



University Neurosurgery Brain & Spinal Column



Volume 1

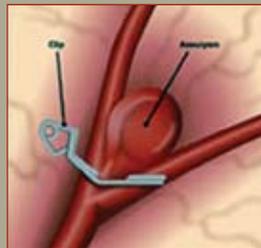
Winter 2007

To Clip or Not to Clip: Clipping Versus Coiling of Aneurysms

Over the past few years, the question of whether to clip or coil has been one of much discussion among medical professionals involved in treating brain aneurysms. Each aneurysm is unique, and this decision must be made in the best interest of each patient. Many complex variables should be considered to ensure proper care.

With the rapid advancement of endovascular techniques, indications for aneurysm coiling are constantly expanding. The balloon remodeling technique and the application of stent technology has made repair of wide-neck cerebral aneurysms possible. While coiling has not completely replaced clipping, the most important factors

are having both treatments available and having the decision made by an experienced physician. Factors important to the decision process include the patient's medical condition and history, as well as aneurysm size, position and configuration.



According to the one-year follow-up results of the International Subarachnoid Aneurysm Trial (I S A T), endovascular coiling is made better than aneurysm clipping for suitable



patients. Of the greater than 2,000 patients enrolled and seen at one-year follow-up, there was a relative risk reduction of 27 percent in death and disability in the endovascular group compared to the surgical group.

The neurovascular service at LSUHSC-S offers both microsurgical clipping and endovascular coiling of ruptured and unruptured cerebral aneurysms. Patients are evaluated based on clinical status, operative risk and aneurysm anatomy. A decision is made cooperatively between surgical and endovascular specialists. ■

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University Neurosurgery Physician Serves His Country

Dr. Brian Willis was commissioned as a Lt. Commander in the U.S. Navy Reserve in February 2003. He drilled at the Naval Reserve Center in Bossier City the following year.

"I joined the reserves because of a desire to serve my country after 9/11," Willis said. He also drew inspiration from his son who was serving in the Army at the time he was commissioned.

In April, he accepted a billet as the assistant battalion 1st Battalion 23rd Marine Surgeon, headquartered in Houston. A week later, they were told they were leaving for Iraq.

The troops mobilized in June 2004 and were sent to California for 12 weeks of pre-deployment training. The battalion was sent to Al Asad Anbar Province in August. Dr. Willis and a small crew of Navy

Corpsmen established a Forward Aid Station at a small marine base outside the town of Hit (heet), which lies northeast of Ramadi, the provincial capital. Dr. Willis directed the trauma and the first aid station. His duties included health maintenance, immediate treatment stabilization and evacuation of wounded marines. He took part in offensive and defensive maneuvers, including the first and second Battle of Hit. He also participated in convoy and foot patrols, and assisted in the training of the Iraqi National Guard.



Repositioned to Haditha, Dr. Willis and his team of corpsmen were moved to a Forward Aid Station as part of the Falluja offensive in November 2004.

The most common injury he treated was blast injuries from land mines and IEDs (improvised explosive device). Dr. Willis treated 80 wounded combat soldiers, Iraqi National Guardsmen and civilians wounded as a consequence of U.S. action. Eleven marines in his unit were killed in action and more than 100 Purple Hearts were awarded.

During the conflict, Dr. Willis was promoted from Lt. Commander to Commander. In April of 2005, the 1st Battalion 23rd Marines were demobilized and returned home. ■



Message from the Chairman

It gives me great pleasure to introduce you to the inaugural issue of *Brain*

& *Spinal Column*. This newsletter is intended to communicate the latest advances in neurosurgery to primary care physicians and physician extenders, and to assist in better management of neurological and spinal disorders.

We are excited about the establishment of our core multidisciplinary brain aneurysm

team and are the only center in North Louisiana equipped to offer both aneurysm coiling and clipping. These improvements help provide better services to our patients and an even higher standard of care.

Furthermore, our department faculty has expanded. Dr. Payne joins us from New Orleans with an expertise in stereotactic and functional neurosurgery. Dr. Williams is a vascular expert, has already coiled several aneurysms and is part of our multidisciplinary team.

We have implemented a new EMR system with the goal of being able to

see referred patients within a week. We have received complaints about the availability of beds. For emergency transfers, call one of our residents and they will be able to assist in placing your patient at LSU or a privately affiliated hospital.

If our department can help in any way in terms of patient care, research or any other issue, feel free to contact me. We are always open for suggestions.

