The Thirty-Seventh Annual
Louisiana Neurosurgical Society Meeting

Meeting Purpose:
The purpose of the 2012 Louisiana Neurosurgical Society Annual Meeting is to provide continuing medical education to neurosurgeons, residents, and physicians extenders involved in the practice of Neurosurgery. Education is provided in the form of didactic lectures, a Scientific Session with residents and physician presentations, and exhibits presenting the newest instruments and information.

2012 Board of Directors:
Brian Willis, MD, FACS
2012-2013 LANS President

Frank Culicchia, MD
2012-2013 LANS Secretary Treasurer

Bharat Guthikonda, MD
2012 Scientific Moderator

2012 Conference Faculty:
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Brian Willis, MD, FACS; LSUHSC – Shreveport
Bharat Guthikonda, MD; LSUHSC – Shreveport
Frank Culicchia, MD; LSUHSC – New Orleans
Erich Richter, MD; LSUHSC – New Orleans
CJ Bui, MD; Ochsner’s Clinic, Tulane University
Dear Colleagues:

On behalf of the Louisiana Neurosurgical Society, it gives me great pleasure to welcome you to the 37th Annual Meeting of the Louisiana Neurosurgical Society at the Shreveport Convention Center in Shreveport, Louisiana. This year’s meeting is offering a pre-conference neuroendoscopy course titled, “Incorporating Intracranial Endoscopy into Your Practice,” held at the Shreveport Convention Center on Friday, January 13th from 12:30 p.m. to 5:00 p.m. and is designed as a hands-on cadaveric workshop for participants. The Scientific Moderator, Dr. Bharat Guthikonda, has assembled a top notch scientific program for both Friday and Saturday.

We are honored to have Dr. Alex Valadka, Associate Professor at the Department of Neurosurgery at Baylor College of Medicine, as our featured speaker. Dr. Valadka will be speaking about “Current Management of Traumatic Brain Injury” and “Washington Committee Update.” In addition, we are delighted to have Dr. Douglas Brockmeyer, a Pediatric Neurosurgical Specialist from University of Utah, speaking about his experience climbing Mount Everest.

The meeting is designed, through the neuroendoscopy course, banquet, and scientific program, to foster friendships and knowledge amongst Neurosurgeons throughout the state of Louisiana. Thank you for joining us in Shreveport for the 37th Annual Meeting of the Louisiana Neurosurgical Society.

Sincerely,

Brian Willis, MD, FACS
LANS President 2012 – 2013
LSU Health Sciences Center – Shreveport
1501 Kings Highway
Shreveport, LA 71103
### Past Presidents

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<th>Year</th>
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In Memoriam

George Derry Beach, MD
1939-2011

Dr. George Derry Beach was born January 14, 1939 in Atlanta, Georgia to Mae and Ralph Beach. He attended North Fulton High School in Atlanta and subsequently attended the Georgia Institute of Technology. While at Georgia Tech Dr. Beach served as President of the Kappa Alpha Fraternity and the Anak Honor Society. He also played on the golf and badminton teams. Dr. Beach graduated from Tulane Medical School in 1965. He served his residencies at the University of Colorado Medical School in Denver and at Ochsner Hospital in New Orleans. From 1966 to 1968, Dr. Beach served in the Medical Corps as a captain in Viet Nam.

In 1973 Dr. Beach joined Dr. Donald Irby in the private practice of neurosurgery in Monroe, Louisiana. On March 27, 1975 Dr. Beach met Nanette Schneider of Lake Providence on a blind date. A year later on March 27, 1976 they were married.

In 1981 Dr. Beach came to Shreveport to join Dr. Frederick Boykin in private practice after Dr. Megison was killed in a plane crash. Dr. Beach welcomed Dr. David Cavanaugh into the practice in 1987. In April of 2004 Dr. Beach retired from the practice of neurosurgery. He was a retired member of the American Association of Neurological Surgeons, a charter member and former President of the Louisiana Neurosurgical Society, and a member of the Shreveport Medical Society, the Louisiana State Medical Society, and the American Medical Society. Dr. Beach’s hobbies included gin rummy, golf, reading, and fly fishing on the Arkansas and Snake Rivers.

On April 7, 2011, Dr. Beach passed away. He is survived by his wife, Nanette and his children: Derry Beach Adams and husband, David, of Colorado Springs, Colorado; Lt. Colonel George Bradford Beach and wife, Melissa, of Fairfax, Virginia; Katherine Miller Carmody and husband, Anthony of Shreveport; Elizabeth Anne Miller of Baton Rouge; John Frederick Beach of Los Angeles; and Gaynanette Beach Sartin and husband, Cole, of Houston, Texas. Dr. Beach is also survived by his brother John Beach and wife, Virginia as well as eight grandchildren. He was preceded in death by his parents, his aunt, Eleanor Karg, and sister, Mary Beach Parker. (Written by Charles L. Black, Jr., MD)
In Memoriam

Fraser Edmund Landreneau, MD

1968 - 2011

Dr. Landreneau grew up in Eunice, Louisiana and graduated with honors from St. Edmund High School in 1986. He was an Altar Server, Eagle Scout and a lifelong supporter of Scouting. At St. Edmund’s he excelled in athletics where he earned “All District” honors in football under the coaching of Joe Nagata (deceased). He attended Louisiana State University in Eunice and in Baton Rouge from 1986 through 1989 and was an active member of the Lambda Chi Alpha fraternity in Baton Rouge.

He was an early admissions selection for medical school training at Louisiana State University Medical Center in Shreveport where he excelled and was elected to membership of the Alpha Omega Alpha Medical Honor Society for Academic Excellence.

After completing medical school, Dr. Landreneau was selected for neurosurgical residency training at the University of Texas – Southwestern Medical Center in Dallas, Texas where he was chief resident from 1998-1999. During his neurosurgical residency, he was selected for additional neurosurgical vascular training at the prestigious Barrow Neurological Institute of Phoenix, Arizona. In 1998, Dr. Landreneau also completed a Neurosurgical Fellowship at the Sir Charles Gairdner Hospital in Perth, Australia.

After completing neurosurgical training in 1999, Dr. Landreneau joined the NeuroMedical Center of Baton Rouge, Louisiana. In 2004, he was a founding partner and member of the medical team, led by Dr. Thomas Flynn, involved in building the present NeuroMedical Center Hospital in Perkins Rowe. Dr. Landreneau was an excellent technical neurosurgeon, an innovator and inventor of spinal instrumentation medical devices, two of which his daughters, Claire and Caroline helped to create.

Dr. Landreneau was board certified in Neurosurgery and he was elected into the American College of Surgeons in 2001. He was a Freemason and a member of the Knights of Columbus. He was a member of St. George Parish Roman Catholic Church of Baton Rouge. Fraser’s passionate loves were for his family, neurosurgery, LSU football, travel, fishing, hunting, and outdoor adventures. He was the neurosurgical consultant for LSU athletics and a member of the Tiger Athletic Foundation (TAF). (Article in eunicetoday.com)
Featured Guest Speaker

Dr. Alex Valadka is one of neurosurgery’s foremost authorities on neurological trauma. A professor of neurosurgery at Baylor College of Medicine in Houston, he served as Chief of the neurosurgical service at Ben Taub Medical Center for many years before becoming Vice Chairman of neurosurgery at the University of Texas in Houston in 2006. Currently, he is a practicing Neurosurgeon as well as CEO of the Seton Brain and Spine Institute in Austin, Texas. Dr. Valadka maintains a strong clinical and research interest in neurotrauma and critical care, including numerous papers, presentations, research grants, courses, seminars, and visiting professorships. He is the recent recipient of the CNS Distinguished Service Award for recognition of his advocacy-related efforts to improve the Emergency Care System in the United States. In addition, he has served as Chairman of the AANS/CNS section of Neurotrauma, a representative of the CNS to the American College of Surgeons, and Chair of the Washington Committee for Neurosurgery.

