0.002) respectively. For the 12 HD patients survival was 82% at 6, 12, and 24 months (Figure 1).

Conclusions: Development TAVR, is associated with poor outcome. Patients with CKD, PAD, prior CABG, and TA approach require close surveillance as they are at risk for AKI through 7 days after TAVR. TAVR was beneficial for HD patients in this series

ABSTRACT # 1148

EVALUATION OF NBME SHELF EXAM SCORES AFTER IMPLEMENTATION OF A NOVEL TABLET APPLICATION

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Introduction: Traditional education outside of the clinical arena consists of didactics and book learning, although newer technologic resources are available. The primary aim of this study was to develop and assess a novel tablet application based on adult learning theory.

Methods: A tablet application, the UF Surgery App (App), was developed to deliver two surgery questions to MS III every weekday during their surgery clerkship. A tablet was made available to all students, but use was not required. To actively engage the learner, a notification alarm and a reminder icon were employed by the App. The application provided immediate feedback to the user, informing of them of correct answers and providing the opportunity for online discussion. App usage data was compared to National Board of Medical Examiners (NBME) surgery shelf examination scores. Data was collected over a ten month period.

Results: Overall, 72 out of 107 (67%) students responded to at least one question. Fifty percent of the users answered more than 84% of the questions, while 36% responded to 100% of questions. There was no difference seen on the NBME score between users and non-users ($p=0.77$). For each question answered correctly, a 0.76 increase in NBME score was seen.

Conclusion: Applications can provide the opportunity for students to actively engage with content and promote learning. This experience provided the opportunity for students to self-direct learning. While there was no significant, individuals who answered questions correctly were more likely to perform better on the NBME shelf examination

ABSTRACT # 1149

ANALYSIS OF ARTERIOVENOUS FISTULA ULTRASOUND WAVEFORMS AND CORRELATION WITH VENOUS DILATION

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Introduction: Prior to use for hemodialysis, an arteriovenous fistula (AVF) must undergo maturation, a complex process of vascular remodeling and dilation. This study aims to analyze AVF ultrasound (US) waveforms to characterize AVF blood flow from creation to maturation and correlate these velocity patterns with vein dilation over time.

Methods: Ninety-three ESRD patients were followed with AVF US at one day, two weeks, six weeks, and ten weeks after AVF creation. Using Matlab, velocity, time, and intensity data were extracted from the US waveforms. Pulsatility of AVF blood flow was quantified as pulsatility index (PI), the normalized difference between the peak systolic and end diastolic velocities. Spectral broadening (SB), or the range of velocities present in the AVF, was computed and standardized to the mean velocity at that time, yielding velocity deviations in relation to the mean. We represented SB by using velocities within one standard deviation above or below the mean.

Results: PI had a loose negative correlation with venous dilation at all time points ($R^2 = 0.0164-0.0491$). SB showed a stronger positive correlation with venous dilation at six to ten weeks compared to vein diameter changes from postoperative day one to six weeks ($R^2 = 0.0023-0.0032$).

Conclusions: Loose correlations between venous dilation, PI and SB were exhibited in this study. Due to the complexity of the maturation process, these velocity patterns may contribute to the overall hemodynamic and physiologic forces driving maturation.

ABSTRACT # 1150

LONG TERM STROKE RATE IS LOWER THAN PERIPROCEDURAL STROKE RATE AMONG TRANSCATHETER AORTIC VALVE REPLACEMENT (TAVR) PATIENS

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Introduction: Transcatheter aortic valve replacement (TAVR) has emerged for high-risk or inoperable pts with severe aortic stenosis (AS). Stroke is a potential complication of treating pts with AS. We investigated stroke occurrence after TAVR, both periprocedural and at follow-up.

Methods: 290 consecutive pts (March 2012-December 2014) underwent TAVR (Sapien, Sapien XT). In-hospital, 30-day, and long-term outcomes were prospectively collected and reported according to Society of Thoracic Surgery (STS) guidelines.