Sincerely,

Anil Nanda, MD, FACS

University Neurosurgery at a Glance

Anil Nanda, MD, FACS

*Professor and Chairman
Neurosurgeon*

Appointed Chief of Neurosurgery in 1990 and the first Neurosurgery Department Chairman in 1995, Dr. Nanda has ushered the growth of University Neurosurgery through the vision he shares with faculty and staff.

Dr. Nanda was board certified by the American Board of Neurological Surgeons in 1993. His training includes surgical oncology, pediatric neurosurgery, microneurosurgery and cranial base surgery

He specializes in general and spinal neurosurgery, Gamma Knife radiosurgery, skull base tumors, AVMs and aneurysms. He has performed more than 1,000 surgeries on aneurysms and skull base tumors.

Brian K. Willis, MD, FACS

*Associate Professor &
Neurosurgeon*

During his tenure as Assistant Professor of Neurosurgery at the University of New Mexico, Dr. Willis also served as Chief of the Neurosurgical Service at the Albuquerque VAMC and Director of Neuro-oncology Services at the UNM Cancer Center.

Dr. Willis was board certified by the American Board of Neurological Surgeons in 1994. He has contributed an extensive number of scientific publications. Dr. Willis has a special interest in the care of infants and children with neurosurgical problems.

Donald R. Smith, MD

*Clinical Professor &
Neurosurgeon*



Dr. Smith obtained his training in the military at Walter Reed Army Hospital in Washington, DC. He spent many years in private practice in the Shreveport community before joining the faculty at LSU Medical Center. Prior to entering private practice, he served on the faculty at George Washington University Hospital and served as Director of Neurosurgery Residency Training there from 1974-77. He received his board certification in 1972.

Dr. Smith's neurosurgical areas of expertise include general neurosurgery with an interest in spinal surgery and spinal instrumentation.

Esther Wylen, MD

*Assistant Professor &
Neurosurgeon*



Dr. Wylen received her medical degree and neurosurgical training from Albany Medical Center in Albany, New York. She completed her medical degree with a Distinction in Research Award and has several publications and meeting presentations under her name.

Dr. Wylen has a strong interest in both basic science and clinical research in the neurosciences. She specializes in general neurosurgery and spinal instrumentation as well as Gamma Knife radiosurgery.

University Neurosurgery Brain & Spinal Column

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Brain & Spinal Column is written for physicians and should be relied upon for medical education purposes only. It does not provide a complete overview of the topics covered, and should not replace the independent judgement of a physician about the appropriateness or risks of a procedure for a given patient.

University Neurosurgery at a Glance

Profile

Dr. Bryan R. Payne



Clinical Associate Professor and Neurosurgeon, Dr. Bryan Payne transferred from the LSU New Orleans campus in 2006. He had been on the faculty there since 2000.

Dr. Payne is a 1998 Phi Beta Kappa graduate of the University of Kentucky with a degree in chemistry. He graduated from the University of Louisville's School of Medicine in 1992 before beginning his general surgery internship and neurosurgical residency at LSU in New Orleans. In 1998 to 1999, Dr. Payne studied Gamma Knife radiosurgery as a fellow at the University of Virginia under Professor Ladilau Steiner. At Emory University, he studied Functional Neurosurgery (movement disorder surgery and epilepsy surgery) under Dr. Roy Bakay.

Dr. Payne was board certified in neurosurgery in 2003. He has a strong clinical and research interest in the surgical treatment of Parkinson's disease, other movement disorders and epilepsy.

Profile

Dr. Michael Williams



Assistant Professor and Interventional Neuroradiologist Dr. Michael Williams joined the full-time faculty in 2006.

His area of expertise is in the field of interventional neuroradiology, and has performed more than 200 endovascular aneurysm coiling procedures. In 2000, Dr. Williams completed his training in diagnostic radiology at LSUHSC-Shreveport and obtained board certification from the American Board of

Radiology. He then completed training in interventional neuroradiology at the University of Tennessee in Memphis in 2002.

Dr. Williams has been a member of a large radiology group in Little Rock, Ark. for the past four years, performing a wide variety of interventional neuroradiology procedures.

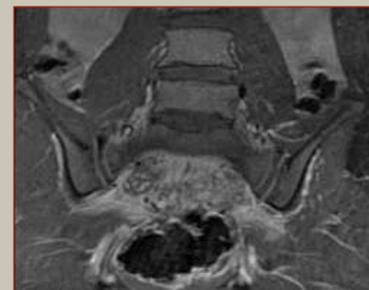
He performs both common and uncommon procedures in interventional neuroradiology including cerebral aneurysm coiling, arteriovenous malformation and arteriovenous fistula embolization, intracranial stenting as well as carotid stenting.

