IR congress news

CIRSE 2006 - Rome
Tuesday, September 12, 2006

Elias Brountzos
Meeting Chairman CIRSE 2007

Dear Colleagues,

CIRSE 2006 is now a reality and I am confident you are having a great time enjoying the high quality scientific programme and the marvels that the city of Rome has to offer. Another historic site, the city of Athens, will host the next CIRSE meeting in September 2007. The Scientific Programme Committee's unrelenting work under the leadership of Mike Lee is already compiling an exciting scientific programme for CIRSE 2007 to meet the demands of the rapidly evolving discipline of Interventional Radiology. World-renowned experts will lecture on hot topics including cardiac and peripheral vascular imaging, arterial, venous and non-vascular interventions, bone interventions and interventions in oncology. The foundation courses will provide a great educational experience for the younger attendants of the meeting, while numerous workshops will offer interactive education in all aspects of Interventional Radiology. The scientific sessions and electronic posters will give us the opportunity to look into the future of our discipline.

Like every year, many people will work hard behind the scenes to realize this ambitious and demanding project and I would like to thank all of them in advance. Most of all I would like to express my gratitude to Professor Dimitris Kelekis, the CRISE 2007 Honorary Meeting Chairman, former CIRSE Foundation Chairman and founder and president of the Hellenic Society of Interventional Radiology for his thoughtful guidance and advice. Without his help we could not carry out our project. I would also like to extend my thanks to the Meeting Co-Chairman, my colleague Professor Katerina Malagari, for her most valuable help and to all other members of the Local Organizing Committee, who are contributing to this venture with great energy in order to guarantee the meeting's successful organisation. However, the project of CIRSE 2007 in Athens could not be realized without the tireless work and the management qualities of Mr Daniel Waigl and the other CIRSE office staff members, who deal with the organisational details of our meetings on a daily basis.

CIRSE 2007 will take place at the Megaron Congress Centre, an ideal venue for our meeting. Apart from state-of-the-art conference facilities, the Megaron also comprises the Athens Concert Hall, which since its opening to the public in 1991 has been regarded as one of the most comprehensive cultural centres in Europe. The numerous auditoriums and amphitheatres are acclaimed for their superb acoustics by both the public and world renowned art performers. The venue is located in the city centre within walking distance from a number of hotels accommodating every budget, as well as Athens' best five star hotels. A newly built metro system connects the Megaron with the city's cultural centre, the Acropolis and many other destinations, including the airport.

The city of Athens needs no introduction. Inhabited for more than 7,000 years Athens is the cradle of western civilization. One cannot but marvel at the sight of the ubiquitous antiquities sprawling the landscape. Since Athens hosted the Olympic Games in 2004, dramatic improvements have taken place. A new subway system has been constructed, there is a new international airport outside the city and the congested downtown streets have been transformed into pedestrian walkways. Athens' cultural life invites its guests to travel back in time from classical antiquity to Roman times, the Ottoman Empire and up until today. Not many places in the world offer such rich, historic heritage and enjoy so much cultural diversity.

Cultural activities may include visits to the numerous museums and archaeological sites scattered through the Attica's landscape, concerts and shows, as well as leisure visits to the flea market and bazaar area, to the taverns at Plaka just under the rock of the Acropolis, or to the city's many boutiques. Those who will have more free time should consider a visit to the Attica's coastal beaches, which are easily accessible. The weather in September is ideal for swimming or other water activities. A day trip to the nearby islands of Aegina, Poros and Hydra is another great option. For those of you who will not have any extra time, we will put together an exciting social programme including dinners in beautiful venues combined with dance and music entertainment.

As you can see, CIRSE 2007 in Athens is going to be thrilling both from the scientific and the social point of view. I am looking forward to seeing you there!

CIRSE in 2006: A review of our society's activities

Johannes Lammer
CIRSE President

I hope you are all enjoying CIRSE 2006, the most comprehensive meeting in the history of our society. The outstanding scientific programme put together by Michael Lee and the Scientific Programme Committee has set a new standard in Interventional Radiology meetings and I would like to thank him for that. My thanks also go to Prof. Passariello and the Local Organising Committee, who have done a fantastic job putting together this year's social programme. I think that I speak for all of us when I say that our congress is the annual highlight for Interventional Radiology in Europe. But before starting a new scientific year I would like to take this opportunity to look back at our society's activities since our meeting in Nice.

In 2005 and 2006 a number of important initiatives were launched to ensure that CIRSE will fulfil its mission of furthering education and research in Interventional Radiology and continue to meet our members' needs in the future. One of CIRSE's great achievements in the field of education has been the establishment of the European School of Interventional Radiology, which aims at eliminating one of the main obstacles to the growth of Interventional Radiology: the shortage of well-trained interventionists. Although this problem is most acute in less well-developed countries, it is also considerable in parts of Europe. Therefore the ESIR is an important step in our strategic plan to ensure the long-term future of our field.

2005 and 2006 also saw the establishment of CIRSE's E-Learning Taskforce. It goes without saying that the leading society of one of the fastest developing medical fields must stay up to date with the latest teaching technology. The E-Learning Taskforce strongly contributes to this aim. The online self assessment examination for selected IR foundation courses introduced at CIRSE 2006, E^3IR and an EPOS platform are just some of the task force's many initiatives.

With the establishment of the Standards of Practice Committee CIRSE has assumed the important task of protecting Interventional Radiology against the perpetual encroachments of other disciplines. So far the SOP Committee has drawn up 20 Standards of Practice Documents - quality assurance guidelines for clinical practice based on the published evidence - which I am convinced will not only set the standards for IR in Europe, but also overseas.