Results: All pts had 30-days follow up, 132 pts 6months, and 101 pts 12months. In-hospital stroke and TIA occurred in 9 (3.1%) and 1 (0.34%) pts, respectively. No new strokes were detected in 30-days and only one pt experienced stroke at 6 months (0.75%). After one year follow up, 2 (1.9%) pts developed CVA and 2 (1.9%) others experienced TIA. Kaplan Meier analysis revealed that 96% 12 months CVA free survival following TAVR. In univariate analysis post-operative blood transfusion OR: 4.21 (95% CI: 1.24-14.28, p=0.03) and preoperative aortic gradient (AG) higher than 40 mmHg, OR: 4.31 (95% CI: 1.17-15.8, p=0.02) were associated with stroke; on multivariate logistic regression, AG higher than 40 mmHg remained as risk factor, OR: 4.48 (95% CI: 1.2-16.54, p=0.02). Intraoperative death occurred in one patient; 5 (4 with CVA) others died before discharge. Thirty-day mortality was 3.8% (11/290). Overall survival rate for TAVR pts was 97.5% for 6 months, 92% for 12 months, and 73.6% for 24 months.

Conclusions: TAVR pts have acceptable mid-term survival. Although periprocedural stroke is not uncommon, long-term stroke rate is low. AG higher than 40 mmHg may prompt protective strategies in the future.

ABSTRACT # 1151

A STUDY OF SERUM, CSF AND URINE BIOMARKERS IN A COHORT OF THORACIC ENDOVASCULAR AORTIC REPAIR (TEVAR) PATIENTS

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Introduction: Surgeons perform thousands of thoracic endovascular aortic repair (TEVAR) operations each year in the United States to treat aortic aneurysms, traumatic aortic transections, and aortic dissections. A complication of the TEVAR procedure may be spinal cord ischemia (SCI). We tested the feasibility of detecting SCI using assays capable of detecting CNS injury and degeneration biomarkers.

Methods: We used two novel assays developed on the MesoScale Discovery (MSD) electrochemiluminescent platform which we show can reliably detect picogram levels of the axonal protein pNF-H and the neuronal perikaryal protein UCHL1. The assays were used on CSF, serum and urine samples from a cohort of 49 TEVAR patients.

Results: Elevated levels of both proteins were detected in certain samples from TEVAR patients. Higher blood and CSF levels of both biomarkers were seen in patients with the worst outcomes, though the two biomarkers showed different release kinetics. Surprisingly, large amounts of UCHL1 (up to 2ng/mL) were detected in the urine of several patients who all had very poor outcomes, and these patients also showed small pNF-H urine signals. The presence of UCHL1 in urine was confirmed by western blotting analysis. Patients with significant amounts of UCHL1 in the urine all had shown renal failure.

Conclusions: We conclude that in future it may be possible to monitor patient response to the TEVAR operation, patient progression and recovery, occurrence of secondary problems, responses to therapy and also to predict patient outcome using simple blood, CSF and urine based assays.

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Previous Year's Research Day Awards

2014

Lester R. Dragstedt Visiting Professor
K. Craig Kent, M.D.
A.R. Curreri Professor and Chairman
Department of Surgery, University of Wisconsin
School of Medicine & Public Health

"Advancing the Practice of Surgery: the
Importance of Surgical Research"

Best Basic Science Abstract Award(s) - \$500

Lori Gentile, MD
ENHANCED PROTECTIVE IMMUNITY &
EXTRAMEDULLARY MYELOPOIESIS IN NEONATAL
SEPSIS BY ABLATION OF CASPASE-1 SIGNALING

Best Clinical Science Abstract Award(s) - \$500

Michael M. McNally, MD
3D FUSION CT CAPABILITIES DECREASES PROCEDURE
TIME, RADIATION EXPOSURE AND CONTRAST USAGE
IN COMPLEX ENDOVASCULAR AORTIC REPAIR

Research Career Development Award(s) - \$25,000

Janice Taylor, MD
„Restructuring of Website Content for Surgical
Education to Maximize and Improve the Didactic
Experience"