Special Lecturer

Dr. Douglas Brockmeyer is a Professor of Neurosurgery, Residency Program Director, and Marion L. Walker Endowed Chair of Neurosurgery at the Primary Children’s Medical Center at the University of Utah Medical Center in Salt Lake City, Utah. Dr. Brockmeyer’s clinical interests include Pediatric Spine Surgery and Pediatric Cerebrovascular Neurosurgery. He has become a pioneer in developing and advancing Pediatric Spinal Deformity correction and stabilization, particularly in the complex area of craniocervical fixation. He has published extensively on pediatric spinal surgery, as well as endoscopy and pediatric cerebrovascular disease. Dr. Brockmeyer is also an avid rock climber, mountaineer, skier, and endurance athlete.
Louisiana Neurosurgical Society wishes to thank the following companies for providing educational grants in support of the meeting:

Biomet

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Zimmer Spine
2011 Abstract Award Winners

Dr. John Jackson Award for Best Clinical Research Presentation- Shashikant Patil, MD

Incidence and Predictive Factors in the Development of New Onset Postoperative Hydrocephalus Following Surgery for Skull Base Pathology

Shashikant Patil, MD, Vijayakumar Javalkar, MD, Matthew Burton, BS, Anil Nanda, MD, FACS
LSUHSC-S, Department of Neurosurgery; Shreveport, LA

Objective:
The incidence of new onset of post operative hydrocephalus is rarely studied. Our aim was to estimate the incidence and identify predictors for the development of post operative hydrocephalus.

Materials and Methods:
We retrospectively reviewed the medical records of patients who underwent surgery for skull pathology to identify patients with new onset post-operative hydrocephalus. Aneurysms with SAH were excluded from the study.

Results:
A total of 307 skull base lesions underwent surgical treatment from 2005-2009. Of these 307 cases, new onset postoperative hydrocephalus was noted in 20 (6.5%) cases. Among these 20 cases with new onset post-operative hydrocephalus 55% were female. Mean age was 54 years. In 40% of cases the pathology was meningioma followed pituitary adenoma (30%). Six patients had prior craniotomy and one patient had prior radiation therapy. Post operative CSF leak was noted in 35% of these cases. The mean duration to intervention was 58 days. The incidence of CSF leak in cases with postoperative hydrocephalus was 35% and in those without hydrocephalus was 4%. (p=0.000). The mean operating time (hrs) among patients who developed hydrocephalus was 3.1 and in those without hydrocephalus was 2.3. The difference in the mean operating time was statistically significant (t=2.254, P=0.025). In multivariate analysis prior craniotomy (P=0.028, OR 0.27 95%CI 0.08-0.87), post op CSF leak (P=0.000, OR 0.07 95%CI 0.02-0.22) and operative time (P=0.043, OR 0.82 95%CI 0.68-0.99) were significantly predictors of postoperative hydrocephalus.

Conclusion:
From our study the incidence of new onset hydrocephalus following surgical treatment of skull base lesions was 6.5%. Post-operative CSF leak was significantly high in those with hydrocephalus. Mean operating time was significantly higher in those with hydrocephalus. Majority of the patients require direct VP shunt. Prior craniotomy, post-operative CSF leak and operating time are the significant predictors of post-operative hydrocephalus.
Dr. Dean Echols Award for Best Laboratory or Research Presentation - Andrew Conger, MD

Statistical Mapping of Motor Responses in the Subthalamic Nucleus in Patients with Parkinson’s Disease

Andrew Conger, MD, Rennie Jacons, MHS, Theodore Weyand, PhD, Erich Richter, MD
LSUHSC-NO, Department of Neurosurgery; New Orleans, LA

Objective:
Deep brain stimulation (DBS) of the subthalamic nucleus (STN) is an effective means of treating Parkinson’s disease (PD) that has become refractory to medical treatment. Accurate placement of DBS electrodes into the dorsolateral motor portion of the STN is guided by the response of individual neurons to specific joint movements. A somatotopically organized homunculus in the motor portion of the STN has been described in normal nonhuman primates, but the clinical literature is limited to contradictory retrospective reviews of intraoperative data. This study aims to test the hypothesis that a homunculus exists in the human population with medically refractory PD.

Methods:
11 data sets were collected from seven patients selected according to routine clinical criteria, including motor severity on UPDRS testing, cognitive status, presence of dopaminergic response, and lack of surgical contraindications. During the implantation procedures, data was collected simultaneously from 5 parallel microelectrodes spaced 2 mm apart, and from goniometers giving angular joint position in the elbow, hip, and knee. Data was collected with independent movements of each joint at 0.5 mm depth increments, and analyzed using a chi-square analysis to assign a measure of movement responsiveness to each joint at each site. The medical and lateral tracks were inspected for mediolateral distribution of responsiveness to arm vs leg responsiveness.

Results:
In these 11 quantitatively mapped STNS, we found significant movement responses in the dorsal extent of the STN. Many units showed responsiveness to two or more joints, and frequently cells that showed response in the upper extremity showed response in the lower extremity as well. No quantifiable medical vs lateral pattern, or homunculus, was found.

Conclusions:
While non-human primate studies as well as some retrospective human studies support the existence of an homunculus, this prospective quantitative evaluation of human patients with advanced PD showed no evidence of a mediolateral distribution of arm vs leg responses, but rather very wide receptive fields. Future work will include samples from across the disease severity spectrum to determine whether less severely affected patients have smaller receptive fields and a mediolateral segregation of limb responsiveness.
Meeting Agenda

Friday, January 13, 2012:

Neuroendoscopy Course, Shreveport Convention Center, Room 208

**Incorporating Intracranial Endoscopy into Your Practice**

12:30 - 1:00 pm → Registration and Lunch

1:00 - 1:10 pm → Dr. Brian Willis – Welcome and Introduction

1:10 - 1:30 pm → Dr. Anil Nanda – The Role of Endoscopy in the Evolution of Skull Base Surgery

1:30 - 1:50 pm → Dr. Bharat Guthikonda – Endoscopic Transphenoidal Approaches to the Sella and Beyond

1:50 - 2:10 pm → Dr. Frank Culicchia – Endoscopic Placement of VP Shunts

2:10 - 2:30 pm → Dr. Cuong J Bui – Intracranial and Intraventricular Endoscopy

2:30 - 2:45 pm → Coffee Break and Proceed to Lab

**Lab Sessions**

2:45 - 3:45 pm → Group 1 → Endoscopic transphenoidal cadaveric dissections

Group 2 → Intracranial / intraventricular endoscopy

3:45 - 4:45 pm → Group 1 → Intracranial / intraventricular endoscopy

Group 2 → Endoscopic transphenoidal cadaveric dissections

4:45 - 5:00 pm → Dr. Erich Richter – Wrap Up / Questions

**Evening Activities, Shreveport Convention Center, Room 209 - 210**

6:30 - 7:30 pm → Reception

7:30 - 9:00 pm → Banquet
Meeting Agenda
Saturday, January 14th, 2012:

Scientific Meeting, Shreveport Convention Center, Room 208

6:30 - 7:30 am: Breakfast with Exhibitors sponsored by Codman/Depuy, Room 209

7:30 - 7:40 am: Opening Remarks, Room 208

7:40 - 8:30 am: **Scientific Session 1**

8:30 - 9:00 am: **Dr. Anil Nanda** → “Neurosurgery through the Prism of Public Health”

