President’s Message

“Removing the faults in a stage-coach may produce a perfect stage-coach, but it is unlikely to produce the first motor car.”

Edward de Bono, MD

Edward de Bono is a Maltese physician who has become recognized as one of the foremost authorities on the subject of creative thinking. His concept of lateral thinking suggests that creativity or progress is not a random act but is something that can be learned and practiced. As the quote above suggests, real progress can only be achieved when we think outside our normal comfort zone. We must think “outside the box”. I look forward to this year as a time to build on the efforts of my predecessors and keep the AANS/CNS Joint Cerebrovascular Section at the forefront of progress in the field of cerebrovascular surgery.

It is a great time to be a cerebrovascular surgeon. Our field is vibrant and undergoing rapid scientific and technological advances. Jacques Morcos, in his previous Chair’s Message, pointed out what an active and vibrant section we are. Our educational commitment is evident in the numerous and varied scientific conferences organized by the section. The CV sessions at the annual meetings of our parent organizations are uniformly among the best attended and enjoy some of the highest abstract submission rates of any of the sections. Under Greg Thompson’s leadership we partnered with the American Heart Association Stroke Council and the Society of Neurointerventional Surgery (SNIS) to organize a significant portion of the educational program for the prestigious annual International Stroke Conference. Building on that relation-

San Antonio Meetings in February 2010

This year’s CV section meeting will start on Monday, February 22, 2010 with two Practical Clinics, a new addition this year, followed by our Opening Reception. On Tuesday there will be a full day of Scientific Symposia and abstract presentations. The Scientific Symposia include: Debate the Experts; Oral Abstracts; The Leaders; Award Abstracts and Large and Giant Aneurysms and Management of Dural Fistulae. The meeting will again have 5 exciting luncheon seminars for you to choose from. Those topics include: Management of Incompletely Treated or Recurrent Aneurysms; Multi Modality Management of Grade 4 or 5 AVMs; State of Flow Diversion in Cerebrovascular Lesions; Update on Vascular Trials and Endarterectomy versus Stent Extra Cranial Carotid Disease.

The Executive Committee of the Cerebrovascular Section is offering complimentary registration for their February 22 – 23, 2010 Annual Meeting if you are registered for the International Stroke Conference (ISC) Meeting. To take 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 CAN NOT register on-line for this special offer. However, we encourage you to make your hotel reservation on-line today. Visit the meeting website at www.cvsection.org for the most up-to-date information on the meeting.

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

February 22,23 CV Section Meeting
February 24-26 ISC Meeting
What would you do?

A 49 year-old previously healthy woman is admitted to the neurology service after developing right sided weakness and aphasia while exercising. The symptoms resolved within 2 hours of arrival to the hospital. After initial imaging studies were obtained the patient was started on Heparin. Three days later she develops a second TIA and is reimaged. At this point she is unable to get out of bed and develops TIA’s if her Blood pressure falls below 150 systolic. The Neurosurgery service is now consulted.

Give your answer here....
http://tinyurl.com/cvsection2010q

and see the responses here
http://tinyurl.com/cvsection2010w

see our website at CVSECTION.ORG for the lastest meeting news and updates.
President’s Message (continued) concepts, we are doomed to obsolescence. The new generation of leaders in our section is doing just that, reaching to the future. They have sought out the training, are advancing the science and promulgating the knowledge that will drive the field in the future while maintaining their knowledge and expertise in the foundations of the specialty.

It is imperative that our organization evolves to meet the needs of our evolving membership. First and foremost, we must maintain and improve our leadership in science and education. The only way to accomplish this is to have the involvement of the brightest minds that are at the cutting edge of our field. It is apparent to me that we have those minds in neurosurgery. We must continue to engage them in the development of our educational content. But we must do more than this. We must deal with the perception by some that our organization (and neurosurgery in general) is resistant to the advancement of this field; that we only want to build a better stagecoach.

