

## President's Message



*"The first responsibility of a leader is to define reality. The last is to say thank you. In between, the leader is a servant."*

**Max de Pree**

Dear colleagues,

Max de Pree's words define well

what the year has been looking like for me. After the initial phase of realizing the immensity of the privilege and responsibility integral to the position of Chair of the Section, I discovered great pleasure in exploring the reality of who and what our group represents, where we seem to be heading and what strategies might ensure our continued successes. Above all, serving the group the best way I can remains my pri-

mary goal. The credit for any tangible progress in that regard must belong to the core of talented and dedicated officers that make up the leadership. The blame for any failures, on the other hand, is entirely mine.



...continues on page 4

## San Diego Meetings in February 2009

**February 16, 17 CV Section Meeting**  
**February 18, 19, 20 ISC Meeting**

Building upon last year's success, we have developed an exciting and intensive program that focuses on current trends and advanced techniques in the surgical and endovascular treatment of cerebrovascular disease. The scientific program committee is honored that this year's **Luessenhop Lecture** will be "Repair of

the Leak, Perfect Clip and Other Stories" given by **Juha Hernesniemi, MD, PhD**.

The Scientific Symposia will include: A Debate the Experts panel discussion that will certainly stimulate audience participation and ample discussion; our new Oral Abstract Presentations describing recent basic science and clinical advances; Cavernous Malformations Point/Counterpoint; and Large AVMs and Emerging Technologies. The meeting will again have 5 exciting luncheon seminars for you to choose from. Those topics include: Technical Considerations of Paraclinoid Aneurysms; Advanced Techniques in the Treatment of Cranial Dural Fistulae; Spinal Cord AVMs and



**2009 Luessenhop Lecturer  
Dr. Jules Hernesniemi**

Their Management; Current Status in the Treatment of Intracranial Occlusive Disease; and Biophysics of Aneurysm Formation.

The Executive Committee of the Cerebrovascular Section is offering complimentary registration for their February 16 - 17, 2009 Meeting if you are registered for the International Stroke Conference (ISC) Meeting. To take

...continues on page 2

### Jt. Section and ISC Meeting Highlights

- Free Registration with ISC meeting registration.
- Monday Evening Reception and Tuesday Sessions
- ISC Meeting follows on Wed, Thurs, Friday.
- Program and more details at [www.cvsection.org](http://www.cvsection.org)

## San Diego Meeting (continued)



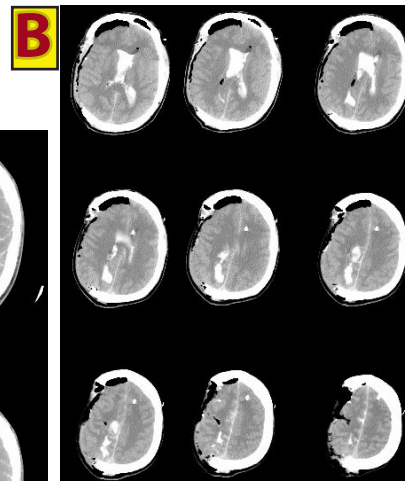
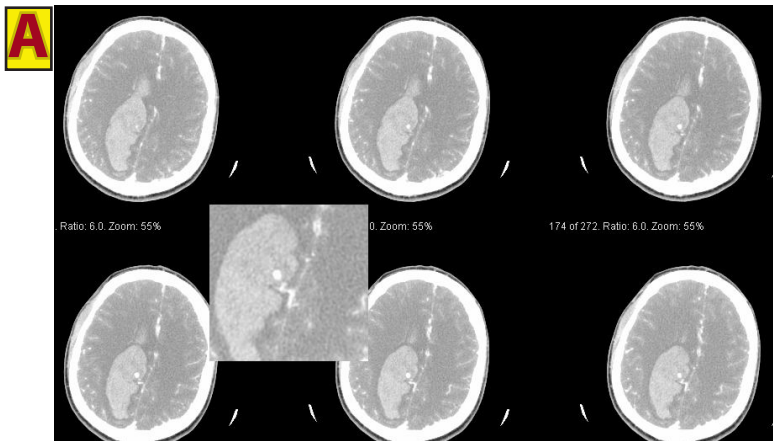
advantage of this offer, proof of your ISC registration is REQUIRED

and must be faxed along with the AANS/CNS Cerebrovascular Section Registration Form. You CANNOT register on-line for this special offer. However, we encourage you to make your hotel reservation on-line today. On-line registration and housing are available at <https://www.cteusa.com/aans28/>. If you need to register

via fax, the forms are available at the end of the preliminary program PDF at the top of this page or on the registration and housing web-site.