In order to serve the educational interests of the IR community even better in the future, CIRSE has launched a survey on IR training in Europe. The four page questionnaire drafted by J. Reekers and sent to the presidents of the European IR Societies will provide our society with an overview on important questions regarding IR education, such as whether there are specialized programmes for IR training in each country and how long they take. I am convinced that this survey will be instrumental in the search for educational deficiencies and inequalities between the various European countries. We are planning to finish the study this year and make it accessible to all our members.

CIRSE has also increased its activities regarding clinical practice - a matter of crucial importance if we want to stop being considered mere "plumbers" and want to be taken seriously. The Clinical Practice Taskforce will therefore develop a training course and accompanying brochure designed to enhance the clinical involvement of interventional radiologists across Europe.

2005 and 2006 was also an outstanding year regarding membership growth. CIRSE's new group membership, which had been introduced at the General Assembly in Nice and offered to all national European societies, was accepted by the Czech, as well as the Dutch, the Polish and the Turkish IR Societies, who, bringing in the entirety of their membership, enlarged the CIRSE community considerably.

The increase in our membership does not only add to our society on a professional level, but also increases our political weight, which is why it is an asset to all of us. In order to maintain this positive development we have to keep meeting the needs of medical professionals involved in IR and further improve our membership benefits. In 2005/06 we were able to do so by reducing the CIRSE membership fee significantly.

In recognition of the ever increasing importance of public relations it is one of CIRSE's main aims to further increase the recognition value of our society, especially in other medical fields such as surgery and gynaecology. In line with this strategy, CIRSE organised its first two press conferences at the 2005 meeting in Nice, which met with a very positive response from the press. The articles published subsequently in various newspapers were priceless promotion for the interventional procedures described, since the dissemination of information regarding our field should not only happen within the medical field, but should most of all aim at the patients, who can only choose to consult an interventionist if they are well informed about their treatment options.

As you can see our society was extremely active in the past year, achieving many of the goals we have set ourselves. Nevertheless we should not rest on our laurels. I therefore invite all of you to keep contributing to our activities, giving CIRSE and Interventional Radiology the strong voice they deserve.

The CIRSE Executive Committee

Atherosclerotic plaque characterization and new indications for carotid revascularization

Special Session 53
Vascular Imaging 2: Plaque Imaging
Wednesday, September 13, 10:15-11:30,
Room B

Giovanni Simonetti
Chairman of the Dept. of Diagnostic Imaging, Molecular Imaging, Interventional Radiology and Radiation Therapy,
University of Rome Tor Vergata

Until recently, indication for carotid artery revascularization was related to patient symptoms and the degree of stenosis assessed by techniques evaluating exclusively the vessel's caliber, giving no information on plaque characteristics; stable or unstable "vulnerable" plaque. Today our objective is not to reduce indications for revascularization, but in the patient's interest extend them by preventively treating vulnerable plaques which may cause invalidating stokes. I believe that symptomatic patients with stenoses greater than 50% and asymptomatic patients with stenoses greater than 70% need to be treated. The real problem, however, concerns those patients not included in these two categories, who nevertheless present high risks of developing an acute ischemic event.

The histological characterization of atherosclerotic plaques based on the risk of thrombotic complications or the rapidity of the progression of the stenosis leads to the identification of a specific category defined as "vulnerable". Multi-detector 64 slice Volumetric Computed Tomography (VCT) can not only determine the degree of a stenosis, but can also assess the type of plaque, its distribution and the percentages of its different components (fibrous, calcific and lipid tissue). With Magnetic Resonance Imaging (MRI) the diagnostic potentials of VCT have been exceeded. In fact, this technique enables the identification of the fibrous cap, one of the mostly discussed elements in the evolution of plaques, and its interruption causing acute thrombosis in 55-60% of cases.

Using "ultrasmall supermagnetic particles of iron oxide" the presence of macrophages can be demonstrated 24 hours after injection due to the selective uptake of the particles, thus providing important information on the plaque's evolution. These techniques however appear superseded when compared to the diagnostic potentials of PET/CT. As a matter of fact, combining functional and morphological data, PET/CT can identify plaques presenting an increased uptake - a sign of inflammation associated with an increased risk of embolization and/or thrombosis.

The research conducted in this field has changed the indications for the treatment of atherosclerotic disease. While in the past the focus was placed on the identification of the stenosis or the plaque, today the major concern is the definition of the "vulnerable patient" presenting a high risk of acute thrombotic events in multiple vascular districts. In this sense, rather than a localized disease atherosclerosis is regarded as a systemic disease. Today indication for treatment based exclusively on morphological data is to be considered anachronistic. This concept is also supported by recent studies which demonstrate how a 40% stenosis with a 0.2-mm-thick "fibrous cap" is associated to the same wall stress and risk of rupture as an 80% stenosis with a 0.5-mm-thick "fibrous cap". Our objective is to identify "asymptomatic" patients presenting a high risk of thrombotic events. For this purpose, we can rely on several diagnostic tools which cannot be substituted any longer by mere angiographic data.

In conclusion, patients cannot be referred to endovascular or medical therapy exclusively on the basis of an eco-color-Doppler examination providing only morphologic data. Indication for treatment cannot be established considering a single variable when several others may substantially modify the evolution and prognosis of the disease. Given the vast diagnostic and interventional capabilities of our department, our group can provide an accurate therapeutic indication and, at the same time, an appropriate endovascular therapeutic option. Using cerebral protection devices, our department has obtained favorable results both, short-term and during a follow-up period of over 5 years, with complication rates significantly lower than those reported in literature on endarterectomy.