To that end, several initiatives are being undertaken. First, we are in the process of revising the Rules and Regulations of the section in an effort to foster more participation from the rank and file. Although our educational programming is well received and well attended and volunteerism is strong in the section, there has been significant apathy in regards to the business of the section and election of officers. I believe this stems in part from ignorance of the process. Regardless, the process can be significantly improved by education and involvement of a broader spectrum of the membership. Several initiatives will be considered at our annual business meeting at the AANS in Philadelphia. One of the most important in my opinion, and one that I hope can be implemented prior to that meeting, will be the ability to have electronic balloting. This will enable the participation of a much broader segment of our membership than just those attending the business meeting. There will also be a proposal regarding changing the process of nomination and election of officers. Within the next sixty days the membership will receive an electronic survey to poll for opinions regarding several possible paradigms for the nomination and election of officers. I encourage you all to take a few minutes and let the Executive Committee know your opinions in this regard.

Secondly, we are proposing that neurosurgery reconvene an endovascular task force. Such a group was previously convened in 2002 and lead by Bob Harbaugh and Nick Hopkins. Many of the recommendations made by that group have been adopted, such as the mandating of endovascular training for neurosurgical residents and the close collaboration with interventional neuroradiology. However, not all the goals set out in the report of that group have been met and revisiting this may help refine the objectives and set a path for full acceptance and implementation of the task forces recommendations.

I feel fortunate and honored to be the Chair of the Joint Cerebrovascular Section at such a pivotal time in its history. I will do my best to live up to the responsibility given to me and continue the progress to the future started by my predecessors. With progress comes change. Change is never easy and it is never ending. But it is what keeps life and our profession interesting. In the words of Sir Winston Churchill:

“Every day you may make progress. Every step may be fruitful. Yet there will stretch out before you an ever-lengthening, ever-ascending, ever-improving path. You know you will never get to the end of the journey. But this, so far from discouraging, only adds to the joy and glory of the climb.”

John Wilson, MD, FACS
Committee Updates

Report from the Executive Committee

The executive council met during the AANS meeting in San Diego. Dr. Gunel provided a summary of the CV section’s involvement with the ISC. This will include 7 of 22 symposia. The 3-day meeting will provide content primarily focused on complications. Each day will be dedicated to different topic: Aneurysm, AVM, and Ischemia. The meeting opens on Thursday with case presentations and a session devoted to complication avoidance in aneurysm open and interventional surgery with a discussion of techniques and hands-on simulation. On Friday, the day opens with case presentations and complication avoidance related to vascular malformations. As well a session on 3D surgical anatomy. Saturday’s content includes case presentations related to atherosclerotic disease and stroke. Updates for the SAMPRISS and CREST trials will be presented. A final session will be devoted to technology development and “great saves.”

Dr. Bendok provided a report regarding CNS University and a charge for content and curriculum. Ideas were solicited for future Webinars.

During the CNS meeting, Dr. Wilson described various initiatives that he would like undertaken during his tenure. First and foremost is a revision of the rules and regulations regarding nominations for the executive committee. An in depth discussion is provided by Dr. Prestigiacomo later in the newsletter. Secondly, Dr. Wilson is reconvening the endovascular task force which was previously active in 2002.

Update from the Washington Committee

Current emphasis is being placed on the implications of the stimulus package. This may potentially create the opportunity for $10 million of additional NIH funding. The next item was a discussion of health care reform. The Washington Committee has been pursuing discussions with the American College of Surgeons to encourage them to leverage their resources towards demonstrating to governing bodies that there is a shortage of surgeons and that it is important to continue to support surgical subspecialties.

There are presently 5 bills being discussed and possibly being merged into a single bill. This maybe unveiled in the coming days. Main areas of discussion include the government run public option and whether states would be allowed to Opt in or out. The biggest area of contention is how and who will pay the bill. Discussions include squeezing more out of medicare, and various tax increases.

Fellowships and Awards

The Resident Research Awards in Cerebrovascular Disease

- Funding available July 1, 2010
- Up to $15,000 support of specific research proposal
- Residents in North American Training Programs
- Research related to Cerebrovascular Disease

APPLICATION DEADLINE IS MARCH 1, 2010

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

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John Wilson, M.D. Chair-Elect
Murat Gunel, M.D. Vice-Chair
Sander Connolly, M.D. Treasurer
Sepideh Amin-Hanjani, M.D. Secretary
At first glance, there is no way to get around the fact that the anatomy of the paraclinoid internal carotid artery may be complex. Part of the confusion arises from the numerous nomenclatures that exist in the literature to describe aneurysms originating in this area.

