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ABSTRACTS

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1 Increased Circular RNA-16 in Acutely Symptomatic Carotid Plaques: A Novel Mediator of Carotid Plaque Rupture

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Background: Circular RNAs (circRNAs) are dynamically expressed during development and possess binding sites for microRNAs (miRs), small RNAs that negatively regulate gene expression. We recently demonstrated that miR-221, which is associated with VSMC proliferation and inhibition of apoptosis, is decreased in acutely symptomatic carotid plaques. As circRNA-16 possesses binding sites for miR-221 through seed sequences found within, we hypothesized that circRNA-16 is increased in acutely symptomatic carotid plaques.

Methods: Relative changes in gene expression levels of circRNA-16 were compared using a real-time PCR assay and the $\Delta\Delta C_t$ method. All samples were run in duplicate; mean and standard error were calculated. One-way ANOVA with Tukey's test was used to determine significance between groups.

Results: Expression of circRNA-16 was confirmed in human VSMC using PCR and resistance to RNase H. To investigate its role in carotid plaque rupture, levels of circRNA-16 were quantified in patients undergoing urgent carotid endarterectomy for acute neurologic symptoms (n=27) compared to asymptomatic carotid plaques (n=19). In contrast to miR-221, circRNA-16 is increased in the urgent group compared to the asymptomatic carotid plaque group (1.51 ± 0.26 vs 1.00 ± 0.10, P=0.03).

Conclusion: We demonstrate circRNA-16 levels are increased and miR-221 levels are decreased in acutely ruptured carotid plaques. Furthermore, our data suggest that a circRNA-16/miR-221 axis may be important in fibrous cap degradation and rupture during the transition from a stable to an unstable carotid atherosclerotic plaque.

2 Repair and Regeneration of the Diabetic Kidney

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Background: The adult kidney retains intrinsic regenerative potential, but the identity of adult stem cells remains in question. Src homology transforming protein 1 (p66) controls mitochondrial metabolism and cellular responses to oxidative stress, aging, and apoptosis. Our working hypothesis is kidney mesenchymal stem cells (MSCs) genetically deficient in p66 (p66-/-MSC) will be resistant to senescent and apoptosis phenotype(s) associated with diabetes, participating in organ maintenance and repair through self-renewal, autocrine/paracrine mechanisms, and regenerative properties.

Methods: Akita (Ins2+/C96Y) diabetic mice were crossed with p66-/- (KO) mice to generate p66 KO-Akita mice. Kidney MSCs were isolated and expanded in culture. By immunocytochemistry, 90% of MSCs expressed stem cell antigen-1 (Sca-1) but did not express hematopoietic markers c-kit, CD31, CD34, CD45, CD106.

Results: When maintained at high ambient glucose (HG), p66-/- MSCs show no increase in ROS metabolism, whereas wild type (WT) MSCs show robust ROS signal. Growth curves for WT MSCs at HG were markedly attenuated by day 6. By contrast, p66-/- MSCs remained in active growth phase up to 12 days. Consistent with this analysis, WT MSCs show upregulation of senescent-associated proteins (p21, p53, and p16INK4a), DNA damage, and apoptosis, all of which were suppressed in p66-/-MSCs. We identified Sca-1+CD45-lin-MSC and Ki67+ cells in kidneys of p66 KO Akita, but these cells were rarely encountered in WT and Akita. Senescent phenotypes associated with diabetes (glomerulosclerosis, interstitial fibrosis, tubular atrophy), were barely detectable in p66 KO Akita, with near normalization of urine albumin excretion (UAE), whereas in Akita, kidney lesions and UAE were substantially increased.

Conclusion: Kidney MSCs genetically enhanced by p66 null mutation offer a potential strategy to repair and regenerate the diabetic kidney.

3 In Vitro Synergy of Fluconazole Plus Doxycycline Against *Candida glabrata*

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Background: *Candida glabrata* is a pathogen of increasing clinical relevance because of resistance to fluconazole. Echinocandin resistance has begun to develop as well. Fiori et al (2012) found the combination of doxycycline and fluconazole to be synergistic against a fluconazole-resistant reference strain of *Candida albicans*. Doxycycline appeared to convert fluconazole activity from fungistatic to fungicidal in that isolate. If confirmed, this may help prevent fluconazole resistance. The goal of our study was to test patients' *C. glabrata* blood isolates for synergy with the combination of fluconazole plus doxycycline using an Etest® method.

Methods: Twenty unique clinical blood isolates of *C. glabrata* collected from 2009 to 2011 from Ochsner Health System patients were screened for fluconazole plus doxycycline synergy. Isolates were identified with the API 20C yeast identification system and genotyped by rep-PCR. Etest MICs (μg/ml) revealed 7 fluconazole-susceptible dose-dependent isolates ($\leq$32) and 13 fluconazole-resistant isolates ($>$32), range 48 to $>$256. All isolates had doxycycline MICs $>$256. An Etest protocol for bacteria was modified for *Candida* synergy testing. All tests were done in triplicate and read at 24 h and 48 h. A summation fractional inhibitory concentration was calculated for each isolate: synergy $\leq$0.5, additivity $>$0.5–1, indifference $>$1–4, and antagonism $>$4.

Results: With the doxycycline plus fluconazole combination, 12/20 (60%) of *C. glabrata* isolates showed synergy (5/20) or additivity (7/20), including 9/13 (69%) of fluconazole-resistant isolates. The remaining 8 isolates were indifferent. No antagonism was noted.

Conclusion: The mechanism of this in vitro synergy is unknown, warranting further study. In vitro findings may or may not be useful clinically.

4 Role of Lymph Node Stromal Cells in Colon Cancer Metastasis

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Background: Colorectal cancer (CRC) is the second most common cause of cancer-related mortality in the US. The outcomes of CRC patients depend on stage, lymph node (LN) involvement, and the presence of extranodal metastasis. Recent studies from our group and others suggest that metastasis is closely associated with CRC cell and the LN stromal cell (LNSC) interaction. Extracellular vesicles carrying proteins and RNA have recently been discovered as mediators for cellular crosstalk. Our objective is to investigate the role of micro-vesicles (MVs) released from LNSC in CRC metastasis.

Methods: MVs were isolated from LNSC supernatant by differential centrifugation and gradient purification. MVs were visualized using GFP-LNSC and RFP-CRC cells. The functional properties of LN stromal MVs on CRC growth were tested by WST-2 assay. Luciferase-tagged colon cancer cells, HT-29-Luc, were intrarectally injected with or without LN stromal MVs or intact stromal cells for tumor formation and distant metastasis.

Results: LN stromal MVs were uptaken by CRC cells detected by fluorescence microscopy. LN stromal MVs promote CRC cell proliferation in vitro. The CRC primary tumor formation and distant metastasis were significantly enhanced by the presence of LN stromal MVs in comparison to cancer cells alone evaluated by bioluminescent imaging, similar to intact stromal cells.

Conclusion: Our data suggest that LNSC-derived MVs trafficking between LNSC and CRC cells play a critical role in CRC progression. This model can be used to identify the determinant factors of human CRC metastasis delivered by stromal MVs and to characterize their biological activity in CRC metastasis.

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5 Follicular Helper T Cells Control Autoimmunity Through IL-21/IL-21 Receptor Interaction in Rheumatoid Arthritis Patients

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Background: Autoantibody production in rheumatoid arthritis (RA) patients occurs prior to the appearance of clinical disease and is accounted for in disease progression. Our previous study showed that follicular helper T (Tfh) cells were accumulated in RA patients and correlated to autoantibody production and disease activity. IL-21 is a signature cytokine produced by Tfh cells. Through its receptor (IL-21R), IL-21 induces B cells to differentiate to antibody-producing plasma cells and also promotes T cell differentiation in an autocrine manner. To investigate the role of Tfh cells in RA, we examined the IL-21R expression on both B cells and T cells in RA patients and their correlation with disease activity.

Methods: Peripheral blood was collected from 25 RA patients and age/gender matched to healthy donors. Tfh cells ($CD3^+CD4^+CXCR5^+$), naïve B cell ($CD20^+IgD^+$), memory B cells ($CD20^+IgD^-CD38^-$), and plasmablasts ($CD20^-IgD^-CD38^+$) were defined via flow cytometry and immunohistochemical staining. The B cell differentiation was carried out by co-culturing B cells with IL-21 for 5 days in vitro. IL-21R expression was examined by flow cytometry.

Results: Circulating Tfh cells, providing a source of IL-21, were significantly increased in severe RA patients ($P<0.05$). The level of IL-21R expression on naïve B cells and memory B cells, but not T cells, was elevated in moderate and severe RA patients and correlated to disease activity.

Conclusion: Our data suggest that Tfh cells control B cell differentiation in a paracrine manner though IL-21/IL-21R axis in RA. Blocking the IL-21 signal may lead to effective treatment for RA patients and improve the quality of patient life.

This work was awarded an Ochsner Translational Medicine Research Initiative Grant.

6 Lymph Node Stromal Cells Support Muscle Invasive Urothelial Cell Carcinoma Implantation and Growth in Orthotopic Xenografts

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Background: Muscle invasive urothelial carcinoma (MIUC) is a highly progressive disease. Despite radical cystectomy and chemoradiotherapy, up to 50% of patients still develop metastasis and die within 5 years of surgery. Lymph node (LN) involvement, which affects 25% of MIUC patients, is a known predictor of poor 5-year survival and chemotherapy resistance. Thus, elucidation of the LN microenvironment in MIUC is important for understanding the progression of MIUC and therapeutic intervention. Here, we established and used an orthotopic human MIUC xenograft model to investigate the effect of LN stromal cells on MIUC growth in vivo and monitored progression by noninvasive imaging.

Methods: Luciferase-tagged human UC cell line UMUC-3 cells were intravesically inoculated via urethral catheterization in the presence or absence of human LN stromal cell line ([HK cells] [3×10^5]). Tumor growth was monitored noninvasively by bioluminescence imaging (BLI) system and recorded by BLI value (photons) weekly up to day 42 post–cancer cell injection. The tumor was then removed and weighed. The frozen and paraffin-embedded tumor was stained with hematoxylin and eosin (H&E), and immunohistochemical staining was used for histological evaluation.

Results: We established a reproducible orthotopic human MIUC xenograft model. H&E and immunohistochemical staining results showed that the xenograft tumor resembles the original specimen in pathologic characterizations, along with preservation of CD326 and CD31 cell markers. Without HK cells, UMUC-3 cells developed significant tumor in 7 days (for 1×10^6 cells) and 21 days (for 1×10^3 cells). Addition of HK cells significantly facilitated the UMUC-3 cells growth measured by BLI value and tumor weight.

Conclusion: We have developed an orthotopic MIUC xenograft model for imaging MIUC growth and dissemination without loss of tumor characteristics. Our data suggest that LN stromal cells play an important role in MIUC development. Our orthotopic model with LN stromal cells provides a platform for studying the mechanism of MIUC progression and metastasis and for testing novel targeted therapies.

7 Role of Cytochrome P450 2E1 and its Interrelationship with Transcription Factor Nrf2 in Myoglobinuric Acute Kidney Injury

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Background: Rhabdomyolysis, a common clinical occurrence, accounts for about 10% of acute kidney injuries (AKI).

Methods: The current study was designed to examine the roles of (1) NF-E2-related factor-2 (Nrf2), a key redox-sensitive transcription factor that regulates the expression of cellular antioxidant and cytoprotective genes; (2) a specific isozyme, CYP2E1, a member of the CYP group of heme proteins that functions as oxidases, degrades the heme protein, and promotes release of catalytic iron in myoglobin-induced AKI; and (3) CYP2E1 in the induction of Nrf2. Intramuscular injection of glycerol results in myoglobin-induced AKI.

Results: In this model, we demonstrate an increase of nuclear Nrf2 protein and Nrf2-regulated genes and proteins including upregulation of heme oxygenase-1 (HO-1). In in vitro studies, pretreatment of renal tubular epithelial cells (LLC-PK1) with the activator of Nrf2 prior to myoglobin exposure significantly decreased reactive oxygen species (ROS) generation and cytotoxicity, whereas Nrf2 inhibitor and gene silencing exacerbated the injury. Administration of chlormethiazole, a specific CYP2E1 transcription inhibitor, markedly prevented the increase in catalytic iron in the kidneys, significantly decreased oxidative stress, blocked the nuclear translocation of Nrf2 protein, reduced HO-1, and provided marked functional and histological protection against glycerol-induced AKI. CYP2E1 inhibitors and gene-silenced LLC-PK1 cells significantly decreased ROS generation and provided marked protection against myoglobin-induced cytotoxicity.

Conclusion: We conclude that in CYP2E1-induced oxidative stress, transcription factor Nrf2 plays a pivotal role in the early adaptive response. Inhibition of CYP2E1 coupled with the prior induction of Nrf2 may be a valuable tool to reduce CYP2E1-mediated, rhabdomyolysis-induced AKI.

8 Prognostic and Predictive Biomarkers for Colorectal Cancer

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Background: Colorectal cancer (CRC) is among the most commonly diagnosed cancers worldwide. CRC tumors that harbor a greater proportion of cancer stem cells (CSCs) have worse prognostic outcomes. We aim to determine the role of CSCs as prognostic markers for CRC reoccurrence via utilization of a novel high-throughput digital immunohistochemistry (IHC) quantification technique.

Methods: Thirty-two CRC patients were matched, with each patient pair containing 1 case of reoccurrence following surgical resection, and 1 nonreoccurred. Tissue-microarrays (TMAs) were constructed and used for high-throughput IHC analysis of putative CSC markers. Image-Pro software was "educated" via setting desired color thresholds to distinguish stain vs background to digitally quantify stained slides. The same threshold was used for analyzing all slides to determine the number of positively staining cells within each image. Automated program macros were written for batch processing of multiple images. This process yielded a percent total area of the slide that was covered in stain (ie, area occupied by CSCs).

Results: TMA slide images of patient groupings were captured using deconvoluting microscopy. Four patients were omitted due to poor tissue quality. Overall, 9 patients with reoccurrence showed a greater CSC count than their counterparts. A statistically significant difference in survival time and number of deaths between reoccurrers and nonreoccurrers was found

Conclusion: We have developed a robust and reliable method for IHC staining quantification. CRC patients with more CSCs have a greater likelihood of reoccurrence and a decrease in overall survival. CSCs play a significant role in CRC reoccurrence.

9 Unique Humanized Orthotopic Mouse Model to Analyze the Role of Lymph Node Stromal Microenvironment in Human Colorectal Cancer Extranodal Metastasis

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Background: Lymph node (LN) involvement is one of the strongest negative predictors in colorectal cancer (CRC). The LN stromal microenvironment is known to contribute to tumor progression, but its effect on extranodal metastasis has not been studied in detail due to the lack of reliable models. Our objective was to develop a reproducible model to analyze the LN stromal involvement in CRC metastasis.

Methods: A human CRC cell line (HT-29-Luc), an LN stromal cell line (HK), and LN stromal (LNS) cells isolated from consented patients' specimens were used. NOD/SCID mice received intrarectal (IR) injection with HT-29 cells alone or were coinjected with HK or LNS cells. Tumor growth and metastasis were monitored by bioluminescent imaging (BLI) with IVIS live imaging system. Mice were sacrificed when the primary tumor BLI efficiency reached $\geq 1\times10^{11}$. Necropsy was performed and primary tumors and organs were harvested for weights and imaging.

Results: Twenty-six mice received IR injections. Eight mice injected with HT-29-Luc cells alone developed no tumors or distant organ metastasis. Eight of 9 mice coinjected with HT-29-Luc and HK cells and 6 of 9 mice coinjected with HT-29-Luc and LNS developed primary tumor and metastatic lesions in liver and lungs by BLI. There were no metastases to the kidney or spleen.

Conclusion: We have developed a unique, reproducible human CRC orthotopic model to investigate the biology of metastasis, specifically CRC and LN stromal interactions. This will allow for the identification of factors that regulate CRC extranodal metastasis and aid in the development of novel targeted therapies.

10 Enhanced Nanoparticle Delivery to In Vivo Pig Skin

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Background: Nanodermatology is a rapidly emerging field of study receiving a large amount of interest because of its potential application in the prevention and treatment of skin diseases. However, for successful therapeutic applications, nanoparticles must be able to penetrate the stratum corneum and target the tissue of interest. This has led to many physical and chemical approaches being developed to overcome the skin's barriers to enhance nanoparticle delivery. Chemical approaches often involve the complete disruption or removal of the epidermis, resulting in irritation and inflammation, and physical approaches are restricted to the size of the delivery device; both techniques limit the delivery to focused areas of skin instead of much larger field delivery. The objective of this project was to overcome the skin's barriers for the treatment of skin diseases. We have developed a novel cutaneous delivery method capable of field treatment using elongate microparticles.

Methods: We compared 2 different size populations of elongate microparticles for the enhanced delivery of 50, 100, and 500 nm nanoparticles in in vivo pig skin.

Results: Elongate microparticle delivery resulted in deeper penetration of nanoparticles when compared to topical application of nanoparticles alone. It was observed that the longer elongate microparticles were able to deliver nanoparticles down to the dermal-epidermal junction, while the shorter elongate microparticles deposited nanoparticles more superficially in the upper epidermis.

Conclusion: This method of nanoparticle delivery proposes a novel idea that shows great potential for its use in the treatment of skin diseases and skin cancer.

11 Etest Evaluation for Synergy with Fosfomycin Plus Aztreonam Against Carbapenemase-Producing *Klebsiella* Species

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Background: Carbapenemase-producing *Klebsiella* is an emerging pathogen resistant to most antimicrobials. The discovery and manufacture of new antibiotics has not kept pace with the development of antibiotic resistance. Therefore, the use of older antibiotics in combination is being evaluated. Fosfomycin is an older antibiotic used mainly for urinary tract infections (UTIs). One study evaluating extended-spectrum β-lactamase–producing *K. pneumoniae* UTIs treated with fosfomycin showed 81% cured. Fosfomycin resistance has occurred when used as monotherapy. Synergy of fosfomycin plus aztreonam was reported in 2013 against a single strain of multi-drug–resistant *K. pneumoniae*. The goal of our study was to test carbapenemase-producing *Klebsiella* isolates for synergy with this combination using a validated Etest method.

Methods: Twenty-nine genetically unique aztreonam-resistant carbapenemase-producing *Klebsiella* isolates were identified using the Vitek2 system and genotyped by rep-PCR. CLSI 2013 guidelines for *Escherichia coli* urinary tract isolates were used for interpretation of fosfomycin MICs (μg/mL): ≤64 susceptible, 128 intermediate, ≥256 resistant. Etest MICs: fosfomycin, 8 to >1,024, 3/29 (10%) resistant; aztreonam, 16 to >256, 100% resistant. The Etest MIC:MIC synergy method was performed in triplicate, with the mean value used to calculate ∑FIC (summation fractional inhibitory concentration). ∑FIC determined at 18 h: synergy ≤0.5; additive >0.5–1; indifference >1–4; antagonism >4.

Results: Using a validated Etest synergy method, 20/29 (69%) of the aztreonam-resistant *Klebsiella pneumoniae* carbapenemase–producing *Klebsiella* showed in vitro synergy (6/29) or additivity (14/29) with fosfomycin plus aztreonam. The remaining 9 isolates were indifferent.

Conclusion: Further studies with additional isolates are needed. In vitro synergy/additivity may or may not correlate clinically.

12 Etest Synergy Testing of Multi-Drug–Resistant *Pseudomonas aeruginosa* with Polymyxin B Plus Fosfomycin, Meropenem, or Rifampin

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Background: Multi-drug–resistant *Pseudomonas aeruginosa* (MDR-PSAR) infection is a major problem in burn patients. Antimicrobial combinations are used empirically without supportive data. The goal of this study was to evaluate synergy of polymyxin B plus fosfomycin, meropenem, or rifampin against MDR-PSAR using a rapid Etest method.

Methods: Nine genetically unique (by rep-PCR) MDR-PSAR clinical isolates were collected from individual burn patients at Shriners Hospitals for Children-Galveston from 2004-2008. Identification/susceptibility testing was performed using the MicroScan WalkAway-96 and the Vitek2 systems. Isolates were resistant to all drugs tested using both systems. In addition, Etest MICs (μg/mL) were determined for polymyxin B (6/9 isolates >2 nonsusceptible), fosfomycin (48 to >1024), meropenem (>32, resistant), and rifampin (>32). Synergy testing with polymyxin B plus fosfomycin, meropenem, or rifampin was performed in triplicate using an Etest synergy method. The summation fractional inhibitory concentration (∑FIC) was calculated for each organism/combination: synergy ≤0.5; additivity >0.5–1; indifference >1–4.

Results: One hundred percent of MDR-PSAR isolates showed synergy (5/9) or additivity (4/9) with the polymyxin B plus rifampin combination. Polymyxin B plus fosfomycin showed synergy in 2/9 (22%) and additivity in 6/9 (67%) of isolates. Polymyxin B plus meropenem showed additivity in 8/9 (89%) of isolates. No antagonism was seen.

Conclusion: Using Etest methodology, the polymyxin B plus rifampin combination was found to have the most synergistic/additive effect with ∑FICs ≤1 for all MDR-PSAR isolates. In vitro synergy/additive effect may or may not translate into in vivo effect. Further studies using this combination with more isolates are needed.

13 Combination Therapy for Colorectal Cancer Metastasis Using an Orthotopic Xenograft Model

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Background: It has been shown that lymph node (LN) stromal cells produce CXCL12, which supports the growth and metastasis of colorectal cancer (CRC). Our objective is to determine whether AMD3100, a specific CXCL12 inhibitor, can be used in conjunction with traditional chemotherapy to inhibit the growth or metastatic potential of CRC.

Methods: Male NOD/SCID mice were injected with luciferase-tagged immortalized human CRC cell line HT-29-Luc cells orthotopically into the rectal mucosa with or without human LN stromal cell line HK cells. Groups with HK cells received either a constant dose, via subcutaneous pump, of AMD3100 for 2 weeks; 5-fluoruracil (5-FU) intravenously once weekly; both of these treatments; or no treatment. Tumor burden was monitored with an IVIS imaging system. After 36 days, primary tumors and organs were collected and imaged.