Radiation Protection in Interventional Radiology

Special Session 55
Radiation Protection for Interventional Radiologists
Wednesday, September 13, 10:15-11:30,
Room F

Gabriel Bartal
Director Department of Medical Imaging, Meir MC, Kfar-Saba, Israel
Chairman of the National Committee on Radiation Protection in Medical Exposure

Radiation protection is a process, not a single episode, and should become an integral part of the daily routine of any responsible interventional radiologist (IR). IRs are trained in general radiology, which includes radiation protection. We have to be a role model for the next generation as well as other image guided specialists. Modern Interventional Radiology comprises fluoroscopy guided vascular and nonvascular endoluminal procedures as well as CT-guided interventions. Recent implementation of CT-fluoroscopy requires particular attention and special measures for staff protection.

We as IRs are expected to master all modern imaging modalities in order to be able to choose the most effective and least hazardous one. The diagnostic work-up of every patient can and should be based on non-invasive imaging modalities, such as CTA or MRA, and the intervention planned and performed based on the acquired data. The recent introduction of medical simulators using a "tactile feedback" control will allow virtual "feeling & handling" of catheters and guide-wires, improve our skills and consequently shorten the fluoroscopy time.

Justification

Any medical exposure should be justified by weighing the benefits against the radiation detriment. Dose limits are not applied to medical exposures, yet any such exposure must be clinically justified and utilized only for the benefit of the patient, while the personnel are subject to strict dose constraints. The goal is to reach the necessary minimum amount of radiation based on the ALARA (As Low As Reasonably Achievable) principle, which should be maintained for all diagnostic and interventional procedures. Techniques that reduce patient dose also reduce scattered radiation and provide the additional benefit of reducing exposure to the IR and the other staff members.

Optimization

IRs have a less than ideal understanding of the risks of radiation induced injuries from x-rays. Optimization is important, given the patient and staff dose levels associated with these often long and difficult procedures. Fluoroscopy accounts for the main part of patient and staff doses.

Procedural methodology

Any interventional procedure requires detailed preparation of the equipment and method, but when sophisticated new devices are introduced, little if any attention is paid to the radiation protection during its deployment. Methods of radiation protection should be tailored according to the type of the procedure, the size of the patient and existing equipment and should be individually adjusted to each operator. Staff radiation protection is a virtuous circle in which proper patient protection is one of the essential principles of staff radiation safety and vice versa. We advise a routine use of a detailed flow-chart for each procedure, which is based on patient dose saving, without interfering with optimal procedural performance. The procedural flow-chart shows the order in which the entire procedure is routinely performed with special attention to the contrast media injection time, including only essential and the shortest necessary fluoroscopy time.

How to improve radiation protection of Patients in IR?

Each department has to develop standardized methods or determine the doses, especially to the patient's skin during IR.
- Develop image quality criteria and guidance on beam projection and dynamic features of angiography equipment such as the frame frequency.
- Develop material for education and training in radiation protection for radiologists and other specialists involved in IR.
- Establish quality assurance programmes that include simple constancy tests.
- Ensure closer collaboration between radiologists, radiographers, medical physicists and non-radiologists performing image-guided procedures.
- Ensure that invasive procedures are performed using dedicated and not general-purpose equipment.

Exposure control (limitation)

We can control only some of the factors that affect patient & personnel exposure , i.e. thickness of the body part being imaged. The imaging chain will automatically adjust the exposure rate during fluoroscopy and filming to a level that allows enough photons to reach the image intensifier to generate an image. During a lengthy intervention, beam angulation can be used to spare skin dose by spreading the overall skin dose over a larger area. In addition, pulsed fluoroscopy can be used instead of continuous tube emission. Modern angiographic equipment uses pulsed fluoroscopy, where the number of pulses per second ranges from a high of 30 down to a low of 3. The dose rate can be modified easily either at tableside or in the control room. Lowering the pulse rate can dramatically reduce radiation exposure. Most IR work can be done at pulse rates of 7.5-15 pulses per second. Below a rate of 7.5 pulses/second, the image quality may be inadequate. The IRs are advised to ask for it routinely as they work, or better activate the pulse mode by themselves.

Tips for reducing the radiation load for personnel

- Reduce the number of images, reduce the FOV (collimate)
- Close filters, start fluoroscopy and gradually open the filters until the desired field size is reached
- Magnification can be used only when mandatory
- Preferably use catheters with radio-opaque tips
- It is strongly advisable to leave the room or stay behind the protective shield during DSA runs
- Dose rates are higher in larger patients
- Keep tube current as low as possible (and tube potential (kVp) as high as possible)
- Keep x-ray tube at maximum and the image intensifier at minimum distance from patient

Basic rules of radiation protection in IR (4 "Commandments")

1. Reduce emission from the X-ray tube
2. Reduce scatter from the patient
3. Shields on your body
4. Shields between patient and yourself

The most important commandment is No. 5: **follow the 4!!!**

How I do it: Closing the Percutaneous Trans-hepatic Biliary Interventional Tract

Tony Watkinson (1), Dr Robert Lavis (2), Dr Denis Kinsella (1)
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2 - Department of Radiology, Gloucester Royal Hospital, Gloucestershire Hospitals NHS Trust, Great Western Road, Gloucester, Gloucestershire, UK

We are all aware that Interventional Radiology carries a risk and that we should aim to reduce the risk to our patients whenever possible. The risks of bile leak and haemoperitoneum with ensuing pain, infection and cardiovascular instability in patients who already have impaired coagulation following Percutaneous Transhepatic Cholangiography (PTC) are not insignificant. A paper from 1973 (1) demonstrated 4 bile leaks, 4 bleeds, 1 liver abscess and 1 severe pain in a series of 79 PTC procedures for known or suspected obstructive jaundice patients. Severe haemobilia has been seen in up to 13/333 (4%) in one series (2). The overall PTC complication rate is said to be in the region of 5%, with biliary peritonitis accounting for 60%. Bile leak without peritonitis has been noted in an additional 1.7% (1). Little has changed in terms of complication rates over time and as pre-procedure diagnoses are made more readily by cross-sectional imaging, we intervene on more cases that are tumour related and complex, thus raising the risks.