Ryan M. Thomas, MD
„Circulating tumor cells shed in operative blood during
pancreatectomy for pancreatic cancer is responsible for
peritoneal recurrence"

2013

Lester R. Dragstedt Visiting Professor
Jeffrey B. Matthews, M.D.
University of Chicago, Department of Surgery
"Crossroads: Vagotomy, The Electric Blues,
and the Chicago South Side "

Best Basic Science Abstract Award(s) - \$500
Sugong Chen, MD
FATE OF ALDEHYDE DEHYDROGENASE ENRICHED
COLON CANCER STEM CELLS

Best Clinical Science Abstract Award(s) - \$500
Luke Gutwein, MD
ALLOCATION OF HEALTHCARE DOLLARS: ANALYSIS
OF NONNEONATAL CIRCUMCISIONS IN FLORIDA

Makesha Miggins, M.D.
ANALYSIS OF SOCIO-DEMOGRAPHIC DISPARITIES
IN BREAST CANCER WITHIN A NATIONAL CANCER
DATABASE

Research Career Development Award(s) - \$25,000
Shawn D. Larson, MD
"Inflammasome activation is critical for neonatal
emergency myelopoiesis and expansion of
hematopoietic stem cells in inflammation"

Jose G. Trevino, MD
"Tumor Associated Fibroblasts Promote Pancreatic
Tumor Progression and Chemoresistance"

2012

Lester R. Dragstedt Visiting Professor
Ronald V. Maier, MD
University of Washington, Department of Surgery
"Resuscitation of the Injured Patient: The Enemy of
Good is Better"

Research Career Development Award(s) - \$25,000
Catherine Chang, MD
"RISK STRATIFICATION OF FISTULA MATURATION
FAILURE FOR DIALYSIS AND GRAFT THROMBOSIS"

Salvatore Scali, MD
"MECHANISMS OF HAND DYSFUNCTION
FOLLOWING HEMODIALYSIS FISTULA CREATION"

Best Basic Science Abstract Award(s) - \$500
Amanda LoGuidice, PhD
"INTERLEUKIN 8 (IL8) IS A MODULATOR OF
TUMORIGENICITY IN COLON CANCER INITIATING
CELLS"

Best Clinical Science Abstract Award(s) - \$500
Kenneth DeSart, MD
"GENOME-WIDE DIFFERENCES IN INFLAMMATORY
GENE EXPRESSION PREDICT SUCCESS VERSUS
FAILURE IN LOWER EXTREMITY ANGIOPLASTY/
STENTING"

2011

Lester R. Dragstedt Visiting Professor
Alexander W. Clowes, MD
University of Washington, Department of Surgery
"NOVEL APPROACHES TO CONTROLLING INTIMAL
HYPERPLASIA AND RESTENOSIS"

Research Career Development Award(s) - \$25,000
Winston T. Richards, MD
"EVALUATING TRANSFER PATTERNS FOR ELDERLY
BURN PATIENTS"

Research Career Development Award(s) - \$25,000
(continued)

Adam W. Beck, MD
"CSF BIOMARKERS OF SPINAL CORD INJURY IN
TEVAR PATIENTS"

Christiana Shaw, MD and Sanda Tan, MD PhD
"EVALUATION OF TECHNOLOGY IN SURGICAL
RESIDENT EDUCATION IN THE ERA OF INCREASED
ACCREDITATION COUNCIL FOR GRADUATE
MEDICAL EDUCATION (ACGME) REGULATION"

Best Basic Science Abstract Award(s) - \$500

Alex Cuenca, MD
"TLR4 PROTECTIVE ADJUVANT EFFECT TO MURINE
POLYMICROBIAL SEPSIS IN TRIF, BUT NOT MYD88,
DEPENDENT"

Best Clinical Science Abstract Award(s) - \$500

Makesha Miggins, MD
"SURGICAL SITE INFECTION IS ASSOCIATED WITH
PATIENT SURVIVAL AT A HOSPITAL LEVEL"