For the sake of this forum, paraclinoid aneurysms are defined as those that have an intricate association with the clinoid process. The internal carotid artery that extends from the cavernous sinus to the subarachnoid space is termed the clinoidal segment. Simply put, its boundaries are delineated by a proximal and distal dural ring. The proximal dural ring forms the roof of the cavernous sinus and is continuous with the dura covering the inferolateral aspect of the anterior clinoid process. The distal dural ring is a layer of dura that is continuous with the falciform ligament medially (overlying the optic nerve) and with the dura investing the superomedial aspect of the anterior clinoid process (1). The lateral segment of the ICA between the two rings is termed the clinoidal segment.

Though the microsurgical and skull base approaches era heralded an age where paraclinoid ICA aneurysms could be treated relatively safely, the current trend is shifting towards endovascular management. Furthermore, the introduction of flow divertors such as the Pipeline Stent (Chestnut Medical Technologies Inc, Menlo Park, CA) and SILK stent (BALT Extrusion, France) has created considerable enthusiasm.

It remains crucial, however to realize that we are fortunate that patients harboring these aneurysms now have more treatment options. The considerable task that remains, however, is customizing the optimal treatment for an individual patient taking into consideration the complementary benefits of microsurgical and endovascular treatments. These are discussed by Dr. Ali Krisht from the Arkansas Neuroscience Institute and Dr. Peter K. Nelson from New York University.
Applications and the need to for a change in lifestyle. Most importantly the patients do not have a sense of closure. The most recently introduced stents, such as the Pipeline stent, carries the disadvantage of occluding the ophthalmic artery, and the lack of protection from rupture in subarachnoid hemorrhage patients in the first 3 months after treatment. The self expanding stents are not recanalization proof and carry the risk of delayed stenosis especially at curvature locations.

In our opinion, based on our experience with more than 130 paraclinoid region aneurysms, we feel microsurgical clipping of these aneurysms should continue to be the primary treatment modality. The reason for this opinion is simply the fact that the best treatment option for any aneurysm is obliteration of the weak segment of the wall which led to the aneurysm formation. So far the durability of the targeted clipping of the aneurysm with full preservation of the parent vessel has been proven to be the most durable and most curable option. This best represented in the late results of the ISAT study in which coiled aneurysms needed 7x as much retreatment as the clipped aneurysms.

In order for surgery to achieve this goal an in-depth understanding of the microsurgical anatomy of the paraclinoid region is of utmost importance. Although microsurgical clipping is nowadays frequently being portrayed as an invasive procedure compared to endovascular therapy, it is not more risky when performed by experienced hands, and it is the most acceptable option to patients when it comes to its durability. More recently we modified our approach to where the treatment of these aneurysms is predominantly exercised with extradural dissection of the paraclinoid region and using a minimal dural opening, enough to visualize the distal neck and the proximal portion of the supraclinoid segment of the internal carotid for distal control. Superior results with microsurgical clipping cannot be achieved without mastering the following steps.

1. A full understanding of the anatomy of the anterior clinoid process and its relationship to the adjacent neurovascular structures.
2. A very extensive laboratory experience with and understanding the anatomy of the dural ring and how it can best be cut and dissected.
3. Understanding the relationship between the different tissue layers proximal and distal to the dural ring, especially the occulomotor carotid membrane, and how best to remove it in order to achieve proximal control, as well as to prevent stenosis of the parent internal carotid artery after clipping of the aneurysm.
4. The relationship of the dural ring to the ophthalmic artery.
5. The clear understanding of the different types of paraclinoid aneurysms and their exact site of origin and the anatomic distortions that takes place after the aneurysm grows.

In our opinion, there are four types of paraclinoid aneurysms.