It is our current practice, in order to minimise the risk of bile leak or haemorrhage following PTC, to embolise the tract. This is based on a prospective study of 50 consecutive patients undergoing PTC in our unit between 2003 and 2005. In this study patients underwent tract embolisation at the end of the final biliary interventional procedure with Spongostan™. The data supported this practice and found no significant leak-related complications. In carefully selected cases (no sepsis, coagulopathy or impaired biliary drainage) who underwent a true one stop procedure with biliary stenting, tract closure and no drain at the first and only procedure (3), we observed that patients had a significantly shorter hospital stay - an average of 6 days for the one stop group versus 17 days for those who had a multiple stage procedure with interval internal-external biliary drainage (p=0.005). In addition, the externally drained group had three significant external drain complications, including two dislodged drains. There were no significant cases of haemorrhage in either group, despite four interventions on patients with marked coagulopathies (coagulation International Normalised Ratio 1.6 - 2.0). Early stent occlusion was noted in one patient from each group.

The use of gelatin sponge to embolise the interventional tract reduces the risk of bile leak or hepatic bleeding (4). Embolisation has long been recognised as a safe way to reduce bleeding complications following intervention and in particular liver biopsy (5) Percutaneous liver intervention using this technique also increases the safety in cases where there are inherent abnormalities of liver function and of coagulation. Spongostan™ gelatin foam has been shown to be well tolerated by tissues with gradual absorption over time and no induction of foreign body reaction (6). Whether PTC stent deployment is completed in a single stage procedure or not, we suggest that gelatin sponge embolization of the interventional tract is a safe and desirable process to reduce the risk of bleeding.

Tract closure technique

Materials
- 11cm, 6F, 0.035" vascular access sheath (Cordis, Miami, USA)
- 11cm, 7F, 0.035" vascular access sheath (Cordis, Miami, USA)
- Spongostan™ Special 7cm x 5cm x 0.1 cm, (Johnson and Johnson, UK)

The tract closure can be performed whenever catheters, sheaths and guide wires are removed to close the tract. As the final manoeuvre of the procedure, a stiff wire (e.g. Amplatz, Cook) should be left through the PTC tract, into the collecting system and/or duodenum in a safe position.

A 6F and a 7F sheath are required (6F sheath (green), 7F sheath (orange)).

In our institution biliary intervention is routinely performed through a 7F, 0.035" sheath. If this is not standard practice, a 7F sheath should be inserted into the tract over a stiff wire to reduce biliary leak and tamponade the percutaneous tract.

The central stylet of the 6F sheath is removed and the hub of the 6F sheath is cut off with scissors.

Using scissors, three strips of Spongostan™ are cut, approximately 3mm wide.

The strips are carefully twisted,

loaded into the cut 6F outer sheath,

and pushed to the end using the 6F stylet

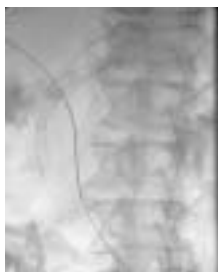
The stylet of the 6F sheath is then used to deploy the Spongostan™ into the 7F sheath.

Once the Spongostan™ is fully deployed in the 7F sheath (outlined by contrast), the 6F sheath and stylet can be removed, and the 7F introducer placed in the hub of the 7F sheath.

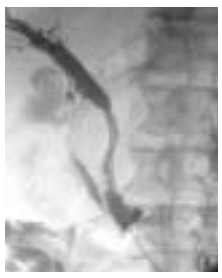
With practice this can be accomplished quickly by a single handed operator or by an assistant. The 7F sheath is flushed with contrast through the side port. The wire is withdrawn. The Spongostan™ is then loaded into the 7F sheath by introducing the loaded 6F sheath into the 7F hub (take care as the 6F sheath has no hub to prevent full insertion).

[*The 7F introducer can then be used to deploy the Spongostan™ under direct fluoroscopic vision along the tract, right up to the biliary radicle that has been initially punctured avoiding biliary leak and haemorrhage.*

An example is demonstrated in the images PTC1-4. A metal stent has been placed through a malignant biliary stricture (PTC1) and deployed (PTC2) with satisfactory drainage of bile and contrast to the duodenum. The tract has been closed as outlined above and the Spongostan™ can be seen outlined by contrast (PTC3 and magnified in PTC4). This case was performed as a one stage procedure without the need for external drainage.



PTC1



PTC2

PTC3

PTC4

In conclusion, it is our current practice to perform one stop primary PTC and stent insertion with tract embolisation in selected patients where lack of sepsis, clotting and good biliary drainage permit. We also employ this technique when a period of external drainage is required based on the view that PTC tract closure is a simple and effective intervention to reduce significant complications.