2010

Lester R. Dragstedt Visiting Professor

Kirby I. Bland, MD
University of Alabama, Department of Surgery
"UNIVERSITY OF FLORIDA AND INTERNATIONAL
TRIALS IN HIGH-RISK RECTAL CARCINOMA"

Research Career Development Award(s) - \$25,000

Philip Efron, MD
"THE EFFECT OF BLOOD TRANSFUSION ON INNATE
AND ADAPTIVE IMMUNITY AFTER TRAUMA/
HEMORRHAGE SHOCK"

Best Basic Science Abstract Award(s) - \$500

Anitha Shenoy, IDP Graduate Student
"WNT/TCF PATHWAY REPORTER: A DUAL FUSION
CONSTRUCT TO ISOLATE AND IMAGE COLON
CANCER INITIATING CELLS"

Audrey Cox, UF Undergraduate Candidate
"A NOVEL SMALL MOLECULE DISRUPTS THE PRO-
TEIN INTERACTIONS OF FAK AND IGF-1 RECEP-
TOR AND DECREASES GROWTH OF A DIRECT
ESOPHAGEAL CANCER XENOGRAFT"

Best Clinical Science Abstract Award(s) - \$500

Michael Hong, MD
"TEVAR IS ASSOCIATED WITH BROADENED
TREATMENT ELIGIBILITY AND DECREASED OVER
ALL MORTALITY IN TRAUMATIC THORACIC AORTA
INJURY"

Constance Lee, MD
"THE EFFECT OF CILOSTAZOL ON INTERMITTENT
CLAUSICATION IN A REAL-LIFE VA PRACTICE"

2009

Lester R. Dragstedt Visiting Professor
Michael G. Sarr, MD
Mayo Clinic, Rochester NY
"THE BIOLOGY OF HERNIA FORMATION/REPAIR"

Research Career Development Award(s) - \$25,000

Darwin Ang, MD
"USING A MODEL USING BOTH CLINICAL AND
GENOMIC DATA TO HELP GUIDE THERAPY AND
PREDICT OUTCOMES FOR SPECIFIC
COMPLICATIONS"

Best Basic Science Abstract Award - \$500

Jennifer Marin
"THE EFFECT OF STROMAL FIBROBLASTS ON CO-
LON CANCER STEM CELL TUMORIGENESIS"

Best Clinical Science Abstract Award - \$500
Anita Rajasekhar, MD
"PROPHYLACTIC INFERIOR VENA CAVA FILTERS IN
TRAUMA: A SYSTEMATIC REVIEW"

2008

Lester R. Dragstedt Visiting Professor
Alden H. Harken, MD
University of California, Department of Surgery
"SHOULD SURGEONS DO RESEARCH?"

Research Career Development Award(s) - \$25,000
Zihua Jiang, MD
"MECHANISMS OF CCR2 SIGNALING REGULATED
VEIN GRAFT NEOINTIMAL HYPERPLASIA"

Research Career Development Award(s) - \$25,000
Emina Huang, MD
"ALDH IDENTIFIES COLON CANCER INITIATING
CELLS FROM COLITIS AND COLON CANCER"

Research Career Development Award(s) - \$12,500
Joseph Magliocca, MD
"HYPOTHERMIC MACHINE PERFUSION OF
STEATOTIC RAT HEPATIC ALLOGRAFTS FOR
TRANSPLANTATION"

Charles Klodell, MD
"GENOMIC IMMUNE ACTIVATION AND
INFLAMMATORY RESPONSE CAN PREDICT
SUCCESSFUL CARDIAC REHABILITATION"

Best Basic Science Abstract Award - \$500
Go Watanabe, MD
"HSP90 INHIBITION DECREASES HUMAN HCC
XENOGRAFT GROWTH"

Best Clinical Science Abstract Award - \$500
Robert Winfield, MD
"EARLY RESUSCITATIVE PRACTICES FAIL TO
RESOLVE METABOLIC ACIDOSIS IN MORBIDLY
OBESE TRAUMA PATIENTS"