Results: Primary tumors or distant metastases did not develop in mice without HK cells. There was a nonsignificant decrease in the primary site tumor burden after 36 days among mice treated with 5-FU plus AMD3100 vs 5-FU alone. There was a significant decrease in the lung tumor burden among the mice treated with 5-FU plus AMD3100 vs 5-FU alone. There was an increase in the primary site and decrease in the lung tumor burden among mice treated with AMD3100 alone vs 5-FU alone.

Conclusion: AMD3100 appears to have no efficacy on its own to control CRC primary tumor growth; however, it does appear to decrease the metastatic potential of CRC, especially when added to a traditional chemotherapeutic regimen.

14 LRP6 Overexpression as a Potential Marker of Early-Stage Tumor Progression in Pancreatic Ductal Adenocarcinoma

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Background: The canonical Wnt pathway has been implicated in pancreatic ductal adenocarcinoma (PDAC). Mutations in the components of this pathway are rare in PDAC, so understanding the molecular mechanisms leading to activation of this pathway and how it influences tumor behavior is of utmost importance. We hypothesized that overexpression of the LRP6 coreceptor is involved in PDAC tumorigenesis.

Methods: Twelve lymph node negative (LN-) and 12 lymph node positive (LN+) FFPE tumor tissues were randomly selected to perform screening gene identification by chip microarray analysis. Sixty-one tumor samples subcategorized by lymph node status, survival time, and grade of differentiation were used to validate the results using real-time PCR (RT-PCR). Migration assays were used to validate the biological function of the studied genes.

Results: We investigated 20,817 genes by microarray analysis. We identified genes with at least a 2-fold difference (up or down) and $P<0.05$ between LN- and LN+; 957 genes were significantly different between the 2 groups. The LRP6 gene showed a 2.46-fold increase in the LN- when compared to LN+ samples (1192.9 vs 485). RT-PCR for LRP6 in LN- (n=29) and LN+ (n=32) confirmed the differential expression ($P=0.00044$). LRP6 showed a trend of overexpression toward tumors of lower grades of differentiation. Inhibition of LRP6 expression reduced the migration of PANC-1 cancer cell line.

Conclusion: Our results reflect an overexpression of LRP6 early in the series of tumorigenesis events and depict the importance of further studies to understand its relationship to tumor behavior and prognosis.

15 Understanding the Role of Lymph Node Stromal Microenvironment in Renal Cell Carcinoma Progression

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Background: Metastatic renal cell carcinoma (RCC) is incurable and fatal, resulting in more than 13,000 deaths in the United States each year. Despite increased incidental detection of lower clinically staged tumors, metastatic RCC still affects up to one-quarter of patients diagnosed. Lymph node (LN) involvement is a strong negative prognostic indicator. LN stromal cells have been shown to enhance tumor cell growth, tumorigenicity, and chemotherapy drug resistance in breast and colon cancer models. However, currently there are no described RCC xenograft models that explore RCC/LN interactions.

Methods: Five different RCC cell lines including SN12K1, CaKi-1, and ACHN cells, and luciferase-tagged RCC cell lines A498-Luc and 769P-Luc cells were either tested for proliferation or transmigration activities in the presence or absence of LN stromal HK cells. A498-Luc and 769P-Luc cells were intrarenal subcapsular (IK) injected to the left kidney of NOD/SCID mice with or without HK cells. Tumor burdens and distant metastases were monitored by weekly bioluminescent imaging before and after left nephrectomy.

Results: The presence of HK cells significantly increased the RCC cell proliferation and transmigration in vitro as well as tumor formation in vivo via IK injection. The promoting influence of LN stromal cells on RCC metastasis was evidenced by distant metastases weeks post–left nephrectomy.

Conclusion: Our data suggest that LN stromal cells support RCC tumor formation and metastasis. Our unique orthotopic model provides a platform to study the molecular mechanism of tumor/LN stromal cell interaction and will lead to individualized treatment plans for RCC patients.

This work was awarded an Ochsner–UQ Forging Opportunities for Research Collaborative Endeavors (FORCE) Grant.

16 Blue Light Therapy in Inflammatory Bowel Disease

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Background: Heliotherapy studies highlight a complex mechanism in which wavelength, duration, and intensity can greatly impact outcome. For example, shorter and longer photoperiods enhance and suppress immunity respectively. In this study, we wished to determine if concentrated periods of direct light could modulate the autoimmune response in inflammatory bowel disease. We hypothesized that blue light therapy is associated with decreased inflammation and consequent improved clinical outcome.

Methods: C57BL/6 mice were subjected to photoperiod conditions. During ambient hours, mice were transferred to a light box for 2 hours of Day-Light lamp with blue filter or to white light control. Both were given unrestricted access to standard diet and dextran sodium sulfate drinking solution. Mice weights and activity levels were noted daily. Serum and colons were harvested for analysis of inflammation.

Results: The blue light and control groups became less active as the week progressed, but the control group more so. Blood was present in the stool of the control group, which lost 43% more weight than the blue light group. H&E staining demonstrated less crypt damage and inflammatory cell migration in the distal colon of the blue light mice. Macroscopic observations were further confirmed by immunohistochemical staining and analysis of proinflammatory chemokine upregulation significant for demonstrating the presence of these markers in both populations and establishing working parameters for continued investigation to increase study sample size.

Conclusion: This nascent study demonstrates the positive effect of blue light therapy in inflammatory bowel disease. Additional trials are ongoing to confirm a quantifiable difference in inflammatory marker upregulation and define parameters for optimal therapy.

17 Vancomycin Powder Use in Total Joint Arthroplasty: In Vitro Results

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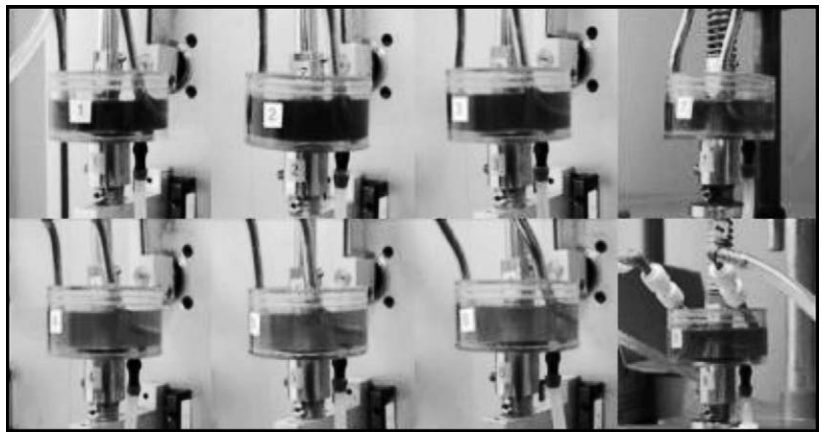
Background: The application of surgical site vancomycin powder (VP) has recently shown efficacy in decreasing infections after spine surgery. Effects on polyethylene wear after intraoperative placement of VP in joint replacements has not been determined. The purpose of this study was to compare wear behavior of material couples of cobalt-chromium alloy (CoCr) on ultra-high molecular weight polyethylene (UHMWPE) to identical wear couples with VP.

Methods: A 6-station wear simulator was used to establish in vitro wear characteristics of CoCr on UHMWPE using total knee models. Three test simulators each included 250 mg of VP added to 100 mL of 36% bovine serum solution. Three control simulators included serum alone. Cyclic articulations were run for 10 million cycles (Mc) at 4 $\pm$ 0.3 Hz under a constant axial load of 89 N over 25° flexion-extension. UHMWPE wear was measured using photography, stereomicroscopic, and gravimetric measurements after 0.5, 1, 2.5, 5, and 10 Mc.

Results: There were no significant differences in UHMWPE wear mark length, width, or area at any time interval. There was no detectable difference in gravimetric wear between test groups at 2.5 Mc (P=0.95), 5 Mc (P=0.80), or 10 Mc (P=0.98). After 10 Mc, the VP and control groups lost an average of 0.32 and 0.33 mg, respectively.

Conclusion: The addition of VP to CoCr on UHMWPE wear simulator demonstrated no detrimental effects on the prostheses. Topical VP may have a role in infection prevention during joint arthroplasty. A well-designed clinical study is needed.



18 Correlation Between Positron Emission Tomography Stress Myocardial Blood Flow and Ventricular Tachyarrhythmia or Death in Patients with Cardiomyopathy

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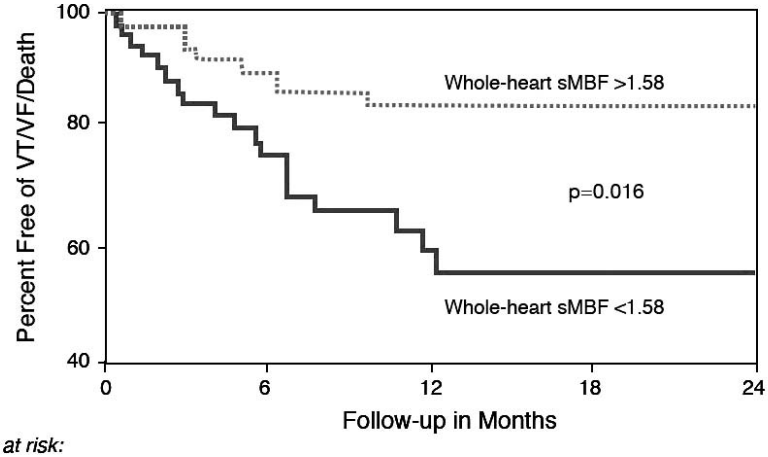
Background: In patients with cardiomyopathy (CM) and an implantable cardioverter-defibrillator (ICD), the relationship between positron emission tomography (PET) stress myocardial blood flow (sMBF) and adverse cardiac events, including ventricular arrhythmia (ventricular tachycardia [VT]/ventricular fibrillation [VF]), is unknown.

Methods: Patients with CM with an ICD in situ who underwent cardiac PET stress imaging were prospectively followed for VT/VF via periodic device interrogation. Mortality was assessed by chart review and SSDI query. Event-free survival was stratified at the median of average whole-heart sMBF and was assessed with the log-rank test.

Results: We followed 104 patients (80 [77%] male, 67 ± 13 years, ejection fraction 31% ± 13, 82 [79%] ischemic). There were 13 VT/VF events over 46 ± 36 weeks of device clinic follow-up, and 19 deaths over 63 ± 37 weeks of mortality follow-up. As seen in the Figure, compared with patients whose sMBF was above the median (1.58 cc/g/min, IQR 1.23-2.12), those with sMBF below the median had inferior event-free survival (P=0.016). Estimated 1-year event rates were 16% and 40% for those above and below the median sMBF, respectively.

Conclusion: In patients with cardiomyopathy and an implanted ICD, a lower PET sMBF predicts the combined endpoint of VT, VF, or death.



Number at risk:

sMBF > 1.58	52	36	15	9	7
sMBF < 1.58	52	33	16	6	3

19 Variability in the Electrocardiographic T-peak to T-end Interval over Time

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Background: The T wave peak to T-end interval (Tpe) is an ECG index of dispersion of ventricular repolarization. In patients with left ventricular (LV) systolic dysfunction, these intervals have been shown to independently predict both ventricular tachyarrhythmia and mortality, with increased risk with even 10 ms increments. The intrapatient variability of Tpe has yet to be described.

Methods: We prospectively evaluated 23 patients with left ventricular ejection fraction (LVEF) $\leq$35%. ECGs were obtained at 3-month intervals over 3 (n=7) or 4 (n=16) consecutive visits. ECGs were automatically analyzed using the commercially available GE Healthcare Marquette 12SL algorithm and manually overread. For each patient, we calculated each interval's mean, mean difference (MD), and relative mean difference (RMD). Summary statistics were tabulated for the population.

Results: In these 23 patients (64 $\pm$ 13 years, 16 [70%] males, LVEF 27 $\pm$ 7%, 20 [87%] ischemic), the mean Tpe was 103 $\pm$ 14 ms, with intrapatient MD 14 $\pm$ 10 ms. The mean Tpec (Bazett-corrected for heart rate) was 112 $\pm$ 14 ms, with MD 15 $\pm$ 9 ms. As seen in the Table, the RMD of Tpe (13.3%) and Tpec (13.5%) was greater than that of the other ECG parameters including RR interval, PR, QRSd, QT, and QTc.

Conclusion: Tpe and Tpec display more intrapatient longitudinal variability than other common ECG parameters. The size of this variability is comparable to Tpec differences implying increased risk in prior studies. Repeated Tpec assessment may be required to optimize these intervals' utility for risk stratification.

Variability of Tpe Tpec, and common ECG parameters

	Mean±SD (ms)	Mean Difference (ms)	Relative Mean Difference
RR	856±106	64±39	7.6%
PR	188±29	17±17	9.2%
QRS	112±18	6±5	5.5%
QT	416±28	18±10	4.4%
QTc	451±27	19±11	4.2%
Tpe	103±14	14±10	13.3%
Tpec	112±14	15±9	13.5%

20 Recently Ruptured Carotid Plaques Demonstrate an Increased Content of Soft Atheroma on CTA Compared to Asymptomatic Carotid Lesions

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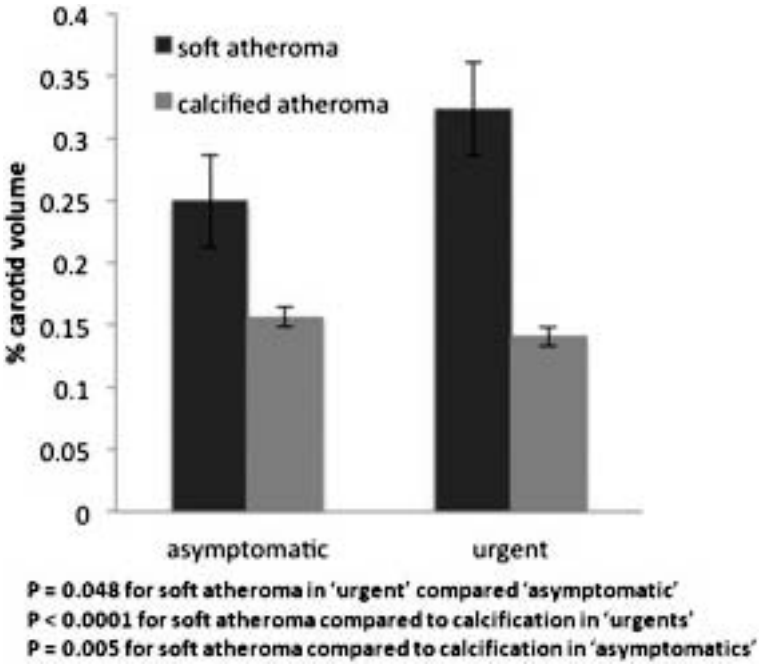
Background: Current guidelines for stroke prevention in patients with carotid disease utilize stenosis severity as a determinant for intervention. Increasing evidence suggests plaque composition and morphology may play an important role in predicting future ischemic events. The presence of soft atheroma has been associated with an increased risk of plaque rupture in the coronaries. With its widespread availability and excellent spatial resolution, computed tomography angiography (CTA) may be a useful tool for assessing carotid plaque vulnerability. We aimed to determine whether patients undergoing urgent carotid endarterectomy (CEA) for acute neurological symptoms have a larger amount of soft atheroma compared to patients with asymptomatic high-grade carotid stenosis.

Methods: Plaque analysis was performed using the TeraRecon Aquarius software. Volumes of soft atheroma (0-150 Hounsfield, HU), contrast (151-550 HU), and calcium (551-2000 HU) were measured as a percentage in a 2 cm length of highest carotid plaque burden. Nonpaired 2-tailed *t* test was used to compare the mean percentage composition of fatty plaque and calcium in the 2 groups.

Results: Preoperative CTA images of 43 urgent and 38 asymptomatic consecutive patients who underwent CEA from 2009-2013 were selected from our institution. The volume of soft atheroma in the urgent group was greater than the asymptomatic group (32.36 $\pm$ 2.85% vs 24.94 $\pm$ 2.27%, P=0.048). There was no difference in the amount of calcium in urgent compared to asymptomatic patients (14.8 $\pm$ 2.1% vs 15.6 $\pm$ 2.3%, P=0.624). Within the urgent group, the volume of soft atheroma was greater than the volume of calcified plaque (32.36 $\pm$ 2.85%, 14.08 $\pm$ 2.16%, $P<0.0001$), as there was to some extent in the asymptomatic group (24.94 $\pm$ 2.27%, 15.64 $\pm$ 2.32%, P=0.005).

Conclusion: An increased volume of soft atheroma representing a large lipid component is found in patients presenting with acute neurological symptoms who undergo urgent CEA compared to patients with asymptomatic high-grade carotid stenosis. These data suggest that low-signal attenuation <150 HU may be a useful noninvasive marker to assess carotid plaque vulnerability.



21 Determinants of Fluoroscopy Time During Radial and Femoral Artery Access for Cardiac Catheterization

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Background: Radial access (RA) for cardiac catheterization has become popular due to lower vascular complication rates compared to femoral access (FA). RA carries technical challenges that may prolong radiation exposure for less experienced operators, including training fellows. The objective of this study was to identify differences in fluoroscopy time (FT) between RA and FA and variables that increase FT in RA procedures and FA procedures.

Methods: All adult coronary angiograms performed at Ochsner Medical Center between 2008 and 2013 were reviewed retrospectively. Cardiogenic shock, concomitant right heart catheterization, and additional noncoronary angiograms were excluded. FT was compared between FA and RA.

Results: Included in the review were 8,720 angiograms: 5,673 (65%) FA and 2,690 (35%) RA. For diagnostic cases, mean FT was 8.25 min (95% CI 7.96–8.53) for FA and 9.95 min (95% CI 9.66–10.24) for RA. For PCI cases, FT was 18.44 min (95% CI 17.87–19.01) for FA and 21.02 min (95% CI 20.22–21.82) for RA. Multivariate analysis of FA cases demonstrated CABG (RR 6.34 95% CI 5.19–7.61; $P<0.0001$), increased number of stents deployed (RR 4.91, 95% CI 4.50–5.32; $P<0.0001$) and advanced age (0.07 minutes more per year; $P=0.03$) were associated with increased FT. Multivariate analysis of RA cases demonstrated CABG (RR 6.31, 95% CI 3.48–9.15 $P<0.0001$) and increased number of stents deployed (RR 5.65, 95% CI 4.87–6.42; $P<0.0001$) were associated with increased FT.

Conclusion: Included in the review were 8,720 angiograms: 5,673 (65%) FA and 2,690 (35%) RA. For diagnostic cases, mean FT was 8.25 min (95% CI 7.96–8.53) for FA and 9.95 min (95% CI 9.66–10.24) for RA. For PCI cases, FT was 18.44 min (95% CI 17.87–19.01) for FA and 21.02 min (95% CI 20.22–21.82) for RA. Multivariate analysis of FA cases demonstrated CABG (RR 6.34 95% CI 5.19–7.61; $P<0.0001$), increased number of stents deployed (RR 4.91, 95% CI 4.50–5.32; $P<0.0001$) and advanced age (0.07 minutes more per year; $P=0.03$) were associated with increased FT. Multivariate analysis of RA cases demonstrated CABG (RR 6.31, 95% CI 3.48–9.15 $P<0.0001$) and increased number of stents deployed (RR 5.65, 95% CI 4.87–6.42; $P<0.0001$) were associated with increased FT.

22 Weight Loss in CABG Patients after Cardiac Rehabilitation

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Background: Despite the protective effect of intentional weight loss, an inverse relationship between obesity on subsequent prognosis (the obesity paradox) in the cardiac rehabilitation (CR) population has been shown. We examine here the impact of weight loss on different measures of performance after CR (including mortality), with a specific focus on patients after coronary artery bypass (CABG).

Methods: We studied 569 patients referred to phase II CR following major CHD events (33% post–CABG [n=188]). Improvements in measured lipid panel and peak oxygen consumption (peak VO_2) on cardiopulmonary exercise testing were recorded. The groups were analyzed by total mortality over 3-year follow-up by National Death Index.

Results: At baseline, CABG patients who lost weight (n=76) were younger and had higher body mass index, body fat, and lean mass, but no other differences were noted. Post–CABG patients had increased mortality associated with weight loss (5.1% vs 0%; $P<0.0001$), while patients referred for other reasons had a mortality benefit from weight loss (3.6% vs 8.7%; $P=0.04$). Body fat loss was not protective either in terms of mortality in CABG patients (3.5% vs 0%; $P<0.0001$), but increase in lean mass was associated with a trend towards greater survival (1.7% vs 3.0%; $P=0.27$). Post–CABG patients who lost weight had greater improvements in peak VO_2 (19% vs 11%; $P=0.002$), triglycerides (–28% vs –11%; $P=0.02$) and low-density lipoprotein (–7% vs +6%; $P=0.004$).

Conclusion: Weight loss might be associated with increased mortality after CABG, independent of cardiometabolic risk factors, and CABG patients may benefit from an emphasis on increasing lean mass.

23 Is There an Obesity *and* a Lean Paradox? The Role of Inflammation and Body Composition in the Obesity Paradox

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Background: Many studies of coronary heart disease (CHD) cohorts have demonstrated an inverse relationship between obesity, as defined by body mass index (BMI), and subsequent prognosis (the "obesity paradox"). The potential role of inflammation and body composition in this process remains unknown.

Methods: We studied 469 patients with CHD before and after phase II cardiac rehabilitation (CR), dividing them into subjects with significant improvement (IMPROV) in high sensitivity C-reactive protein (HSCRP) (defined as improvement in HSCRP to <3 mg/dL) and without significant improvement (nonIMPROV). Body fat (BF) was measured using the skinfold method, and lean mass index (LMI) was calculated ([1-%BF]×BMI). The population was divided based on LMI and BF and analyzed by total mortality over 3-year follow-up by National Death Index.

Results: Three-year mortality was higher in the nonIMPROV group, especially in the low BF subgroup. After adjusting for ejection fraction and peak O_2 consumption, higher BMI was associated with lower mortality in both groups (HR 0.29 in IMPROV [*P*=0.033] vs 0.51 [*P*=0.04] in nonIMPROV). High BF, however, was associated with lower mortality in the nonIMPROV group (HR 0.20, *P*=0.007) but not in the IMPROV group (HR 0.78, *P*=0.75). Conversely, high LMI was associated with lower mortality in the IMPROV group (HR 0.05, *P*=0.008) but had only a trend to lower mortality in the nonIMPROV group (HR 0.12, *P*=0.12).