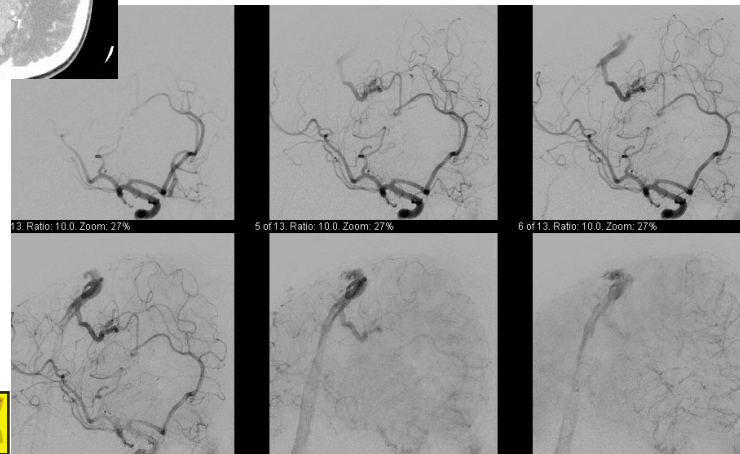
We look forward to seeing each of you at this year's section meeting!

## What would you do?



Last month's write up focused on a patient with severe verte-brobasilar disease. A survey of responses showed varied opinions about the management of this problem. See the last newsletter case at <http://tinyurl.com/cvsectionfall08> and the responses at <http://tinyurl.com/a8cuum>

This newsletter case shows a 33 y.o. man who presented in coma and blown pupil (A)... after evacuation of the hematoma and decompressive craniectomy (B) the patient recovered with a fixed motor deficit on the left. His angiogram now shows the fistula in (C). What would you do? Give us your response at <http://tinyurl.com/cvwinter09>



see our website at [CVSECTION.ORG](http://CVSECTION.ORG) for the latest meeting news and updates.

## Fall 2008 Congress Meeting Report

The Cerebrovascular Section met at the 58th Congress meeting in Orlando, Florida Wednesday, September 24th. Under the direction of Chairman **Jacques Morcos**, Dr. **Roberto Heros** was introduced as the Charles Drake lecturer. Dr. Heros candor and elegance is a perpetual reminder of a career of leadership and surgical excellence. The large number of former residents and fellows in the session were a testament to his immense contributions to Cerebrovascular surgery.

Next, Drs. **Loftus, Levy,**

**Fessler, Charbel** and **Ringer** presented relevant topics to the evolution of Neurovascular Therapeutics and community outreach. The presentations were concise, intriguing and further demonstration of the robust contribution our section makes to clinical neurosurgery and research in the neurosciences.

The IML (Integrated Medical Learning) Clinical Science Session for the Cerebrovascular Surgery Section was directed by Dr. **Bernard Bendok**. The Section topic, Hemispheric Stroke: Data,

Practice and Experience was presented by Drs. **Ogilvy, Awad** and **Naidech**. A review the DECIMEL, DESTINY and HAMLET trials laid the foundation for panel discussion regarding clinical practices. Pre and post didactic surveys via IML keypads demonstrated the trend towards widespread acceptance of this technique. The program was well attended and generated engaging comments from the attendees and presenters.