2007

Lester R. Dragstedt Visiting Professor
Michael W. Mulholland, MD
University of Michigan, Department of Surgery
"SURGICAL RESEARCH IN TEN STEPS"

Research Career Development Award(s) - \$25,000
Stephen Grobmyer, MD
"USE OF NOVEL ICG NANOPARTICLES FOR IN-VIVO
CANCER IMAGING AND PHOTOTHERMAL ABLATION"

Thomas Beaver, MD
"HYPERURICEMIA AS A MEDIATOR OF RENAL
INJURY DURING CARDIOVASCULAR SURGERY"

Best Basic Science Abstract Award - \$250
Chessy Fernandez
"OSCILLATORY SHEAR AND VEIN GRAFT REMODEL-
ING IN A RABBIT FOCAL STENOSIS MODEL"

Best Clinical Science Abstract Award - \$250
Matthew Delano, MD
"APROTININ ATTENUATES THE IMMUNO-
INFLAMMATORY RESPONSE AND ALTERS BLOOD
MONOCYTE GENE EXPRESSION FOLLOWING CARDI-
OPULMONARY BYPASS"

2006

Lester R. Dragstedt Visiting Professor
Mitchell P. Fink, MD
University of Pittsburgh, School of Medicine
"ETHYL PYRUVATE, HMGB1 AND CRITICAL THER-
APEUTICS, INC.: A TRUE STORY"

Research Career Development Award(s) - \$25,000
Robin Kim, MD
"STRATEGIES AGAINST TNF-RELATED PROLIFERA-
TIVE SIGNALING IN THE TREATMENT OF HEPATO-
CELLULAR CARCINOMA"

Jae-Sung Kim, PhD
"ROLE OF SPHINGOSINE AND LYSOSOMAL IRON
RELEASE IN MITOCHONDRIAL PERMEABILITY
TRANSITION-DEPENDENT CELL DEATH AFTER
ISCHEMIA/REPERFUSION OF RAT HEPATOCYTES"

Best Basic Science Abstract Award - \$250

Takashi Nitta, MD
"AN ACTIVATED PI3-KINASE/AKT PATHWAY EXERTS
PRO-SURVIVAL AND ANTI-APOPTOTIC EFFECTS IN
PRIMARY MOUSE CIRRHOTIC HEPATOCYTES"

Best Clinical Science Abstract Award - \$250

Priscilla McAuliffe, MD, PhD
"SUBSTANCE ABUSE IN SURGEONS AND
ANESTHESIOLOGISTS AND INTRAVENOUS
PROPOFOL AND FENTANYL DETECTED IN
OPERATING ROOM AIR"

2005

Lester R. Dragstedt Visiting Professor

Murray F. Brennan, MD
Memorial Sloan-Kettering Cancer Center
"SURGICAL EDUCATION: ADAPT, CHANGE OR
WITHER"

Research Career Development Award(s) - \$25,000

Steven Hochwald, MD
"ANTI-NEOPLASTIC EFFICACY OF FAK AND/OR IGF-
1R TYROSINE KINASE INHIBITION IN HUMAN
PANCREATIC CANCER XENOGRAFTS"

Elizabeth Beierle, MD
"FOCAL ADHESION KINASE AND VASCULAR
ENDOTHELIAL GROWTH FACTOR RECEPTOR-3 IN
HUMAN NEUROBLASTOMA"

Best Basic Science Abstract Award - \$250

Priscilla McAuliffe, MD, PhD
"SERPINS FROM POXVIRUS MITIGATE INTIMAL
HYPERPLASIA"

Best Clinical Science Abstract Award - \$250

Philip Efron, MD
"ALTERATIONS IN CIRCULATING DENDRITIC CELLS
AND MONOCYTES FOLLOWING HEPATECTOMY MAY
AFFECT SYSTEMIC IMMUNITY"

Lester R. Dragstedt, M.D., Ph.D.