Conclusion: The obesity paradox may have multiple underlying etiologies. Especially in the subpopulation with persistently high CRP levels, BF seems protective. The role of body composition in the obesity paradox in CHD is not completely clear.

24 Renal Artery Stenting Improves Clinical Outcomes: A Meta-Analysis of Randomized Controlled Trials

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25 Retrograde Pedal Access for Patients with Critical Limb Ischemia

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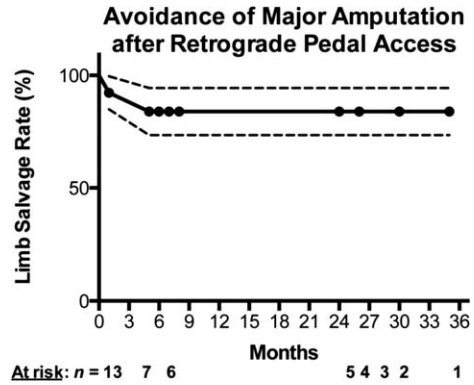
Background: Retrograde pedal access allows for the treatment of tibial occlusive lesions when standard endovascular techniques fail. We aimed to analyze the outcomes in patients who underwent retrograde pedal access subsequent to an unsuccessful attempt at revascularization through an antegrade endovascular approach.

Methods: A 3-year retrospective chart review of lower extremity angiograms was used to identify procedures that employed retrograde pedal access. Patient indications and comorbidities were recorded; outcomes analyzed were limb salvage rates, periprocedural complications, and mortality.

Results: Lower extremity angiograms from 2010 through 2013 (n=681) identified 13 cases in which a retrograde pedal access was performed (mean age was 71.4 ± 12.4 years, 9 men). There was high prevalence of diabetes (77%; 10/13), chronic renal insufficiency (stages III-V; 69%; 9/13), and previous contralateral amputation (38%; 5/13). Indications for retrograde pedal revascularization were Rutherford chronic limb ischemia class IV (15%; 2/13) and class V (85%; 11/13). Technical success rate was 69% (9/13); popliteal (2/13) and tibial (13/13) vessels were intervened with angioplasty alone (10/13) and with angioplasty/stent placement (3/13). The technical failures were due to inability to cross the occlusion(s). There was 1 myocardial infarction, and no local complications, worsening renal insufficiency, or deaths. At a mean follow-up of 17.1 ± 10.3 months, the limb salvage rate was 77% (10/13). There was a high mortality rate (23%; 3/13) occurring at median 6 ± 4 months.

Conclusion: Retrograde pedal access for limb salvage in high-risk patients is feasible and safe with acceptable limb salvage rates at intermediate follow-up.



26 Among Cardiomyopathy Patients Undergoing Revascularization for Stable Coronary Artery Disease, No Commonly Examined Clinical Parameter Predicts Ejection Fraction Improvement to >35%

Geoffrey Lewis, MD;[1] Lauren Vazquez, PhD;[2] Freddy Abi-Samra, MD;[1] Michael Bernard, MD, PhD;[1] Sammy Khatib, MD;[1] Glenn Polin, MD;[1] Daniel Morin, MD, MPH[1,3]

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[3]*The University of Queensland School of Medicine, Ochsner Clinical School, New Orleans, LA*

Background: Implantation of primary-prevention ICDs is indicated in patients with left ventricular ejection fraction (LVEF) ≤35%. Coronary revascularization may result in improvement in LVEF. We sought to identify predictors of improvement in LVEF among patients with an initially depressed LVEF but without an implanted cardioverter defibrillator following revascularization for stable CAD.

Methods: We followed patients with LVEF ≤35% but without an ICD who underwent surgical or percutaneous revascularization (CABG or PCI) for stable CAD at our tertiary care hospital between 2008 and 2012. Follow-up used chart review and telephone interviews with patients and/or their relatives. Independent *t* tests and chi square tests were performed to identify factors that predict subsequent improvement in LVEF.

Results: Among 3,164 patients who underwent revascularization (2198 [69%] PCI, 966 [31%] CABG), 3102 (98%) were excluded for 1 or more reasons: 1,068 had revascularization for acute coronary syndrome, 2,722 had EF >35%, and 64 patients had prior ICD implantation. The remaining 62 patients (2%; 33 [53%] M, 67 ± 12 years, LVEF 28 ± 6%) had stable CAD, a depressed LVEF, and no ICD. On repeat testing over 7 ± 10 months until first follow-up echocardiogram or improvement in EF to >35% after revascularization, 35 of the 62 (56%) were no longer candidates for ICD based on improved LVEF. Recovery of LV function after revascularization was not predicted by age at revascularization, race, BMI, surgical vs percutaneous revascularization, number of vessels revascularized, revascularization in the LAD territory, comorbidities (diabetes, COPD, cerebrovascular disease, or valvular disease), or creatinine clearance (*P*=0.16-1.0).

Conclusion: Following revascularization for stable CAD, more than half of patients' LVEFs improve sufficiently to obviate the need for ICD implantation. We were unable to identify any factor that predicted improvement to LVEF >35%.

27 Vascular Brachytherapy Versus Drug-Eluting Stents in the Treatment of In-Stent Restenosis: A Meta-Analysis of Long-Term Outcomes

Alexandre M. Benjo, MD, PhD; J. Stephen Jenkins, MD; Tyrone Collins, MD

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28 Cilostazol Increases Patency and Decreases Adverse Outcomes in Patients Submitted to Percutaneous Femoropopliteal Stent Revascularization: A Randomized Controlled Trials Meta-Analysis

Alexandre M. Benjo, MD, PhD; J. Stephen Jenkins, MD; Tyrone Collins, MD

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29 Comparing Culprit Lesion Versus Complete Revascularization Among Patients with ST-Segment Myocardial Infarction and Multivessel Coronary Disease: A Meta-Analysis of Randomized Controlled Trials

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30 Natural History and ICD Implantation after Revascularizaton for Stable Coronary Artery Disease with Depressed Ejection Fraction

Geoffrey Lewis, MD;[1] Lauren Vazquez, PhD;[2] Freddy Abi-Samra, MD;[1] Michael Bernard, MD, PhD;[1] Sammy Khatib, MD;[1] Glenn Polin, MD;[1] Daniel Morin, MD, MPH[1,3]

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Background: We examined left ventricular ejection fraction (LVEF) improvement and ICD implantation rates following revascularization for stable coronary artery disease (CAD) and depressed LVEF. Following revascularization, guidelines require 3 months of medical therapy, followed by LVEF reassessment, before ICD implantation. This waiting period may contribute to incomplete follow-up and suboptimal utilization of ICD therapy. The natural history of these patients and their fate regarding ICD implantation are unknown.

Methods: We followed patients with LVEF $\leq$35% but without an ICD who underwent surgical or percutaneous revascularization (CABG or PCI) for stable CAD. Follow-up used chart review and scripted telephone interviews.

Results: Among 3,164 revascularized patients (2,198 [69%] PCI, 966 [31%] CABG), only 62 (2%; 33 [53%] M, 67 $\pm$ 12 years, LVEF 28% $\pm$ 6%) had stable CAD, depressed LVEF, and no ICD. Over 35 $\pm$ 19 months, only 14 (23%) of these 62 patients received an ICD. Thirty-five (56%) patients were no longer candidates for ICD based on improved LVEF, 5 (8%) declined ICD despite physician recommendation, 3 (5%) were not offered ICD despite continued eligibility, 2 (3%) died, 1 (2%) was not a candidate due to substance abuse, 1 (2%) ICD implantation was deferred due to need for other medical procedures, and 1 (2%) was lost to follow-up.

Conclusion: Following revascularization for stable CAD with depressed LVEF, over half of patients' LVEFs improved sufficiently to make ICD implantation unnecessary. A waiting period after revascularization prior to ICD implantation appears appropriate to allow LVEF recovery and does not negatively impact follow-up or ICD implant rates.

31 Proximal Embolic Protection Decreases Cerebral Microembolization Compared to Distal Protection for Carotid Stenting: A Meta-Analysis

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[2]*The University of Queensland School of Medicine, Ochsner Clinical School, New Orleans, LA*

32 Effect of Preexisting Left Ventricular Dysfunction on Meeting Central Venous Oxygen Saturation Goals in the Management of Severe Sepsis and Septic Shock

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Background: Early-goal directed therapy (EGDT) remains a center point of severe sepsis/septic shock treatment guidelines. However, the effect of preexisting left ventricular cardiac dysfunction (LVCD) on meeting central venous oxygen saturation ($ScvO_2$) goals is unknown.

Methods: We conducted a retrospective chart review of 1,095 patients who received a standardized resuscitation protocol (879 received $ScvO_2$ catheters; 108 had preexisting LVCD defined as ejection fraction (EF) $\leq$40% prior to sepsis admission). Patients were divided into non-LVCD (EF >40%), mild (EF 30-40%), moderate (EF 20-29%), and severe (EF <20%) LVCD groups. We used linear or logistic regression to evaluate the association between LVCD and $ScvO_2$.

Results: Compared to those with EF >40%, patients with EF <20% more often failed to meet $ScvO_2$ goal (odds ratio 5.62, P=0.040) independent of age and sex. LVCD severity predicted $ScvO_2$ levels (adjusted R^2=0.021, P<0.001) and values for patients with EF <20% were lower compared to those with EF >40% (β=–13.52, 95% confidence interval –19.26, –7.78). Among patients not reaching $ScvO_2$ goal, mean $ScvO_2$ in those with EF <40% (42.80 $\pm$ 11.50) were lower than in patients with EF $\geq$40% (56.64 $\pm$ 1.65) (P=0.030).

Conclusion: Compared to the non-LVCD group, patients with preexisting EF <20% had lower $ScvO_2$ values and failed to meet goal more often after EGDT. $ScvO_2$ goals for resuscitation may, therefore, be most beneficial when EF $\geq$20%. Among patients not meeting $ScvO_2$ goals, those with preexisting LVCD had lower $ScvO_2$ levels, indicating an LVCD subgroup with impaired ability to improve $ScvO_2$ despite resuscitation.

33 Importance of Accurate and Timely Diagnosis of Severe Sepsis and Septic Shock

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Background: Studies suggest early goal-directed therapy improves outcomes among patients with severe sepsis and septic shock (SS and SH). One challenge is accurately diagnosing sepsis and classifying it as SS or SH.

Methods: We conducted a retrospective chart review of prospectively collected patients admitted to the medical intensive care unit (MICU) from July 1, 2008, to June 31, 2012, with a diagnosis of SS and SH. We analyzed in-hospital mortality between patients admitted directly from the emergency department (ED) to the MICU vs those admitted to the MICU from the wards within 48 hours of hospital admission. We then performed a subgroup analysis of in-hospital mortality among those transferred from the wards within 48, 24, 12, and 6 hours of admission. All patients were managed with a standardized treatment protocol once diagnosed with SS and SH.

Results: A total of 979 patients were analyzed, of whom 326 (33.3%) were transfers from the wards. Of these, 150 (46%) were transferred within 48 hours of admission, 38 (25.3%) between 24-48 hours, 45 (30%) 12-24 hours, 29 (19.3%) 6-12 hours, and 38 (25.3%) in <6 hours. Baseline APACHE II scores were similar (>48h, 27.1 $\pm$ 8.3; 24-48 h, 26.7 $\pm$ 7.8; 12-24 h, 25.4 $\pm$ 7.5; 6-12 h, 24.1 $\pm$ 7.9; <6 h, 26 $\pm$ 9.6). In-hospital mortality for patients transferred to the MICU <48 hours from admission was 24% vs 17.9% (P=0.041) for patients admitted directly from the ED. For the cohort transferred from the wards, in-hospital mortality was similar among groups (24-48 h, 26.3%; 12-24 h, 22.2%; 6-12 h, 24.1%; <6 h, 23.7%).

Conclusion: Patients who were not initially diagnosed with SS and SH upon admission and later transferred to the MICU had significantly worse in-hospital mortality than patients diagnosed in the ED. Improving the diagnostic accuracy of SS and SH and predicting which patients may progress to SS and SH after presentation to the ED may improve outcomes.

34 Reducing Central Line–Associated Bloodstream Infections Through the Addition of Disinfecting Port Protectors to the Central Line Bundle

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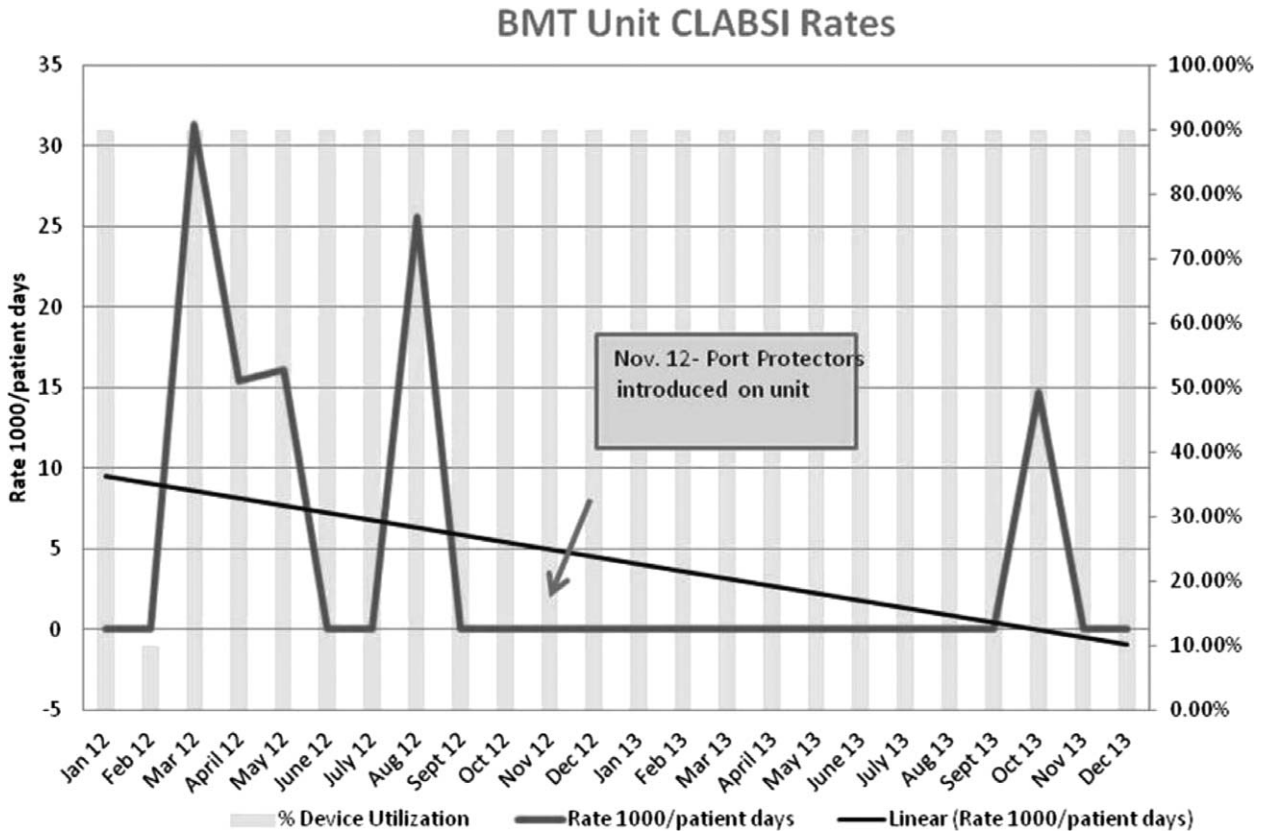
Background: Central line–associated bloodstream infections (CLABSIs) are the second leading cause of death from a healthcare-acquired infection in the US. CLABSIs are preventable when proper management of the central line is hardwired into daily practice. Efforts to use the central line bundle recommendations by the Centers for Disease Control and Prevention have driven nationwide improvements, but the elimination of CLABSIs continues to be a challenge for many hospitals, especially among immunocompromised patients such as those in acute oncology settings. The aim of this project was to implement the use of disinfecting port protectors as part of the central line bundle to prevent CLABSI on an acute inpatient oncology unit.

Methods: In October 2012, the staff were educated on the following: (1) disinfecting port protectors are luer-lock caps with an alcohol-saturated sponge-like foam that cleans the catheter hub; (2) the port protectors disinfect within 3 minutes after application and act as a barrier for up to 7 days if not removed; (3) once removed, a fresh port protector must be applied; and (4) hand hygiene and patient education are important for prevention of CLABSI. The port protectors were made available for use in November 2012. Audits to track port protector compliance, central line care, and hand hygiene began in January 2013.

Results/Conclusion: The compliance of using the port protectors increased to >90%, central line dressing compliance has been sustained at 100%, and hand hygiene ranges from 80%-90%. CLABSI rates decreased on both the units; the Bone Marrow Transplant Unit had 1 CLABSI since the project began.



35 Outcomes of Unselected Patients with Metastatic Renal Cell Carcinoma Treated with Frontline Pazopanib Therapy

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Background: Pazopanib prolongs progression-free survival (PFS) in treatment-naïve and cytokine-refractory metastatic renal cell carcinoma (mRCC). Outcomes and safety of its use in frontline settings in unselected patients and data regarding subsequent therapies after frontline pazopanib are limited. We aim to evaluate outcomes/safety of frontline pazopanib in patients with clear cell mRCC.

Methods: After obtaining IRB approval, we reviewed records of patients with mRCC treated with frontline pazopanib from November 2009 to November 2012. PFS and overall survival (OS) were estimated by the Kaplan-Meier method. Univariate and multivariate Cox proportional hazards models were fitted to evaluate the association of PFS and OS with covariables. Response was assessed by a blinded radiologist using RECIST criteria v1.1. Toxicity was graded by NCI CTCAE v3.0.

Results: Among 88 clear cell mRCC patients, there were 66 events (death or PD). Twenty-three (31%) of 75 evaluable patients had a partial response. There was 1 complete response; 43 (57%) patients had stable disease. Median PFS was 13.7 months (95% CI, 8.68–18.29), and median OS was 29.1 months (95% CI, 20.2–NA). At time of analysis, 30% of patients were still receiving pazopanib, 55% discontinued due to PD or death on treatment, and 10% discontinued due to AEs. There were no treatment-related deaths. Fifty-three patients (60%) received second-line therapy after firstline pazopanib, with a median treatment duration of 3.7 months (range, 0.5-41 months). Twenty-nine patients (33%) received therapy in the third-line and subsequent settings.

Conclusion: Pazopanib confirmed its efficacy and safety in clear cell mRCC in a real-world frontline setting. AEs were mild/moderate and manageable.

36 Missed Opportunities for HIV Diagnosis in a New Orleans Area Health System

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Background: Many patients present to multiple healthcare facilities in the years preceding their initial HIV diagnosis. These missed opportunities are the key to capturing the undiagnosed HIV-positive individuals. The HIV infection rate in Louisiana has increased while the national rate has steadily decreased, resulting in the third highest rate of HIV infection in the United States (30.2 per 100,000). The objective of this study was to determine the number of healthcare visits within the Ochsner Health System at which an HIV diagnosis could have been made in an HIV-unaware individual.

Methods: Potential study subjects were identified from the positive HIV ELISA tests performed by the blood bank between January 1, 2011 and December 31, 2012. Charts were reviewed and information was collected from the 2 years preceding diagnosis. Age at diagnosis, race, initial CD4 count, opportunistic infections, risk factors, and the number and type of healthcare attendances were recorded. Patients previously diagnosed with HIV were excluded.

Results: Of the 139 individuals identified, 69 have been reviewed thus far, and 50 met the inclusion criteria. This cohort attended a total of 277 visits in the 2 years preceding initial diagnosis. The majority of these missed opportunities were to primary care doctors (44%), followed by specialty clinics (29%) and emergency room visits (17%). Thirty-eight percent received a diagnosis of AIDS at initial diagnosis.

Conclusion: Nontraditional settings for testing should be considered to decrease the undiagnosed, unaware population and minimize complications of late diagnosis.