9:00 - 9:30 am: **Dr. Alex Valadka** → “Current Management of Traumatic Brain Injury”

9:30 - 10:10 am: **Scientific Session 2**

10:10 - 10:20 am: Poster Review / Coffee Break with Exhibitors, Room 209

10:20 - 10:40 am: **Dr. Douglas Brockmeyer** → “Current Concepts in Pediatric Neurosurgery”

10:40 - 10:45 am: *In Memoriam* presented by Dr. David Cavanaugh

10:45 - 11:30 am: **Scientific Session 3**

11:30 - 12:00 pm: **Dr. Alex Valadka** → “Washington Committee Update”

12:00 - 1:00 pm: Lunch / **Dr. Douglas Brockmeyer** → “Climbing Mount Everest”, Room 209

1:00 - 1:05 pm: Closing Remarks

1:05 – 1:30 pm: Business Meeting; Adjourn
Scientific Session 1- Presentations
7:40 a.m. – 8:28 a.m.

1) 7:40-7:48 am: Benjamin L. Brown, MD → CT Angiography: Reliable Tool for Predicting Anterior Communicating Artery Aneurysm Inflow Dominance; Benjamin L. Brown, MD, Prashant Chittiboina, MD, Eduardo C. Gonzalez-Toledo, MD, Bharat Guthikonda, MD, Anil Nanda, MD, Hugo H. Cuellar, MD (LSUHSC-S)

2) 7:48-7:56 am: Mark Manix, MD → Occipital Interhemispheric Approach to Lesions of the Pineal Gland; Mark Manix, MD, Jai Thakur, MD, Bharat Guthikonda, MD, Anil Nanda, MD, FACS (LSUHSC-S)

3) 7:56-8:04 am: Osama Ahmed, MD → Surgical Clipping of Vertebralbasilar Aneurysms and Oculomotor Nerve Palsy – A Single Institutional Experience; Osama Ahmed, MD, Lissa Baird, MD, Rishi Wadhwa, MD, Anil Nanda, MD, FACS (LSUHSC-S)

4) 8:04-8:12 am: Cedric Shorter, MD → Early Experience with Pipeline Flow-Diverter at LSUHSC-Shreveport; Benjamin L. Brown, MD, Cedric Shorter, MD, Hugo Cuellar, MD (LSUHSC-S)

5) 8:12 – 8:20 am: Justin Owen, MD → Use of Phase Reversal for Intra-operative Localization of the Motor Cortex; Justin L. Owen, MD, Erich Richter, MD, Frank Culicchia, MD (LSUHSC-NO)

6) 8:20 – 8:28 am: Andrew Conger, MD → Retrospective Review of Blood Pressure Management Before and After Carotid Artery Stenting; Daniel Eggart, MD, Andrew Conger, MD, Robert Dawson, MD (LSUHSC-NO)
Scientific Session 1

CT Angiography: Reliable Tool for Predicting Anterior Communicating Artery Aneurysm Inflow Dominance

Benjamin L. Brown, MD, Prashant Chittiboina, MD, Eduardo C. Gonzalez-Toledo, MD, Bharat Guthikonda, MD, Anil Nanda, MD, Hugo H. Cuellar, MD
Louisiana State University Health Sciences Center - Shreveport

Introduction:
In this study, the authors sought to determine whether or not physicians can reliably predict the inflow dominance to an anterior communicating artery (AcomA) aneurysm based on computed tomographic angiography (CTA) alone.

Background:
Preoperative assessment of AcomA aneurysms with cerebral angiography is a common practice in Neurosurgery. Cerebral angiograms are not without risk, however, with estimates of overall morbidity approaching 2%. One rationale for its use is to assess the dominant inflow to a given aneurysm in order to plan operative approach. The use of CTA has emerged as an adjunct and perhaps an alternative for preoperative imaging. Its benefits include wide availability, quick acquisition time, low morbidity, and ability to observe bony and cerebral relationships to the aneurysm. Perhaps the biggest limitation of CTA is its lack of dynamic information, thus dampening our appreciation of flow dynamics. It may be possible to infer this information from CTA, however, by analyzing the anatomical relationships of the AcomA complex and the aneurysm itself.

Methods:
Imaging data from seventy-seven patients with ruptured AcomA aneurysms presenting from 2006 to 2011 at LSU Health Sciences Center in Shreveport were reviewed retrospectively. Only those patients evaluated with both CTA and cerebral angiogram preoperatively were included in the study. Four independent observers reviewed the CTAs and attempted to identify whether the dominant inflow to the aneurysm was from the right or left. Additionally, a simple mathematical model was created to identify the dominant A1 by comparing the diameters of the two incoming vessels as measured by CTA. These responses were compared to the standard as defined by the cerebral angiogram. Statistical analysis was performed on the results.

Results:
The four observers were correct in judging the dominant aneurysm inflow an average of 93% of the time. The individual scores were 98.7%, 100%, 81.8%, and 90.9% (kappa = 0.86). Seventeen cases were read incorrectly by only one of four observers and 3 cases were read incorrectly by 2 observers. For those cases with incorrect readings, the average percentage difference in A1 sizes was 19.6%. For those cases read unanimously correct, the average percentage difference in A1 sizes was 42.7%. The mathematical model correctly evaluated the dominant A1 92.2% of the time. Of the 6 aneurysms read incorrectly by the model, 4 were also read incorrectly by a human reader.
Conclusions:
This study finds that CTA can be reliable in predicting the inflow dominance to the majority of AcomA aneurysms. Use of cerebral angiography incurs additional risk, cost, and time in the treatment of patients with cerebral aneurysms. The current study argues against the need for cerebral angiogram in order to determine inflow dominance for AcomA aneurysms in most cases. Certain anatomic factors such as symmetric A1 segments reduce the reliability of CTA in predicting inflow dominance and may provide justification for cerebral angiogram in these cases.
**Occipital Interhemispheric Approach to Lesions of the Pineal Gland**

Mark Manix MD, Jai Thakur MD, Bharat Guthikonda MD, Anil Nanda MD

Louisiana State University Health Sciences Center - Shreveport

**Purpose:**
To present a surgeon’s experience at a single institution using the occipital interhemispheric surgical approach to lesions in the pineal gland and posterior third ventricle.

**Methods:**
A retrospective chart review of twenty patients who underwent surgery on this area of the brain via the occipital interhemispheric route. The procedure is done with neuro-navigation assistance and after a lumbar drain is placed. A five centimeter diameter craniotomy is made and microsurgical technique is used for treatment of the lesion. This review looked at presenting symptoms, the length of hospital stay, post-operative neurologic deficits, disposition, and the need for a shunting device for the treatment of hydrocephalus.

**Results:**
The cohort consisted of 20 patients with ages ranging from 15 to 83 (mean 41) and shows a wide array of pathology and presenting symptoms. The most common chief complaint was headache (90%), but diplopia, blurry vision, and gait disturbances were common as well (25%). 17 of the patients were discharged home while the remaining 3 were discharged to a rehabilitation facility. The average hospital stay was 9 days, with a range of 3 to 34 days. There were no mortalities in the series and the morbidity included: two cases of new onset diabetes insipidus, and two cases of upward gaze palsy, one of which resolved at clinic follow-up. A total of eight patients had ventriculo-peritoneal shunts placed for hydrocephalus.