References:

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Carotid Plaque Characterization

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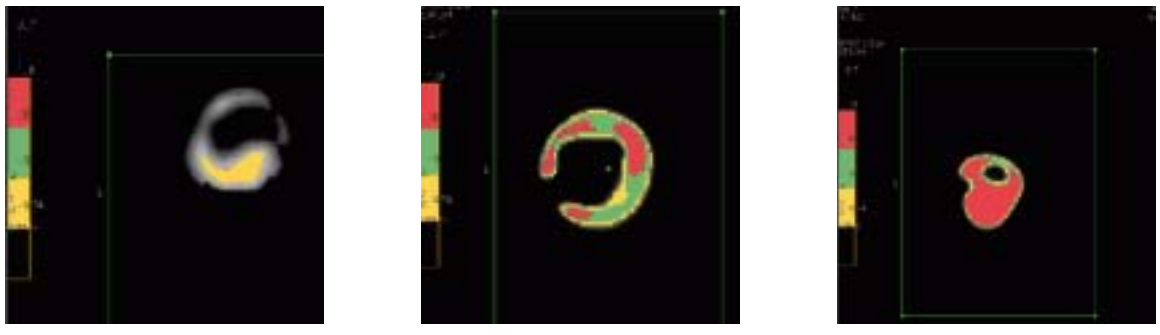

Figure 1: CT reconstructions with dedicated carotid artery plaque assessment algorithms for densitometric characterization. ***1a:*** *soft plaque;* ***1b:*** *fibrous plaque;* ***1c:*** *calcific plaque*

Disruption of atherosclerotic plaques has been demonstrated as the most frequent underlying cause of the unpredictable onset of acute thromboembolic vascular events. Several studies have demonstrated a direct correlation between plaque morphology and evolution of symptoms, and even if it is clearly demonstrated that the severity of carotid artery stenosis is associated with an increased risk for subsequent ischemic neurologic events, it has been noted that the majority of individuals with high-grade carotid stenosis remain asymptomatic. Therefore, there is a need to better define the characteristics of a high-risk atherosclerotic plaque. Moreover, hystological studies have identified vulnerable plaque as plaques characterized by a high risk of thrombotic complications and/or a rapid progression of the stenosis.

The progression of atherosclerotic plaques, especially those with an embolic or thrombotic evolution, occurs through different phases. In the first phase called positive remodeling, the carotid plaque undergoes an eccentric growth that is not associated with a reduction of the vessel's caliber. In the successive phase called negative remodeling, due to the action of metal-proteases, the degeneration of the matrix takes place followed by its repair, which leads to the consequent reduction of the vessel's caliber. The cellular pathogenesis underlying thrombosis was first identified in the coronary arteries and is characterized by three events: plaque rupture, plaque erosion and plaque surface irregularity. Plaque rupture occurs in thin cap fibro-atheromas (TCFA) characterized by macrophage infiltration with a minimal muscular component. This condition evolves in acute thrombosis in 55-60% of the cases. Plaque erosion is characterized by a rich muscular cell component with proteoglycan matrix and is responsible of acute thrombosis in 30-35% of the cases. Plaque surface irregularity is characterized by a calcific component and is responsible of acute thrombosis in 2-7% of the cases.

The same pathogenic moments appear to be involved in the progression of carotid plaques. In particular, what emerges from these studies is that a TCFA is usually associated with a stenosis <50%. Moreover, recent studies performed on in vivo models confirmed the importance of the thickness of the fibrous cap in contrast to the degree of the stenosis. According to these studies, a 0.2-mm-thick fibrous cap determining a 40% stenosis is exposed to the same stress as a 0.5-mm- thick fibrous cap determining an 80% stenosis. According to the expression of these different factors at different moments, two plaques with a different evolution toward thrombosis can be distinguished; eroded plaques, with no evidence of rupture of the fibrous cap, and TCFA with a rich lipid chore, intra-plaque hemorrhage and macrophage infiltration.

According to a recently published consensus, patients with vulnerable plaques need to be considered "vulnerable", because atherosclerosis is a systemic disease with multiple factors leading to the progression of the plaques. Such factors are, for instance, the activation of ICAM-1, the action of metal-proteases (MMPs) involved in plaque rupture, of TGF-ß1 involved in plaque stabilization, of inflammatory markers and infections (Chlamydia). Therefore there is a need for a non-invasive in vivo method for the characterization of atherosclerotic plaques and the identification of vulnerable plaques. As a matter of fact, the identification of patients with plaques susceptible of disruption is not possible by angiographic studies which visualize the vessel's lumen, such as AMR and DSA. Previous studies have shown how MRI can characterize the composition of human atherosclerotic plaques both ex vivo and in vivo.

To date, MR with dedicated coils is the diagnostic tool which appears having the highest sensitivity and specificity for the identification of the different plaque components. Thanks to new contrast agents enabling the visualization of specific plaque components present in different moments during the plaque's evolution, MR can yield not only anatomical, but also functional data. An example is the use of "Ultrasmall Superparamagnetic Particles of Iron Oxide" that are selectively captured by the macrophages situated in the atherosclerotic plaque.

Several studies have been also performed on the possibility of using CT to classify plaques on the basis of their density. These studies documented a higher probability of progression in plaques with a density smaller than 50 HU. In the future the evolution of PET, with the integration of VCT technology, might increase the sensitivity for the detection of vulnerable plaques due to their high macrophage content. This method would furthermore enable the differentiation between the three major densitometric characteristics of atherosclerotic plaques and the execution of an angiographic study during the same session.

In conclusion, the assessment of a carotid atherosclerotic plaque exclusively by an eco-color-Doppler examination prior to endovascular or medical therapy is unacceptable. As a matter of fact, this method only allows the morphological evaluation of the plaque without the possibility of characterizing its evolutional stage.