**Robert Singer, M.D.**  
Nashville, TN

## The Luessenhop Lecture

**ALFRED JOHN LUESSENHOP** was born on February 6, 1926, and at the age of four years, his family moved to Westfield, N.J. His father was with the Western Electric Company where he was comptroller of manufacturing. He graduated from the public school system and entered Yale University during July 1943. After completing the freshman year there, he entered the military service and served in the European theater as a medic. He re-entered Yale University in July 1946 and after two more years of pre-medical work entered Harvard Medical School in September 1948. After graduating in 1952, he spent one year as a surgical intern at the University of Chicago and then entered the residency training program in neurological surgery at the Massachusetts General Hospital. For his first year he served as a clinical and Research Fellow at Harvard. During his final year at the Massachusetts General Hospital, he was appointed as a Teaching Fellow in surgery at Harvard.

After completing the residency program in June 1959, he became a visiting scientist at the National Institutes of Health and simultaneously engaged in clinical practice at Georgetown University Hospital. Ultimately, he was appointed to a full time position at Georgetown University Hospital in 1962, and subsequently became head of the neurosurgical program in 1966. He remained in this capacity until his retirement from active practice in 1993.

He served as chief of neurosurgical services at the District of Columbia General Hospital, Children's Hospital of the District of Columbia, and the Veteran's Administration Hospital. He served as consultant to the National Institutes of Health, National Naval Medical Center, FAA, State Department, and CIA. His principle interest has been cerebrovascular disease and he served as president of the First International Conference on Spontaneous Intercerebral Hemorrhage in Tokyo, Japan, in 1972.



During his tenure as visiting scientist at the National Institutes of Health, he originated and subsequently developed the field of intravascular surgery which is now generally referred to as Interventional Neuroradiology.

At present he continues his position as Professor of Surgery at Georgetown University Medical School, where his activities are principally teaching and administration.

*Bio: Society of Neurologic Surgeons*

## President's Message (continued)

It may not be too apparent to the casual observer, but our own Cerebrovascular Section is by far the most active and dynamic subgroup that our parent organizations, the AANS and CNS, have "fathered". In spite of our relatively small size, we currently count no less than 14 separate committees and sub-committees, dealing with countless projects of significant importance and too numerous to summarize here. Our latest initiative was to become an integral partner with other sister societies, through the services of the Intersocietal Accreditation Council (IAC), in controlling the accreditation of institutions performing carotid artery stenting. We have committed funds to the INREF, in support of their excellent international educational mission, with the goal of sponsoring significant cerebrovascular projects and fellowships. We have secured Award funds (from Synthes) to recognize "Best Abstract by a Trainee" on 3 separate occasions during the year. Above all, we are proud to boast that we now offer 5 annual national educational gatherings that deal with the issues that interest us, under the auspices of the: AANS, CNS, CV Annual Meeting, ISC/AHA Conference ("Stroke" Meeting) and, our latest addition, the C3 Jackson Hole Meeting (Cerebrovascular Complications Conference). I invite all skeptics that ever doubted the viability and vitality of the field of Cerebrovascular Surgery, to look at the composition of all submitted abstracts for the upcoming WFNS World Congress in Boston this coming summer. The largest topic category is indeed in Cerebrovascular Surgery, ahead of Neuro-Oncology and Spine.

Our alliance with the SNIS, in no small measure due to the quality, integrity and sincerity of their current leadership, namely Robert Tarr and Colin Derdeyn, seems to be in excellent shape. Although the SNIS leadership

had elected not to share with us the financial responsibility of organizing the upcoming 1 day CV Annual Meeting next month in San Diego, immediately preceding the ISC Conference, we have elected to continue sharing with the SNIS on equal footing the composition of leaders and speakers of the scientific program. A look at the program content will clearly demonstrate this healthy collaboration. Our happiest achievement to date however, has been the strengthening of our ties with the ISC/AHA Conference Leadership, who recognized, as we had, the mutual benefit of having our Annual Meetings closely tied. Not only do we continue to determine the content of one third of the entire ISC Conference Scientific Program, but we also maintain our autonomy during our preceding 1 day Annual CV Meeting. We listened to the voice of our CV Section members and the message was clear: the integrity of a pre-ISC surgical/endovascular meeting was essential. A rather intimate forum to discuss and present advances in our field, that may not be of immediate interest to Stroke Neurologists, was felt to be paramount, hence the resurgence of the 1 day meeting. The ISC Leadership was extremely supportive of our decision to waive the registration fee for the CV Meeting, to any participant already registered in the ISC Meeting, an affirmation on our part that our alliance with the ISC is based entirely on academic, rather than financial grounds. Our predictions seem to have been validated, as preliminary numbers suggest that a large proportion of participants have taken advantage of this promotional registration scheme.