37 Why the Foley? MD/RN Collaboration with Implementation of Evidence-Based Criteria Reduces Foley Catheter Utilization

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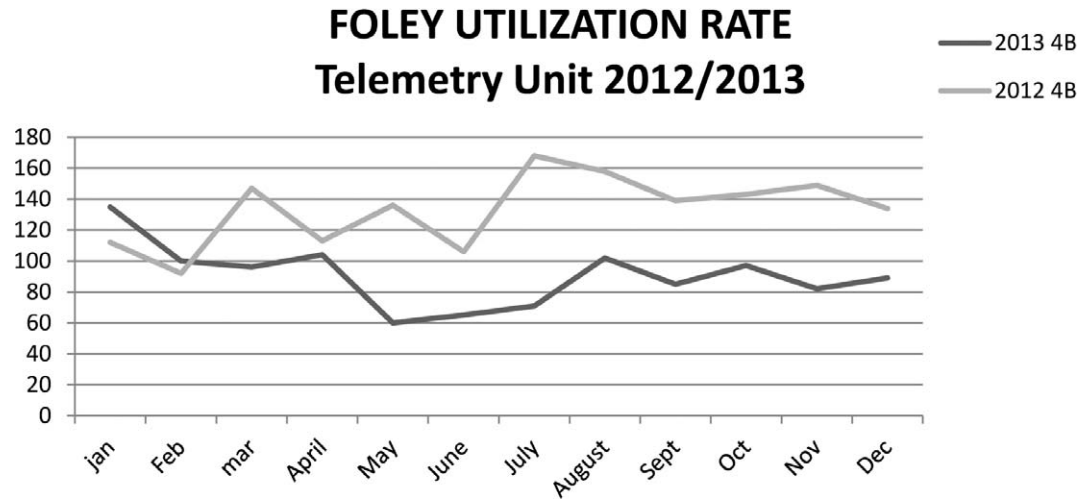
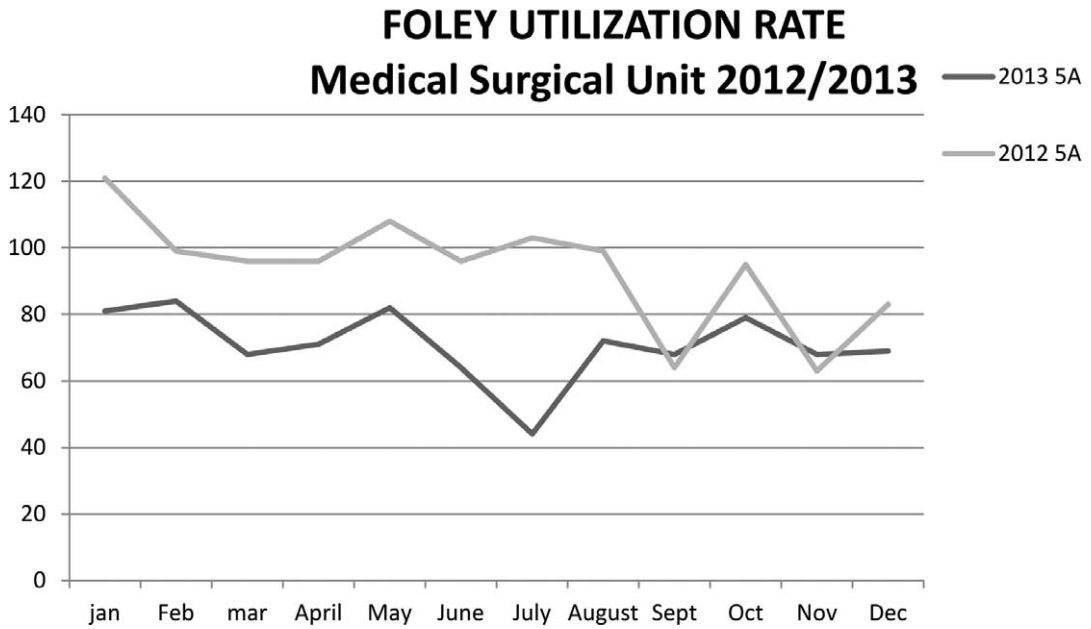
Background: Complications associated with catheter-associated urinary tract infections (CAUTI) result in increased length of stay, discomfort, excess costs, and sometimes mortality. An estimated 13,000 deaths are associated with CAUTI each year. However, most cases of CAUTI are preventable.

Methods: The purpose of this quality project at a 110-bed acute care facility was to use a systematic approach to reduce Foley catheter utilization in an effort to reduce CAUTI. The Centers for Disease Control recommendations for reducing CAUTI were adopted and implemented in April 2013. Key components of this multidisciplinary project involved medical staff, nursing, medical executive approval of exclusive insertion criteria, and a nursing monitoring program of catheter utilization. Monitoring involved nursing assessment of whether the patient met criteria prior to insertion and daily criteria monitoring on patients with a catheter on 2 units. If the patient did not meet criteria, the nurse and physician collaborated to ensure adherence to the guidelines.

Results: Catheter utilization decreased by 27% on the medical surgical unit from 93 catheter days to 65 catheter days and decreased by 53% on the telemetry unit from 133 catheter days to 63 catheter days after 3 months. Overall, catheter utilization was reduced from 2,729 catheter days in 2012 to 1,936 catheter days in 2013, resulting in a 29% reduction with only 1 CAUTI compared to 3 in the prior year.

Conclusion: Preliminary findings suggest that a systematic process involving physician/nurse collaboration and daily monitoring is essential to reducing Foley catheter utilization.





38 An Evidence-Based Approach to Creating a Restraint-Free Environment in the Pediatric Intensive Care Unit

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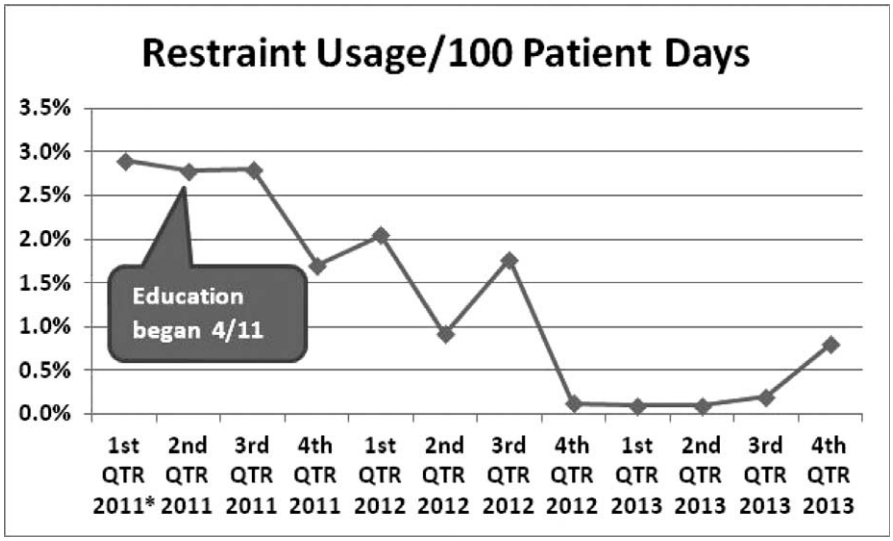
Background: Since 1996, The Joint Commission has published guidelines that establish requirements for the safe use of restraint and seclusion procedures for patients. Physical restraint has historically been common practice in the pediatric intensive care unit (PICU) despite a lack of empirical evidence to support its use. Children in pediatric intensive care are frequently sedated to decrease anxiety, as well as to prevent accidental dislogement of medical devices needed to monitor and sustain life.

Methods: An interidisciplinary task force was created in the PICU to decrease restraint usage by 50% within 2 years using evidence-based strategies. The task force consulted PICUs around the country as well as scientific evidence to develop a daily checklist to assess the need for restraints. Numerous plan-do-study-act cylces were used to (1) educate the staff on appropriate use of restraints, (2) identify methods to be used as alternatives to restraint usage, (3) increase staffing to allow more time at the bedside to ensure safety, and (4) conduct weekly chart audits to assess staff compliance with restraint guidelines.

Results: Since inception of the new restraint guidelines, the rate of restraint usage decreased by approximately 68% at 1 year and 97% at 2 years. In addition, patients spent approximately 2 fewer days in restraints for each restraint episode. The PICU continues to provide a near restraint-free environment to the children and families.

Conclusion: Forms of restraint in the PICU should only be used as a safety measure of last resort.



39 Evaluation of Pneumococcal Titers and Response to 23-Valent Pneumococcal Polysaccharide Vaccine in Children with Cough

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Background: The clinical significance of poor pneumococcal antibody protection in children with cough is not well understood. The objective of this study was to examine the prevalence and clinical significance of low pneumococcal titers, pre- and post-23-valent pneumococcal polysaccharide vaccine (PPSV-23) in patients ≥2 years presenting with cough.

Methods: We reviewed the charts of patients ≥2 years presenting to the Ochsner Pediatric Pulmonology clinic from 2006-2012 with a diagnosis of cough. We determined the prevalence of low pneumococcal titers pre- and post-PPSV-23. Clinical significance was evaluated by examining improvement in cough in patients with response to PPSV-23 and by determining whether various clinical characteristics were associated with low pneumococcal titers pre- or post-PPSV-23. Stata was used for statistical analysis. Fisher exact test was used to determine statistical significance.

Results: Pneumococcal titers were measured in 276 patients. Abnormal titers were found in 73.2%. Adequate response to PPSV-23 occurred in 77.5%. Clinical improvement in cough occurred in 53.5% of patients with adequate response to PPSV-23. There were no statistically significant associations between any of the clinical characteristics and low initial pneumococcal titers except for environmental tobacco smoke (ETS) exposure.

Conclusion: Our pediatric patients with cough often had low pneumococcal titers, good response to PPSV-23, and clinical improvement in cough in greater than 50%. Poor pneumococcal antibody production may contribute to cough in children with ETS exposure. Larger, prospective studies would be helpful in predicting which children with cough are likely to benefit from PPSV-23 and which children may have specific antibody deficiency with cough as a presenting symptom.

Clinical characteristics in patients with low initial pneumococcal titers, normal initial pneumococcal titers, adequate response to PPSV-23 and inadequate response to PPSV-23

Characteristic	Low Initial Pneumococcal Titers (N=202)	Adequate Initial Pneumococcal Titers (N=74)	Adequate Response to PPSV-23 (N=86)	Inadequate Response to PPSV-23 (N=7)
Abnormal Chest X-ray	92 (45.5%)	32 (43.2%)	47 (54.7%)	5 (71.4%)
Abnormal Chest CT	39 (19.3%)	16 (21.6%)	29 (33.7%)	4 (57.1%)
Abnormal BAL	42 (20.8%)	18 (24.3%)	35 (40.7%)	5 (71.4%)
History of atopy	93 (46%)	26 (35.1%)	43 (50%)	6 (85.7%)
Previous pneumonia	75 (37.1%)	23 (31%)	40 (46.5%)	7 (100%)
Previous otitis	108 (53.5%)	33 (44.6%)	57 (66.3%)	5 (71.4%)
Previous sinusitis	37 (18.3%)	11 (14.9%)	21 (24.4%)	4 (57.1%)
Previous antibiotic treatment for cough	67 (33.2%)	26 (35.1%)	35 (40.7%)	5 (71.4%)
Previous intravenous antibiotic treatment	18 (8.9%)	7 (9.5%)	11 (12.8%)	3 (42.9%)
Environmental tobacco smoke exposure	80 (39.6%)	20 (27%)	43 (50%)	4 (57.1%)
Wet cough	77 (38.1%)	28 (37.8%)	39 (45.4%)	3 (42.9%)

* There was a statistically significant association with environmental tobacco smoke exposure and low initial pneumococcal titers (Fisher's Exact = 0.064). No other statistically significant associations.
* Duration of cough (≤ 2 weeks, 2-4weeks, and > 4 weeks) was also examined with no statistically significant association to low initial pneumococcal titers or inadequate response to PPSV-23.

40 Early Skin-to-Skin Contact and Exclusive Breastfeeding Rates

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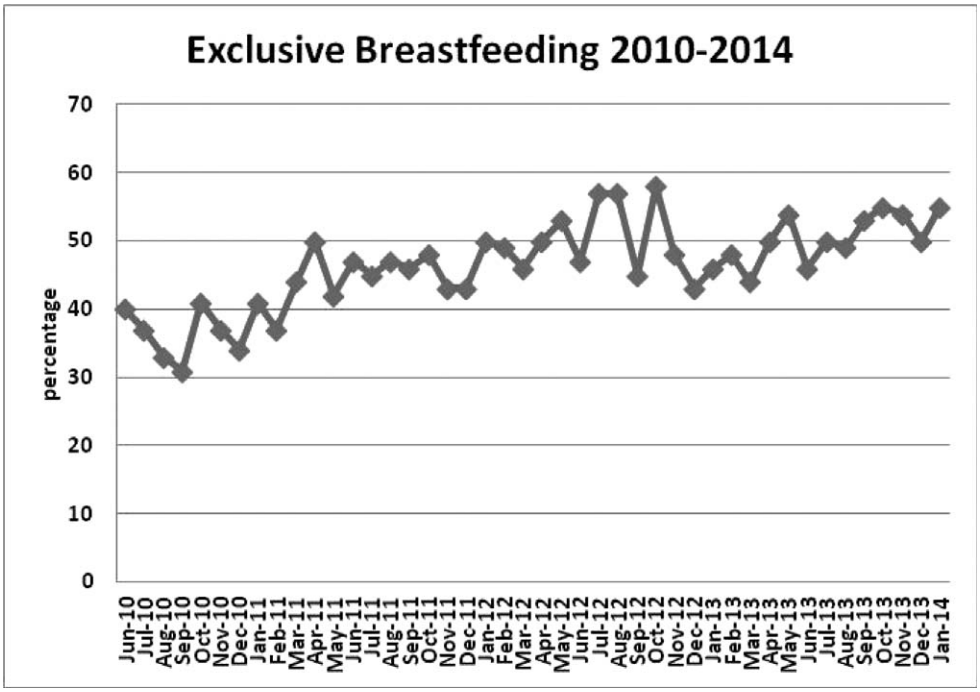
Background: Early skin-to-skin contact between mother and infant after delivery is associated with significant improvement in breastfeeding initiation and duration rates. Louisiana ranks as one of the lowest among US states for initiation and duration of lactation during the first year of infant life; Ochsner breastfeeding outcomes are similar to those of the state.

Methods: In an effort to improve lactation outcomes at Ochsner, the maternal child nursing staff aimed to sustain the rate of documented skin-to-skin contact after vaginal delivery at or above 75% and improve the exclusive breastfeeding rate to 50%. Using plan-do-study-act rapid cycles, the nursing team (1) educated staff, providers, and patients (prenatal clinic and hospital) on the importance of early skin-to-skin contact after vaginal delivery; (2) used journal club article critiques to increase staff buy-in for the skin-to-skin initiative; (3) developed and disseminated the essential elements of electronic medical record documentation of skin-to-skin contact; (4) included skin-to-skin compliance targets as a unit goal to be adopted by all staff; and (5) conducted retrospective audits to provide staff feedback on compliance rates.

Results: The compliance with offering skin-to-skin care immediately postdelivery has improved from 20% (2010) to 63% (2013). In addition, the exclusive breastfeeding rate has increased from 31% (2010) to 48% (2013).

Conclusion: The next step is to include skin-to-skin contact immediately after nonemergent cesarean deliveries in an effort to continue to improve our exclusive breastfeeding rates.



41 Transient Elastography to Measure Liver Stiffness in Pediatric Patients with Cystic Fibrosis–Associated Liver Disease

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Background: Liver disease develops in about 20% of patients with cystic fibrosis in adolescence, but it is difficult to detect by conventional diagnostic tools such as ultrasound and liver function tests. Liver biopsy remains the benchmark for detecting fibrosis; however, it is invasive and only samples a small portion of the liver. Transient elastography is a noninvasive modality for measuring liver stiffness in adults but its utility in pediatric liver disease needs to be assessed. It may also be useful in determining fibrosis in cystic fibrosis–associated liver disease (CFLD). We aimed to establish the normal range of liver stiffness in healthy control pediatric subjects and to determine the usefulness of liver stiffness measurements (LSMs) in detecting liver disease in patients with cystic fibrosis.

Methods: We used LSMs (FibroScan) (CFnoLD) and 69 aged-matched healthy control subjects. Ten valid LSMs were performed and the median value, expressed in kilopascals (kPa), was taken as representation of liver stiffness. Fibrosis was determined using the Scheuer scoring method in 12 CFLD patients following liver biopsy, and 5 patients with abnormal ultrasound findings, variceal bleeding, or portal hypertension were deemed to have stage 3-4 fibrosis.

Results: LSMs were reliably performed in 72% of this pediatric cohort, which is comparable to adult populations. LSM was difficult to perform reliably in younger children (30%, 60%, and 75% reliability in children 0-1, 1-4, and >4 years, respectively). There was no statistically significant effect of age on LSM ($r=0.07$, $P=0.57$). LSM was higher in CFLD patients (11.8 kPa) than CFnoLD patients (4.7 kPa) and control subjects (4.1 kPa), KW ANOVA $P<0.0001$. There was a significant difference in LSM in control subjects vs CFnoLD patients ($P=0.001$). It was possible to distinguish CFLD from CFnoLD patients using receiver operating characteristics curve analysis; an area under the curve of 0.81, $P=0.0001$ gave a cutoff of LSM 5.7 kPa with 70% sensitivity, 84% specificity, and likelihood ratio 4.4. There was a positive correlation between Scheuer fibrosis stage and LSM in CFLD patients (Spearman rank, $r=0.77$; $P=0.0005$). CFLD patients with severe fibrosis (Scheuer F3-4) has a significantly higher LSM compared to those with early fibrosis (Scheuer F0-2) (Mann Whitney U, $P=0.002$).

Conclusion: In this study, we showed the potential utility of transient elastography in the detection of liver disease in patients with CF and established a normal range of LSM in a non–liver disease cohort of control children. LSM can discriminate early from severe fibrosis in CFLD and is a useful noninvasive tool to monitor liver disease.

42 Canagliflozin Lowers A1C and Blood Pressure Through Weight Loss–Independent and Weight Loss–Associated Mechanisms

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43 Effects of a Fitness Program on Ochsner Employees Fighting Obesity

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Background: Workplace fitness programs have been shown to improve measures of health in an organization's workforce. This study assessed the effect of an intensive, 90-day employee fitness program at Elmwood Fitness Center on body weight in an obese employee cohort over a 1-year period. Secondary endpoints evaluated the program's effects on lipids, waist/hip ratio, heart rate, and blood pressure (BP).

Methods: Participants were eligible for the study if they were an Ochsner employee with a BMI >30, passed a physical exam, and participated in the Virgin HealthMiles program. The intervention consisted of weekly nutritional education, motivational interviewing, and participation in an exercise program customized and overseen by a personal trainer at Elmwood Fitness Center for 90 days. Participants then had free access to the fitness center for the remainder of the study. Endpoints were measured every 3 months.

Results: A total of 56/86 (65%) participants completed the 1-year study. Their mean baseline weight decreased from 228 pounds (SD ± 36.6) to 221 pounds (SD ± 39.3) (P=0.0019). Systolic BP decreased from 122 (SD ± 11.1) to 114 (SD ± 1.2) (P<0.001) and diastolic BP decreased from 82 (SD ± 8.7) to 75 (SD ±7.8) (P<0.001). There were no statistically significant changes in total cholesterol, HDL, waist/hip ratio, or heart rate.

Conclusion: An intensive 90-day fitness program was associated with significant weight reduction and improvement in blood pressure control in obese employees. No changes were noted in measures of lipid metabolism.

44 Perfusion Computed Tomography–Obtained Blood-Brain Barrier in Prediction of Infarct Expansion Following Acute Ischemic Stroke

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Background: Deterioration of the blood-brain barrier is believed to contribute to infarct extension following acute ischemic stroke. Patient outcomes have been shown to be inversely proportional to final infarct volume; thus, prediction of infarct growth is one of the most important prognostic criteria in stroke care. The goal of this study was to evaluate the use of perfusion computed tomography (CT)–obtained blood-brain barrier permeability (BBBP) to predict infarct expansion.

Methods: Thirty patients with acute ischemic stroke who underwent perfusion CT on admission were enrolled in this study. Ethical approval and consent were obtained. BBBP was measured using the Gjedde-Patlak method, and follow-up imaging was performed at least 5 days after stroke onset. Infarct expansion ratio was defined as the percentage of initial penumbra turned to infarct. Linear regression was used to test the relationship between increased microvascular permeability and infarct expansion ratio.

Results: A proportional association was found between increased BBBP (measured in penumbra and entire ischemic volume) and infarct expansion ratio (r=0.40, P<0.05). Predictability of infarct expansion was stronger with implication to untreated patients compared to patients who underwent recanalization therapy (r=0.53 and 0.43, P<0.05 for permeability value measured in penumbra and the entire ischemic volume, respectively).

Conclusion: This study established that increased microvascular permeability is a potential early predictor of infarct expansion and radiological outcome in patients following acute ischemic stroke, particularly in those treated conservatively.

45 Factors Related to the Sensitivity of Emergency Medical Service Impression of Stroke

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Background: The purpose of this study was to examine factors related to the sensitivity of emergency medical service (EMS) stroke impression.

Methods: We reviewed ambulance and hospital records of all patients transported to Long Island College Hospital between January 1, 2009, and January 1, 2011, by the hospital-based EMS with a discharge diagnosis of stroke or a confounding diagnosis and compared EMS impression to hospital discharge diagnosis. We examined relationships between EMS diagnostic sensitivity and age, gender, ethnicity, NIH Stroke Scale (NIHSS), motor signs, aphasia, neglect, lesion side, circulation, stroke type, EMS provider level, and documented Cincinnati Pre-hospital Stroke Scale (CPSS) with contingency analysis and logistic regression.

Results: Stroke was validated in 18% (56/310) of patients, and 50% (28/56) of these were missed by EMS. EMS diagnostic sensitivity was 50% (95% CI, 36%–64%), and was related to NIHSS quartile (P=0.014), with higher sensitivities in second (69%; 95% CI, 44%–86%) and third (75%; 95% CI, 47%–91%) vs first (20%; 95% CI, 7%–45%) and fourth (45%; 95% CI, 21%–72%) quartiles, motor signs (62% vs 14%, P=0.002), and documented CPSS (84% vs 32%, P=0.0002). EMS impression was independently related to NIHSS quartile (first vs second adjusted OR=9.61; 1.13–122.03; P=0.038) and CPSS (adjusted OR=12.58; 2.22–111.06; P=0.003).

Conclusion: Stroke was missed more frequently when CPSS was not documented, in patients without motor signs, and in patients with moderate-severe stroke. The sensitivity of prehospital screening for patients with moderate-severe stroke might be improved by including additional nonmotor signs and by stressing indications for when screens should be performed.

46 Exclusion Criteria in Prehospital Stroke Screens Contribute to Their Insensitivity

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Background: Prehospital stroke recognition is insensitive. Many prehospital stroke screens exclude patients ≤45 years of age and those with baseline wheelchair or bedridden status, seizures at onset or epilepsy, and transient symptoms. We examined the number and kind of stroke patients that are excluded by these criteria.

Methods: We included all patients with a discharge diagnosis of acute ischemic stroke (AIS) or intracerebral hemorrhage (ICH) at Ochsner Medical Center during 2013. We determined frequency of patients with age ≤45 years, baseline modified Rankin Scale (mRS) of ≥4 (unable to walk without assistance or worse), history of epilepsy or admission diagnosis of seizures, and admission diagnosis of transient ischemic attack (TIA). We examined the relationships between exclusion criteria and discharge diagnosis using chi square test.

Results: Discharges included 83% (621/747) AIS and 17% (126/747) ICH, including 9.4% (70/747) ≤45 years, 10.5% (44/421) with mRS ≥4, 2.4% (18/747) with seizure/epilepsy, and 2.0% (15/747) with admission diagnosis of TIA. Patients ≤45 years and those with baseline mRS ≥4 occurred with similar frequency in AIS and ICH. Seizure/epilepsy was more frequent in ICH (6.4% vs 1.6%, P=0.0016), and there was a trend towards more TIA on admission in AIS (2.4% vs 0%, P=0.078).