1. **Superior paraclinoid aneurysms** (true ophthalmic aneurysms): These are usually the most common type of paraclinoid aneurysms. These aneurysms could either be a)superiorly projecting causing mass effect on the optic nerve, or b)superomedially projecting, in which case they may grow superiorly without significant visual deficits.
2. **Inferior type aneurysms**: (previously described as ventral paraclinoid aneurysms). These are the next most common type of aneurysms. When they achieve large or giant sizes they need to be treated with either reconstruction of the parent vessel (usually with fenestrated clips) or a bypass with trapping or sacrifice of the internal carotid artery.

3. **Lateral paraclinoid aneurysms**: (previously described a subclinoid or anterior clinoid or transitional aneurysms). They usually arise at the level of the dural ring and have two components, one intradural which may bleed into the subarachnoid space, and one extradural usually eroding into the anterior clinoid process. These aneurysms are more surgically demanding and fortunately they rarely present with subarachnoid hemorrhage.

4. **Medial paraclinoid aneurysms**: This includes two subtypes. The proximal ones are the carotid cave aneurysms and the more distal ones are the true superior hypophyseal type aneurysms.

Nowadays the full understanding of the different types of paraclinoid aneurysms and acquiring an in-depth experience of the microsurgical anatomy of the paraclinoid and parasellar region can help achieve a perfect and targeted microsurgical clipping of more than 85% of paraclinoid aneurysms. This can be safely achieved when the surgery is performed with the following goals in mind:

1. Preservation of flow within the parent vessel;
2. Preservation of flow within the ophthalmic artery;
3. Preservation of flow within the superior hypophyseal perforators to the optic nerve and chiasm;
4. Minimal trauma with full decompression of the optic nerve at the level of the optic canal;
5. Minimal intradural manipulation and predominantly extradural clipping process.
A Novel Endoluminal Sleeve for Definitive Endovascular Treatment of Paraclinoidal Segment Aneurysms of the Internal Carotid Artery.

Peter Kim Nelson, MD
New York University Langone Medical Center

(Other contributors Tibor Becske, MD and Pedro Lylyk, MD, E.N.E.R.I. Medical Institute, Buenos Aires, Argentina; David Fiorella MD, PhD, Barrow Neurological Institute, Phoenix, AZ)

Aneurysms arising from the paraclinoidal segment of the internal carotid artery present distinct management challenges due to special clinico-anatomic features of this location. Numerous surgical (intra- and extradural) (1) and endovascular (2) approaches have been described- with more recent reports advocating the importance of individual considerations in directing multimodality therapy (3, 4). While the case selection bias imposed by appropriately triaged patients has resulted in improved outcomes; for those aneurysms treated by endovascular coiling, incomplete occlusion and delayed recurrences requiring retreatment remain an important source of concern (5). Moreover, the treatment of complex neck and giant paraclinoid aneurysms has remained problematic for both surgical and coil-based endovascular therapies, with many such symptomatic patients referred ultimately to carotid sacrifice (6). To this point, the emergence of a novel class of endoluminal sleeves likely will provide a transformational break-through in tackling paraclinoid aneurysms not easily amenable to other treatment methods.

One such implant, the Pipeline Embolization Device [PED] (Chestnut Medical, Menlo Park, CA) is a flexible, self-expanding, porous endoluminal sleeve composed of 48 braided microfilaments which provide, when unconstrained, approximately 30% surface metallic coverage (Figure 1). Unlike earlier neuroendoluminal devices (Neuroform, Boston Scientific; Enterprise, Codman Medical; and Leo, Balt) which are used primarily to facilitate endosaccular aneurysm coiling, the PED and similar endoluminal sleeves have been engineered to uncouple the aneurysm from the parent artery; and, to provide scaffolding sufficient to support neointimal overgrowth of the neck defect with or without adjunctive coils (7). The use of the PED and other microporous endoluminal sleeves in paraclinoid aneurysms has several advantages over alternative endovascular approaches. 1) The device provides a means for a durable, anatomically correct reconstruction of the diseased arterial segment with definitive sustained occlusion of the treated aneurysm (Figure 2). 2) By directly targeting the arterial deficiency comprising the aneurysm neck, the device permits resolution of aneurismal mass effect to a more complete degree than is possible with endosaccular devices (Coils, Onyx)- which by definition establish a permanent space occupying mass within the aneurysm fundus. 3) Furthermore, deployment of the PED does not require direct catheterization of the aneurysm, hypothetically reducing the risk of intra-procedural aneurysm rupture.