Dr. Williams is a senior member of the American Society of Neuroradiology and an active member of the American Society of Interventional and Therapeutic Neuroradiology.

Multidisciplinary Treatment for a Rare Sacral Tumor

Anthony Sin, MD

We treated a 15-year-old Hispanic male after discovering a large sacral mass. He presented with back pain and lower extremity weakness to our clinic.



The initial biopsy was consistent with osteoblastoma, which is an uncommon neoplasm of the bone, accounting for only 0.5-2 percent of all primary bone tumors. It constitutes nine percent of all primary bone tumors arising in the sacrum. Upon reviewing the radiographic images, multidisciplinary planning was done to remove the tumor en bloc.

The patient was admitted and Dr. Michael Williams performed embolization of major feeding vessels to the tumor a few days prior to the operation. Once he was brought into the OR, Urology service placed stents in his ureters bilaterally. Vascular surgery then went transabdominally to ligate multiple feeders to the tumor. Colorectal surgery provided assistance to mobilize the rectum from the tumor. Dr. Anil Nanda and Dr. Stephen Ondra were the primary surgeons for the resection. Dr. Ondra, an Associate Professor and Neurosurgeon at Northwestern University in Chicago, is an expert in treating sacral tumors. Drs. Nanda and Ondra performed

osteotomy of the sacrum anteriorly then closed the incision. The second stage of the operation was performed posteriorly.



Fortunately, we were able to completely resect the tumor en bloc and he is

doing well. This complex case would not have been possible without outstanding cooperation among our multidisciplinary team. ■

University Neurosurgery is pleased to serve you and your patients. Our new system is geared towards customer service for the physician and the patient.

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Disk Disease & Lower Back Pain

Interview with Donald Smith, MD

by Anthony Sin, MD, Chief Resident, Dept. of Neurosurgery

Q *Would you recommend an MRI for someone who comes in with severe back pain for 2-3 weeks?*

A No, but if a patient had neurological symptoms then I'd do an MRI early. Otherwise, I would treat with anti-inflammatory medications, gentle physical therapy and then progress to more vigorous physical therapy with an exercise program. If the patient didn't respond, then I would go ahead with those studies, but a high percentage of things like soft tissue injury such as muscular strain will respond to medication and physical therapy.

Q *Do you think a patient would benefit by going through pain management evaluation prior to coming to a neurosurgery office, such as epidural steroid injections before they go see a surgeon?*

A I do not believe these are a good initial prescription. In my opinion, epidural steroid injection is primarily of benefit in patients who have radicular pain. Epidural steroids do have a very prominent place in the treatment of postoperative patients. Not immediately post op, but patients who have had previous surgery with some scarring or fibrosis around the nerve roots and come back with radicular complaints, may find epidural steroids to be very helpful.

Q *What percentage of patients that come to your clinic do you eventually take to operation to alleviate their pain?*

A That's a different figure for a neurosurgeon than it is for a primary care physician (PCP). For a PCP, that figure is probably one percent or less. For a neurosurgeon, who is evaluating patients with spine problems, it's still probably less than 20 percent of the patients.

Q *Do you think that there is an age that is too young or too old to have an operation with disk disease?*

A No, although age influences the decision whether to treat them surgically or not. Very young patients will almost always respond to non-operative treatment. We do occasionally see young people in their teens that have actual extruded acute disk. Some teenage patients need to have surgical treatment for disk disease, but they are a very small percentage. At the other end of the spectrum, we do see elderly patients with extruded disks. They more frequently have degenerative disease, osteophyte and stenosis problems.

Q *What is the future as far as surgical treatments for this disease?*

A I think some sort of surgical procedure is going to always be a part of the treatment of disk disease for those patients in which non-operative measures fail. It may be that our surgical procedures will progressively get less intrusive or be truly minimally invasive procedures because there has been a steady trend in that direction over the period of my practice. ■

Due to problems with emergency transfers, contact the resident on-call and they will be able to assist in placing your patient at LSU or a privately affiliated hospital.