With regards to honoring our "elders", I could not be more proud of my choice for our three traditional named Lecturers for the year: Roberto Heros (Drake Lecturer at the CNS Meeting), Juha Hernesniemi (Luessenhop Lecturer at

the CV Annual Meeting) and Evandro de Oliveira (Donaghy Lecturer at the AANS Meeting). I will let the reader relish matching these iconic figures with the following attributes: intellectual honesty, quiet efficiency and surgical artistry. Roberto has already delivered and predictably did not disappoint, as he attempted to read into Drake's mind how he might have dealt with various aneurysms given the science and the art of 2008! My personal plea to the future leadership of the Section is to always foster a global international reach in all of our activities. Honoring the fathers and rising stars of our field should be no exception.

I intended this address to be upbeat and inviting, and thus (conveniently) will not discuss challenges and obstacles to the growth of the Section. These (if any subsist by then!) will be discussed in my farewell address in the next Newsletter, as well as be part of my "Chairman's Message" in San Diego, which I have provocatively entitled "The Future is not what it used to be". All that is left for me to say right now, is that I invite all neurosurgeons, interventionalists, vascular neurologists and any medical and allied health personnel interested in the field of cerebrovascular disease of the head and neck, to join us, February 16-17, 2009 in San Diego for a first class CV Annual Meeting that will stimulate and enrich us all. I then encourage you all, like most of us are doing, to stay on and participate in the ISC/AHA Conference immediately following, February 18-20, where a large portion of the program is eminently relevant to the daily practice of our craft and the real aspirations of our science. I hope to see you all there.

Thanking you for the trust and privilege,

**Jacques J. Morcos, MD, FRCS**  
January 20, 2009

## Technical Forum

### Microsurgical Approach to Anterior Communicating Artery Aneurysms With Guest Contributors: Drs. Hernesniemi and Spetzler

**Ketan R. Bulsara MD**  
Yale School of Medicine

In the current era, the microsurgical management of anterior communicating artery aneurysms is associated with minimal morbidity. The major aim of the surgical approaches to this area have emphasized minimizing brain retraction by optimizing bone removal. How much bone removal is optimal? Classically, the pterional approach has been utilized for anterior communicating artery aneurysms. Incorporated within this approach is drilling of the greater wing of the sphenoid and flattening of the orbital roof. To further limit the extent of brain retraction, a limited gyrus rectus resection is usually required. This has formed the mainstay of approaches for these aneurysms. The incorporation of skull base surgery techniques such as the orbitopterional and orbitozygomatic approach may add to further minimizing brain retraction. These approaches do not necessarily form the mainstay of approaches to the anterior communicating artery complex however cadaveric studies have shown that increased angles of approach to these aneurysms can be attained. This may potentially eliminate the need for gyrus rectus resection.

In this forum, the microsurgical perspective of two senior

cerebrovascular neurosurgeons is presented. Other perspectives are welcomed for possible publication in the next forum.