**Conclusion:**
The surgical treatment of lesions in the pineal gland and posterior third ventricle evolved considerably over the last century. What was an operation associated with an almost prohibitive mortality and morbidity unacceptable by today’s standards, is now performed with good outcomes, little post-operative deficits, and a much shorter hospital stay. There are several routes to the pineal gland, the most common being the supracerebellar infratentorial and occipital transtentorial approaches. The present series is a single surgeon, single institution experience using occipital interhemispheric approach, with results showing an ability to treat a variety of lesions, with a relatively short hospital stay, and with minimal morbidity. This series highlights the improvement of neurosurgical techniques over the past few decades to the point where we are now proficient at treating lesions in this once surgically inaccessible area of the brain.
Object:
One of the morbidities associated with surgical clipping of basilar aneurysms is oculomotor nerve palsy. However the incidence of oculomotor nerve palsy is less reported in the literature. We report our single institutional experience with basilar aneurysms and the incidence of oculomotor nerve palsy.

Methods:
This is a chart review of 59 patients with basilar aneurysms from 1993 to 2008 at our institution. Multiple variables were assessed to gather risk identifying factors for oculomotor nerve palsy. All surgical clippings were performed at LSUHSC Shreveport.

Results:
Of 38 patients, 29 patients (76%) that underwent surgical clipping presented with subarachnoid hemorrhage. 2 of the 38 (5%) patients presented with an oculomotor nerve palsy, both of which had a preoperative subarachnoid hemorrhage. After surgical clipping, 5 of the 38 (13%) patients had a new onset of oculomotor nerve palsy. A total of 7 patients out of the 38 (18%) were discharged from the hospital with a third nerve palsy. 3 of the 38 (8%) patients did not have any resolution of their oculomotor nerve palsy, while 4 out of the 38 (11%) had complete resolution of their oculomotor nerve palsy.

Conclusion:
The results of this study describe the incidence of oculomotor nerve with surgical clipping of basilar aneurysms. Our incidence of oculomotor nerve palsy was 18%, with over half of the patients having complete resolution of their nerve palsy. 8% of the patients had no to partial resolution of their oculomotor nerve palsy.
Scientific Session 1

Early Experience with Pipeline Flow-Diverter at LSUHSC-Shreveport

Cedric Shorter, MD; Ben Brown, MD; Hugo Cuellar, MD
Louisiana State University Health Sciences Center – Shreveport

Endovascular coil embolization has evolved into an acceptable alternative technique to clipping in the treatment of ruptured and unruptured cerebral aneurysms and is the primary treatment modality at some centers. Despite advances in coil embolization including the use of stents and balloons, many aneurysms still prove problematic to these techniques. Among the most troublesome include fusiform and giant aneurysms with wide necks.

More recently “flow-diverting” stents have been created to address these problems. These flexible, self-expanding stents possess a lower porosity than standard stents. When deployed across the neck of an aneurysm as much as 90% of flow is diverted out of the aneurysm while retaining patency of any branching vessels. We present our institution’s early experience with this new technology.
Use of Phase Reversal for Intra-operative Localization of the Motor Cortex

Justin L. Owen, MD, Chief Resident, Department of Neurosurgery; LSUHSC New Orleans
Erich Richter, MD, Program Director, Department of Neurosurgery; LSUHSC New Orleans
Frank Culicchia, MD, Chairman, Department of Neurosurgery; LSUHSC New Orleans

Neurosurgical procedures for pathological processes involving or abutting eloquent cortex can present a difficult challenge for neurosurgeons. A desire to aid the patient with the best possible outcome must be tempered with an awareness of the potential pitfalls associated with aggressive resection around eloquent brain. Injury to the motor cortex, for example, can lead to devastating morbidity and a post-operative quality of life that causes patients to second-guess the decision to pursue surgery, or regret it altogether.

Many institutions, especially on the academic frontier, have employed tactics such as awake craniotomies in order to identify areas of eloquent cortex during surgical procedures where such areas may be at risk. These procedures, however, often times require additional expertise on the part of Anesthesia. They can also be time-consuming, require additional levels of logistical support, and for a variety of reasons be impractical for surgeons operating out of smaller, and/or non-academic institutions.

At our institution, we have begun to use a Phase Reversal Cortical Mapping (PRCM) technique for identifying the motor strip during craniotomies where pathological areas of interest are estimated to be in proximity to the central sulcus based upon pre-operative imaging. PRCM is advantageous in that it requires no additional training or expertise on the part of Anesthesia, no additional level of logistical support beyond that which is already utilized by many if not most practicing neurosurgeons, adds mere minutes to an otherwise standard craniotomy, and is reliable.

Phase Reversal identification of the motor cortex during standard craniotomies represents an easy and reliable means by which to identify the motor cortex and avoid injury to eloquent cortex during standard craniotomies near the central sulcus.
Retrospective Review of Blood Pressure management before and after Carotid Artery Stenting

Daniel Eggart, MD, Andrew Conger, MD, Robert Dawson, MD
Department of Neurosurgery, LSU HSC New Orleans

Objective:
At our institution as well as others, we observe acute decreases in blood pressure after deployment of CAS. With tight intraoperative blood pressure control these post stent deployment changes are more often realized as a quantitative decrease in blood pressure medications required in maintaining normotension. This study aims to quantify the decrease in blood pressure and blood pressure medication following CAS.

Methods:
69 patients were included. We have conducted a retrospective chart review of 69 patients that underwent carotid artery stenting from 2008-2009 evaluating acute and long-term trends in blood pressure with a focus on blood pressure management medications. Inclusion criteria includes patients at West Jefferson Hospital in Marrero Louisiana, with 75-99% occlusion of one or both carotid arteries and a diagnosis of hypertension treated with at least one class of blood pressure medication. Blood pressure and blood pressure medications were reviewed before and after the CAS procedure, at 1-3 months, at 1 year, and 2 years post stenting.

Results:
IRB granted December 2011. Preliminary results show an average decrease in SBP of 10-15mmHg with a requirement of an average of 1 fewer antihypertensive medication.

Conclusions:
In order to maintain cerebral bloodflow in the setting of high-grade carotid artery stenosis, elevated systemic blood pressures are maintained. Resolution of the stenosis results in a significant drop in systemic blood pressure.
Scientific Session 2- Presentations
9:30 a.m. – 10:28 a.m.

1) 9:30 – 9:38 am: Prashant Chittiboina, MD, MPH → Negative imaging in patients with new onset neurological symptoms. The importance of early repeat imaging in detecting occult tumors. An analysis of literature; Prashant Chittiboina, MD, MPH, David Connor, DO, Gloria Caldito, PhD, Joseph Quillin, BS, Jon Wilson, MD, Anil Nanda, MD, FACS (LSUHSC-S)

2) 9:38 – 9:46 am: Menarvia Nixon, MD → Clinical Utility and Accuracy of MR Spectroscopy in Diagnosing Brain Lesions; Menarvia Nixon, MD, Prashant Chittiboina MD, MPH, Anil Nanda MD, FACS, Bharat Guthikonda MD (LSUHSC-S)

3) 9:46 – 9:54 am: Erich O. Richter, MD → Use of CMAPs and SSEP to Guide Placement of SCS Electrodes Under General Anesthesia; (LSUHSC-NO)


5) 10:02 – 10: 10 am: David Connor, DO → The Utility of Bone Cement to Prevent Lead Migration with Minimally Invasive Placement of Spinal Cord Stimulator Laminectomy Leads; David E. Connor, Jr, DO, Aileen Cangiano-Heath, MD, Benjamin Brown, MD, Ryan Vidrine, BS, Toussaint Battley III, FNP, Anil Nanda, FACS, MD, Bharat Guthikonda, MD (LSUHSC-S)
Scientific Session 2

**Negative imaging in patients with new onset neurological symptoms. The importance of early repeat imaging in detecting occult tumors. An analysis of literature.**

Prashant Chittiboina, MD, MPH¹, David Connor, DO¹, Gloria Caldito, PhD², Joseph Quillin, BS³, Jon Wilson, MD⁴, Anil Nanda, MD, FACS¹

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**Introduction:**
Some patients presenting with a neurological complaint and a normal imaging study may harbor occult brain tumors that are not detectable in the initial imaging. The purpose of the study was to analyze the cases of occult brain tumors reported in literature to determine an optimal period for repeat imaging.