References:

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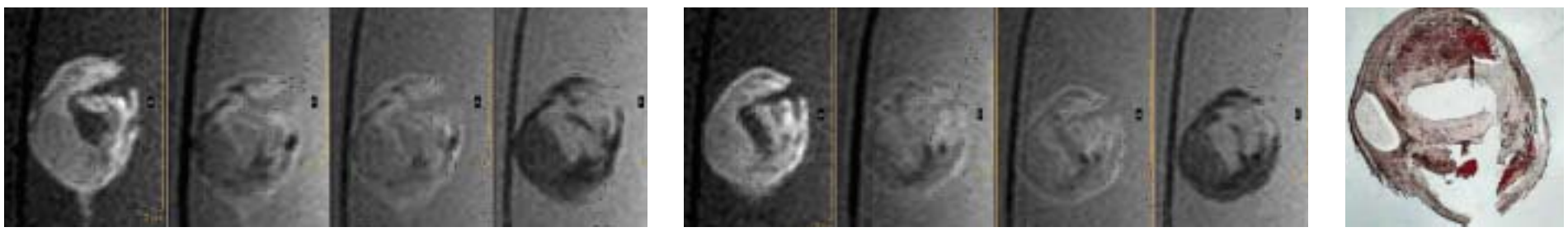

Figure 2: MR plaque evaluation using dedicated micro-coils and histological correlation. Presence of an intra-plaque hemorrhage

Endovenous Ablation: Better than Surgery?

Workshop 37.3
Endovenous ablation: Sclerotherapy, laser and RF
Monday, September 11, 17:00-18:00,
Room H

Dr. Sanjoy Kundu
Medical Director of the Vein Institute of Toronto, Canada

Lower extremity venous insufficiency affects 25% of women and 15% of men in the United States and Europe (1). Common risk factors include gender, pregnancy, hormones, aging and prolonged standing or sitting which may influence the appearance or cause the worsening of primary varicose veins (2,3). Many people seek medical treatment for varicose veins, because they find them unsightly. However, most people with varicose veins do experience symptoms (4,5). Symptoms of primary venous insufficiency are often not recognized by patients or their physicians. Common leg complaints with varicose veins include aching pain, night cramps, fatigue, heaviness or restlessness (6). Left untreated, nearly 50% of patients with significant superficial venous insufficiency eventually experience chronic venous insufficiency characterized by lower extremity swelling, eczema, pigmentation, hemorrhage, and ulceration (7). Great Saphenous Vein (GSV) reflux is the most common cause of significant varicose veins.

The historic treatment of GSV reflux has been surgical removal of the incompetent GSV. Although surgical ligation and stripping of the GSV has been the most durable treatment, it has been associated with significant perioperative morbidity and recurrence of varicose veins. Other surgical treatments include high ligation of the GSV at the saphenofemoral junction (SFJ), high ligation combined with phlebectomy of varicose tributaries or retrograde sclerotherapy (8,9). The problem with surgical treatments has been the high recurrence rate and neovascularity. Multiple surgical studies have shown that recurrence of varicose veins after GSV stripping occurs early, with 73% of limbs destined for recurrent varicosities at 5 years already having them at 1 year. Overall a 25 % recurrence rate for varicose veins has been reported (10,11,12).

Endovenous ablation with endoluminal laser energy was first reported by Bone in 1999 for treatment of the incompetent GSV (13). Since then there has been marked evolution in the procedure with the addition of tumescent anesthesia and the treatment of the entire incompetent GSV segment (14,15). Endovenous thermal ablation allows the delivery of laser or radiofrequency energy directly into the blood vessel lumen (Figure 1). Non-thrombotic vein occlusion is accomplished by heating the vein wall. Sufficient heating of the vein wall is necessary to cause collagen contraction and denudation of the endothelium. This stimulates vein wall thickening, eventual luminal contraction and fibrosis of the vein. Successful occlusion of the GSV has been reported in 98% of cases (16). The endovenous ablation procedure is usually followed by ancillary foam compression sclerotherapy to eliminate the varicose tributaries (Figures 2 and 3). Long term results have demonstrated a recurrence rate of less than 7% at 2 and 5 year follow-up. The results for endovenous ablation are comparable or superior to those reported for the surgical treatments of GSV reflux.

Figure 1: Endovenous laser ablation of great saphenous vein

Figure 2: Varicose veins, pre-endovenous laser ablation

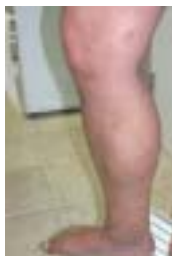

Figure 3 : Appearance 3 months post-endovenous ablation

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Dr. Marc Bosiers - Chief of Vascular Surgery at AZ Sint Blasius Dendermonde, Belgium

Dr. Bosiers, you recently presented your clinical trial results which compare the 30-day Major Adverse Event (MAE) rates for patients who received a closed cell vs. an open cell carotid stent. This trial represents the first clinical experience comparing the 30-day performance of closed and open cell stent designs for the treatment of carotid disease. Please could you describe your clinical trial and the respective results?

We performed a retrospective analysis of 701 consecutive CAS patients. The procedures were performed in 2 Belgian centers. Our objective was to identify any patient and procedural parameters which negatively impact the 30-day stroke, death and TIA rates after CAS. Once we identified these factors, we could try to further study them or to modify the technique, with the ultimate goal of improving the clinical success of CAS. We found that for symptomatic patients, the risk of having a TIA, stroke, or death is approximately 4.1 times higher if the patient received a stent with an open cell design, versus a carotid stent with a closed cell design.

What is the difference between a closed cell and an open cell stent design? Which closed cell and open cell stents were implanted in your clinical study?