### **Supraorbital lateral approach (SOL) for surgery of anterior communicating artery aneurysms**

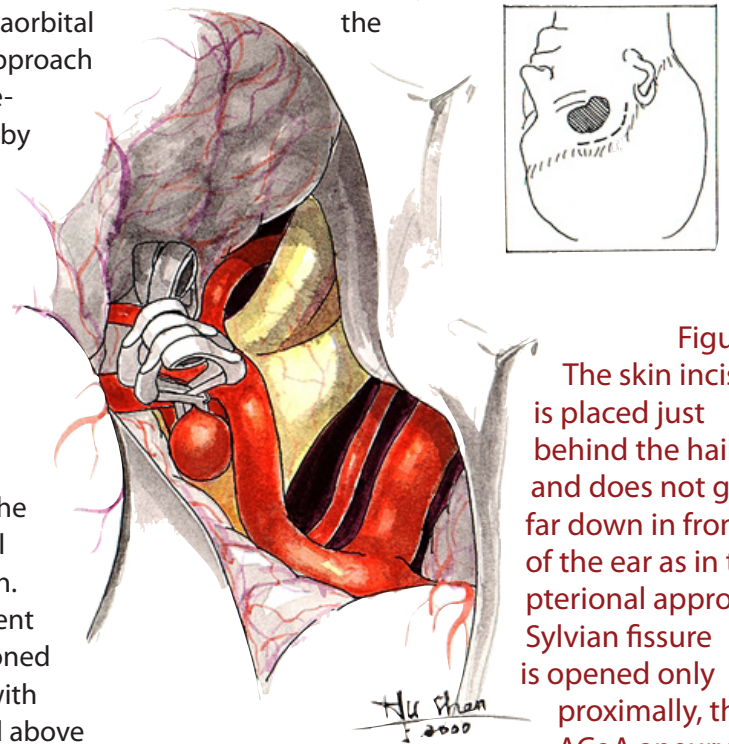
*Juha Hernesniemi, Rossana Romani, Ondrej Navratil, Reza Dashti, Özgür Çelik, Wei Wei Zhu, Stefano Toninelli, Ayse Karatas, Keisuke Ishii, Hu Shen, Mika Niemelä*

The classical pterional approach introduced by Prof. Yasargil (1, 2) has been a worldwide standard more than 30 years to operate on aneurysms of the anterior circulation.

The supraorbital lateral approach (SOL), developed by senior author in 80's, presents a good, simple and fast alternative for the pterional approach.

The patient is positioned supine with the head above the heart level to reduce bleeding. The head is fixed with 3 or 4 pins in the head frame and rotated 15 – 20 degrees towards

the opposite side and tilted slightly downward. After minimal shaving and injecting a vasoconstrictor agent, 8-10 cm skin incision is made behind the hairline. One-layer-musclecutaneous flap is retracted anteriorly until the superior orbital rim and anterior attachment of the zygomatic arch is exposed. The splitting of the temporal muscle is limited at the superior and anterior part. Insertion of one burr hole on the superior temporal line, cranially 4 cm away from the pterion is usually enough. The dura can be detached from the inner surface of the bone through this burr hole with a special dissector. A small craniotomy, limited 2-3 cm anteriorly and 2-3 cm posteriorly to the burr hole, is ideal to expose the fronto-basal region. A little drilling of the



**Figure 1.** The skin incision is placed just behind the hairline and does not go so far down in front of the ear as in the pterional approach. Sylvian fissure is opened only proximally, the ACoA aneurysm is usually treated under temporary clipping of A1s..

## Technical Forum Continued

skull base allows additional exposure. The dura is opened by a curvilinear incision with the base caudally and elevated with stitches. The anterolateral basal part of the frontal lobe is exposed with the Sylvian veins hidden just below the posterior and basal edge of the craniotomy.

The arachnoid folds are opened under the microscope until the ipsilateral optic nerve is exposed. Proximal part of Sylvian fissure (with water dissection technique) and lamina terminalis can be opened if more slack brain is needed. Minimal gyrus rectus resection and temporary clipping of both A1s can be achieved.

SOL is simple and fast (< 10 minutes in experienced hands) and preserves normal anatomy with good cosmetic result. The incision is short, does not reach the zygomatic arch as in pterional approach, reducing the risk of the facial nerve injury and preventing muscle atrophy. Usually one burr hole is sufficient. The small craniotomy size decreases complications (CSF leakage, postoperative epidural hematoma, infection); but is sufficient to reach all aneurysms of anterior circulation, and those aneurysms of basilar tip. It is our experience, that with more extensive approaches, as pterional and orbito-zygomatic approach, more hours and skull base are spent in ORs without substantial benefit for final treatment of the aneurysm. To compete with endovascular treatment, exovascular surgery should be simple, fast and preserve normal anatomy, as this SOL

approach. Extensive approaches should be used only in most complex aneurysms.