Conclusion: Commonly used prehospital stroke screens exclude a significant percentage of patients with AIS and ICH, including about 10% of stroke patients aged ≤45 years. Removing exclusion criteria from prehospital stroke screens may improve their sensitivity.

47 Efficacy of Perampanel in Secondary Generalized Seizures: Data from Three Phase III Trials

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Background: The purpose of this study was to evaluate the efficacy of perampanel against secondarily generalized seizures (SGS) in patients with pharmacoresistant focal seizures in 3 phase III studies.

Methods: Patients included were aged ≥12 years with uncontrolled focal seizures with or without SGS treated with 1-3 concomitant antiepileptic drugs. Randomization was to placebo or perampanel 2, 4, 8, or 12 mg/d in 6-week titration and 13-week maintenance periods. Endpoints were responder rate (% of patients with ≥50% reduction in seizure frequency from baseline) for SGS and median percent change in SGS frequency.

Results: A total of 1,480 patients were randomized and treated in the 3 phase III trials. Of these, 564 patients had SGS at baseline with a median baseline SGS frequency per 28 days range of 3.4-4.0. A significant improvement in responder rates for SGS was seen in patients randomized to 8 mg (60.5%, $P<0.001$) and 12 mg (53.7%, $P<0.01$) compared with placebo (37.0%). A significant median percent change in SGS frequency was seen in patients randomized to 4 mg perampanel (–48.6%, $P<0.01$), 8 mg (–62.9%, $P<0.001$), and 12 mg (–53.3%, $P<0.001$) vs placebo (–19.4%). Seventy-five percent response rates were significantly improved in patients receiving 8 mg perampanel (46.5%, $P<0.001$) and 12 mg (38.9%, $P<0.05$) vs placebo (24.3%). Seizure-free rates were also significantly higher with perampanel 8 mg (28.9%, $P<0.01$) and 12 mg (27.0%, $P<0.05$) than with placebo (14.2%).

Conclusion: A significant reduction in seizure frequency was found in pharmacoresistant partial seizures with SGS treated with 4, 8, and 12 mg/d of perampanel.

48 Impact of Coordinated Stroke Care Across the Continuum: Mortality and Length of Stay Results from Ochsner's CMS Innovation Grant

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Background: Stroke is the fourth leading cause of death in the US and requires timely intervention to decrease mortality and improve outcomes. Understanding the continuum of care and employing innovative care strategies to manage and monitor patients in the hospital and outpatient settings are essential in this population.

Methods: Through a Centers for Medicare and Medicaid Services (CMS) Health Care Innovation Award (grant #1C1CMS331043), Ochsner Neuroscience Institute developed a comprehensive stroke care program that provides streamlined, coordinated care from entry to the Emergency Department through 12 months postdischarge. Clinical benefits and increased efficiency, including impact on patient mortality and length of stay for patients within this innovative stroke care model in an inpatient setting are described. Patients with a discharge diagnosis of stroke who arrived at OMC-Jefferson Highway 6 months prior to project implementation (July-December 2012) and 6 months postproject implementation (January-June 2013) were compared. Patient demographic characteristics were described, and risk-adjusted mortality index analysis, which compares the expected mortality rate and the observed mortality rate, were calculated. Patient volume, length of stay, and other clinical data were compared to expected length of stay.

Results: This analysis found a 13% decrease in mortality and a 19.5% decrease in overall length of stay in the first 6 months following program implementation.

Conclusion: These data suggest that increased coordination of inpatient care for stroke will lead to improved patient outcomes and decreased costs for stroke care.

49 Prevention of Recurrent Stroke in the Stroke Belt: Reducing Risk Through Effective Management of Weight, Tobacco Use, and Blood Pressure

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Background: According to the American Heart Association, managing behavioral risk factors, including weight control, tobacco use, and blood pressure management, are key factors to reduce risk for a stroke. This is particularly important to prevent recurrence among patients who have a prior history of stroke. Stroke is the fourth leading cause of death in Louisiana, and behavioral factors that influence stroke recurrence are high, as 69% of adults are overweight or obese, 24.8% are current smokers, and 38.4% have been told they have high blood pressure, all of which are higher than the US average.

Methods: The purpose of this study was to illustrate the benefits of ongoing monitoring and intervention of behavioral risk factors in a comprehensive outpatient program called Stroke Mobile. This novel outpatient initiative provides targeted follow-up care and patient/family education in the patient's home for 12 months post–hospital discharge and is funded through a Centers for Medicare and Medicaid Services Health Care Innovation Award (grant #1C1CMS331043). Patient data collected between 2012-2013 as part of the comprehensive stroke care program were included. Demographic characteristics and behavioral factors, including body mass index, tobacco use, and blood pressure at hospital discharge and throughout participation in Stroke Mobile were analyzed.

Results: In this sample, 66% of patients with elevated blood pressure postdischarge fell to within an acceptable range after starting Stroke Mobile.

Conclusion: Results suggest potential benefits of weight, tobacco use, and blood pressure management poststroke.

50 Stroke Central: An Innovative Approach to Coordinated Comprehensive Stroke Care

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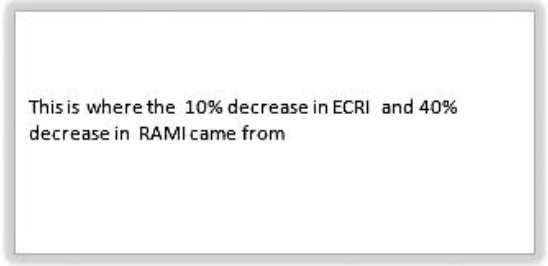
Background: Stroke care involves a costly and time-sensitive interdisciplinary approach that requires a supportive platform to optimize quality and functional outcomes. An innovative care model, Stroke Central, was implemented to comprehensively monitor patients for the early detection and management of inpatient stroke-related complications and facilitate postdischarge care transition.

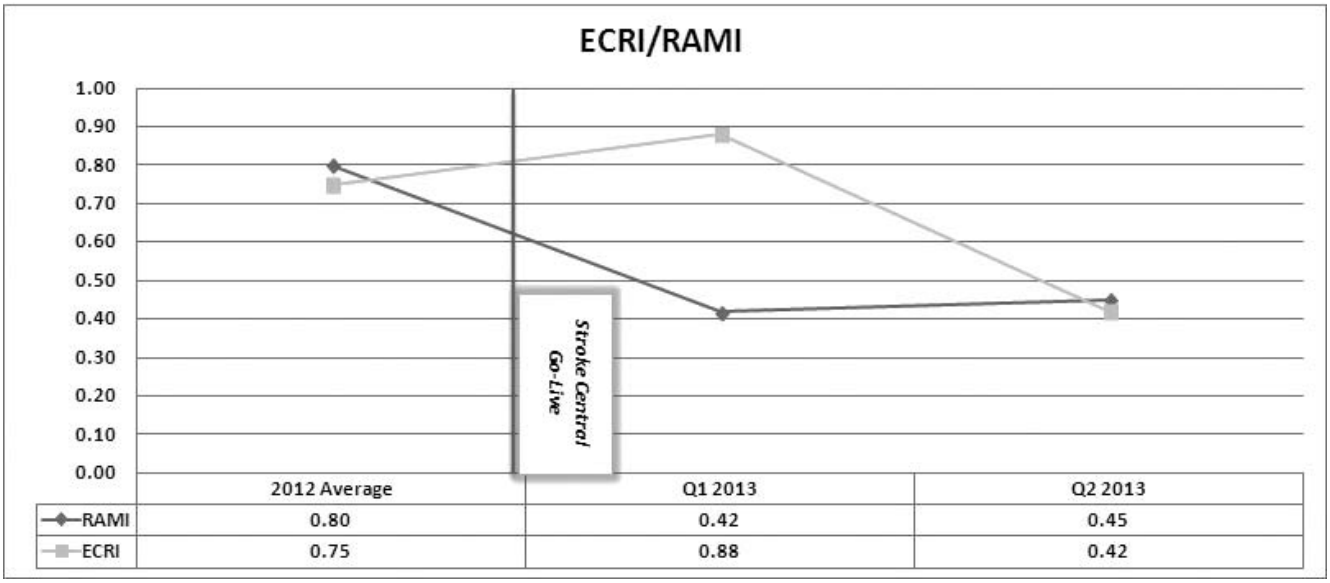
Methods: Stroke Central utilizes an intraprofessional team of specialists, including vascular neurologists, advance practice nurses, therapists, and a registered nurse (RN) coordinator. The RN coordinator serves as the central contact to handle all stroke-related concerns from staff and patients. Improved adherence to standard of care guidelines is facilitated through daily intraprofessional rounds and monitoring by the RN coordinator. Inpatient Stroke Central outcomes from January-June 2013 (n=480) were compared to historical controls from 2012 (n=822).

Results: Preliminary results suggest improved patient outcomes for the 480 patients seen in the first 2 quarters of 2013 compared with the 822 patients seen in 2012. Length of stay decreased in cases of hemorrhagic stroke (10%), ischemic stroke (19%), and transient ischemic attacks (31%). The expected complication rate index decreased by 10%, and risk-adjusted mortality rate decreased by 40%.

Conclusion: Integration of the Stroke Central model into this Joint Commission-certified Comprehensive Stroke Care Center has contributed to overall improvements in stroke outcomes since project inception.

AIS		
	RAMI	ECRI
2012 Average	0.80	0.75
Q1 2013	0.42	0.88
Q2 2013	0.45	0.42





51 Comparative Study of Two Minimally Invasive Surgical Techniques for Lumbar Degenerative Spondylolisthesis: An Ochsner Experience

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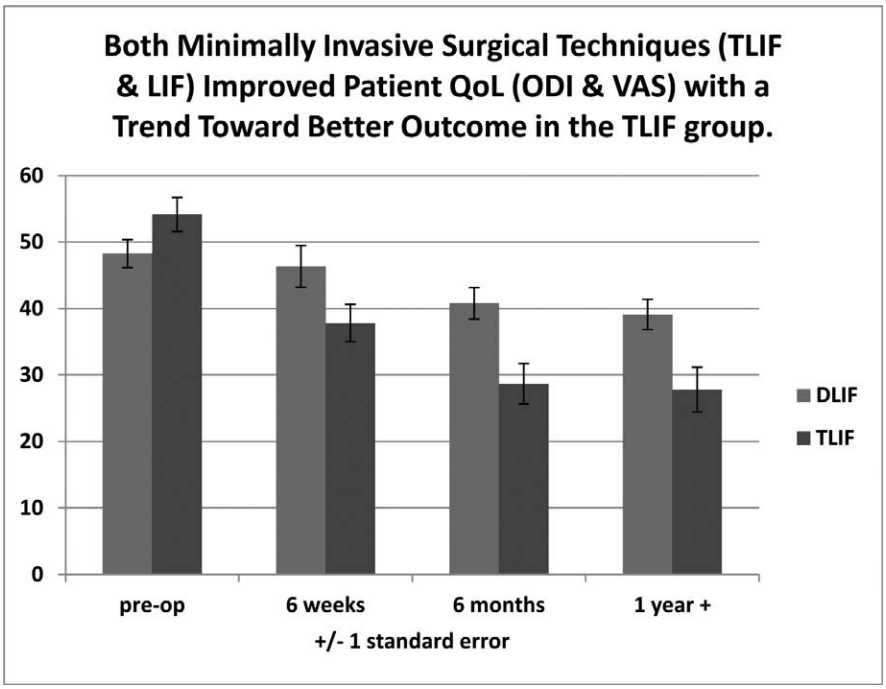
Background: Several minimally invasive fusion strategies have been described, including anterior lumbar interbody fusion, posterior lumbar interbody fusion, transforaminal lumbar interbody fusion (TLIF), and 2 lateral approaches, extreme and direct lateral interbody fusion. All have pros and cons compared to open surgery and each other. The effect of minimally invasive surgery (MIS) of all types is that patients have less blood loss, faster postoperative ambulation, lower use of opioids, and shorter in-hospital stay, which is nearly always significantly better than an open procedure. However, there is limited data on how these MIS techniques compare with each other, especially in the treatment of a specific spine diagnosis such as degenerative spondylolisthesis. The objective of this study was to compare patient demographics, preoperative BMI, length of surgery, perioperative complications, estimated blood loss (EBL), hospital length of stay (LOS), direct hospital costs, and radiographic and functional outcomes in patients who underwent either MIS-TLIF or lateral interbody fusion (MIS-LIF) for a diagnosis of degenerative spondylolisthesis at T12-L5.

Methods: We reviewed our clinical database and patient medical records for sex, direct surgical cost, age at surgery, preoperative BMI, EBL, hospital LOS, duration of surgery, postoperative complications, and patient-reported functional outcomes (Oswestry Disability Index [ODI] and Visual Analog Scale [VAS]). These outcomes are reported preoperatively and at 6 weeks, 6 months, and 1 year+ postoperatively. We used paired *t* test and a two-sample *t* test with equal variances to determine means, standard errors, and *P* values for statistical significance.

Results: There were 32 patients in the LIF group and 39 in the TLIF group. There was no significant difference in age, BMI, direct cost, hospital LOS, or duration of surgery between the 2 groups. EBL was significantly less for LIF patients (P=0.0007). Within the LIF group, patients reported significantly improved ODI scores at 6-month and 1-year follow-up (P=0.0029 and 0.0039, respectively). LIF VAS scores were significantly better at 6 weeks and 6 months postoperatively (P=0.0011 and 0.0005, respectively). Within the TLIF group, patients reported significant ODI and VAS improvement at all follow-up points. When comparing the LIF against the TLIF patients, ODI improvement was significantly better in the TLIF group at all follow-up points (P=0.0476, 0.0034, and 0.0165, respectively). VAS scores were significantly better for TLIF patients at 1-year follow-up (P=0.0461).

Conclusion: Both MIS-LIF and MIS-TLIF demonstrate significant and sustained improvement outcomes in patient pain and quality of life. When compared against each other, MIS-TLIF seems to offer better functional outcomes.



52 Deep Brain Stimulation for Movement Disorders in 95 Patients at Ochsner: Incidence of Surgical Complications and Subjective Outcomes at a Single Center

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Background: Variable rates of surgical complications in deep brain stimuation (DBS) have been reported, with infections, intracranial hemorrhage, and lead migration being the most common. This retrospective review aimed to evaluate the incidence of postoperative surgical complications in 128 DBS procedures performed at Ochsner Health System between 2006 and 2010.

Methods: Analysis of data from 95 patients who underwent DBS lead implantation (128 procedures) between 2006 and 2010 by the neurosurgeon (RDS) at our institution was conducted and the rate of incidence of surgical complications was assessed. Subjective improvement of symptoms (per patient report) was reviewed.

Results: Incidence of infection was 1.05% of patients (1/95) and 0.78% of procedures (1/128). Other complications included lead migration which occurred in 2.1% of patients (2/95), transient postoperative delirium in 5.26% of patients (5/95), intracranial hemorrhage without clinical sequelae in 2.1% of patients (2/95), and lead malfunction in 1.05% of patients (1/95). Diagnoses included Parkinson disease (70 patients; 58 males, 12 females; mean age at DBS: males 62, females 59 years); essential tremor (23 patients; 10 males, 13 females; mean age at DBS: males 65, females 69.5 years); other indications (2 patients). Mean length of hospital stay was 3.05 days. The percentage of patients reporting symptomatic improvement postoperatively was 96.4%. The postoperative incidence of infection and lead migration at our center is low at 1.05% and 0.78%, respectively, with the majority of patients reporting improved symptom control.

Conclusion: Systematic analysis of surgical data from different movement disorder centers will help us share information regarding techniques, outcomes, and complications.

53 Association of Guillain-Barré Syndrome with the Development of Diabetes Mellitus

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Background: The endocrine function of the pancreas is also regulated by the autonomic system. Severe Guillain-Barré syndrome (GBS) is known to affect the autonomic system. We investigated an association between new-onset diabetes mellitus (NODM) after severe GBS.

Methods: A cohort of patients in the MarketScan database with claims of GBS was classified by the presence or absence of NODM. We defined NODM as a new claim of diabetes mellitus >90 days after the GBS claim. Variables suggesting severity of GBS were collected for analysis by univariate and multivariate methods.

Results: A total of 3,282 patients with GBS were included, and of these, 199 (6.1%) had NODM. Of the variables collected, older age (50.2 years vs 42.1 years, $P<0.0001$), longer hospital length of stay (14.3 days vs 9.5 days, $P=0.005$), tracheostomy (9.6% vs 4.3%, $P=0.007$), cardiac arrhythmia (5% vs 1.2%, $P=0.008$) and discharge to a rehabilitation facility or long-term acute care hospital (25.6% vs 19.3%, $P=0.024$) were associated with NODM. We allocated a point each to age >45 years, length of hospital stay >10 days, tracheostomy, arrhythmia, and discharge to an acute or subacute rehabilitation facility to develop a scoring system for GBS severity. The total possible score was 5 points, with higher scores reflecting increasing GBS severity. Using the total points, risk of NODM was stratified as low risk (0-1), moderate risk (2-3), and high risk (4-5). The frequency of NODM in the low-risk group was 4.9%, in the moderate-risk group it was 8.8%, and in the high-risk group it was 15.5%.

Conclusion: Among patients with GBS, features suggestive of severe disease are associated with NODM.

54 Phase I Cancer Clinical Trial for 4-Demethyl-4-Cholesteryloxycarbonylpenclomedine (DM-CHOC-PEN)

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[5]*Detroit Clinical Research Center, Detroit, MI*
[6]*DEKK-TEC, Inc., New Orleans, LA*
[7]*Service de Pharmacologie, Hôpital Pitié Salpétrière, Paris, France*
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Background: DM-CHOC-PEN is a polychlorinated pyridine cholesteryl carbonate whose mode of action is via alkylation of DNA at N^7 guanine and via oxidative stress. The aims of this clinical trial were to determine maximum tolerated dose (MTD), safety, dose-limiting toxicities (DLTs), and pharmacokinetics (PK) of DM-CHOC-PEN, as well as to monitor for clinical responses.

Methods: DM-CHOC-PEN was administered as a 3-hour IV infusion once every 21 days to patients with advanced cancer: melanoma (n=3), colorectal (n=3), breast (n=3) and glioblastoma multiforme (n=6). The trial included patients with advanced cancer ± CNS involvement. The starting dose was 39 mg/m^2 with escalations to date up to 111 mg/m^2.

Results: Twenty-six patients have been treated. The MTD was 2 tiered and defined as 85.8 mg/m^2 for patients with liver involvement and 98.7 mg/m^2 for patients without liver abnormalities. The most common adverse effects were fatigue (n=2), liver dysfunction/elevated bilirubin (Gr 3, n=3; Gr 2, n=1), ALT/AST (Gr 2, n=3), alkaline phosphatase (Gr 2, n=3) and an allergic reaction (Gr 2, n=1). Three patients with liver metastasis demonstrated hyperbilirubinemia (Gr 3 SLT)–2 at the 98.7 mg/m^2 level and 1 patient at the 111 mg/m^2 level. Five additional patients with liver disease have been treated at 85.8 mg/m^2 level without toxicity.

Conclusion: DM-CHOC-PEN is safe at the presented dose levels and has a favorable PK profile. Eight patients had responses or significant progression-free survival, including 6 with CNS involvement. A phase II trial has begun in patients with primary brain cancer and brain metastases from melanoma, breast cancer, and lung cancer.

55 Mini-Open Thoracolumbar Corpectomy—Functional Outcome and Cost-Utility Analysis Compared to Open Corpectomy

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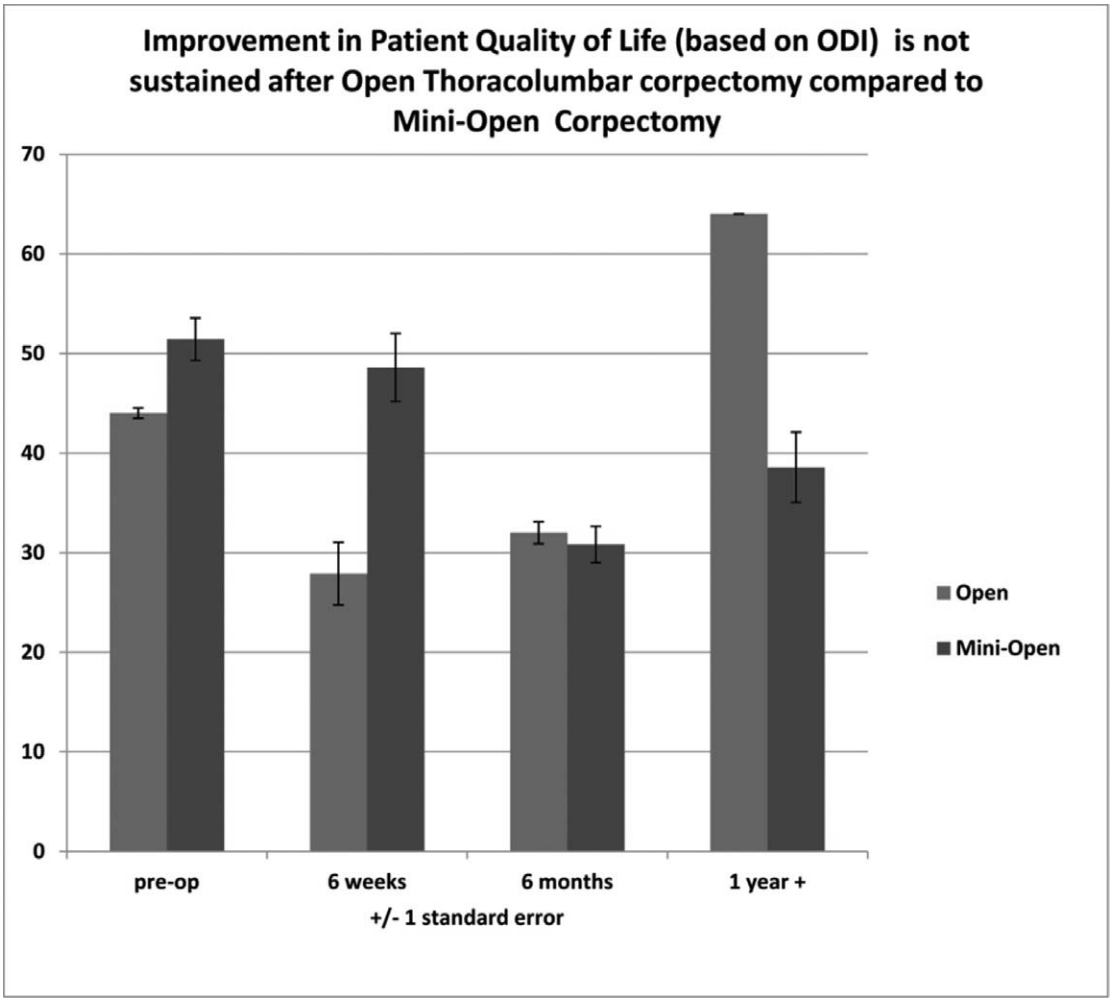
Background: Open thoracolumbar corpectomy carries significant morbidity and may require prolonged hospitalization, rehabilitation, and pain control for the patients. Newer mini-open surgical techniques have the potential to reduce such factors. However, there aren't many published studies that have compared open vs mini-open corpectomy techniques. The objective of this study was to review the outcomes of open and mini-open thoracolumbar corpectomy cases performed at Ochsner Medical Center. We reviewed patient demographics, diagnosis, surgical techniques, perioperative complications, direct hospital cost, and patient-reported functional outcomes.