**Methods:**
A review of literature was performed using PubMed. We found 15 articles with a total of 60 patients with occult tumors.

**Results:**
Seizures were mode of initial presentation in majority (61.7%) of patients. The initial imaging was CT in 55% and MRI in 45%. The mean time to diagnosis for occult brain tumors was 10.3 months (median 4 months). Average time to diagnosis (mean 7.5, median 3.2 months) was shorter (p=0.049) among patients with seizures. GBM was found more frequently among patients with seizures (67.6% vs. 34.8%, p=0.013). Average time to diagnosis of GBM was shorter than time to diagnosis of other tumors; median time to diagnosis of was 3.2 months for GBM and 6 months for other tumors (p=0.04). There was no predilection for side or location of occult tumors. Although, in adult patients, seizures may be predictive of left sided tumors (p=0.04).

**Conclusions:**
Based on these data, we recommend that repeat imaging be performed at an interval shorter than 4 months in patients with new neurological symptoms and negative imaging, with a shorter interval of less than 3 months for those with initial seizures.
Scientific Session 2

Clinical Utility and Accuracy of MR Spectroscopy in Diagnosing Brain Lesions

Menarvia Nixon, MD, Prashant Chittiboina MD, Anil Nanda FACS MD, Bharat Guthikonda MD
Department of Neurosurgery, LSUHSC – Shreveport

Introduction:
Imaging plays an integral role in intracranial tumor management with magnetic resonance imaging (MRI) being the most frequently used modality to evaluate intracranial lesions. Although MRI can provide a wealth of information on location and anatomical alterations for treatment planning, its role is limited to physiological data. To address the diagnostic challenge of differentiating non-neoplastic, metastatic and primary brain lesions magnetic resonance spectroscopy (MRS) was created to improve diagnostic accuracy and avoid biopsy and follow-up imaging. The purpose of this study is to evaluate the diagnostic accuracy of MRS at a single institution and thus its clinical utility in the treatment of brain lesions.

Methods:
A retrospective analysis of all MR spectroscopy examinations for evaluation of intra-axial brain lesions from 2006 – 2011 at LSU Health Science Center in Shreveport, LA was conducted. Inclusion criteria consisted of availability of MRI and MRS imaging studies, availability of surgical pathology results via tissue sampling either by biopsy, resection and/or CSF analysis and MRS imaging prior to obtaining tissue sample for pathological analysis. Patients were excluded on the basis of previous resection prior to MRS, or MRS for differentiation of tumor recurrence versus radiation necrosis. All patients had solitary lesions on imaging.

Results:
The search for MR spectroscopy examinations yielded 74 patients. Eleven (11) patients were excluded due to previous resection and eight (8) patients were excluded due to unavailability of tissue pathology results. Of the 55 patients included in the study, tissue pathology revealed 30 patients with primary brain lesions, 10 patients with metastatic lesions, 12 patients with demyelinating lesions, 2 abscesses and 1 hematoma. Of the 30 patients with tissue diagnosis of primary brain lesions, 22 patients had an MRS report concluding primary neoplasm, 3 concluding neoplasm without distinction of primary vs. metastatic lesion, 3 stating metastatic lesion, 2 reporting inflammatory process. Of the 10 metastatic lesions, 8 were reported as metastatic and 2 as primary lesions. All demyelinating lesions and abscesses were reported by MRS as such. Calculated sensitivity of MRS for primary vs. metastatic lesions was 88% and specificity was 80%; positive predictive value was 92%. Calculated sensitivity for neoplastic vs non-neoplastic lesions was 92.8%, specificity and positive predictive value were 100%.

Conclusion:
The results of this study illustrate that MR spectroscopy is a useful tool in classifying solitary brain lesions and when used in addition to MRI can assist in improving diagnostic accuracy and can decrease the need for surgical biopsy.
Scientific Session 2

Use Of CMAPs and SSEP to Guide Placement of SCS Electrodes Under General Anesthesia

Erich O. Richter, MD
Department of Neurosurgery, LSU HSC New Orleans

Spinal Cord Stimulation (SCS) is an important treatment option for many patients with neuropathic pain syndromes refractory to conventional medical management. The most common indication for SCS implantation in the United States is persistent back and leg pain after lumbar spine procedures, often referred to as "failed back surgery syndrome" (FBSS) or post-laminectomy syndrome. Implantation techniques vary widely across centers, with most variation focusing on techniques used for physiologic verification of appropriate placement over the areas of the dorsal columns expected to produce appropriate pain control. We reviewed 40 patients treated over the past 3 years at LSUHSC in New Orleans, and traced the evolution of our technique from an awake placement under thoracic epidural block, to a general anesthetic technique guided by induced CMAPs (commonly called "EMG mapping," to a combined technique using CMAPS and SSEPs from the posterior tibial nerve with collision testing to determine the physiologic midline. In the current technique, physiologic midline is best delineated by collision studies, but nerve root activation is best predicted by CMAP studies.
When Life Depends on Medical Technology

Valle EP; Singh MK, Sulaiman OA.
Tulane/Ochsner Neurosurgery Program; New Orleans, Louisiana.

Background:
Spinal cord stimulation has become a very handy tool for the treatment of neuropathic pain and failed back surgery syndrome. The paddle is usually placed though a small off- midline laminotomy and common challenges during the surgery are placement of the paddle in the midline, epidural adhesions and migration of the leads.

Objectives:
To describe an innovative technique where the surgery is done minimally invasive through a small 2.5 cm midline incision and with minimal bone removal and easier placement of the lead paddle.

Methods:
Using the METRx™ system, we localize under fluoroscopy the target levels. Then we sequentially anchor the tube retractors in between spinous processes. Once down to the lamina, a small laminectomy is made in midline, the ligamentum flavum is locally removed over the midline and the paddle lead is fed into the epidural space cranially. Fluoroscopy is used to confirm the placement level.

Results:
We are presenting 27 patients that were treated with this modality. All of them were done in an outpatient setting, had a minimal blood loss (less than 50 CC), low malpositioning rate (less than 8%), and minimal back pain after the procedure.

Conclusion:
Minimal invasive placement of dorsal column stimulators is an option for the placement of these devices with very low complication rates.
Scientific Session 2

The Utility of Bone Cement to Prevent Lead Migration with Minimally Invasive Placement of Spinal Cord Stimulator Laminectomy Leads

David E. Connor, Jr, DO, Aileen Cangiano-Heath MD, Benjamin Brown MD, Ryan Vidrine BS, Toussaint Battley III FNP, Anil Nanda FACS MD, Bharat Guthikonda MD
Department of Neurosurgery, LSU HSC Shreveport

Background:
Lead migration is a significant concern with spinal cord stimulator (SCS) placement with rates ranging from 10-60%.

Objective:
We describe a novel technique utilizing bone cement at the laminotomy site to help prevent lead migration after minimally invasive placement of laminectomy paddle leads and present our short term results.