1. Yasargil MG (1987). *Microneurosurgery*, Vols I and II. New York, Thieme-Stratton.
2. Yasargil MG, Fox JL (1975). *Surg Neurol* 3: 7-14.
3. Hernesniemi J, Ishii K, Niemelä M, Smrcka M, Kivipelto L, Fujiki M, Shen H (2005). *Acta Neuroch (Wien) Supp.* 94: 17-21.

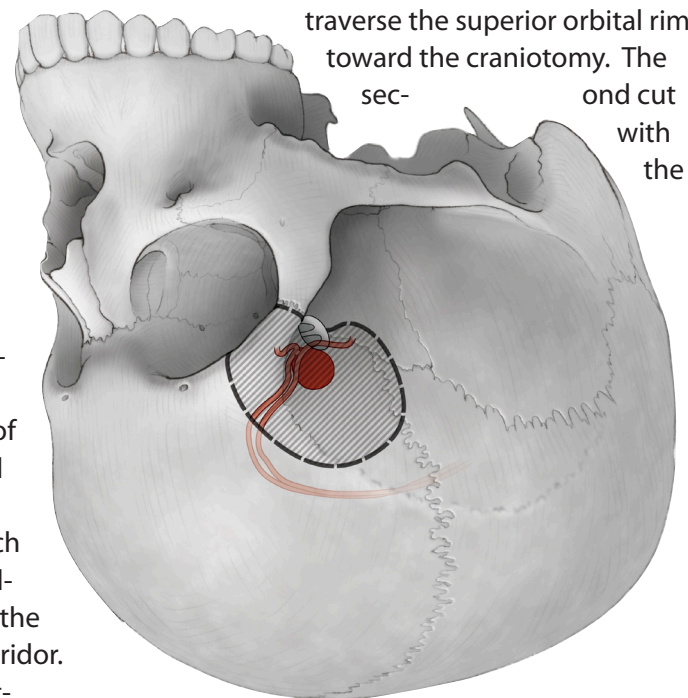
### Fronto-orbital craniotomy for anterior communicating artery aneurysms

*Pankaj Gore, MD & Robert F. Spetzler, MD  
Barrow Neurological Institute*

To access anterior communicating artery aneurysms, we prefer to use a one-piece frontal craniotomy and orbital osteotomy. This modification of the traditional orbitozygomatic approach provides excellent access to the subfrontal corridor. We use a right-sided approach to almost all anterior commu-

nicating artery aneurysms. Either an eyebrow incision or a fronto-temporal incision is used depending on the intended size and position of the craniotomy. With the latter incision the temporalis fascia is incised, and subfascial dissection is used to protect the frontalis ramus of the temporal branch of the facial nerve. The temporalis muscle is not incised. Instead the muscle is elevated from its origin upon the temporal fossa and retracted inferiorly below the pterion. A single burr hole is placed at the McCarty keyhole region overlying both the orbit and dura of the frontal lobe. A three-centimeter frontal craniotomy is fashioned from the frontal aspect of the burr hole without completing the cut that is parallel to the superior orbital rim. The reciprocating saw is then used to

traverse the superior orbital rim toward the craniotomy. The second cut with the



**Figure 2.** Surgical perspective demonstrating position of standard fronto-orbital craniotomy for an anterior communicating artery aneurysm.

## SAMMPRIS Trial Update

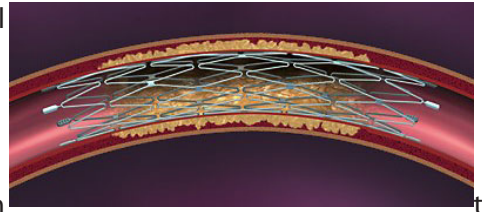
**Christopher S. Ogilvy, M.D.** Massachusetts General Hospital & **Elad I. Levy, M.D.**, University at Buffalo SUNY

The best treatment for prevention of another stroke or TIA in patients with narrowing of one of the arteries in the brain is uncertain. A common treatment is the use of antiplatelet medications or anticoagulation with Coumadin to prevent blood clot formation in a narrowed vessel. With the advent of stent therapy, the possibility of stenting atherosclerotic lesions is becoming increasingly prevalent.