The Worst Headache of His Life: Aneurysm Case Study

Michael Williams, MD

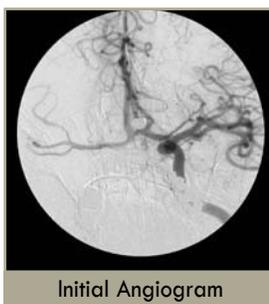
This is a 49-year-old man who experienced an acute onset of the worst headache of his life. However, he did not present to the hospital until day seven of his symptom onset.

A non-contrast CT of the brain at that time showed no evidence of hemorrhage, but a CT angiography showed a wide-neck anterior communicating artery aneurysm. A lumbar puncture was not performed.

The CTA demonstrated excellent anatomical delineation of the relationship of the anterior cerebral artery segments to the



3D CT Angiogram



Initial Angiogram



Post-Coiling Angiogram

The initial arteriogram demonstrates injection of the left internal carotid artery and the anterior communicating artery aneurysm.

aneurysm. The left A1 is the larger of the two segments, and the aneurysm involves a significant portion of the left A2 segment. For successful endovascular treatment, the left A2 would have to be protected. Options included balloon remodeling technique and Neuroform stent placement. Also, noticeable is a small tip near the dome of the aneurysm.

A Neuroform stent was advanced via the right A1 segment and into the left A2 segment and deployed. This created stent coverage horizontally across the entire neck of the aneurysm, protecting the left A2 segment. The aneurysm was then completely occluded as demonstrated on the final arteriogram. The patient made an excellent recovery and was discharged on post operative day one. ■

Fall Neuroscience Nursing Symposium Successful

The Dept. of Neurosurgery and NSU's School of Nursing hosted its Neuroscience Nursing Symposium September 29. This year's conference had 157 participants.

Ellen Barker, MSN, APN, CNRN, CLCP, ABDA and the president of Neuroscience Nursing Consultants in Greenville, Del. was the featured speaker. The symposium included neuroscience presentations and a hands-on cadaver brain anatomy lab.



"Participation was the highest ever and the response afterwards was very positive," said Allyson DeLaune BSN, CNRN. "The addition of the cadaver lab drew a lot of attention. Overall, it was a great success and

we are thankful for everyone who helped make it possible." DeLaune, Gamma Knife Coordinator in Neurosurgery, led the lab dissection.

Participants learned neuroscience history, assessment and management of various neurosurgical patients and brain anatomy. ■

The first FDA approved minimally invasive, non-fusion solution to lumbar spinal stenosis

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Cervical Spondylotic Myelopathy: An Underdiagnosed Disorder

Esther Wylen, MD

The aging process in the cervical spine manifests as bulging discs, hypertrophy of ligaments and bony elements. This can result in critical stenosis of the cervical spinal canal with spinal cord compression. Patients, typically in their 60s or 70s experience hand clumsiness and mild gait disturbance as their first symptoms. Dropping objects, hand numbness and weakness are frequently reported as well. As the long tract damage progresses, patients notice gait difficulties due primarily to spasticity. The neurologic examination is characterized by hand, arm and proximal leg weakness, patchy sensory loss, hyperreflexia with positive Babinski sign and Hoffman thumb and finger flexion reflex.

¹Sampath, P, et al.: Outcome in patients with cervical radiculopathy: Prospective multicenter study with independent clinical review. *Spine* 24:591-597, 1999. ²Chagas H, et al.: Cervical spondylotic myelopathy: 10 years of prospective outcome analysis of anterior decompression and fusion. *Surg Neurol.* 64:30-5, 2005. ³Chibbaro S, et al.: Anterior cervical corpectomy for cervical spondylotic myelopathy: experience and surgical results in a series of 70 consecutive patients. *J Clin Neurosci.* 13(2):233-8, 2006.

Wheelchair dependence, bowel, bladder and sexual dysfunction occur in cases of severe cervical myelopathy.

Due to the insidious onset of symptoms, many patients are first diagnosed based on a cervical spine MRI, which is obtained for a chief complaint of neck pain. The differential diagnosis of CSM includes MS, tumor, ALS, spinocerebellar disease and syrinx. A detailed history, neurologic examination and a cervical MRI showing canal stenosis (often with cord signal change), usually decides the diagnosis.

Delayed diagnosis of CSM is

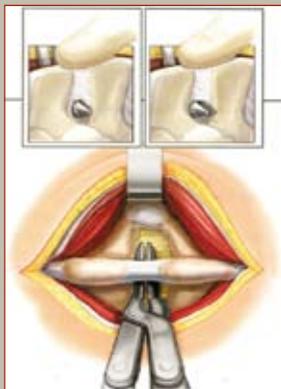


often seen in institutionalized patients, especially those with mental retardation or other conditions that preclude effective communication. In these patients, a gradual decline in motor function, such as the ability to feed themselves or ambulate unassisted, is the usual trigger that calls for imaging studies.