Methods: We reviewed our clinical database and patient medical records for sex, direct hospital cost, age at surgery, preoperative BMI, estimated blood loss (EBL), hospital length of stay (LOS), duration of surgery, postoperative complications, and patient-reported functional outcomes (Oswestry Disability Index [ODI] and Visual Analog Scale [VAS]). These outcomes are reported at preoperative, 6 weeks, 6 months, and 1 year+ postoperative intervals. We used paired *t* test and a 2-sample *t* test with equal variances to determine means, standard errors, and *P* values for statistical significance.

Results: There were 17 patients in the open group and 21 in the mini-open group. There was no significant difference in age, BMI, or length of surgery. Most patients had a diagnosis of a burst fracture or metastatic tumor. Compared to the open group, patients who underwent mini-open surgical technique had less EBL and less hospital LOS (6 vs 9 days). One patient in the mini group had revision surgery due to malpositioned instrumentation. Mini-open is a more cost-effective treatment given lower hospital direct costs ($34,373 vs $45,376) and better functional outcome at 1+ year (mini-open: ODI preoperatively 51.43 to 38.57 at last follow-up; VAS 6.7 to 4.1) compared to open corpectomy (ODI preoperatively 44 to 64 at last follow-up; VAS 5.8 to 5.7). Patients who underwent open corpectomy did not have sustainable improvement in their ODI and VAS at last follow-up.

Conclusion: Mini-open corpectomy is a more cost-effective treatment option than open corpectomy, with better and sustained patient-reported functional outcomes.



56 Minimally Invasive Lumbar Laminectomy Is a More Cost-Effective Treatment for Degenerative Spinal Stenosis Compared to Open Laminectomy—Ochsner Experience

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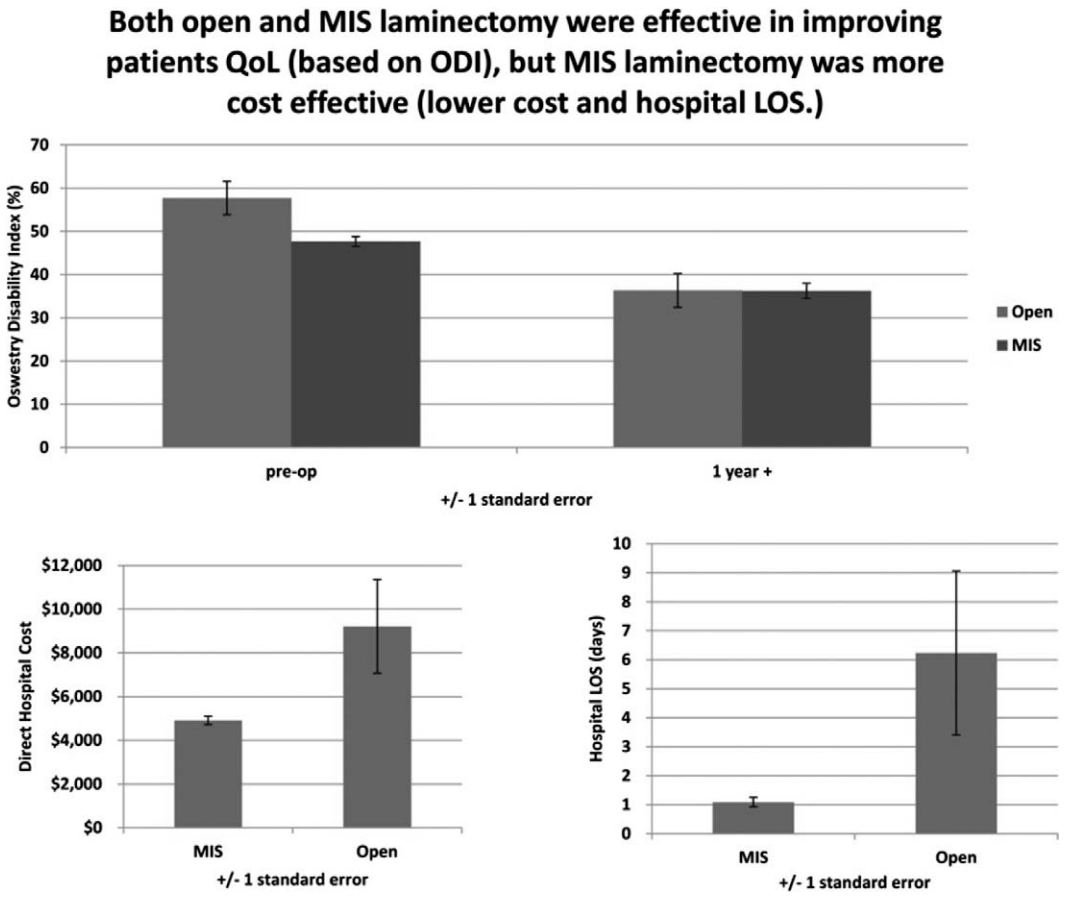
Background: Lumbar spinal stenosis (LSS) is a common cause of leg pain and difficulty walking, especially in older patients. Open laminectomy and bilateral laminotomy are the standard procedures for decompression of LSS and are very effective, although further degeneration of the spine can occur due to significant disruption of supporting structures of the spine. This may necessitate additional spinal surgery. Less invasive surgical techniques that decompress the spinal canal but better preserve spinal stability, such as unilateral approach for bilateral decompression, have been developed. However, limited long-term follow-up publications exist that report on cost effectiveness and clinical outcomes of minimally invasive surgery (MIS) laminectomy compared to conventional open laminectomies. The objective of our study was to compare the cost effectiveness and functional outcomes of MIS lumbar laminectomy compared to open laminectomy over the last 5 years.

Methods: We reviewed our clinical database and patient medical records for sex, age at surgery, preoperative BMI, estimated blood loss (EBL), hospital length of stay (LOS), duration of surgery, postoperative complications, and patient-reported Oswestry Disability Index (ODI) and Visual Analog Scale (VAS) scores. These outcomes are reported at preoperative, 6 weeks, 6 months, and 1 year+ postoperative intervals. Paired *t* test and 2-sample *t* test with equal variances were performed to determine means, standard errors, and *P* values for statistical significance.

Results: There were 116 patients in the MIS group and 13 patients in the open group. There were no significant differences in age between the 2 groups. Outcomes in the MIS group were significantly more favorable in EBL (58 vs 171), direct cost ($4,903 vs $9,210), and hospital LOS (1 day vs 6 days). Compared to their preoperative scores, there was significant and sustained improvement in the ODI and VAS scores at each follow-up point for MIS patients. The outcomes in the open group were significantly improved at all follow-up points except 6 months for ODI and VAS.

Conclusion: MIS laminectomy is a more cost-effective and effective treatment option for patients with spinal stenosis compared to traditional open surgical techniques.



57 Lamotrigine Pharmacokinetics Following Oral and Stable-Labeled Intravenous Administration in Young and Elderly Epilepsy Patients

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Background: This study aimed to investigate the age effect on pharmacokinetic (PK) parameters of lamotrigine (LTG) and to estimate parameter variability.

Methods: To be included, subjects had a stable maintenance regimen of LTG for at least 2 weeks either as monotherapy or with other noninteracting antiepileptic drugs. Subjects fasted overnight and did not take their morning oral LTG doses. Fifty mg of a stable-labeled intravenous LTG formulation (SL-LTG) replaced 50 mg of a patient's normal daily oral LTG dose. Thirteen blood samples were collected per person over 96 hours. SL-LTG and unlabeled LTG concentrations were measured by GCMS. Concentration-time data were analyzed by nonlinear mixed-effects modeling (NONMEM). A total of 384 unlabeled and 352 SL-LTG plasma concentrations were obtained from 28 patients.

Results: The population mean of LTG clearance for a 70 kg (median body weight of patients in the study) elderly epilepsy patient was 1.31 L/h. Young patients had a 37% higher clearance than elderly patients. The population estimate for intercompartmental clearance (Q) was 5.6 L/h. The central (V_c) and peripheral (V_p) volumes of distribution were estimated to be approximately 45 L and 17 L, respectively. The population mean for k_a was 0.56 h^{-1}. The absolute bioavailability (*F)* of the tablet formulation of LTG was estimated to be 75% and did not differ by age.

Conclusion: LTG clearance in the elderly was 27% lower than in younger patients. These results support a dose adjustment based on age with elderly patients receiving 73% of the daily dose prescribed for a younger adult to achieve an equivalent serum concentration.

58 Neurointensivists as the Main Providers of Care for Telestroke Transfers: Our 4-Year Experience

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59 Outcomes of Lumbar Spinal Surgery in Patients Older Than 65 Years: Does Minimally Invasive Surgery Make a Difference?

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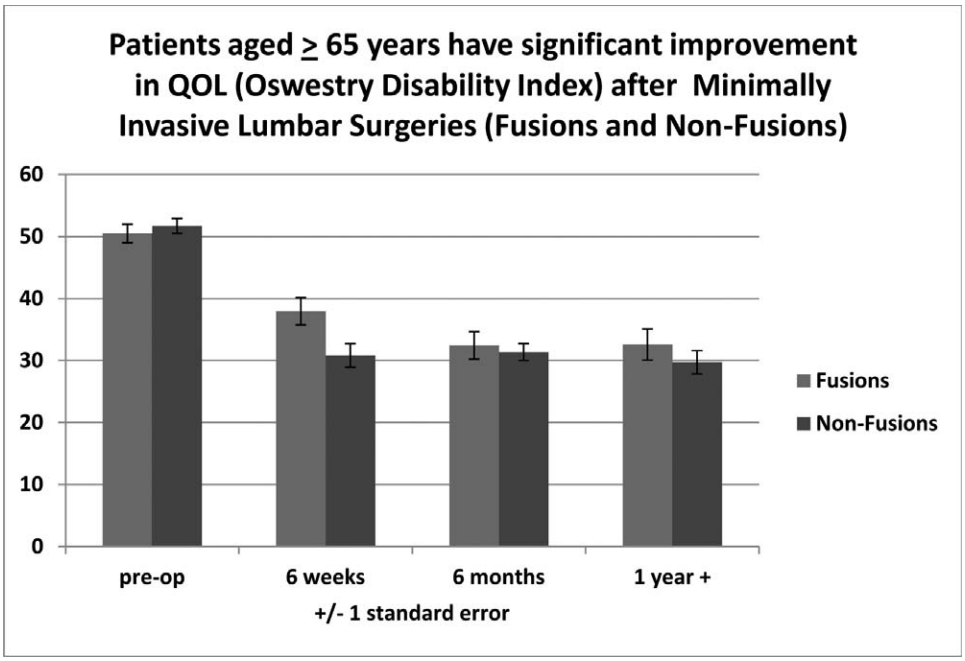
Background: The benefit of spine surgery is often put to question, especially in the elderly population. Minimally invasive surgical techniques for spine surgery are associated with smaller surgical incisions; decreased surgical morbidity including blood loss, postoperative pain, and wound infection; and decreased hospital length of stay (LOS). These advantages to conventional open approaches make minimally invasive spine surgery particularly appropriate for older patients with multiple comorbidities, but its potential benefits have never been reported in patients >65 years old. We reviewed our patient database for patients >65 who underwent lumbar minimally invasive spine surgeries at our institution between January 2009 and November 2013. We reviewed patient demographics, diagnosis, type of surgery (fusion vs nonfusion), perioperative complications, and patient-reported functional outcomes.

Methods: An existing clinical database and patient medical records were consulted for sex, direct surgical cost, age at surgery, preoperative BMI, estimated blood loss (EBL), length of hospital stay, duration of surgery, postoperative complications, and patient-reported Oswestry Disability Index (ODI) and Visual Analog Scale (VAS) scores. These outcomes were reported at preoperative, 6 weeks, 6 months, and 1 year+ postoperative intervals. Using deidentified information, the paired *t* test and the 2-sample *t* test with equal variances were performed to determine means, standard errors, and *P* values for statistical significance. Patients were analyzed as a whole group, as well as in age breakdowns of 65-69, 70-79, 80-89, and 90-99 years.

Results: There were 183 patients in the group, with 80 males and 103 females. Age range was 65-95 years. Average EBL and LOS were 128.38 and 2.52, respectively. Compared to their preoperative scores, all patients reported significant improvements in their ODI and VAS, both in the fusion and nonfusion surgical categories at all follow-up intervals (ODI preoperative vs 1+ years postoperative 51.2 vs 30.9; VAS 6.2 vs 3.5). In the nonfusion group, patients showed significant ODI improvement at all ages and follow-up intervals (preoperative 51.7 vs 1 year postoperative 29.7). In the fusion group, patients showed significant improvement in their ODI in the 65-69 and 70-79 groups. VAS was significant in all groups except 90-99.

Conclusion: Minimally invasive spine surgery is a safe and effective treatment option for patients older than 65 years. All patients in our study had significant improvement in their quality of life (based on ODI) except those older than 90 years where the functional benefit of minimally invasive spine fusion is diminished. Additional subgroup analyses and analysis of predictors of poor outcomes are ongoing.



60 Single Center Experience Comparing Outcomes of Strokes Treated with Mechanical Thrombectomy vs Without Mechanical Thrombectomy Using CTP for Patient Selection

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Background: The aim of this study was to relate the outcomes of patients with large vessel occlusion (LVO) strokes treated with neuroendovascular procedures vs those who received conservative treatment, based on a 2-year (2012-2013), single center experience.

Methods: In 2 groups, 116 consecutive patients with CTA-confirmed intracranial LVO were retrospectively studied. Patients with hemorrhages, tandem lesions, or high-grade carotid stenosis were excluded from this analysis. Patients in group 1 (n=50) underwent endovascular revascularization procedures while patients in group 2 (n=66) were treated conservatively (medical management alone or with IV t-PA if within treatment window). Presentation NIHSS, risk factors, mortality, discharge NIHSS, discharge modified Rankin Scale (mRS), and follow-up mRS were recorded and compared. Onset of symptoms to CTP time was also studied.

Results: Patient populations were similar in age, gender, and risk factors. There was no statistical difference in their presentation NIHSS (17.7 vs 19.6, $P=0.1236$). The 2 groups were statistically different in their discharge NIHSS (7.82 vs 18.26, $P<0.00001$), discharge mRS (2.42 vs 4.30, $P<0.00001$), follow-up mRS (2.1 vs 4.12, $P<0.00001$), mortality (8% vs 21%, $P=0.043$), and good outcome at discharge (mRS 0-2)(62% vs 14%, $P<0.00001$). There was a statistically significant difference between the groups regarding onset to imaging (6h 28m vs 8h 26min, $P=0.0247$).

Conclusion: Patients who presented with high NIHSS, LVO, and large ischemic penumbra who underwent neuroendovascular reperfusion treatment had better outcomes and decreased mortality in our patient population. This highlights the importance of time, reperfusion, and collateral flow to maintain tissue viability.

61 Presence of Cerebral Microhemorrhage Is not Associated with Hemorrhagic Conversion Following Thrombolysis for Acute Ischemic Stroke

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Background: Hemorrhagic conversion remains an unpredictable complication of thrombolysis for acute ischemic stroke. Cerebral microhemorrhages (CMHs) have been associated with intracerebral hemorrhage (ICH) and may serve as a biomarker for hemorrhagic conversion of acute ischemic stroke treated with tissue plasminogen activator. Our study objective was to determine the relationship between the presence of CMH and hemorrhagic conversion of acute ischemic stroke treated with intravenous thrombolysis.

Methods: Using our institutional stroke registry, we identified patients with acute ischemic stroke treated with intravenous tissue plasminogen activator between January 1, 2012, and December 31, 2012, whose workup included an MRI with gradient recovery echo (GRE) sequence performed within 12-24 hours of receiving thrombolysis. The presence and location of CMHs were recorded and compared with the presence of postthrombolytic ICH. Patient demographics, clinical history (hypertension, diabetes mellitus, hyperlipidemia, atrial fibrillation, coronary artery disease, congestive heart failure, chronic renal insufficiency), NIHSS, LDL, HDL, HbA1c, total cholesterol, and ejection fraction on transthoracic echocardiogram were collected and analyzed. Statistical analysis was done using Fisher exact test for categorical variables and *t* test for continuous variables.

Results: A total of 68 patients were identified and studied. Fifteen patients (23.5%) demonstrated CMH, while a total number of 45 CMHs (37 lobar and 8 nonlobar) were observed. Hemorrhagic conversion was more frequent in patients with CMH compared to patients without CMH; however, the difference was not statistically significant (26.7% vs 9.4%; $P=0.0999$). In addition, there was no difference in the frequency of parenchymal hematoma between the groups (20% vs 5.7%; $P=0.116$). Of the clinical and laboratory variables recorded, only a history of atrial fibrillation was significantly different between the patients with and without CMH (0% vs 26.4%; $P=0.0289$).

Conclusion: The presence of CMH on GRE is not associated with an increased frequency of hemorrhagic conversion or presence of parenchymal hematoma following thrombolysis for acute ischemic stroke.

62 Improving Patient Care via Resident-Led Ophthalmologic Exam Skills to Midlevel Emergency Room Staff

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Background: The objective of this project was to evaluate how comfortable midlevel emergency room staff at Ochsner Medical Center felt with their ophthalmologic exam before and after a 1-hour ophthalmic skills transfer course led by a resident ophthalmologist.

Methods: A 6-question observational survey of exam skills and knowledge base was taken before an ophthalmic skills transfer course taught by a resident ophthalmologist. The questions asked about comfort with ocular anatomy, slit lamp examination, differential diagnosis for ocular pathology, ocular terminology, pupil evaluation, and helpfulness of the Conclusion, respectively. The Conclusion was separated into 30 minutes of a PowerPoint presentation and 30 minutes of basic physical examination skills using the slit lamp. After the Conclusion, the participants were asked to reassess their comfort with the ophthalmologic physical examination knowledge and retake the survey.

Results: Ten participants completed both the precourse and postcourse surveys. The surveys were conducted on a 4-point scale, with 1 being *very uncomfortable*, 2 being *uncomfortable*, 3 being *comfortable*, and 4 being *very comfortable*. A 2-tailed dependent *t* test was performed and for each of the 6 questions there was a significant increase in comfort score between the before and after scenarios ($P<0.0007$, $P<0.0001$, $P<0.003$, $P<0.00001$, $P<0.003$, $P<0.03$, respectively).

Conclusion: This project demonstrates that with minimal intervention and a multidisciplinary approach to problem solving, midlevel clinical practitioners in the emergency room can improve their comfort with the ophthalmologic physical exam and knowledge base.

63 Defining the Structure-Function Horizontal Meridian of the Human Macula and Optic Nerve Head in Glaucoma

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Background: The conventional practice to orient the SD-OCT posterior pole asymmetry analysis thickness map is such that the horizontal meridian bisects the optic nerve head. We tested the validity of this arbitrary practice in glaucoma patients with asymmetric split-fixation visual field loss. We aimed to minimize the disparity between the SD-OCT posterior pole thickness map and the functional HVF pattern standard deviation profile by determining whether varying the alignment of the macular thickness grid has an effect on posterior pole asymmetry analysis.

Methods: We identified stable glaucoma patients who manifested split fixation on HVF testing and performed SD-OCT posterior pole asymmetry analysis. The posterior pole asymmetry analysis image was oriented in a systematic manner with the macular thickness grid centered on the fovea and its horizontal meridian intersecting the optic nerve head at 5 preselected equidistant locations. The posterior pole asymmetry analyses for each optic nerve head intercept generated average thickness measures of superior and inferior retinal hemifield and temporal quadrant.

Results: A one-way repeated-measures ANOVA demonstrated a significant difference between the horizontal intercept locations for the hemifield ratios as well as for the temporal quadrant ratios. The thickness ratios for both the hemifield and temporal quadrants were maximized when the posterior pole asymmetry analysis' horizontal meridian intercepted the inferior pole of the optic nerve head.

Conclusion: Our results demonstrate that in order to maximize the congruency of the macular structure-function relationship in patients with glaucoma, the horizontal meridian of the posterior pole asymmetry grid should intersect near the inferior pole of the optic nerve head.

64 Ocular Involvement in Patients with Fungemia: A Meta-Analysis

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Background: Ophthalmologists receive many inpatient consultations to evaluate for eye infection in patients with fungus found in their blood cultures. Much has been written in the literature about the evaluation of these patients, including conflicting opinions about the necessity of routine ophthalmology consultation. Our goal was to perform a systematic review and meta-analysis of the literature to strategize a cost-saving approach for management of fungemic patients without significantly increasing morbidity. We aimed to determine the prevalence and patterns of ocular involvement in patients with fungemia.

Methods: We performed a systematic review and meta-analysis of the literature describing fungemia with ocular involvement.