While stenting and angioplasty has been shown to be safe and effective in treating patients with symptomatic intracranial stenoses (Ref 1), restenosis [both radiographic (as high as 25-30%) and symptomatic (~10%)] has remained a challenge for this technology. Therefore it remains unclear if medical therapy or stenting is superior long-term for the treatment of patients with intracranial atheroma.

**SAMMPRIS, Stenting versus Aggressive Medical Management for Preventing Recurrent stroke and Intracranial Stenosis**, is an NIH-funded prospective randomized study to compare the safety and efficacy of either intensive medical therapy plus stenting or intensive medical therapy only in preventing strokes, heart attacks, or death. The inclusion criteria for this study is **TIA or non-severe stroke within 30 days of enrollment attributed to a 70 to 99% stenosis of a major intracranial artery** in a patient with modified Rankin score of 3, and a target area of stenosis in an

intracranial artery that has a normal diameter of 2.00 mm to 4.50 mm with a target area of stenosis that is < 14 mm in length.



Patients must have a negative pregnancy test and be available by phone. It is planned that patients be **randomized to either 1)** an experimental arm with a **Wingspan intracranial stent with Gateway balloon and intensive medical therapy**, including management of blood pressure, lipids and other risk factors for vascular events,

or 2) to an experimental medical arm with **only intensive medical therapy with management of blood pressure, lipids, and other risk factors for vascular events**. The primary purpose of this study is to determine whether intracranial stenting (Wingspan stent) with intensive medical therapy is superior to medical therapy alone for preventing secondary stroke in high risk patients with symptomatic stenosis of a major intracranial artery.

**SAMMPRIS**  
**Stenting vs. Aggressive Medical Management for Preventing Recurrent Stroke in Intracranial Stenosis**  
**Lead Investigators:**  
**Marc I Chimowitz, MBChB, MU South Carolina**  
**Colin P. Derdyn, MD Washington University**  
**David Fiorella, MD PhD Barrow Neurological Institute**

**Fast Facts:**  
**Wingspan Stent + Medical Rx vs Medical Rx Alone**  
**Study Began November 2008**  
**7 patients of planned 764 patients enrolled thus far.**  
**Up to 60 Centers Participating**  
**Duration of Study Including Follow-Up : 5-6 years**

There are a variety of exclusion criteria for this study. TIA or stroke that is attributed to less than 70% stenosis of a major intracranial artery or other extracranial or intracranial stenosis (70% to 99%) or occlusion; bilateral intracranial vertebral artery stenosis of 70-99%, and uncertainty about which

## SAMMPRIS Update (continued from page 7)

artery is symptomatic; stenting, angioplasty, or endarterectomy of an extracranial or intracranial artery within 30 days; previous treatment of the target lesion with a stent, angioplasty, or plan to perform angioplasty/stenting of the target lesion; plan to perform angioplasty or stenting of an extracranial tandem lesion; isolated stenosis of the ACA, PCA, MCA division or distal branch of the MCA, PICA, AICA, SCA; presence of intraluminal thrombosis proximal to or at the target lesion, or any aneurysm near target artery; intracranial tumor (except meningioma), or any intracranial vascular malformation. Other exclusion criteria include CT scan or other evidence of severe calcifica-

tion of the target lesion; thrombolytic therapy within 24 hours prior to enrollment; progressive neurologic signs within 24 hours prior to enrollment; brain infarct within 30 days prior to enrollment greater than 5 cm; any hemorrhage infarct within 14 days prior to enrollment; intracranial stenosis due to arterial dissection; Moya-Moya disease; vasculitis, radiation-induced vasculopathy, or fibromuscular dysplasia; presence of any cardiac source of embolism; allergy or contraindication to study medications or anesthesia; history of life-threatening allergy to contrast dye; active risk of bleeding; major surgery within previous 30 days or planned in next 90 days after enrollment;

indication for heparin or warfarin beyond enrollment; severe neurologic deficit (patient incapable of living independently); dementia or psychiatric problem prevent following an outpatient program; comorbid conditions that may limit survival to less than three years; pregnancy or of childbearing potential; enrollment in a conflicting study.

### References

1. Zaidat OO, Kluczink R, Alexander MJ et al. The NIH Registry for the use of Wingspan stent in symptomatic 70-99% intracranial arterial sclerosis. *Neurology* 2008;70:1518-24.