-'When I was a teenager in Chicago, my father (Lester) would tell my mother he was sorry to be late but that the Tea Party he had at 5 pm took longer than he expected. I asked what kind of Tea Party did you have and he told me, "I invite the surgeons to come to my office and we discuss their ideas for new research and the Tea Party gets larger each year and more interesting so I am glad we do this." My mother was very understanding, but we had a large family including a grandmother, aunts and four children. Since my father was the head of the family, we waited for him always. Maybe this is where it all started?"

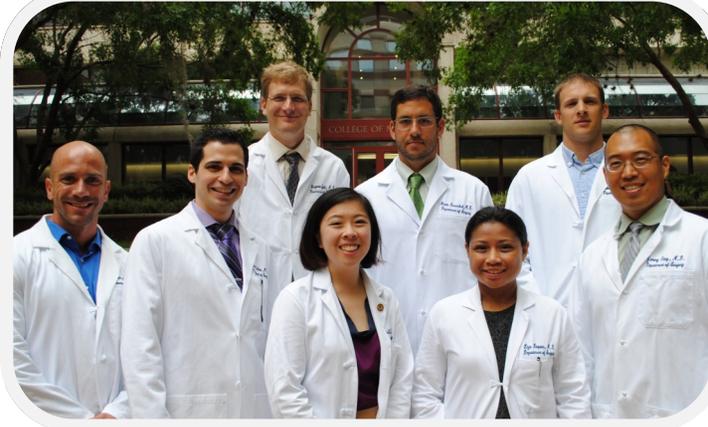


Charlotte Jeffreys, 2012

"Dr. Dragstedt was born in Anaconda, Montana in 1893, the son of Swedish immigrants. He received a B.S. degree in 1915, a Masters degree in physiology in 1916, a Ph.D. in physiology in 1920 and an M.D. degree in 1921. During this period, Dr. Dragstedt considered himself a physiologist and became Professor and Chairman of the Department of Pharmacology and Physiology at Northwestern University.

Dr. Dragstedt's second career began in 1925. When the University of Chicago decided to build a university hospital on its campus, Dr. Dallas Phemister employed Dr. Dragstedt as a consultant for the purpose of designing research facilities. At the conclusion of the assignment, Dr. Phemister appointed Dr. Dragstedt an Associate Professor of Surgery, and is said to have stated, "I can teach surgery to a physiologist; I am interested in teaching physiology to surgeons." In 1947, Dr. Dragstedt succeeded Dr. Phemister as Departmental Chairman, a position he held until his retirement in 1959. It is not surprising that when Dr. Dragstedt came to the University of Florida following his Chicago retirement, he reverted to a full-time physiologist with a joint appointment in both the Departments of Surgery and Physiology. Was Dr. Dragstedt a physiologist or a surgeon? He was both. Although an outstanding lecturer, Dr. Dragstedt's major impact as a teacher was in the laboratory."

Edward R. Woodward, M.D. Jan. 1976, Gastroenterology



2014-15 Lab Residents

Top: Ben Spilza, Martin Rosenthal, Jonathan Rehfluss
Front: Chris Kuppler, Dan Delitto, Kristina Go, Liza Laquian, Ming-Jim Yang
Not Pictured: Brittany Mathias

**The Department of Surgery
wishes to extend its appreciation to the
Research Advisory Committee
for their assistance with this year's program**

Lyle L. Moldawer, PhD Chairperson	Michael Clare-Salzler, MD
Henry V. Baker, PhD	Mark S. Gold, MD
Christopher Batich, PhD	Daqing Liao, PhD
Kevin E. Behrns, MD	W. Stratford May Jr., MD
Scott A. Berceli, MD, PhD	Richard Moyer, PhD
Kenneth Berns, MD, PhD	Harry S. Nick, PhD
Barry Byrne, MD, PhD	George A. Sarosi, MD
	Stephen Sugrue, PhD

**The Department of Surgery also wishes to extend its
appreciation to the following for their commitment to this
year's program**

Angela M. Avery
Tabitha Johns