Results: Eighteen studies involving 1,662 patients with fungemia were included. The pooled relative risks for chorioretinitis and endophthalmitis were 5.5% (95% CI, 3.3%–8.9%) and 1.6% (95% CI, 1.0%–2.4%), respectively. Only 6 patients (0.4% of total patients) required intravitreal injections or vitrectomy. In subgroup analyses, the overall pooled percentage of ocular involvement prior to year 2001 was 5.7%, which significantly decreased to 1.9% after year 2001.

Conclusion: The current prevalence of disseminated ocular fungal infection in patients with fungemia is low. This meta-analysis suggests that ocular fungal disease in patients with fungemia is significantly lower than previously reported. This is probably due to early and widespread use of prophylactic systemic antifungal agents.

65 Risk-Stratified Usage of Antibiotic-Loaded Bone Cement for Primary Total Knee Arthroplasty: Short-Term Infection Outcomes with a Standardized Cement Protocol

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Background: Antibiotic-loaded bone cement (ALBC) usage has been proposed as an infection prevention measure and compared to plain bone cement (PBC) in multiple studies. No study to our knowledge has examined its efficacy in high-risk patients undergoing primary total knee arthroplasty (pTKA). The purpose of this study was to compare infection rates in 3 cohorts of patients: (1) all patients receiving only PBC, (2) all patients receiving only ALBC, and (3) only high-risk patients receiving ALBC.

Methods: A standard cement protocol was instituted for pTKA. From January 2000 to January 2005, all pTKAs were performed with PBC. From February 2005 to May 2010, all were performed with ALBC. From June 2010 to March 2012, all patients received PBC unless they had diagnoses of rheumatoid arthritis, obesity, and/or diabetes. Institutional registry data and individual charts were retrospectively reviewed. Infection rates among cohorts were compared at 1, 6, and 12 months utilizing 2-sided proportion tests.

Results: A total of 3,292 consecutive pTKAs were analyzed. The 1-year infection rate for the entire study was 0.67%. There were 1,025 patients who received PBC, 1,486 ALBC, and 781 risk stratified. The 30-day infection rates for cohorts 1, 2, 3 were 0.29%, 0.20%, and 0.13%, respectively. The 6-month rates were 0.39%, 0.54%, and 0.38%, respectively. The 1-year rates were 0.78%, 0.61%, and 0.64%, respectively. The differences in cohort infection rates at all 3 time intervals were not statistically significant.

Conclusion: ALBC does not significantly decrease infection for pTKAs. Even risk-stratified usage of ALBC may be unnecessary and add undue costs without any appreciable benefit.

66 Do Athletes and the General Population Recover the Same after Hip Arthroscopy?

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Background: Hip arthroscopy has been shown to be effective in the management of femoroacetabular impingement syndrome (FAI) in the general population as well as in athletes. The recovery patterns of athletes may differ from nonathletes after hip arthroscopy. The purpose of this study was to identify any difference in recovery pattern after hip arthroscopy between athletes and nonathletes.

Methods: We investigated 265 patients who underwent hip arthroscopy for treatment of FAI and labral pathology. Patients were assessed preoperatively, at 6 weeks, 3 months, 6 months, and yearly with regards to Visual Analog Scale (VAS) pain score, modified Harris Hip Score (mHHS), and Short-Form-12 Physical/Mental Subscales (SF-12 PS)/(SF-12 MS). The patients were split into 2 groups: nonathletic (n=22) and athletic (n=46). A good outcome was defined as (mHHS) >80 at 1 year post–hip arthroscopy.

Results: The athletic group reported significantly lower VAS scores postoperatively through 1 year: (P=0.004), (P=0.0006), (P=0.03), and (P=0.04). The athletic group reported significantly higher (mHHS) preoperatively (P=0.03) and postoperatively through 1 year: (P<0.001), (P<0.001), (P=0.0007), and (P=0.03). The athletic group reported significantly higher SF-12-PS postoperatively through 2 years: (P=0.0007), (P=0.0013), (P=0.013), (P=0.004), and (P=0.02). The SF-12-MS was significantly higher for athletes at 3 months (P=0.03), 6 months (P=0.005), and 2 years (P=0.046). At 1 year post–hip arthroscopy, there was no significant difference with regard to good outcome when comparing athletes to nonathletes.

Conclusion: Athletes recover differently than nonathletes after hip arthroscopy. However, at 1 year post–hip arthroscopy, athletes and nonathletes are equally likely to experience a good outcome.

67 Smartphone-Based Goniometers vs Standard Goniometers: Accuracy in a Clinical Setting

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Background: In this study, we compared 2 popular iPhone-based goniometer applications with the gold standard universal goniometer for the measurement of the knee, hip, and elbow joints.

Methods: Four physicians measured joint angles (hip, knee, elbow) of 3 patients 35 times with 3 goniometers: standard universal 12-inch goniometer (UG), DrGoniometer (DrG), and Simple Goniometer (SG) (both iPhone 5 based). We repeated for a second angle. Then each physician measured joint pictures at a single angle.

Results: For the knee patient, average angles measured with the UG were 34.4° and 83.8°, with DrG 38.9° and 83.1°, and with SG 43.1° and 77.8°. For the hip patient, average angles measured with the UG were 40.1° and 61.8°, with DrG 39.6° and 60.6°, and with SG 41.7° and 58.1°. For the elbow, patient average angles measured with the UG were 28.7° and 106°, with DrG 29.5° and 96.6°, and with SG 29.2° and 100.4°. Knee picture average angles measured were 98.5°, 96.5°, and 93.89° for DG, UG, and SG, respectively. Hip picture average angles measured were 39.4°, 39.9°, and 35.1° for DG, UG, and SG, respectively. Elbow picture average angles measured were 98.1°, 98.8°, and 98.6° for DG, UG, and SG, respectively.

Conclusion: Smartphone applications have many clinical utilities and can save both time and space. This study shows that although there was no significance to the results, the angles do measure within the accepted widths reported in the literature. We further demonstrate the necessity in multiple measurements with any goniometer, as single measurements can vary greatly.

68 Thumb Metacarpal Phalangeal Joint Capsulodesis at the Time of Basal Joint Arthroplasty: A Surgical Technique Utilizing Suture Anchors

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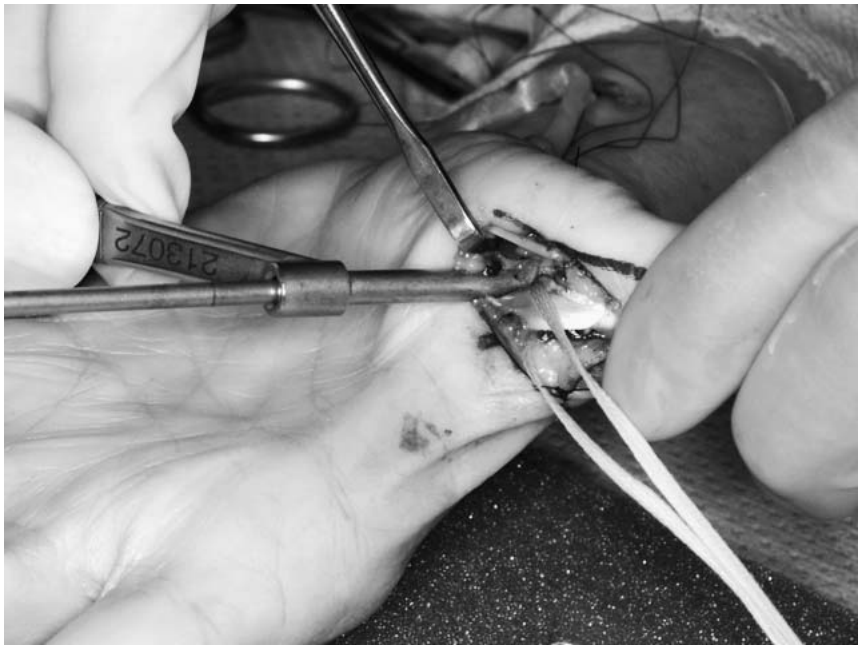
Background: Metacarpophalangeal joint (MCPJ) capsulodesis is a technically demanding procedure with recognized risks of nerve and tendon injury. There is no uniform surgical approach to allow the procedure to be considered routine. The use of capsulodesis for the treatment of the hyperextended MCPJ at the time of basal joint arthroplasty is well established. The purpose of this study was to examine the results of a unique surgical approach to MCPJ capsulodesis that utilizes suture anchors.

Methods: Between 2003 and 2006, 21 thumbs in 19 consecutive patients underwent the procedure utilizing the illustrated suture anchor technique. Indications for surgery were thumb MCPJ hyperextension deformity of at least 30 degrees with radiographic evidence of stage 3 basal joint arthritis. Variables retrospectively examined included preoperative and postoperative range of motion and complications.

Results: The average patient age was 62.4 years (55-79). The average range of motion at the thumb MCPJ after capsulodesis was 0 degrees of extension (range –5 to 5) and 40 degrees of flexion (range 20 to 70). There were no cases of residual hyperextension at the last follow-up (6-38 months). There were 4 complications: 2 superficial pin tract infections treated with oral antibiotics and 2 cases of complex regional pain syndrome. One patient complained of pain at the thumb MCPJ postoperatively and eventually underwent arthrodesis.

Conclusion: Thumb MCPJ capsulodesis at the time of basal joint arthroplasty can easily and effectively be performed utilizing this technique of suture anchors, joint pinning for 6 weeks, and a strict hand therapy protocol.



69 Deep Brain Stimulation for Obsessive-Compulsive Disorder—A Systematic Review and Meta-Analysis

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Background: Deep brain stimulation (DBS) is increasingly being applied to psychiatric disorders such as obsessive-compulsive disorders, major depression, and anorexia nervosa. Double-blind, randomized controlled trials of active vs sham treatment have been limited to small numbers. We undertook a systematic review and meta-analysis on the effectiveness of DBS in psychiatric conditions.

Methods: We performed a systematic literature search for double-blind, randomized controlled trials of active vs sham treatment using PubMed/Medline and EMBASE through April 2013. Where possible, we combined results from studies in a meta-analysis. We assessed differences in final values between the active and sham treatments for parallel-group studies and compared the results of paired analyses in changes from baseline score for crossover designs.

Results: Five studies met inclusion criteria, all of which were of obsessive-compulsive disorder. Forty-four subjects provided data for the meta-analysis. The main outcome was a reduction in obsessive symptoms measured by the Yale-Brown Obsessive Compulsive Scale. Patients on active, as opposed to sham, treatment had a significantly lower mean score (MD −8.93; 95% CI, −13.35 to −5.76; $P<0.001$), representing partial remission. There was also a statistically significant difference between active and sham treatments for 2 studies using the Hamilton Rating Scale for Depression (MD −7.89; 95% CI, −13.86 to −1.91; $P=0.01$). However, one-third of the patients experienced significant adverse effects (n=16).

Conclusion: DBS shows promise for treatment-resistant obsessive-compulsive disorder but there are insufficient randomized controlled data for other psychiatric conditions. It remains an experimental treatment for severe, medically refractory conditions until further data are available.

70 Improved Methodology for Calculating Hepatorenal Index

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Background: The aim of this study was to determine if the hepatorenal index (HRI) can be accurately calculated directly from a picture archiving and communication system (PACS) quickly and efficiently without the need for the multiple steps and specialized software used to calculate HRI in the Marshall et al study [Marshall RH, Eissa M, Bluth EI, Gulotta PM, Davis NK. Hepatorenal index as an accurate, simple, and effective tool in screening for steatosis. *AJR Am J Roentgenol* 2012 Nov;199(5):997-1002].

Methods: We analyzed the same subgroup of patients as Marshall et al. HRI was calculated using images from a PACS and a markup region of interest tool. We compared this value to the value that Marshall et al derived by using specialized software and to standard histological estimates. We created similar subgroups: patients with steatosis based on histologically estimated >5% intracellular fat and patients without steatosis.

Results: We evaluated 99 of the 101 patients included in the Marshall et al study. The average HRI for those with steatosis according to histology was 1.87 ± 0.6 SD and for those without was 1.14 ± 0.2 SD. Our data showed a strong correlation between HRI and percentage of fat (r=0.70, $P<0.001$). HRI ≥1.34 had 92% sensitivity for identifying >5% fat, 85% specificity, 94% negative predictive value, and 79% positive predictive value. Used prospectively, we could have excluded the presence of fat in 88% of our patients without performing a biopsy.

Conclusion: The HRI can be calculated from images directly on a PACS without supplementary software. An HRI ≥1.34 indicates >5% hepatic steatosis and is therefore useful in determining which patients may require liver biopsy.

71 Role of Special Coagulation Studies for Preoperative Screening and Thrombotic Complications in Simultaneous Kidney-Pancreas Transplantation

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Background: Vascular thrombosis is a well-known complication after simultaneous kidney-pancreas transplant (SKPTx). However, the role of special coagulation studies as a preoperative screening in this population is unclear.

Methods: Ninety-six SKPTx were performed between April 2007 and June 2013. All patients underwent enteric and portal drainage and received induction with antithymocyte globulin followed by tacrolimus, mycophenolate mofetil, and steroids. Routine preoperative screening for hypercoagulable state included antiphospholipid antibodies (IgG/IgM), lupus anticoagulant, protein C and protein S activity, Leiden factor V mutation, prothrombin gene mutation, and antithrombin III levels.

Results: Eighty-three patients had complete data for revision. Age at transplant was 41 $\pm$ 9.5 years, BMI was 26.9 $\pm$ 4.7 kg/m^2, and 37 patients (44%) had type 1 diabetes mellitus. Twenty-three of the 83 (27.7%) patients had at least one positive special coagulation study. Four (17.4%) of these 23 patients had a thrombotic event. Fourteen (23.3%) of 60 patients with negative screening coagulation studies had a thrombotic event. The screening workup had a positive predictive value of 0.17, negative predictive value of 0.76, sensitivity of 0.22, and specificity of 0.70. Calculated odds ratio is 0.691 with a confidence interval 0.20 to 2.37 and *P* value of 0.55. There were no differences in patient or graft survival at 1 year between both groups.

Conclusion: A positive special coagulation study in routine preoperative screening does not increase the risk for vascular thrombosis in SKPTx. This revision failed to demonstrate the utility of routine use of preoperative special coagulation studies in SKPTx.

72 Cytomegalovirus Infection in Liver Transplant Recipients after Protocol Change to Universal Prophylaxis

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Background: Cytomegalovirus (CMV) is a prevalent opportunistic infection in solid organ transplant associated with graft failure, rejection, and mortality. Acceptable prevention strategies are universal prophylaxis or preemptive therapy. In September 2010, our program instituted universal prophylaxis for patients considered at moderate risk (R IgG+) for developing CMV infection. This group had previously had no formal method for CMV prevention.

Methods: This single-center, retrospective chart review evaluated episodes of CMV in patients 18 years or older who received a liver transplant at Ochsner Medical Center from September 2007 through August 2009 (preprotocol period) compared to January 2011 to January 2012 (postprotocol period). Follow-up was 1 year posttransplant. The primary objective was to evaluate the effects of the protocol change for prevention of CMV. The secondary objective was to determine the cost of preventing one episode of CMV.

Results: One hundred ninety-nine preprotocol and 127 postprotocol patients were included in this analysis. Sixteen R+ patients developed CMV prior to protocol initiation compared to 1 patient after protocol change (11.3% vs 1.1%; *P*=0.033). The number needed to treat (NNT) was 9.8 to prevent an episode of CMV and 28.6 to prevent tissue-invasive disease. The cost of prophylaxis in 9.8 patients for 3 months with valganciclovir 450 mg daily was $59,336.26 (average wholesale price).

Conclusion: After our protocol change, CMV infections in our patients at moderate risk for CMV decreased significantly. Our data show that it was costly to prevent an episode of CMV; however cost analysis is needed to account for indirect effects.

73 Outcomes after Multiple Retransplantations of the Liver—A Single-Center Experience of 13 Patients

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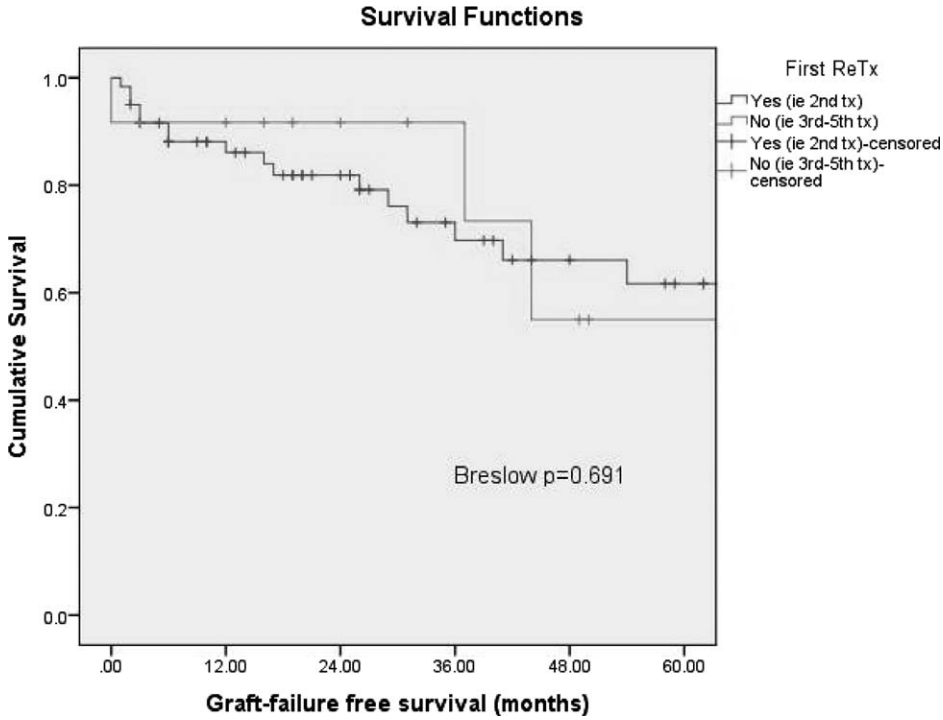
Background: While liver transplantation is an effective treatment for many conditions causing end-stage liver disease, liver allograft failure may occur, necessitating retransplantation (Re-LTx). Retransplantation is associated with increased risk and poorer long-term survival outcomes compared to primary transplantations. Occasionally, third or even fourth liver transplants may be performed. Limited literature is available on patient outcomes after multiple Re-LTx (mRe-LTx). The objective of this project was a critical appraisal of adult patient outcomes after multiple retransplantations of the liver.

Methods: From January 1, 2005, to December 31, 2013, 1,088 consecutive liver transplants were performed at the Ochsner Medical Center. Adult patients who underwent a Re-LTx were identified. Demographic, clinical, operative, and donor information were reviewed retrospectively. The primary outcome studied was graft failure–free survival with the endpoint defined as death or retransplantation.

Results: Seventy-nine adult patients underwent a total of 84 (7.7%) Re-LTx. Seventy-one (84.5%) were first Re-LTx (second liver transplant), 10 (11.9%) were second Re-LTx (third liver transplant), 2 (2.4%) were third, and 1 (1.2%) was fourth Re-LTx. Median age of mRe-LTx patients was younger than first Re-LTx (49 vs 54 years, P=0.008). The indications for first Re-LTx include recurrent disease (49.3%), hepatic-artery thrombosis (23.9%), and chronic rejection (12.7%). For mRe-LTx, indications were recurrent disease (69.2%) and hepatic artery thrombosis (15.4%). Median follow-up was 24.5 (range 0-103) months. Excluding early Re-LTx performed within 90 days, graft failure–free survival for mRe-LTx vs first Re-LTx was 91.7% vs 86.1% at 1 year and 73.3% vs 69.7% at 3 years (P=0.691).

Conclusion: Our experience with multiple Re-LTx shows that excellent graft failure–free survival rates comparable to first Re-LTx can be achieved.



74 Liver Transplantation for the Morbidly Obese: The Ochsner Experience

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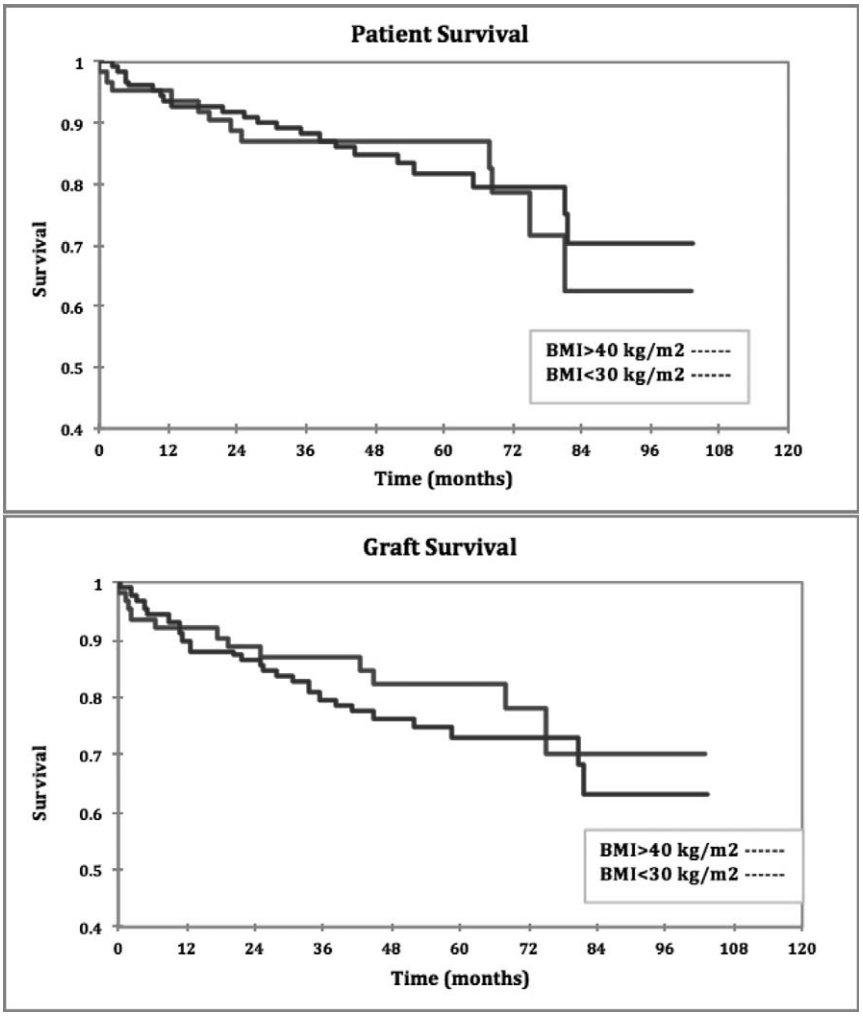
Background: Obesity levels in the US liver transplant (LT) population are greatly increasing. Several studies looking at liver transplantation outcomes in morbidly obese individuals have shown mixed results. The objective of this study was to compare outcomes in LT patients with a BMI >40 kg/m^2 with outcomes in LT patients with a BMI <30 kg/m^2.