A closed cell stent design has overlapping or fully connecting stent struts. An open cell stent design has connecting and non-connecting stent struts. A closed cell stent design offers a greater potential to scaffold and support fractured plaque that could embolize to the brain. Closed cell stents cover a greater percent of the vascular wall in the stented region and have less uncovered cell area. Boston Scientific's Carotid WALLSTENT™ Monorail™ has the smallest cell area of only 1.08 mm^2. It covers 5 to 10 times more of the vascular wall as compared to open cell stents. (See below chart which compares the cell areas of various carotid stents available in the market)

In our study, carotid stents were utilized in 695 interventions**. In 79.3% of the cases, closed cell stents were used, the remaining 20.7% patients received an open cell stent. For the patients who received a closed cell stent, we used the Carotid WALLSTENT™ Monorail™ from Boston Scientific in 75% of the cases. We used 2 other closed cell stents: the NexStent™ Monorail™ (Boston Scientific) and the Xact™ stent (Abbott Vascular). The 3 most commonly selected open cell stents were the Precise™ stent (Cordis), Protégé™ stent (ev3) and Zilver™ stent (Cook).

Why do you believe that closed cell stents caused fewer strokes, TIAs, or deaths in your clinical study?

The free cell area, which is the open space in-between the struts, is smaller in a closed cell stent, as compared to an open cell stent. With a small free cell area, less material can be squeezed through the stent struts. This is likely to be the main reason why we found in our study that the closed cell stent implantation results in lower rates of TIA, stroke, and death within 30 days after CAS.

Your clinical results offer a compelling rationale for the use of closed cell carotid stents for the treatment of symptomatic patients with carotid artery disease. How do you expect that your clinical results could change the way physicians currently treat their patients? Should the majority of symptomatic patients receive a closed cell carotid stent to maximize clinical success rates?

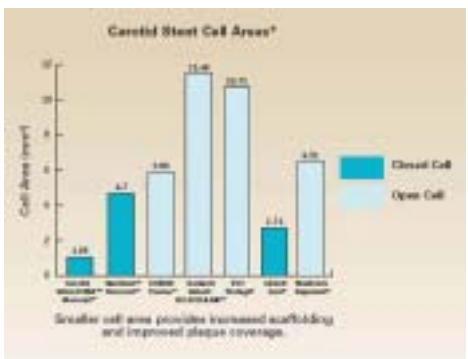
I'm convinced that all symptomatic patients should receive a closed cell stent. Our study indicates that symptomatic patients benefit from a closed cell stent. I believe that if we follow this philosophy, we will improve the clinical outcomes of CAS. If a symptomatic patient, for any reason, cannot receive a closed cell stent, this patient may be more appropriately treated with surgery.

How would you extrapolate your clinical results to other types of patients, such as asymptomatic patients and patients with vulnerable plaque?

We found the same result for patients with echolucent lesions, which are known to be highly emboligenic. We can only advise that these patients should also receive a closed cell carotid stent. I believe it is too early to extrapolate these results to asymptomatic or even all CAS patients, as we currently lack the data.

Do you have any plans for additional research on this topic?

We are currently expanding the dataset of our experience by combining our clinical data with that of Dr. Alberto Cremonesi and Professor Carlo Setacci. Our objective for combining this clinical data is to increase the power of our current findings and further investigate the timing of complications after CAS.



**Measurement and testing completed by Boston Scientific Corp. Data on file. Bench test results may not necessarily be indicative of clinical performance. Testing performed on Carotid WALLSTENT™ Endoprosthesis 8mm x 29mm, NexStent™ Monorail™ 4mm - 9mm x 30mm, Precise™ Stent 8mm x 40mm, RX ACCULINK™ Stent 8mm x 40mm, Protége™ Stent 8mm x 40mm, Xact™ Stent 8mm x 30mm and Exponent™ Stent 8mm x 40mm.*

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***Three patients were treated with a PTA balloon catheter and three procedures were aborted. (PTA= Percutaneous transluminal angioplasty)*

Secrets of Rome, Part II

The church of Sant'Ignazio - A flat dome
Piazza di Sant'Ignazio

Piazza Sant'Ignazio is an amazing piazza, both for its peculiar shape and the strange optical illusion inside the church of the same name. The small piazza has a very harmonious shape similar to that of the wings of a theatre; it is closed on three sides by the facades of three big buildings that form un apparently single concave wall, while the church of Sant'Ignazio constitutes the fourth side. Founded by Cardinal Ludovisi in 1626 and built in several phases until 1662, the church has a peculiar aspect which goes unnoticed by almost all visitors: the cupola, which at first glance is nothing special regarding its decoration and dimensions, was in fact never built due to technical problems.

The circular space for the dome, which in fact is flat, was painted using the trompe d'oleil technique by Father Andrea Pozzo. The work, known as the Gloria di Sant'Ignazio (the glory of Saint Ignatius) was painted in the vault of the nave with impressive perspective.
The sensation felt once inside the church is strange, walking from the centre of the nave in the direction of the altar while looking at the skylight of the cupola. Little by little as you approach, the initial perspective no longer works and you realise that there is, in fact, no cupola.

The Roman tradition of talking statues
Piazza Pasquino
Via del Babuino

Rome's talking statues are much less known today than they were in previous centuries. It is interesting to note, however, that for a long time they have been a popular means of opposing the arrogance and corruption of the dominant classes with humour and satire. In the 16th century Romans started the habit of secretly hanging satirical signs on statues decorating much frequented parts of the city, so that everyone could read them the following day. The ironic verses, poetry and dialogues written on these signs were authored by anonymous Romans and were almost always directed at the pope. Soon people began giving these statues funny nicknames, "Pasquino" soon becoming the most famous one. Verses, complaints and insults of all types are still hung on this statue even today. Pasquino is the bust of an unknown man dating back to the 3rd century BC. Since 1501 it has been located just a few metres from Piazza Navona in a small square which consequently became known as Piazza Pasquino. The messages were nicknamed "pasquinate". It is difficult to know whom the bust represents due to the badly preserved state it is in. Many hypotheses have been made regarding the origin of its name. One of them claims that the statue was found close to an inn or a barber's shop whose owner was called Pasquino.