The PED is deployed through a coaxially introduced 2.8-French delivery microcatheter, requiring 6-French guide catheter support. The device is pre-mounted on a delivery wire and constrained within an introducing sheath. Once transferred into the hub of the recipient microcatheter, the PED is advanced into position for deployment by pushing its delivery wire. The delivery wire is then held in place while the distal segment of the PED is unsheathed by carefully retracting the microcatheter to initiate deployment. Once the unsheathed segment of the device begins to expand, its distal end is released from the delivery wire and, through a combination of forward load applied to the delivery wire and gentle retraction of the microcatheter, the device is deployed across the aneurysm neck from distal to proximal. Devices are chosen from an assortment of sizes depending on the diameter of the parent artery and size of the aneurysm neck in...
order to accomplish an anatomically correct reconstruction of the diseased arterial segment. For cases in which coils are used adjunctively, coiling is either accomplished prior to placement of the PED (with or without balloon assistance); or the coil-delivery microcatheter is placed prospectively within the aneurysm fundus and “jailed” by the deployed PED, after which the aneurysm is coiled through the jailed microcatheter with the PED supporting placement of coils in a manner similar to balloon assistance.

As with other metallic vascular-endoluminal implants, anti-platelet coverage is recommended for the safe and effective use of the PED. Typically, patients are pretreated with 75 mg of plavix and 325 mg of aspirin 5 to 7 days prior to treatment and maintained on antiplatelet coverage for at least 6 months after the procedure. Heparinization is usually initiated during treatment with PTT maintained at 1.5 to 2 times baseline values for 12 to 24 hours post-treatment. This requisite antiplatelet regimen complicates the use of the device in acutely ruptured paraclinoid aneurysms. However, for patients presenting with acute subarachnoid hemorrhage, a staged endovascular approach— which includes initial coiling of the aneurysm, followed by PED placement to suppress aneurysm recurrence once appropriate anti-platelet therapy can be safely instituted— may provide a rational alternative strategy.

References:

Figure 2: (A) Arterial phase image of the left interna carotid artery [LICA] (lateral projection) demonstrating a paraclinoidal (dural cave) aneurysm. (B) 3 month follow-up angiographic image of the same LICA after treatment with a single 4mm diameter x 16mm long PED, demonstrating aneurysm occlusion.


CNS Meeting

The CNS Annual meeting was held October 24-29, 2009 in New Orleans. There were a variety of sessions devoted to cerebrovascular topics. The CV section had two afternoon sessions during the week. On Monday, the CV Section-provided an excellent “Top Ten Abstracts” session. The abstracts were outstanding and generated several excellent discussions. Highlights included:

- **Gailbraith Award Winner**: Trends in Outcome for the treatment of Intracranial aneurysms in New York State by Dr. Zacharia
- **Synthes Award Winner**: Natural History of Spetzler-Martin Grade 4-5 AVM's
- **An in depth presentation on the genome wide association study of aneurysms** by Dr. Gunel.
- **Do Aneurysms Shrink after rupture** presented by Dr. Rahman
- **Incidence of “Denovo Aneurysm” formation** by Dr. Bruneau
- **Impact of ISAT on Treatment practices in the US** by Dr. Memon
- **Early and Late Hemorrhage in Moya Moya Angiopathy** by Dr. Khan

Tuesday's session revolved around the theme of excellence in cerebrovascular surgery with the highlight of Dr. Harbaugh's presentation as the Drake Lecturer. Dr. Harbaugh provided a thought provoking in depth analysis on morphologic features of aneurysms which may predict rupture. This was followed by several outstanding speakers discussing excellence on a variety of vascular topics.

Wednesday’s IML session discussed small hemispheric AVM's in terms of treatment options. In addition the consensus session discussed the regionalization of emergent cerebrovascular care.