Methods: This is a retrospective study conducted by reviewing the charts of patients who received an LT at Ochsner Medical Center. Between January 1, 2005, and March 1, 2013, our center performed 63 liver transplants in patients with a BMI >40 kg/m^2. This study compared their outcomes to 126 patients with a BMI <30 kg/m^2 who were matched for age, gender, MELD, and primary liver etiology. The primary outcome was patient and graft survival at 1, 3, and 5 years. Secondary outcomes were perioperative and postoperative variables.

Results: Preoperative demographics were similar between groups. Surgery length (P=0.02), time to arterial reperfusion (P=0.0003), and length of postoperative ICU stay (P=0.0007) was greater in the BMI >40 kg/m^2 group. There was more wound dehiscence in the BMI >40 kg/m^2 group, but this did not reach statistical significance (P=0.07). No difference was found in patient or graft survival at 1, 3, or 5 years. There was no difference in warm or cold ischemic time, intraoperative complications, postoperative infections, biliary complications, or graft vascular complications.

Conclusion: Despite greater perioperative technical challenges and longer ICU stays, those with a BMI >40 kg/m^2 have similar survival rates to those with a BMI <30 kg/m^2 following liver transplantation.



75 Earlier PSA Testing in African American Men—Clinical Support for the Recommendation

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Background: Guidelines recommending prostate-specific antigen (PSA) testing at an earlier age for African American (AA) men are based on observed racial disparities in prostate cancer outcomes for men >50 years. We sought to determine whether PSA testing in AA veterans aged 40-54 years is associated with lower likelihood of being diagnosed with high-risk tumor characteristics when compared to AA veterans aged 55-70 years and how this compared to white veterans aged 40-54 years.

Methods: From a cohort of 275,831 veterans aged 40-70 years, information on prostate cancer characteristics was available for 1,044/1,059 AA veterans diagnosed with prostate cancer after PSA >4 ng/mL and prostate biopsy between October 1, 2002, and September 30, 2007. From this cohort, those aged 40-54 years (397) were compared to those ages 55-70 years (647) with regard to prebiopsy PSA level, biopsy Gleason sum, clinical TNM stage, and D'Amico risk strata. The group of 40- to 54-year-old AA veterans were then compared to white similarly aged veterans from the same cohort.

Results: AA veterans aged 55-70 years are more likely to have biopsy Gleason sum 8-10 prostate cancers (P=0.02) compared to AA veterans ages 40-54 years in this cohort (Table). When comparing AA veterans aged 40-54 years with white veterans of the same age group, only index PSA levels appear to be significantly higher in the AA group.

Conclusion: Prostate cancer detected in 40- to 54-year-old AA veterans who undergo PSA testing shows more favorable clinicopathologic characteristics than those detected in 55- to 70-year-old AA veterans. Our data support current recommendations of PSA testing at an earlier age for AA men.

Comparison of Clinicopathologic Characteristics

Comparison of AA Veterans Aged 40-54 Years and 55-70 Years				
Characteristics	**Total % (n=1044)**	**40-54 Years % (n=397)**	**55-70 Years % (n=647)**	***P* Value**
Prebiopsy PSA				
4-10 ng/mL	74	76.6	72.3	
10.1-20 ng/mL	16.7	14.1	18.2	
>20 ng/mL	9.4	9.3	9.4	0.2908
Biopsy Gleason Sum				
≤6	48.9	53.2	46.2	
7	36.4	34	37.9	
≥8	13.7	11.6	15	
Unknown	1.1	1.3	0.9	0.0204
TNM Classification				
Stage 1	0	0	0	
Stage 2	93.8	95.2	93	
Stage 3	3	2	3.6	
Stage 4	2.6	2.3	2.8	
Unknown	0.6	0.5	0.6	0.2556
D'Amico Risk Strata				
Low	39.9	43.1	37.9	
Intermediate	39.7	38.3	40.5	
High	19.4	17.1	29.7	
Unknown	1.2	1.5	0.9	0.0593
AA Veterans Aged 40-54 Years Compared to White Veterans Aged 40-54 Years				
Characteristics	**Total % (n=863)**	**White % (n=466)**	**AA % (n=397)**	***P* Value**
Prebiopsy PSA				
4-10 ng/mL	79.4	81.8	76.6	
10.1-20 ng/mL	13.1	12.2	14.1	
>20 ng/mL	7.5	6	9.3	0.0364
Biopsy Gleason Sum				
≤6	53.2	53.2	53.2	
7	34.3	34.6	34	
≥8	11.6	11.6	11.6	
Unknown	0.9	0.6	1.3	0.9679
TNM Classification				
Stage 1	0.4	0.6	0	
Stage 2	94.4	93.8	95.2	
Stage 3	2.1	2.2	2	
Stage 4	2.4	2.6	2.3	
Unknown	0.7	0.9	0.5	0.9568
D'Amico Risk Strata				
Low	36.3	30.5	43.1	
Intermediate	29.1	21.5	38.3	
High	12.5	8.6	17.1	
Unknown	22.1	39.7	1.5	0.0815

76 Recurrent Stress Urinary Incontinence after Transvaginal Mesh Revision: A Comparison of Treatment Paradigms

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Background: Transvaginal mesh placement for the management of stress urinary incontinence (SUI) can result in pain, obstruction, and extrusion (3%-35%). Mesh revision may result in recurrent SUI and require secondary treatment.

Methods: A retrospective chart review was performed to evaluate patients undergoing transvaginal mesh sling revision; SUI outcomes and the need for retreatment were analyzed. Patient satisfaction was evaluated with the Patient Global Impression of Improvement (PGI-I) and the Medical, Epidemiological, and Social Aspects of Aging (MESA) Stress and Urge Incontinence (UI) questionnaires.

Results: Forty-one patients met inclusion criteria with an average follow-up of 11 months. There was a 75.6% (31/41) response rate to the questionnaire; averages are reported. Thirty-five patients (85%) were managed by mesh revision alone, and 26/35 (74.3%) reported SUI after mesh revision. Of these patients, 50% have required further intervention. Three (8.5%) patients underwent sling (2 fascial and 1 midurethral) placement and required no further procedures; 10 (28.5%) underwent urethral bulking agent injection, with 70% of these requiring at least 1 further procedure. Six patients (14.6%) elected to undergo prophylactic urethral bulking agent injection at the time of mesh revision—4/6 patients report no recurrent SUI, 2/6 (33.3%) have minimal SUI, and 100% have required no further procedures.

Conclusion: The incidence of recurrent SUI after transvaginal mesh revision is high. Our clinical experience shows that a secondary sling may be more effective and have higher patient satisfaction. Prophylactic urethral bulking agent injection appears to reduce the rate of secondary SUI but does not change overall patient satisfaction.

Responses	Management	Urge 0=no UI 18= UI	Stress 0=no UI 27=UI	PGI-I 1= better 7= worse
100%	Sling	2	1.3	1
67%	Prophylactic Injection	9.5	10	5
73%	No Procedure	11.8	5.3	2.5
80%	Injections ≥1	9.1	10.1	3.5

C1 Mojo-Induced Critical Illness: A Syndrome of Pseudo-Seizures and Multi-Organ Failure

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Background: Synthetic cannabinoids have gained popularity for producing intoxication while avoiding detection on drug screens. They have undergone minimal scientific testing, and potential harmful side effects are not well understood. We present 2 cases of a new syndrome encountered in patients immediately after intoxication with the synthetic cannabinoid Mojo.

Case Report: Two patients, ages 19 (patient A) and 23 (patient B), were brought to their local emergency departments after family witnessed repeated episodes of loss of consciousness followed by arm/leg thrashing. Both patients were disoriented, uncooperative to questioning/commands, and extremely agitated. Both were intubated, started on propofol infusions, and transferred to Ochsner Medical Center for presumed status epilepticus. The patients' mothers each reported their sons' heavy use of Mojo. Each had negative toxicology panels. Computed tomography, magnetic resonance imaging, and electroencephalogram were negative for any acute process/seizures. Both patients developed hypoxic respiratory distress, tachycardia, persistent leukocytosis, rhabdomyolysis, and acute renal failure requiring emergent dialysis. After 21 days, patient A was discharged in stable condition. He adamantly refused all substance abuse other than smoking Mojo. Patient B became progressively hypoxic, hypercapnic, and acidotic, with leukocytosis >70,000 and creatine kinase >40,000 despite prompt discontinuation of propofol. He was treated with lung protective ventilation, nitric oxide, and broad-spectrum antibiotics but developed hypotension despite 3 vasopressors and passed away on ICU day 11.

Conclusion: Mojo-induced critical illness (MICI) is a clinical syndrome that mimics status epilepticus. Although much remains unknown, we believe MICI is an important clinical syndrome that should be recognized by healthcare providers.

C2 Emboli Documented by Intraoperative Transesophageal Echocardiogram During Administration of a Topical Hemostatic Agent While Performing a Pedicle Subtraction Osteotomy

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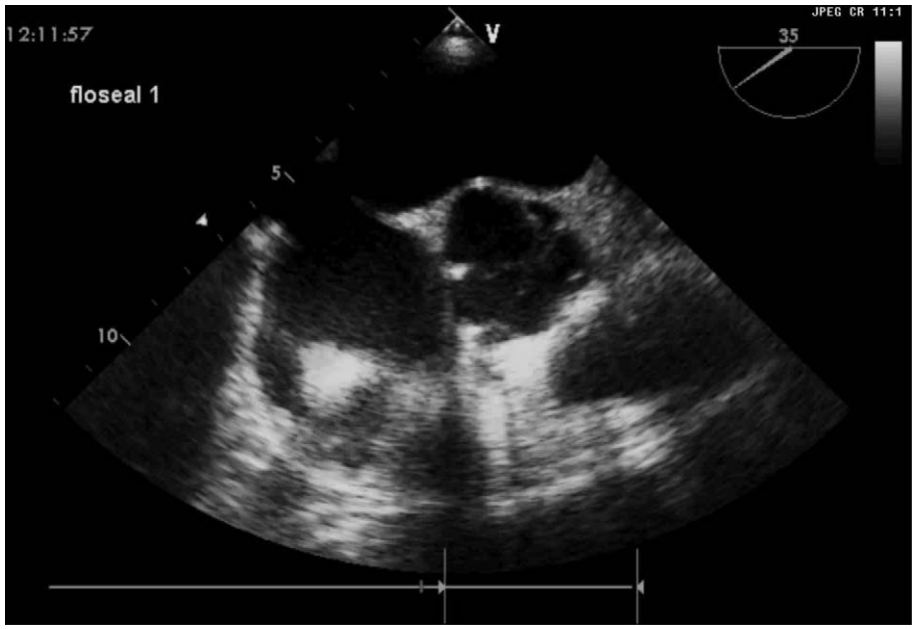
Background: Pedicle subtraction osteotomies (PSOs) are used to correct fixed sagittal plane spinal deformities and are associated with increased blood loss. Topical hemostatic agents can be applied into the PSO site in an attempt to decrease blood loss. We document large emboli seen in the heart by transesophageal echocardiogram (TEE), which occurred after the application of a topical hemostatic agent into the PSO site.

Case Report: A topical hemostatic matrix agent was injected through the pedicle screw pilot holes prior to performing the PSO while using TEE to monitor the heart for emboli. Large emboli were clearly visualized and documented passing through the heart into the pulmonary vasculature. Postoperative spiral CT scan of the chest was negative for pulmonary embolus (PE).

Conclusion: Hemostatic agent pressurization of the vertebral body through space occupancy is thought to be the etiology of these emboli. Similar embolic events have been seen with pressurization during the reaming process and rod insertion during femur fracture fixation. The exact makeup of the emboli is unknown, and further studies are required to assess their morbidity and risk of developing a PE.



C3 Weil Disease—It's Not Your Classic TTP

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Background: A 27-year-old Caucasian male with history of asthma presented to the ED complaining of 5 days of fevers/chills, night sweats, myalgias, headache, nausea/vomiting, and diffuse abdominal pain.

Case Report: Initial vitals were 102.7°F, BP 90/46, HR 120, RR 36, and SpO_2 of 86% on room air. On examination, the patient was lethargic and jaundiced but no rash was noted. WBC was 18,980 k/uL (neutrophils 81%), hemoglobin 7.9 g/dL, platelets 21,000 k/uL, creatinine 4.5 mg/dL, total bilirubin 25.0 mg/dl, AST 58 U/L, and ALT 92 U/L. Because the patient presented initially with fever, anemia, thrombocytopenia, and AKI, there was a high suspicion for thrombotic thrombocytopenic purpura (TTP) and he was immediately administered plasmapheresis. After 3 days of treatment with only modest clinical improvement along with a peripheral smear which revealed few schistocytes, LDH 544 U/L, haptoglobin 522 mg/dL, and reticulocyte count 0.16%, infectious etiologies were then considered. Later it was discovered the patient also worked part time as a tour guide with wild game and multiple exposures to animal excrement in water. Leptospirosis became the leading diagnosis. Additional studies such as *Brucella* and ehrlichiosis antibodies were negative; HIV 1 and 2 assays, spotted fever group, and histoplasmosis antibody were also negative. *Leptospira* antibody titer, however, was positive at 1:800.

Conclusion: Mortality for TTP is 85% if left untreated, thus the impetus for aggressive treatment in this patient. Paradoxically, the treatment for TTP also produced clinical improvement in this patient with severe hyperbilirubinemia and AKI, both which are associated with high mortality in severe leptospirosis (Weil disease). These complications typically persist despite the use of antibiotics. Consequently, our patient improved in addition to antibiotic therapy because of the amelioration of his hyperbilirubinemia by the plasmapheresis, which resulted in resolution of his renal failure and protection of his hepatocytes by facilitating excretion of conjugated bilirubin. As such, plasmapheresis should be considered as adjunctive therapy in patients with severe cases of leptospirosis which further leads to the question of the role of chemoprophylaxis in endemic areas.

C4 Uremic Amaurosis—A Rare Presentation of End-Stage Renal Disease

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Background: Bilateral visual impairment leading to complete blindness as the only complaint is a very unusual presentation of uremia.

Case Report: A 91-year-old white male with history of coronary artery disease, type 2 diabetes, and chronic kidney disease presented in the ophthalmology clinic with 2 weeks' history of progressive visual loss. On physical examination, he was found to have bilateral papilledema with visual acuity of 800/20 in the right and 400/20 in the left eye. CT of the head showed no evidence of stroke. Carotid Dopplers were negative for any vascular abnormality. The patient was admitted to the hospital for further workup. His complete ophthalmology and neurological workup including spinal fluid was negative for any infectious, vascular, or mechanical abnormality. His creatinine on presentation was 3.8 with a GFR of about 13%. Further nephrology workup showed no reversible component of chronic kidney disease. The patient was initiated on acute hemodialysis. He started to feel improvement in his vision after the second hemodialysis. His vision continued to improve and was back to his baseline after 1 week of dialysis.

Conclusion: Accurate measurement of GFR at an advanced age and in patients with poor muscle mass is very challenging. Uremia presents in multiple forms and with different symptoms. Here, we describe an unusual presentation of uremia causing almost complete blindness in this 91-year-old patient that was only relieved by initiation of hemodialysis. To our best knowledge, this is the first report of uremia presenting as blindness as a sole presenting symptom.

C5 A Novel Technique for Repairing Incidental Durotomies in Minimally Invasive Spine Surgery Using Standard Operating Room Instruments

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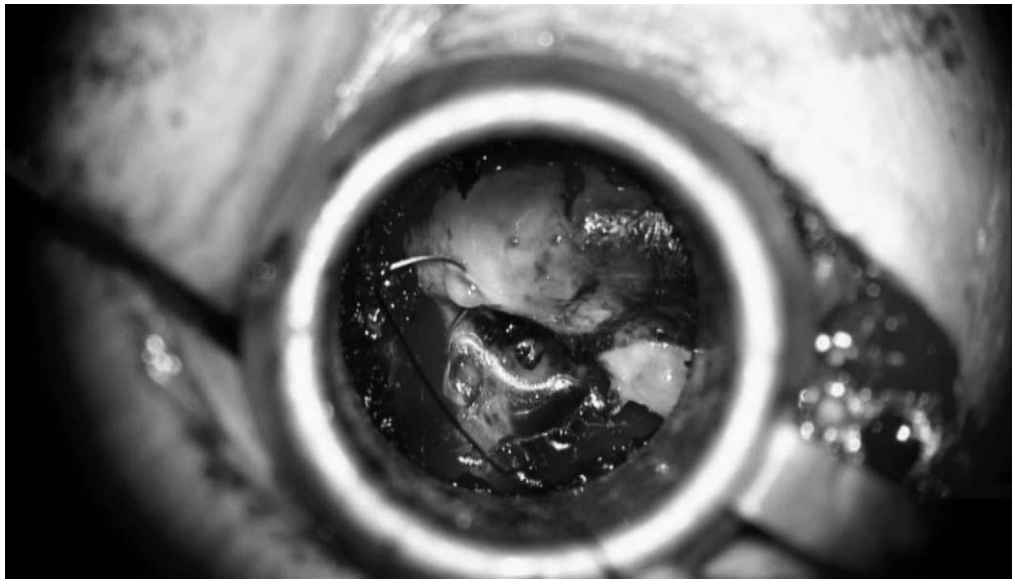
Background: The reported incidence of inadvertent dural tear is 16%-19% and primary repair continues to be the recommended treatment. However, primary repair of tears during minimally invasive surgery (MIS) can be technically challenging secondary to limited access through small tubular retractors, as well as the cumbersome nature of certain operating room instruments. We describe a reliable way to repair inadvertent durotomies during MIS procedures using standard operating room instruments not usually found in spinal instrument trays.

Case Report: A bayoneted Castro-Viejo needle driver commonly found in cardiac trays was used to place a 5-0 nylon suture across the durotomy site. Alternating sliding suture knots were tied outside the body and advanced down the suture using an arthroscopic knot pusher commonly found in orthopedic trays. The repair technique curtailed repair time and was successful using these standard operating room instruments. The patient suffered no increased morbidity due to the durotomy or the primary repair. This repair technique has been repeated successfully in multiple patients.

Conclusion: We have described a reproducible, reliable, and time-efficient technique for primary repair of inadvertent durotomy during MIS surgery.



C6 Atypical Teratoid Rhabdoid Tumor in the Pineal Region of an Adult: A Case Report

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Background: Atypical teratoid rhabdoid tumor (AT/RT) is a rare, highly malignant neoplasm of the central nervous system. It is characterized by a heterogeneous population of rhabdoid, epithelial, mesenchymal, and primitive neuroectodermal cells. This morphology closely resembles medulloblastoma and primitive neuroectodermal tumors. It occurs almost exclusively in infants and children younger than 3 years and is most commonly supratentorial.

Case Report: A 29-year-old male with a history of migraines presented with worsening headaches and new onset diplopia with upgaze palsy. A CT head scan revealed a hemorrhagic pineal mass with extension into the right thalamus. MRI showed enhancement of the pineal mass with a small supratentorial component. CSF was negative for embryonic markers. The patient underwent an infratentorial, supracerebellar approach for resection of the tumor. He developed postoperative acute hydrocephalus that required a temporary ventriculostomy. He was discharged on postoperative day 10 with persistent upgaze palsy.

Results: Pathological examination of the tumor showed cells containing large nuclei with prominent nucleoli and abundant cytoplasm of a somewhat rhabdoid morphology. Immunohistochemical staining was positive for EMA, GFAP, synaptophysin, SMA, and S100, while expression of INI1 was negative in the tumor cells. These features are consistent with a diagnosis of AT/RT (WHO grade IV).

Conclusion: AT/RT is a rare tumor that presents mainly in children. We report an AT/RT in the pineal region of a 29-year-old male. This is exceedingly rare, as there are only 3 previously reported cases.

C7 Cerebral Intraventricular Leiomyoma: A Case Report

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Background: Leiomyomas are benign smooth muscle tumors that are most commonly found in the gastrointestinal and genitourinary systems. Primary intracranial leiomyomas are exceptionally rare. We present a case of an intraventricular leiomyoma.

Case Report: A 30-year-old male presented with progressive diplopia, retro-ocular pain, occipital headaches, and bilateral papilledema in an ophthalmological exam. MRI of the head showed a well-circumscribed 2 cm enhancing mass in the left lateral ventricle. There was marked associated vasogenic edema in the brain tissue in contact with the tumor. The patient underwent an interhemispheric pericallosal approach for gross tumor resection. There were no postoperative complications and he was discharged home on postoperative day 3.

Results: Pathological examination revealed a smooth muscle tumor with epithelioid appearance of uncertain biological malignant potential. The tumor was highly vascular, myxoid, and composed of cells with spindle to round nuclei and variable amounts of cytoplasm, as well as rare mitotic figures. Immunohistochemistry was positive for smooth muscle actin and desmin, suggesting smooth muscle differentiation. The tissue was negative for EMA, progesterone receptor, GFAP, NF, S100, synaptophysin, CD34, MelanA, and HMB45. An in situ hybridization study probing for Epstein-Barr virus was negative.

Conclusion: We present an intraventricular leiomyoma. To our knowledge, this is the first description of this kind of tumor in the ventricular system. Leiomyomas are extremely rare in the central nervous system and have been mostly described as skull base tumors arising from vascular smooth muscle. We hypothesize that this intraventricular leiomyoma arose from the vascular smooth muscle within the choroid plexus.