Methods:
A review of a prospectively maintained database identified all patients who underwent minimally invasive placement of laminectomy leads with use of bone cement. All procedures were performed between January 2008 and November 2009 utilizing conscious sedation and local anesthetic. Intraoperative testing was performed to confirm good pain coverage. A small volume of bone cement (1-3 cc) was then placed to cover the laminectomy defect. Radiographic and clinical follow up was assessed.

Results:
42 patients (mean age 58.0 yrs) underwent 42 procedures. Back pain (88.1%) and leg pain (88.6%) were the most common presenting symptoms. No intraoperative complications were noted. Two (4.8%) patients required removal of their devices due to non-healing wounds. All patients were followed for a minimum of six months and no cases of clinical or radiographic lead migration have been seen at the time of publication.

Conclusion:
We present a novel technique in hopes of decreasing the incidence of lead migration after minimally invasive placement of spinal cord stimulator laminectomy paddle leads. Our results have been promising thus far with no cases of lead migration. Longer term follow up is needed to assess the longevity of our positive short-term results.
Scientific Session 3- Presentations
9:30 a.m. – 10:28 a.m.

1) 10:42 – 10:50 am: **David A. Cavanaugh, MD** – *Factors affecting the choice of anterior procedure (TDR versus ACDF) for cervical radiculopathy: Analysis of 3-7 years follow-up from 4 randomized controlled trials*; David A. Cavanaugh, MD, Ajay Jawahar, MD, MS, Eubulus J. Kerr, MD, Phillip Andrew Utter, MD, Pierce D. Nunley, MD (Spine Institute of Louisiana)


3) 10:58 – 11:06 am: **Shihao Zhang, MD** – *Anterior Thoracolumbar Stabilization for Unstable Traumatic Spine Fractures*; Shihao Zhang, MD, Imad Khan, MD, Donald Smith, MD, Anil Nanda, MD, FACS(LSUHSC-S)

4) 11:06 – 11:14 am: **Jayme Trahan, MD** – *Facet Dowel Stabilization after Lumbar Laminectomy. A Biomechanical Evaluation*; Jayme Trahan, MD, Eric Morales, MD, Gabriel Tender, MD (LSUHSC-NO)

5) 11:14 – 11:22 am: **Rishi Wadhwa, MD** – *Revision of Suboptimally Placed Lumbar Pedicle Screws Decreases Pullout Strength and Alters Biomechanical Stability: A Pilot Cadaveric Study*. Rishi Wadhwa, MD, Jai Deep Thaker, MD, Imad Saeed Khan, MD, Osama Ahmed, MD, Alan Ogden, BS, Debi P. Mukherjee, PhD, Bharat Guthikonda, MD, Anil Nanda, MD, FACS (LSUHSC-S)

6) 11:22 – 11:30 am: **Nnenna Mbabuiké, MD** – *Progressive Spastic Paraparesis caused by Epidural Lipomatosis- A case report and review of literature*; Nnenna Mbabuiké, MD, Olawale Sulaiman, MD, PhD, FRCS (Tulane-Ochsner)
Scientific Session 3

Factors affecting the choice of anterior procedure (TDR versus ACDF) for cervical radiculopathy: Analysis of 3-7 years follow-up from 4 randomized controlled trials.

David A Cavanaugh, MD; Ajay Jawahar, MD, MS; Eubulus J Kerr, MD; Phillip Andrew Utter, MD; Pierce D. Nunley, MD
Spine Institute of Louisiana, Shreveport, LA, United States

Purpose:
Total disc arthroplasty has been shown as equally safe and effective as ACDF for intractable radiculopathy due to cervical disc disease. The purpose of present study was to analyze the long-term outcomes from 3 to 7 years follow-up of patients participating in 4 different prospective randomized controlled trials for cervical total disc arthroplasty devices at one or two consecutive levels of the cervical spine.

Methods:
Six surgeons from three different institutions within the United States enrolled 275 patients in 4 different FDA investigational device exemption clinical trials for cervical total disc arthroplasty. Although, the primary requirement for all protocols was to have 2-year follow-up, the patients were followed subsequently with annual clinic visits and radiographic studies. Thus, 255 patients have completed 3-7 years follow-up (median 45 months). The results from these long term annual visits were analyzed in an attempt to determine the factors that statistically affected the clinical outcomes in these patients. Multivariate regression analysis was performed to study the influence of various factors on the primary outcomes and possibly identify demographic characteristics that may help surgeons chose a specific procedure i.e. total disc arthroplasty versus anterior cervical fusion for individual patient.

Results:
255 patients with mean age of 50 years (range 22-68 years) completed 36-84 months follow-up (mean 45 months). There was a marginal female predominance (56.5%), 40% were habitual tobacco users, 18% had osteopenic bone mineral density scores and 30% had documented, actively treated lumbar spine disc disease at the time of cervical procedure. The randomization was 2:1 in favor of total disc arthroplasty (167 TDA versus 88 ACDF). 179 patients (70%) had single level disease and 30% were treated for two levels. The primary outcomes were visual analogue scores (VAS) for neck pain, neck disability index and detailed neurological examination. The data was collected at 6 weeks, 3,6, 12,24 months after the surgery and then annually. Both procedures (TDA and ACDF) provided significant reduction in the pain scores and the NDI, however, in the longer term follow-up, NDI proved to be a better outcome indicator (p = 0.01). Although long term outcomes overall were better in younger patients regardless of the index procedure (p = 0.007), nevertheless, TDA provided significantly higher incidence of better long term outcomes in patients older than 50 years (p = 0.03). Habitual tobacco use and osteopenic bone density significantly worsened the outcomes in patients with ACDF (p = 0.02 and 0.04 respectively) but did not affect the outcomes after TDA. However, presence of concurrent documented lumbar disc disease at the time of cervical procedure negatively affects the outcome in patients after TDA (p = 0.03) but does not affect the outcomes of ACDF.
Conclusions:
Statistical analysis reveals that ACDF provides longer term symptom relief than TDA in patients with cervical radilulopathy who have concurrent lumbar degenerative disease. However, TDA is superior to ACDF for patients older than 50 years, habitual tobacco users and those with osteopenic bone density. Considering these demographic factors may help clinicians to choose a surgical option that may afford the best chance of longer term symptom relief.
Scientific Session 3

Dural Scoring as an Alternative to Duraplasty in Treating Patients with Chiari I with Syrinx.

Durga R. Sure M.D, Clarence Greene M.D, Lori McBride M.D

Introduction:
Chiari I with syrinx is commonly accepted as surgical indication for chiari I decompression. In the past, surgical goals included dural opening, tonsillar evaluation and ensuring proper CSF flow through the 4th ventricle. Dural Scoring is a newer method where partial thickness cuts are made through the superficial layer of the dura after suboccipital craniectomy and C1 laminectomy. We set out to determine if this is an alternative with similar results and lesser complications.

Objective:
To compare the effect of posterior fossa decompression with dural scoring and with duraplasty for chiari I malformation and syrinx.

Methods:
20 patients with chiari I with Syrinx who underwent Chiari I decompression either with duroplasty or spilt thickness dural scoring were selected. Their medical records and MRI images were reviewed retrospectively. All these patients underwent surgical procedure at Children’s Hospital New Orleans from July 2008 to June 2011 by one of the senior authors. Every one underwent suboccipital craniectomy and C1 laminectomy. All of these patients were followed both clinically and radiologically with followup period ranging from 6 to 24 months.