## Upcoming Meeting Calendar

**2009 AANS/CNS Cerebrovascular Section Meeting February 16-17, 2009 The Hilton San Diego Bayfront San Diego, California**

**2009 AANS Annual Meeting May 2-6, 2009 San Diego, California**

**3C Conference Update: The second annual Cerebrovascular Complications Conference (3C), jointly sponsored by the AANS, is scheduled for July 8-11, 2009 at Four Seasons Resort Jackson Hole, WY.**

3C is a multidisciplinary peer review meeting committed to a dynamic, honest and open discus-

sion of complications related to the microsurgical and endovascular management of complex cerebrovascular pathology. Using a case discussion format, the exchange of ideas among physicians, scientists, and engineers are facilitated and encouraged in a confidential environment. Through open dialogue, 3C hopes to enhance physician education, stimulate progress in the field of cerebrovascular surgery, and improve patient care. This conference is designed for neurosurgeons, interventional neuroradiologists, interventional cardiologists, neurologists, scientists, and all practitioners involved in cerebrovascular interventional procedures.

The heart of this meeting is no-holds-barred sharing of our worst complications, focusing on how the disaster occurred and how you might prevent it in the future. Failure analysis in the group discussion that follows enhances understanding of the disease process and limitations of techniques and technologies to the betterment of all participants and their patients. Case presentations center on daily themes: Aneurysms (Thursday), Malformations - AVM, AVF, CCF (Friday), and Atherosclerotic Disease & Stroke (Saturday).

### Section Leadership

Jacques Morcos, M.D. Chair  
John Wilson, M.D. Chair-Elect  
Christopher Ogilvy, M.D. Vice-Chair  
Sander Connolly, M.D. Treasurer  
Sepideh Amin-Hanjani, M.D. Secretary



## Technical Forum (continued from page 6)

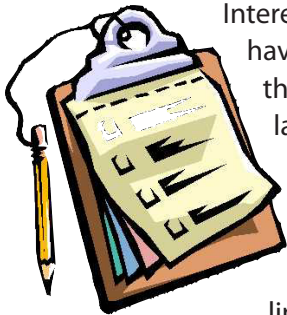
saw traverses the lateral orbital rim at the level of the frontozygomatic suture. A narrow osteotome is then used to fracture the orbital roof exposed by the bur hole.

In comparison to the pterional approach, removal of the orbital rim adds no surgical morbidity but significantly improves the ability to visualize superiorly along the subfrontal corridor,

thereby reducing the need for brain retraction. Our standard craniotomy is fashioned to avoid the frontal sinus (Figure 1). The medial extent is typically one cm medial to the lateral orbital rim, and the overall length is typically three cm. In the case of large anterior communicating artery aneurysms that point downward or toward the operative side, the craniotomy can be positioned

more medially to facilitate control of the contralateral A1 segment. A more lateral craniotomy provides a better view of anterior communicating artery perforators posterior to an upwardly directed aneurysm. This versatility makes the fronto-orbital craniotomy our approach-of-choice for anterior communicating artery aneurysms.

## Training Survey and Fellowship Announcements



Interested in knowing how others have trained and prepared for their practice in cerebrovascular surgery? Please join in and answer our 8 question survey on training and preparation for cerebrovascular surgery practice. Please click on the link below.

--> <http://tinyurl.com/aytns5>

### *Also please note the following fellowship information:*

The Resident Research Awards in Cerebrovascular Disease

- Funding available July 1, 2009
- Up to \$15,000 support of specific research pro-

- posal
- Residents in North American Training Programs
- Research related to Cerebrovascular Disease

APPLICATION DEADLINE IS MARCH 1, 2009

To download an application form, please e-mail or write to:

Robert J. Dempsey, MD  
Chairman and The Manucher J. Javid Professor of  
Neurological Surgery  
Department of Neurological Surgery

University of Wisconsin 600 Highland Avenue,  
K4/822 Madison, WI 53792 Email: [l.vanbrocklin@neurosurg.wisc.edu](mailto:l.vanbrocklin@neurosurg.wisc.edu)

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