**Update on Sections Rules and Regulations**

Rules and Regulations Undergo Revisions for a Growing Section
Charles J. Prestigiacomo, MD, FACS

The Joint Section of Cerebrovascular Surgery continues to grow and change in many respects. As the group continues to mature, it is clear that several aspects regarding the governance and the membership of the group need to change. As such, the leadership, in consultation with active members of the section, is in the process of proposing changes to the Rules and Regulations that will reflect changes in membership criteria as well as changes in the elections of officers.

Membership to the Section. Residents in good standing in the Department of Neurological Surgery at ACGME-approved programs are now members of this section with no membership fees. Once residents have completed training, they are requested to write a letter to the Membership Chair, expressing an interest in becoming Active Members of the Section.

Elections. Significant changes are being made to the election process of Members-at-Large, such that any active member in good standing can be considered for election. The Member-at-Large position provides any member of the Section to become involved in the governance of the Section. In addition, additional positions for election to the Nominating Committee will be created such that members of the Section can be more involved in the selection of candidates for the governance of the Section. Of course, a detailed summary of the process is beyond the scope of this brief article and additional information will be provided to the Section as the Rules and Regulations are developed, reviewed, and submitted to the general Section membership for electronic vote. The Section continues to hear the many voices of the Section. Any additional modifications to the Rules and Regulations can always be suggested to the Chair of the Rules and Regulations Committee (Charles J. Prestigiacomo, MD, FACS) who will forward to the Executive Council for consideration.
Past Chair’s Message

“The genius of a good leader is to leave behind him a situation which common sense, without the grace of genius, can deal with successfully.” Walter Lippmann

Lippmann’s quote is entirely reassuring to me, as, even if I be judged a terrible leader for the past year; even if my legacy were a political and organizational nightmare, I know that my successor, John Wilson, has enough grace and genius to tackle and solve any leftover disasters! John has served us through the years with remarkable wisdom, clarity of purpose, and a winning smile, and I have no doubt he will shine as our current Chair.

I wish to thank the general Membership as well as my colleagues on the Executive Council for their trust and support this past year. I truthfully feel that, although challenges are omnipresent, the Section remains in excellent standing. I know that this past year will show that, as a group, we have never lost track of the singularity of our purpose, and yet continued to adapt to ever changing situations without sacrificing our goals and ideals.

I will not detail any ongoing initiatives, as John Wilson’s address will undoubtedly cover them eloquently. The only parting thought I wish to leave you all with, is an excerpt from my Chair’s address from this past February. This was in response to the question as to how I saw the future of the Section. The following legend is a very appropriate answer indeed.

The legend goes that there was a malicious youngster who lived in a small town. He was in the habit of stopping passers-by and strangers to ask them the following question: “There is a bird in my hand. Is the bird dead or is it alive?” If the unsuspecting stranger answered “Dead”, the prankster would say “Wrong!!!”, and proceed to open his closed hand and let the live bird fly away. If the answer was “Alive”, he would secretly crush the life out of the bird inside his closed fist, shout “Wrong!!!” and show the stranger a dead bird, proving himself right, again and again. Until one day, when a wise old man came into town and was intercepted by the youngster. “Old man”, said the boy, pointing his closed fist to the man’s face, “there is a bird in my hand. Is the bird dead or is it alive?” The old man looked at the boy, looked at the fist, smiled, and started to walk away. The boy promptly blocked his way and said: “Old man, nobody enters this town without answering this question. Is the bird dead, or is it alive?” To which the old man replied: “My son, the bird is neither dead nor alive. The bird is in your hand!” Dear members of the CV Section, young and old, single-minded and open-minded, the Section is in your hands. You can crush it or let it soar, but make no mistake, no one else has the privilege or responsibility of this choice.

Jacques Morcos, MD, FRCS
Immediate Past Chair

Contributors This Issue

- Dr. John Wilson, President’s Message, Wake Forest University
- Dr. Jacques Morcos, Past President’s Message, University of Miami
- Dr. Ketan Bulsara, Technical Forum, Yale University;
- Dr. Peter Kim Nelson, New York University Langone Medical Center
- Dr. Ali Krisht, Arkansas Neurological Institute
- Dr. Carlos David, Editor, Lahey Clinic,
- Dr. Bob Carter, Editor, University of California, San Diego