Results:
15 patients underwent duroplasty and 6 patients underwent dural scoring. Over the span of last 2 years, the technique of operating on these patients changed from duroplasty to just dural scoring at this hospital, for patients without neurologic deficits pre-op. Of the 15 patients with duroplasty, 2 developed pseudomeningocele and 2 developed CSF leaks. 14 out of 15 patients who underwent duroplasty showed stable or decreased size of the syrinx. All the 5 patients with dural scoring showed decreased or stable size of the syrinx with no CSF leaks.

Conclusion:
The rate of syrinx regression or stabilization after posterior fossa craniectomy with dural scoring in children with Chiari I malformation with a syrinx shows no difference compared to the patients who underwent duroplasty. Dural scoring is a reliable option in these patients as an initial approach and does not preclude open duroplasty as an option later. We believe this technique provides the neurosurgeon with an effective and safer approach to a common neurosurgical problem.
Scientific Session 3

Anterior Thoracolumbar Stabilization for Unstable Traumatic Spine Fractures

Shihao Zhang MD, Imad Khan MD, Donald Smith MD, Anil Nanda MD FACS
Department of Neurosurgery, LSU HSC Shreveport

Introduction:
Traumatic injuries to the thoracolumbar spine results in a high incidence of unstable fractures. Surgical management includes adequate decompression and stabilization. We aimed to analyze operative and postoperative features of different anterior surgical approaches.

Methods:
We retrospectively analyzed the medical records of 45 consecutive patients that presented with traumatic unstable thoracolumbar fractures who underwent anterior corpectomy with stabilization from January 1999 to January 2009.

Results:
The average age of the patients was 37.6 years (range: 13-70), with a male-to-female ratio of 1.5:1. Retroperitoneal approach was used in 64.4%, transthoracic in 13.3%, and transthoracic transdiaphragmatic in 22.2%. The average operation time, estimated blood loss (EBL) and length of stay after surgery was 412.3 minutes, 1098.2ml and 9.1 days, respectively. A BMI>25 was associated with longer operative times (p=0.02) and higher EBL (p=0.006). Perioperative complications occurred in 37.7%, (7 major, 10 minor). The incidence of major perioperative complications was significantly higher in females (p=0.0007). Postoperative neurological status was in 18 patients (preop: ASIA-E, postop: unchanged), 14 patients (preop: ASIA-D, postop 7 improved), 8 patients (preop: ASIA-C, postop: 5 improved), and 5 patients (preop: ASIA-B, postop: 1 improved). There were no cases of neurological deterioration postoperatively. 84.4% of the patients were discharged home. At latest follow-up (mean: 27.2 months) there were no new cases of neurological deficits, and 14.8% patients had a further improvement of neurological status.

Conclusions:
In our study, unstable traumatic thoracolumbar fractures could be managed with an anterior surgical approach with no risk of neurological deterioration.
**Facet Dowel Stabilization after Lumbar Laminectomy. A Biomechanical Evaluation.**

Jayme Trahan MD, Eric Morales MD, Gabriel Tender MD
Department of Neurosurgery, LSU HSC New Orleans

**Introduction:**
Low back pain occurs in upwards of 80% of the population at some point in their life. In efforts to treat this condition, lumbar spinal decompression and fusion procedures have become a prevalent treatment modality once all conservative measures have been exhausted. However, due to the morbidity associated with traditional open procedures, spine surgeons have begun to seek minimally invasive alternatives. Facet dowels offer a percutaneous approach aimed to not only fuse the facet, but also, increase the stiffness of the joint. More recently, they are increasingly being used to provide spinal stabilization after decompressive procedures such as lumbar laminectomies. In this study, we performed a biomechanical analysis to determine if facet dowels increase the stiffness of a motion segment after laminectomy.

**Materials and Methods:**
Two fresh cadaveric lumbar spines, with preserved ligaments, were potted such that only one mobile segment remained, L4-L5. Each specimen was fixated in the vertical position in the Mini-Bionix MTS 858 spine simulator (MTS, Eden Prairie, MN, USA). The spine was tested in pure moments of flexion-extension, lateral bending, and axial rotation. Spine stiffness was determined for the intact specimen, after L4 laminectomy, and after bilateral L4-5 facet dowel placement. Following dowel insertion, the specimen was evaluated using computed tomography (CT) to assess dowel placement. The specimen was then subjected to fatigue testing by applying 10,000 cycles of flexion. At the end of the experiment, the specimen was again analyzed using CT scan to determine if the facet dowels maintained their position.

**Results:**
The spine stiffness of the intact specimen was 17.76 N/mm² (considered 100%). After laminectomy, the stiffness decreased to 16.80 N/mm² (94% of the intact spine). Placement of bilateral facet dowels increased the stiffness to 18.95 N/mm² (106% of the intact spine). After fatigue testing, none of the facet dowels were extruded. CT imaging confirmed the fact that the facet dowels maintained their initial inserted position.

**Conclusion:**
We conclude that facet dowels can be used effectively to increase the stiffness of a motion segment in patients who undergo lumbar laminectomy if postoperative instability is suspected.
Scientific Session 3


Rishi Wadhwa, MD, Jai Deep Thakur, M.D., Imad Saeed Khan, M.D., Osama Ahmed M.D., Alan Ogden, B.S., Debi P. Mukherjee, PhD., Bharat Guthikonda, M.D., Anil Nanda, M.D., FACS.
Department of Neurosurgery, LSU HSC Shreveport

Introduction:
Lumbar pedicle screws are placed for internal fixation and help to enhance fusion. Optimal screws are medially directed, should be parallel or pointing to the superior endplate, and penetrate 50-80% of the vertebral body. (1-4) "Suboptimal" pedicle screws can be inadvertently placed within the confines of the pedicle and vertebral body but are sometimes replaced to obtain a more acceptable post-operative image. We define a suboptimal screw to be in the pedicle and body and not violating bone, however not parallel to the superior endplate. We suspect these “cored-out” grooves left in the bone from the initial tap and screw placement compromise the integrity of the bone and thus the construct. We set up a cadaver study to test both screw pullout strength and biomechanics of the construct.

Methods:
DEXA scans and L4-5 laminectomies were performed on 6 fresh-frozen cadaveric lumbar spines. We placed 2 optimal L4 pedicle screws, 1 optimal L5 screw and one suboptimal screw in L5 (Construct A). Axial rotation, flexion/extension and lateral bending were tested and the suboptimal screw was replaced in an optimal fashion (Construct B) and retested. Pullout strength was also performed on the revised screw and the contralateral screw.

Results:
The mean axial rotation in the Construct A was 1.31 ± 0.22 while in Construct B was 1.19 ± 0.17 (p=0.023, 95% Confidence interval: 0.20, 0.02). The mean lateral bending in the Construct A was 0.015 ± 0.002 while in Construct B was 0.016 ± 0.002 (p= 0.3, 95% Confidence Interval: 0.0008,-0.001). The mean flexion and extension in the Construct A was 0.0139 ± 0.002 while in Construct B was 0.0126 ± 0.002 (p=0.01, 95% Confidence Interval: 0.002, 0.0004). The axial rotation and flexion/extension were significantly different among the two groups. The mean difference in the pull out force was significantly different in the non-revised optimal screw group as compared to the revised optimal screw group (906.93 ± 271.17 N vs. 608.32 ± 207.23 N respectively, p=0.031); in favor of the former. DEXA demonstrated 4 osteopenic and 2 osteoporotic specimens and difference in bone mineral density did not play a role in assessing either the biomechanical parameters or the pull out strength.