A diagnosis of CSM requires serious consideration of surgical intervention, as this course tends to be progressive with conservative management¹. Motor function improves in 64-94 percent of operated cases^{2,3}. ■

Procedure Offers A Renewed Active Lifestyle for Many With Back Pain

In “*The Hunchback of Notre Dame*,” Victor Hugo’s Quasimodo always stooped because of his back. Neurosurgeons have always suspected that this may have been a case of lumbar stenosis.



Lumbar stenosis is a debilitating problem that affects many people as they get older and costs the U.S. economy several billion dollars. At present, 400,000 people over the age of 50 have symptoms of lumbar stenosis.

It is a form of tightness that occurs with arthritis and causes compression of the spine as well as the nerve roots. This leads to difficulty walking with back pain radiating down the legs, persistent, progressive low back pain with or without radiation or numbness or weakness in the buttocks and legs. These symptoms do improve with rest and lying down. Most times, lumbar stenosis can improve with just physical therapy and conservative management; however, if it persists, surgical options become necessary.

A recently approved new procedure, X-Stop, is a prosthetic titanium device placed between

the spinous processes. In this outpatient procedure, the X-Stop device is placed in the spine while the patient is under local anesthesia.

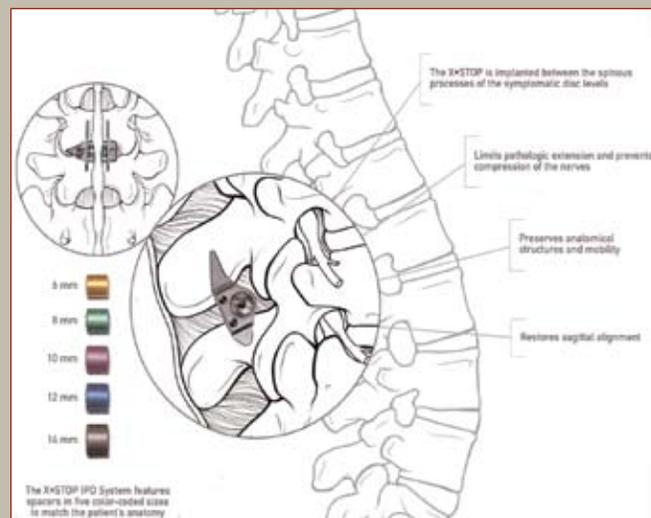
A study appearing in the *Journal of Neurosurgery: Spine* showed a greater clinical outcome two years after surgery compared to traditional non-operative methods. This study showed that after two years with the X-Stop,

63.4 percent of patients did better compared to traditional non-operative therapies like steroid injections and physical therapy, which had a success rate of 12.9 percent¹.

In this procedure, the patient is laid on his side and given local anesthesia and sedation. A small opening is made in the back and the titanium device is placed inside. The procedure takes about 30 minutes, which allows the device to increase the space

gives more room to the nerve roots and spinal canal, alleviating the symptoms fairly dramatically.

In our experience with 24 X-Stops put in at LSUHSC-S, we have had close to a 90 percent success rate and are very pleased with this procedure. Initially, we intended to use it for patients who would not tolerate open back surgery, such as those with heart disease, on blood thinners or where the medical risk is very high. We now include other patients over the age of 60. This may be a simple procedure to try with good, long-term results. ■



¹Anderson PA, et al.: Treatment of neurogenic claudication by interspinous decompression: application of the X STOP device in patients with lumbar degenerative spondylolisthesis. *J Neurosurg Spine* 4(6): 463-71, 2006.

New Indication for Gamma Knife Radiosurgery

Bryan R. Payne, MD

LSUHSC-S introduced the first Gamma Knife radiosurgery unit to Louisiana and has since been the busiest center of its kind. The most common uses have been for the treatment of benign brain tumors, vascular malformations, malignant tumors that have spread from other locations to the brain and trigeminal neuralgia (a form of intermittent facial pain).

Recently, the first patient in the state with cluster headache was treated with this therapy. Named for their tendency to occur four or five times a day for months and then resolve spontaneously, these headaches tend to return intermittently over years.



Generally, well-managed medically by internists or neurologists, a small percentage of patients receive little or no relief from the commonly accepted medical therapies which include oxygen, migraine medications and oral analgesics.

The usefulness of Gamma Knife radiosurgery for recalcitrant cases of cluster headache has been demonstrated recently in several publications. The treatment performed is similar to that for trigeminal neuralgia.

Targeting with an MRI, a CT scan is obtained after an injection of dye through a lumbar puncture. Since the trigeminal nerve is only millimeters in diameter, both imaging modalities are used to maximize treatment accuracy. As new indications for radiosurgery, such as cluster headaches, epilepsy and pain are developed, LSUHSC-S will remain a leader in the region. ■

Nanda featured Speaker at Chinese Conference of Neurosurgeons

Dr. Anil Nanda was honored as the featured speaker at the Congress of Chinese Neurosurgeons Conference in Beijing, China September 16, 2006. Only three international guests were invited, and Dr. Nanda was



the only one from the U.S.

His lecture, "Skull Base Tumors: Past, Present, & Future," opened the conference. Dr. Nanda presented techniques, video clips of surgeries

and case studies to more than 7,000 convention delegates. The lecture was translated into Chinese as he gave his presentation.

"This is a huge event with thousands of people. It is a great honor to have been asked to speak to such a highly-regarded group of neurosurgeons," said Dr. Nanda. "China has invested wisely in their neurosurgical infrastructure."

Also while in China, Dr. Nanda was the Visiting Professor of Fudang University presenting to the faculty and staff of Hua Shan Hospital in Shanghai September 11. His presentation was titled "Skull Base Approach to Vascular Lesions."

"The hospital has an impressive neurosurgery department. It is always a privilege to be asked to be a visiting professor at another university." ■

Upcoming Meetings & Events

Grand Rounds

January 10, 2007, 4 p.m.
Daniel K. Resnick, MD
University of Wisconsin
School of Medicine
LSUHSC - Shreveport, La.

Grand Rounds

March 28, 2007, 4 p.m.
David Adelson, MD
Children's Hospital of
Pittsburgh
LSUHSC - Shreveport, La.

Louisiana Neurosurgical Society Meeting

January 19-20, 2007
Ritz Carlton,
New Orleans, La.

American Association of Neurological Surgeons

April 14-19, 2007
Washington, DC

Grand Rounds

March 7, 2007, 4 p.m.
H. Richard Winn, MD
Mt. Sinai School of Medicine
LSUHSC - Shreveport, La.

Mary Louise & Ben Levy, Jr. Visiting Professorship in Neurosurgery

May 2, 2007
Volker Sonntag, MD, FACS
University of Arizona
College of Medicine
LSUHSC - Shreveport, La.

Southern Neurosurgical Society

March 14-17, 2007
Sea Island, Ga.

Society of University Neurosurgeons

June 26-29, 2007
London, England

Neuroscience Stroke Symposium

March 24, 2007
LSUHSC - Shreveport, La.

Management Results of Intracranial Aneurysms in Elderly Patients

Prasad Vannemreddy, MD

Increasing age plays a significant role in decision making and also influences the outcome in the management of intracranial aneurysms.



For this study, consecutive patients operated on for intracranial aneurysms were entered into a database, both prospectively and retrospectively. Forty-one patients, age 60 and above who had 47 aneurysms, were analyzed for clinical grade and outcome. They were compared with younger age patients as well.

The results found that females (n=27) outnumbered their male (n=14) counterparts. The clinical grade was III and IV in 40 percent of older patients. Only 36

percent were in grade I. Seven patients had giant aneurysms, while the mean size was 12.4mm. Four aneurysms were located on the vertebrobasilar system. Following surgical obliteration of aneurysms, good outcomes were achieved in 72.5 percent of these patients, while mortality was 6.5 percent.

Upon comparison with 196 younger patients, who had aneurysm operations, the clinical grade was found to be significantly worse than in older patients (P<0.008). This corresponds to the findings of the Glasgow Outcome Scale (GOS) score

(P<0.003). As seen with other categories of patients, poor clinical grade had significant correspondence with a worsened outcome. Ten and 20 percent of grade III and IV patients died respectively, while a good outcome occurred in more than 80 percent of patients with grades I and II. There was no mortality in patients presenting in good neurological condition.



In conclusion, despite age, good outcome is possible in older patients who present with good clinical grades, while worsening neurological status is associated with poor outcome. ■

Department of Neurosurgery

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