One of the most famous "pasquinata" was that directed at Pope Urban VIII, who in 1633 ordered Bernini to use all the bronze parts of the Pantheon to build the impressive canopy of Saint Peter's. The pasquinata read "What the barbarians didn't do, the Barberini did" ("Quel che non fecero i barbari, lo fecero i Barberini"), alluding to that fact that the aforementioned pope belonged to the Barberini family. Babuino and Marforio are also famous talking statues. Babuino (Italian for baboon), represents a reclining monkey and Marforio is the figure of a bearded man lying on his side, perhaps the allegory of a river. The latter statue, which was initially located in front of Mamertino prison, was moved to the courtyard of the Capitolium Museums (Musei Capitolini) in the 16th century. Marforio was considered to be Pasquino's accomplice, since, when one statue raised a specific political or social issue, the other one often answered.

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Advertorial

A paradigm shift in endovascular treatment of femoro-popliteal artery disease

Endovascular treatment of femoro-popliteal artery disease is the most commonly performed procedure in patients with symptomatic periphereal arterial disease (PAD).

In the newly revised TASC II document, the morphologic indications for endovascular treatment were changed in favour of endovascular treatment according to the results of recent technologic changes:
TASC A lesion: single stenosis = 10cm, single occlusion = 5cm.
TASC B lesion: multiple lesions = 5cm, single stenosis or occlusion = 15cm.
Endovascular treatment is the treatment of choice for TASC A lesions and the preferred treatment for TASC B lesions.

Until recently, percutaneous transluminal balloon angioplasty (PTA) was accepted as the standard treatment for femoro-popliteal artery occlusive disease. Stent placement was recommended only if PTA failed. However single arm cases series and a metaanalysis (Muradin et al., Radiology, 2001) indicated that the primary patency rate after femoro-popliteal artery stent placement may have longer patency rates, specifically in occlusions and in patients with more severe disease such as advanced claudication (Rutherford 3) and critical limb ischemia (CLI). A most recently published randomized trial from the Medical University Vienna, Department of Angiology and Interventional Radiology (Schillinger et al., NEJM, 2006) could demonstrate a significant lower restenosis rate of 36.7% vs. 63.5% in primary stented patients after 1 year of follow-up. Two more randomized trials comparing PTA and primary stenting are underway - the FAST trial and the RESILIENT trial. Results of these trials will be presented during CIRSE 2006.

These results indicate that primary stent placement may be preferable in patients with femoro-popliteal artery obstructive disease TASC A and B.

Preliminary outcome of clinical trial evaluating the efficacy of the Edwards LifeStent NT show encouraging results

DENDERMONDE, Belgium, August 16, 2006: Between April 2005 and June 2006, 59 patients with intermittent claudicant or critical limb ischemia were included in the "MELOPEE" - Multicenter Edwards LifeStent NT Outcomes: Popliteal European Evaluation, said Dr. Marc Bosiers of the Department of Vascular Surgery of the AZ Sint-Blasius in Dendermonde, Belgium who was appointed as Principal Investigator for the clinical trial. In a bit over 1 year, he continued, my colleagues of 4 other European renowned vascular services and I succeeded to complete the enrollment of this clinical investigation of the Edwards LifeStent NT in stenotic popliteal artery. The LifeStent self-expanding stent has a unique helical design that provides for a highly flexible, yet radially strong structural scaffold that is well-suited to withstand the continual bending and flexing experienced in the femoropopliteal arteries. In accordance to support the currently ongoing RESILIENT trial investigating the use of the LifeStent NT in the femoropopliteal area, we wanted to collect European data on the performance of the stent in specifically the popliteal segment. We've selected the popliteal area as we believe that especially in this highly flexible area, the unique features of the helically designed LifeStent NT are of high importance in order to offer a longlasting endovascular solution for our patients, added Bosiers.

In total we have treated 59 patients, of which 34 (57.6%) are claudicating and 25 (42.4%) suffer from Critical Limb Ischemia (CLI). The mean length of the treated lesions is 69.1 ± 39.3 mm, while the mean pre-procedural stenosis is recorded by the investigators as 92.2 ± 11%.

The procedure was technically successful, defined as < 30% residual stenosis with a good confirmed vessel run-off confirmed in 98.3% of the cases. The mean post-procedural residual stenosis is 2.3 ± 5.8 %.

To date we could collect 6-month follow-up data on 49 patients and we can observe a good evolution of the patient's Rutherford Categorization. In this 6-month period target vessel revascularization (TVR) was only required in 2 patients. It is far too early to draw definitive results on this preliminary interim analysis of the 6-month follow-up of the patients, but it is at least very encouraging and makes us very enthusiastic for the full 6-month data analysis of the MELOPEE-study which will be presented at the ISET-meeting which is held from January 28 to February 1st, 2007 in Hollywood, Florida.

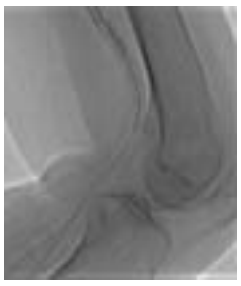

Fig1a: final stent position with bended knee

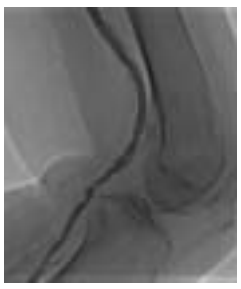

Fig1b: final angiographic flow with bended knee