Conclusion:
Great care is warranted to initially place the screw in an optimal position. Revising the suboptimal screw results in decreased pull out strength as well as altered biomechanical movements (axial rotation and flexion/extension). Therefore, we propose a screw placed within the confines of the pedicle and vertebral body with adequate bone purchase but inadvertently placed non-parallel to the end plate should be left in its place. More specimens will likely increase the power of this pilot study.
References:


Scientific Session 3

Progressive Spastic Paraparesis caused by Epidural Lipomatosis- A case report and review of literature

Nnenna Mbabuike, MD; Olawale Sulaiman, MD, PhD, FRCS
Tulane-Ochsner Department of Neurosurgery

Introduction:
Spinal epidural lipomatosis is a rare entity where there is hypertrophy of the adipose tissue overlying the epidural space. Clinically, it is most commonly asymptomatic and rarely presents with back pain or lower extremity weakness. Here, we present a patient with progressive spastic paraparesis due to epidural lipomatosis.

Case Report:
59 year old female with a history of insulin-dependent diabetes who presents with a one year history of slowly progressive bilateral leg spasticity and weakness. Given concordant clinical exam and MRI finding, she underwent decompressive laminectomy and excision of epidural lipoma. Post-operatively, she demonstrates progressive improvement in her lower extremity strength and spasticity. At last clinic follow-up, she walks with a cane and motor strength was normal. Her gait is impaired due to residual spasticity.

Discussion and Conclusion:
Review of the literature reveals only 14 other case reports and case series involving patients with symptomatic epidural lipomatosis with etiology ranging from obesity, chronic steroid use to idiopathic. The only significant past medical history in our patients is the use of insulin pump for insulin-dependent diabetes and it remains unclear whether this plays a role. Surgical decompressive laminectomy and excision of the lipomatous lesion is the treatment of choice.
**Scientific Poster Presentations**

**Historical Review of Military Neurosurgery and Application for the Future**

Richard P. Menger MD  
Department of Neurosurgery  
Louisiana State University Health Sciences Center - Shreveport

The military has been on the forefront of neurosurgical advance from the Ottoman Empire to Dr. Harvey Cushing’s experience in World War I, expanding into contemporary advances in damage control neurosurgery. Current experiences in Operation Iraqi Freedom and Operation Enduring Freedom have been well documented with a migration from the historical approach to traumatic brain injury. Dr. Cushing’s work during the early portion of the 20th century focused primarily on maximum debridement. Current conflicts in Iraq and Afghanistan show a movement toward early decompressive craniectomy with local debridement in the setting of closed head injury related to blast.

This emphasis relies on a trauma care network of triage and early intervention. Corpsman and medics perform initial lifesaving interventions on the battlefield. Combat Support Hospitals provide acute surgical care allowing for decompressive craniectomy to occur within two to three hours of injury. Combat Casualty Air Transport planes, under ICU level supervision by critical care doctors in-flight, bring critically injured patients to tertiary care centers within 24 hours.

Advances in body armor and the strike of modern warfare have created new injury patterns. Visceral injuries once considered non-survivable have been prevented or mitigated. Penetrating cranial wounds have better outcomes than any previous conflict secondary to the early interventions offered. However, up to one-third of all patients with penetrating cranial injuries have a documented vascular injury. From 2003-2007, the Operation Iraqi Freedom and Operation Enduring Freedom series noted fifty traumatic aneurysms. A pattern of rupture was not reproduced. A portion of aneurysms seen with a size less than 2mm healed spontaneously. These were treated by a variety of open and endovascular repair. This represents an interesting challenge in the management of critical injury; patients present with previously non-survivable injuries with little historical context.

Examination of the military neurosurgery apparatus in Bulgaria, Germany, and Turkey provides international insight. Bulgaria’s transformation from communist leadership to a NATO ally and its implication on uniformed neurosurgeons presents unique challenges. In Germany, Dr. Wilhelm Toennis organized a meticulous damage control neurosurgery apparatus during World War II. This organization still benefits the German military today as it helps to globally forge medical care. Over its history, Turkey has undergone a metamorphosis from Islamic medical traditions to an array of 26 military neurosurgeons operating at 11 military institutions.

Nationally and internationally, the military has had and continues to act as a leader in developing progressive neurosurgical techniques.
**Scientific Poster Presentations**

**History of Cauda Equina**

Christopher Storey, MD  
Department of Neurosurgery, LSU HSC Shreveport

The anatomy of distal spinal cord has been studied for the last two millennia. Heropolis, the father of anatomy, was the first to discover the function nerves around 350 BC. Much of what was learned was believed to be destroyed in the fire in the library of Alexandria. Galen around 150 AD was the physician to Marcus Aurelius and was the first to describe the pattern of nerves exiting the spinal column. Around a similar time, Rabbi Judah was noted to describe the cauda equina when describing the code of laws surround consuming animals after a spinal cord injury. No further significant contributions would occur until the Renaissance period in the 16th and 17th centuries when a flourish in the study of anatomy would provide the description and name for cauda equina, horse’s tail. Andreas Laurentius, was one of the anatomist and 2nd generation royal physician at the turn of the 17th century to describe cauda equina in his Historia Anatomica. He is also the French anatomist who coined the term cauda equina after observing the distal spinal cord and nerves after immersion in water. His anatomical text was one of the leading texts of his time. His anatomical Galenic philosophies lead to many controversies that he published. Much of his work was based of the previous century’s leading anatomist Vesalius, who described the anatomical innervation of the spinal nerves, in his De Humani Corporis Fabrica. Both Vesalius and another 17th century anatomist, Willis, failed to accurately describe to the cauda equina and illustrated nerve roots exiting the spinal column within a level of its origin. Widespread accurate knowledge of the cauda equina was present until the late 19th century. The cauda equina syndrome wasn’t diagnosed and treated until 1934 when Mixter and Barr published their findings and treatment of herniated disc.
Laparoscopic assisted VP shunt placement in obese patients: an Ochsner/Tulane series.

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Tulane/Ochsner Neurosurgery Program. New Orleans, LA.

Background:
Ventriculoperitoneal shunt (VPS) is the most common treat modality for patients with hydrocephalus. VPS placement in obese patient can be challenging with increased operative time and complication rate. Laparoscopic-assisted distal shunt placement has been shown to be a safe and effective option for VPS placement. We believe that this method can provide surgical advantages in obese patients.

Objectives:
To do a retrospective review of the laparoscopic assisted shunt cases done in one of our institutions (Ochsner Medical Center) during the period 2008 – 2011 in patients with Body Mass Index ≥ 30 kg/m².

Materials and Methods:
We reviewed our shunt data base and selected all the patients with a BMI ≥ 30 that underwent primary shunt placement with laparoscopic assistance. We reviewed the data for operating time, blood loss, patient satisfaction, and complications.

Results:
Forty-four out of 188 shunt surgeries involved patients with a BMI ≥ 30. Twenty-nine out of these surgeries involved primary shunt placement with laparoscopic assistance. All revision surgeries were excluded. The mean total operative time was less 35 minutes and the mean peritoneal access time was less than 5 minutes and did not differ from surgeries on non-obese patients. EBL was less than 10 cc in all cases. There were 2 shunt revisions in this group but both were proximal occlusion. There was no distal complication. All patients were satisfied with their abdominal incisions.

Conclusions:
Laparoscopic assisted shunt placement is an effective and safe method for VPS placement in obese patients that may offer some advantages in operative time, blood loss, and patient satisfaction.
Thank you for your participation.

Please mark your calendar for the 2013 Louisiana Neurosurgical Society Annual Meeting, which will be held on January 11-12, 2013 in New Orleans, Louisiana.
Notes:
Notes: