IR congress news

CIRSE 2012 - Lisbon
Tuesday, September 18, 2012

Join us for CIRSE 2013!

It is a great honour and special pleasure for us to be part of the organisation of the upcoming CIRSE 2013 in Barcelona. Preparations have already started and together with the Scientific Programme Committee and the CIRSE Office in Vienna we are looking forward to organising yet another memorable educational and scientific event.

The CIRSE Annual Meeting has grown continually over the years and is now drawing an attendance of over 6,000 annually, thus being one of the largest IR congresses in the world. With specific needs, such as a wide range of rooms for the different courses, lectures and workshops, as well as the state-of-the-art technical exhibition, finding the perfect congress centre can be a challenge.

Luckily, our city of Barcelona can offer just that, and we are delighted to welcome next year's CIRSE to Spain! Barcelona is one of the most popular cities in Spain, located on the east coast. The city offers the ideal infrastructure for large congresses, with excellent accommodation, transport, and many services catering for visitors. It is therefore a perfect location for European IRs to meet.

This is an exciting event for interventional radiologists in Spain, who are seeing a growing public interest in minimally invasive therapies.

There are big centres located in all the biggest cities in Spain, promoting investigation and development in several areas, especially in interventional oncology. Vascular interventions are also increasing, especially distal revascularisation, promoted by the development of diabetic foot units, which are co-ordinated by IRs and endocrinologists. Varicose vein treatment is rapidly evolving and direct referral of patients from the primary care physicians is starting to increase our workload. Multidisciplinary teamwork and hybrid IR suites are evolving and developing into aortic units composed of IR and cardiovascular surgeons to treat aortic aneurysms.

This is all of particular interest in light of the challenging economic situation in Europe, and our national IR society, SERVEI, is convinced that IR has a major role to play in maintaining and promoting the efficacy and efficiency of medical resources. Hosting the CIRSE Annual Meeting is an opportunity to increase the visibility of IR to our political leaders, and to show them the major role that IR can play and the great benefits that can be obtained from minimally invasive image-guided therapies.

With all this in mind, we cordially invite you to join us for the 28th Annual CIRSE Congress in the cosmopolitan and inspirational city of Barcelona.

José J. Martinez Rodrigo
José Joaquin Muñoz Ruiz-Canela
Chairmen of the Local Host Committee 2013

Training in interventional oncology

The treatment of cancer in modern medicine is dependent on effective multidisciplinary care. The collaboration between all the disciplines involved in the care of patients with malignant disease improves outcomes and can minimise the costs of treatment. The practice of surgery has changed significantly as the contribution of radiotherapy and chemotherapy have become more effective. Mutilating surgical techniques have been replaced with more targeted approaches that aim to deal with the primary tumour, relying on chemotherapeutic and radiotherapeutic methods for dealing with satellite lesions and distant metastases.

Interventional Oncology (IO) is making an ever-increasing contribution to the care of patients with cancer. Exciting new techniques are making it possible to deal with many tumours safely and effectively, without recourse to open surgery. However, the success of IO is beginning to raise important questions regarding its place in relation to other treatments and the skills required for its effective and safe practice.

If Interventional Oncology is to take its place as a mainstream discipline in oncology, it is important to determine how it compares with other methods of treatment in terms of outcomes and costs. In order to achieve this, systematic and accurate collection of data is necessary.

Interventional Radiology emerged from the invasive angiographic techniques used in radiology – a 'service' discipline which lacks the

Don't miss it !

Training in interventional oncology
Special Session
Tuesday, September 18, 10:00-11:00
Auditorium 8

Andreas Adam
Moderator

Peter Mueller
Moderator

Prof. Andy Adam is internationally recognised as one of IR's leading captains, and his research work has shaped clinical practice internationally. He has served as President of eight national and international societies, including CIRSE, ESR and the Royal College of Radiologists (UK), and has received numerous honours and awards, including a recent mention in the birthday honours of Queen Elizabeth II of England, who named him "Commander of the Most Excellent Order of the British Empire" for his services to interventional radiology.

Prof. Peter Mueller, this year's Gold Medallist, is a renowned pioneer and researcher. Based in Massachusetts General Hospital, Boston, USA, he was part of team that pioneered many non-vascular techniques that are now considered routine. His specialist area is biliary interventions, including percutaneous ablation of malignant tumours of the liver and kidney. Prof. Mueller has published well over 300 articles, several books and editorships, and given over 15 "named" lectures on interventional radiology, and has served on the editorial boards of many peer-reviewed journals.

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>> infrastructure for clinical practice. This situation hampers the effective care of patients treated by interventional radiologists and makes it more difficult to collect accurate data on the outcomes of interventional radiological methods of treatment. If IRs are to become primary clinicians, they will require access to infrastructure and staff that would allow them to care for their own patients.

The practice of IO differs substantially from that of other branches of IR and is particularly different from that of vascular intervention. Experience has shown that it is unsafe to delegate the follow-up of patients treated by IOs to other disciplines. Interventional oncologists must see new patients personally and explain the potential advantages and disadvantages of local treatment, and how it compares with alternatives. They must also be able to answer questions regarding the effect of chemotherapy or radiotherapy on local treatment and how these modalities might affect timing. After local treatment, interventional oncologists must follow patients up personally. Patients should be seen soon after follow-up imaging has been carried out, ideally by the interventional oncologist, and decisions taken regarding the indications for further treatment.

The set of clinical skills and the understanding of other modalities involved in cancer care are not a significant part of the current IR curriculum. A special module of this curriculum would be very valuable in improving the care of patients treated by interventional oncologists and would help to increase the credibility of IO as a mainstream discipline in oncology.

This session will be jointly moderated by Prof. Andy Adam from Guy's and St. Thomas' Hospital, London, and Dr. Peter Mueller, from Massachusetts General Hospital, Boston. The session will bring together three world-renowned experts:

1. Professor Riccardo Lencioni is one of the best-known interventional oncologists in the world. His work has transformed this discipline and has provided the scientific foundations for many of the techniques employed in this field. Professor Lencioni will outline the scope of IO and will indicate how he sees its further evolution.
2. Dr. David Kessel is a renowned interventional radiologist, who has recently served as President of the British Society for Interventional Radiology. He has been a key member of CIRSE's Simulation Task Force since 2006, and has served on various RCR Education and IR committees since 2004. He will explain the need for this development and suggest how it can be achieved.
3. Dr. Liz Kenny is a world-famous Radiation Oncologist and a past-President of the Royal Australian and New Zealand College of Radiologists. She is one of the greatest strategic thinkers in the field of oncology, whose work has transformed oncological practice in Australia and has influenced developments in her field internationally. She will outline the need for interventional oncologists to act as clinicians, to have an understanding of tumour biology and other disciplines involved in cancer care, and to base their actions on scientific data relating to the outcomes of treatment.

This session builds on a similar one held at the European Congress of Interventional Oncology 2012 in Florence, which was extremely well received and stimulated a lively discussion. It is anticipated that this session will be equally successful and that the debate between the participants and contributions from attendees will help to establish a way forward in this exciting new field, helping us to improve the service we offer to our patients.

Riccardo Lencioni: *"We will not persuade the oncology community that what we can do is worth doing just by exposing our technical skills: we need to show knowledge and produce evidence of clinical benefit."*

David Kessel: *"The increasing complexity of IO procedures means that it is no longer sustainable for those performing them to come from a purely diagnostic background. Dedicated training is needed to ensure not only competence, but excellence."*

Lizbeth Kenny: *"To be a true oncologist involves prolonged patient care, an in-depth understanding of cancers, and an understanding of the need for integration of treatments in a planned sequence."*

IR research: Paving the way for the successful future of our specialty

Dušan Pavčnik

Don't miss it !
IR research: Paving the way for the successful future of our specialty
Josef Roesch Lecture
Tuesday, September 18, 13:00-13:30
Auditorium 1

Dušan Pavčnik

A native of Ljubljana, Slovenia, Dušan Pavčnik is well known as an outstanding teacher and researcher. In 1993, he was appointed Professor of Radiology at Ljubljana University School of Medicine, and named best teacher in radiology by his students. In 1995, he moved to the Dotter Interventional Institute in Portland, Oregon. He is currently Director of Research at the Institute. Prof. Pavčnik is the inventor of the Square Stent, and co-inventor on 18 patents. He has published over 120 scientific publications, 17 book chapters and is co-author of a book on diagnostic and interventional radiology. Prof. Pavčnik is on the editorial boards of CVIR, and Radiology and Oncology, and his scientific exhibits have won numerous awards at national and international meetings.

Today's research is tomorrow's turf! IR research is always seeking better solutions, and many of those currently under investigation will become the everyday applications of future generations of IRs.

Current IR research focuses on the following:
- Arterial interventions: Drug-eluting stents, bioabsorbable and cell-coated stents, delivery of stem cells, renal ablation and denervation, embolisation.
- Venous interventions: Ablations, pharmaco-mechanical therapy, venous stents, IVC filters, artificial venous valve, CCSVI, emerging vein technologies and embolisation.
- Interventional oncology: Radioembolisation, chemoembolisation, immunoembolisation, embolotherapy, ablations and targeted therapies.
- Non-vascular interventions: Vertebroplasty, kyphoplasty and vertebral augmentation procedures.

Percutaneous vascular occlusion in the absence of an intact coagulation system
A large number of embolic agents and devices are used to occlude blood vessels. Some of these devices have disadvantages that limit their effectiveness. For example, the Amplatzer vascular plug and coil devices are dependent on thrombus formation as the mechanism for occlusion. While such devices usually provide the desired result, it may take a long time for the thrombus to form and occlusion to occur. Furthermore, the thrombus can be partially or completely lysed over time, thus reducing the effectiveness of these occlusion devices. Because of their dependence on thrombus formation to achieve occlusion, these devices may have limited effectiveness in patients with coagulopathies and in patients undergoing anti-coagulant or fibrinolytic therapy.

We are developing a vascular plug (BioPlug) that occludes vessels very rapidly. It has a biological membrane (pouch) that becomes integrated into the blood vessel on a cellular level through formation of vascular connective tissue. The bioprosthetic material used for the biological membrane, porcine small intestinal submucosa (SIS), is attached to a metallic frame. Because this mechanism of occlusion doesn't rely on thrombus formation, there is no need for an intact coagulation system.

Sheep with arteries and veins of similar size to humans are the experimental model we are using to test this new device. In order to simulate a coagulopathy or anticoagulant therapy, the sheep were heparinised (ACT = 200-400) for these experiments (Fig. 1).

IR research: Pioneering the development of prosthetic venous valves
One area in which interventional radiologists are applying their ingenuity is to search for a new solution to chronic venous insufficiency (CVI). When deep veins are affected by CVI, treatment options are much more limited. Surgical treatments exist such as valve repair, valvular reconstruction, femoral vein transposition or venous segment transplantation. However, the majority of patients with secondary valve insufficiency are not candidates for these procedures due to obstructions or residual thrombus throughout the vein. Treatment options for these patients include the use of compression stockings and local skin treatment. These are often inadequate and often result in the development of non-healing ulcers.

After an episode of deep venous thrombosis, IR techniques of thrombolysis and recanalisation are used for the prevention of secondary venous insufficiency. Unfortunately however, these techniques are only offered to a minority of patients. The majority of patients are managed conservatively with anticoagulation as the only therapy. Therefore, they are at risk of progressing to secondary CVI of the deep veins (post-thrombotic disease). An effective therapy is needed for these patients and, once again, preclinical IR research is working to offer the solution.

Many designs for prosthetic venous valves have been conceived. Howerver, despite significant progress in this area, there are still many challenges to overcome before prosthetic venous valves are a clinical reality. One of the major difficulties encountered with all vascular prosthetics is neointimal hyperplasia: a local thickening and growth of the blood vessel's lining at the site of device deployment. Neiointimal hyperplasia is a natural response of a blood vessel whenever a foreign body comes into contact with it. Neointimal hyperplasia leads to stenosis of the vessel restricting blood flow and limiting the effectiveness of the treatment. For successful clinical use, prosthetic venous valves must be compatible with the body, remain in position and maintain function for the long term.

Our research group is making progress in developing artificial venous valves. Our concept is to construct a bioprosthetic valve leaflet material by using porcine small intestinal submucosa (SIS), that is attached to a metallic square stent frame. Following promising animal experimental studies, these devices were placed in symptomatic patients with good short term results. Their symptoms improved and, in some cases, large venous ulcers healed [9,10]. Encouraged by these positive clinical results, our next step is to enhance the long-term function of the valve with elimination neointimal hyperplasia, thus keeping the leaflets functional in the long-term. We postulated that valve function could be prolonged by covering the SIS valve leaflets with vein wall endothelial cells. Animal studies reported by Teebken et al. and Pavcnik et al. demonstrated that leaflets lined with endothelial cells prevented intimal hyperplasia and prolonged valve function. Both the source of endothelial cells for harvest and the ability of the interventional radiologist to deliver the valve leaflet with its endothelium intact and fully functioning are critical issues in developing percutaneous endothelial cell-seeded valve therapy. Endothelial progenitor outgrowth cells (EOCs) that can be isolated from the peripheral blood are a promising source of autologous endothelial cells for the bioprosthetic venous valve.

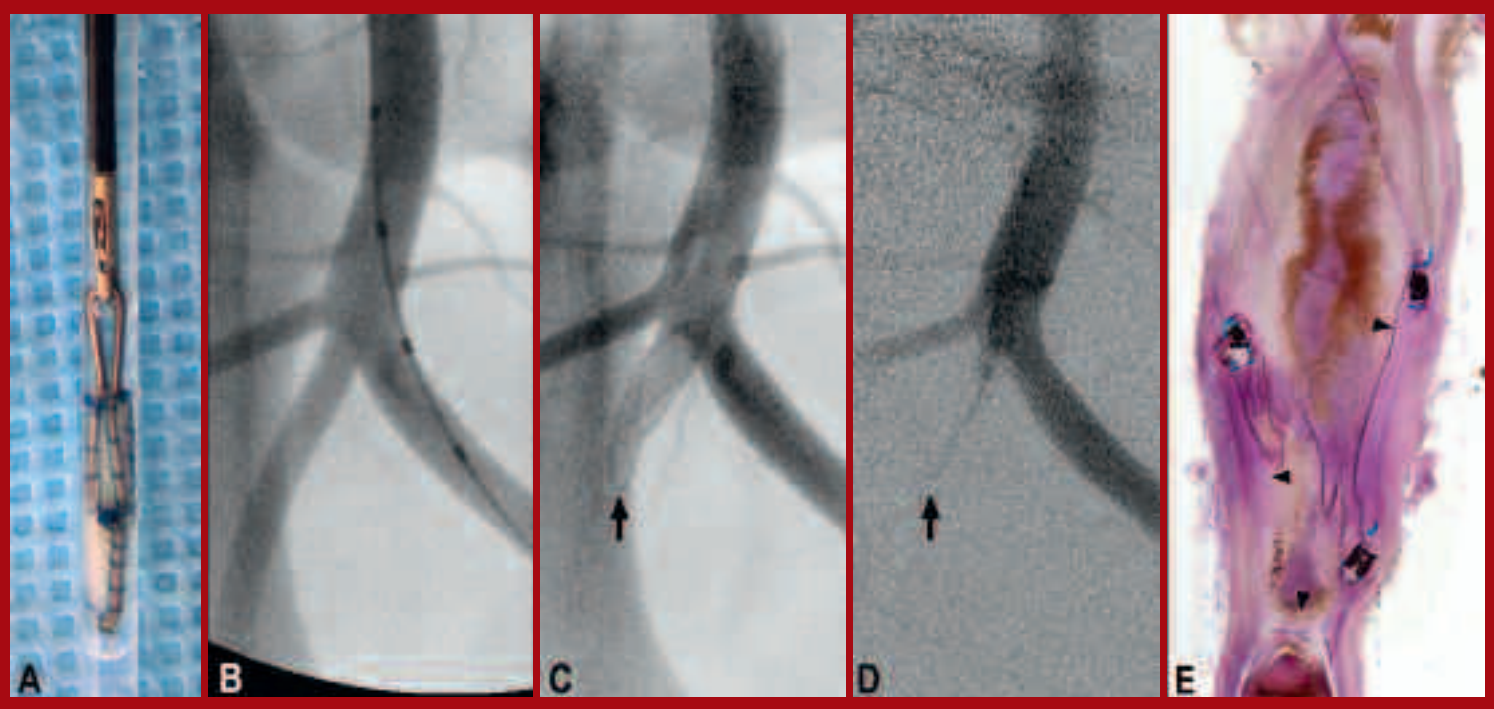

Fig. 1: Left deep FA branch 4 weeks post occlusion with BioPlug in heparinised sheep.
(a) Bio Plug for 4-5 mm vessel diameter compressed inside 5 Fr delivery cartridge.
(b) Angiogram of the left deep FA prior to BioPlug placement, ACT - 304 seconds.
(c) Angiogram one minute after BioPlug deployment shows occlusion. Arrow points to the device.
(d) Left deep FA 4 weeks after device implantation demonstrates occlusion.
(e) Longitudinal microscopic view: The vessel lumen is occluded. SIS pouch (arrowheads) is remodeled with vacular connective tissue surrounded by neointima.

Recognising the significant potential of this idea, the National Institute of Health recently awarded the Dotter Interventional Institute and Department of Biomedical Engineering at Oregon Health & Sciences University (OHSU) a NIH R01 grant to investigate this promising technology. The clinical availability of a bioprosthetic venous valve would revolutionise the management of chronic deep venous insufficiency; a condition for which no satisfactory standard treatment currently exists.

Summary
Clinical and preclinical IR has a strong track record of innovations. Improving current therapies or developing new devices sometimes means looking into the past and understanding what has already been done. In order to improve and adapt new devices or techniques, we need to participate in preclinical IR research. We must recognise challenges and find ways to investigate them using in vitro or in vivo models. Investigation and development of new devices, techniques and procedures and the translational research required for their evolution into clinical realities are essential for the future success of interventional radiology.

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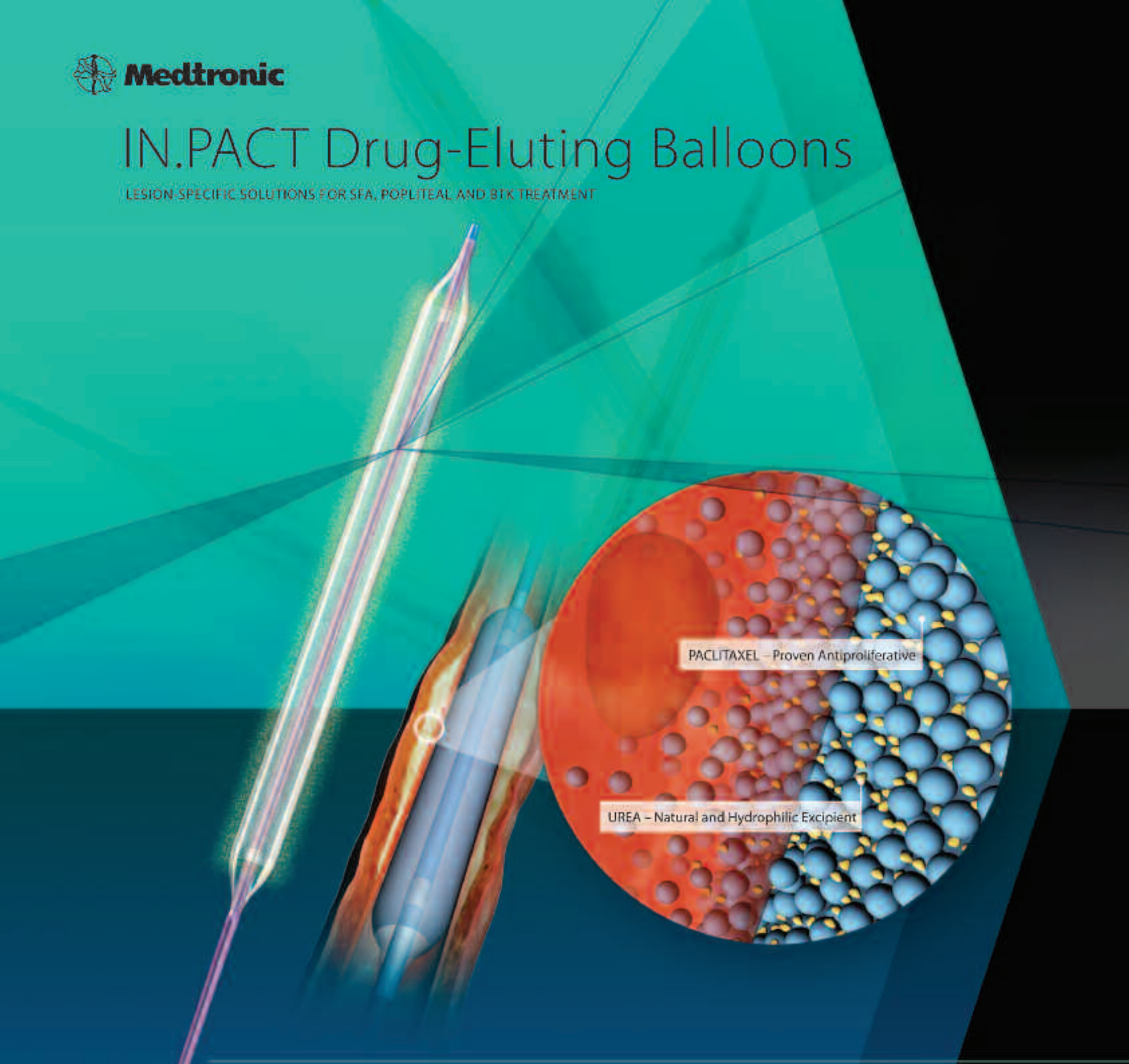

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Innovating for life.

Renal Denervation: A novel percutaneous treatment modality for therapy-resistant hypertension

Michiel Voskuil

Hypertension is one of the most prevalent cardiovascular risk factors. Globally, 34% of adults worldwide have hypertension and this number is rising [1]. Despite this high prevalence and its associated complications, control of hypertension is far from adequate [2, 3]. Data from the National Health and Nutrition Examination Survey show that only 34% of the patients with hypertension have their blood pressure under control, defined as a level below 140/90 mmHg [4]. This frequent occurrence of failure to treat hypertension can be attributed to both physicians' negligence, as well as patient non-compliance to a lifelong pharmacological therapy for a mainly asymptomatic disease.

The pathogenesis of hypertension remains not completely unraveled. However, it has been shown that activation of the sympathetic nervous system (SNS) is an important factor in the development and progression of systemic hypertension [5, 6]. Also, the degree of SNS activation correlates with the severity of blood pressure elevation. Sympathetic overdrive is also directly associated with target-organ damage related to chronic hypertension (e.g. left ventricular hypertrophy, renal damage) and has been detected in patients with heart failure, chronic kidney disease, and end-stage renal disease [7]. The response of the kidneys to SNS signaling is one mechanism by which sympathetic activation increases blood pressure [8]. Renal sympathetic stimulation promotes renin secretion, reduces urinary sodium excretion, and induces renal vasoconstriction. These activities increase blood pressure but may not appreciably alter renal haemodynamics.

Radical surgical methods for sympathetic denervation (mostly on splanchnic level) have been successful in lowering blood pressure in severely hypertensive patients. However, these methods were associated with high perioperative morbidity and even mortality, and also long-term complications [9].

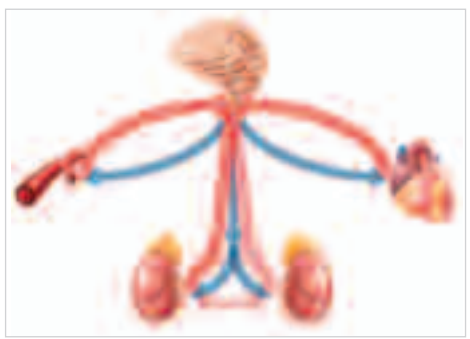

Fig. 1: Correlation sympathetic activity, hypertension and organ damage (adapted from Schlaich MP, et al. Hypertension. 2009; 54:1195-1201).

Renal sympathetic efferent and afferent nerves towards the kidney, which lie within and immediately adjacent to the wall of the renal artery, have a crucial role in this SNS signaling and activation, and therefore they offer an intriguing option for treatment (Fig. 1). In a recent study, over 90% of these nerves were shown to exist within 2 mm of the renal artery lumen, indicating that a great proportion of renal sympathetic nerves should be accessible using renal artery interventional approaches [10].

In this context, a percutaneous, catheter-based approach has been developed using radiofrequency energy to disrupt renal sympathetic nerves without affecting other abdominal, pelvic, or lower extremity innervation [11]. This renal denervation is achieved percutaneously via the lumen of the renal artery. The first studies showed this technique to be safe, illustrated by a lack of (long-term) vascular or renal injury [12]. More importantly, catheter-based renal nerve ablation resulted in a significant reduction in both systolic and diastolic blood pressure on top of maximal medical therapy, which has now shown to persist throughout 24 months follow-up, further reducing the likelihood of nerve regrowth of sympathetic nerves in the long run [13]. The Symplicity HTN-2 Trial, which was the first randomised controlled study using this technique of renal denervation, confirmed the findings of the first-in-man study [14].

Also, first-in-man data from other systems that received CE Mark approval for renal denervation have been presented recently and show similar results [15]. Patients enrolled in this trial had an average of 176/96 mmHg baseline blood pressure, with an average blood pressure of 148/87 mmHg at one-month follow-up, a 28 point reduction in systolic blood pressure. Although these are only preliminary data with a short-term follow-up, it is encouraging for the field of research.

Besides the positives effects that have been shown on hypertension, renal denervation may also influence other organ systems in which we know sympathetic nerve activity plays a role. This includes sleep apnea, insulin resistance, heart failure and even metabolic changes in polycystic ovary syndrome [16-19].

One pivotal study currently enrolling patients in the United States is the Symplicity HTN-3 study, including a sham procedure-controlled patient group. What the exact role of renal artery denervation will be has to be shown in future clinical trials.

Don't miss it !
Renal denervation
Hot Topics Session
Tuesday, September 18, 13:30-14:30
Auditorium 1

Michiel Voskuil
University Medical Center Utrecht
Utrecht, the Netherlands

Dr. Michiel Voskuil is a cardiologist at the University Medical Center Utrecht. He joins us at CIRSE to discuss one of the most talked-about new IR procedures: percutaneous renal denervation. This debate will follow the Josef Roesch Honorary Lecture, and will also feature Dr. Peter Blankestijn, a nephrologist from Utrecht, Dr. Clemens Jilek from the German Heart Centre, Munich, and Prof. Michel Azizi of the Hôpital Européen Georges Pompidou, Paris.

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Infrapopliteal PTA and bare stents – what trials show

Fabrizio Fanelli (EBIR)

Don't miss it !
Lower limb trials update - infrapopliteal segment
Special Session
Tuesday, September 18, 10:00-11:00
Auditorium 1

Fabrizio Fanelli
(EBIR)
Vascular and Interventional Radiology Unit
"Sapienza" University of Rome, Italy

Dr. Fabrizio Fanelli is an IR at the "Sapienza" University of Rome, the largest university in Italy. His work includes a wide range of IR procedures, notably vascular interventions (such as CLI and carotid stenting), interventional oncology, vertebroplasty and hepatobilliary interventions. He is a well-known face at CIRSE, having served on the CIRSE Standards of Practice Committee from 2007-2009, and as Chairman of the Rules Committee from 2009-2011. He is currently Chairperson of the SoP Committee, and a member of the Vascular Division of the Foundation Advisory Council.

Critical limb ischaemia (CLI) is a complex condition that represents the end stage of a peripheral arterial occlusive disease whose evolution is characterised by macrovascular lesions inducing such a big reduction of distal perfusion pressure that microcirculation and nutried blood flow to the tissues are severely disturbed. In the last years, as a consequence of the growing number of diabetics and elderly people, CLI has begun to largely affect the world population and for this reason, several studies have been conducted to evaluate the best approach to solving this problem and to validating the efficacy of multiple new devices available on the market.

The primary goals of infrapopliteal angioplasty in the presence of CLI are: to restore at least one straight line of blood flow to the ischaemic foot, to maintain the patency of the treated artery for as long as possible or at least as long as necessary, to achieve ulcer healing and pain relief, and to avoid CLI recurrence.

In the past, infrapopliteal angioplasty was reserved for patients with short stenotic lesions or for patients suitable for surgery, but in recent years this technique has started to be used also as first line treatment for very complex lesions (Level 4 – Grade C) [1].

Unfortunately, the level of evidence for endovascular treatment of BTK vessels is still low, and comparing surgery with endovascular techniques, the most relevant data in the literature come from extrapolation of RCTs and from comparison between bypass and balloon angioplasty outcomes at different levels in patients with CLI and from meta-analysis of retrospective case series without bias.

Long total occlusions of the infrapopliteal vessels have become increasingly amenable to therapy with long low profile balloons. The diffuse nature of the disease, in addition to a high prevalence of calcification, reduces PTA outcomes, but none of the various devices on the market has proven to be superior to PTA in the treatment of the BTK disease in case of CLI.

The limitation of the first generation small-vessel balloons was correlated with their poor capability to cross severe, long calcified lesions in small vessels with a very bad pushability. But when the characteristics of these devices were improved, especially by imitating the coronary angioplasty balloon catheters, a paramount progress was observed in clinical results.

Kuo et al. reported a technical success of 96.4% with a 5-year limb salvage rate of 89.1% [2].

Graziani et al. reported their experience treating CLI in dialysed patients, the most difficult ones to take care of. In this population technical success was 97%, while cumulative limb salvage rate at 12, 24, 36 and 48 months was 86%, 84%, 84%, and 62% respectively [3].

The presence of heavy calcified lesions along the BTK arteries represents a big limitation to PTA.

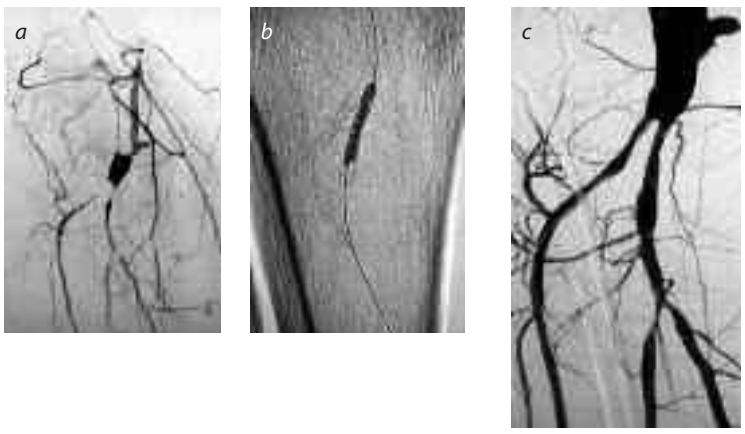

Fig. 1: A 63-year-old male patient, diabetic, heavy smoker, suffering from CLI, already subjected to femoro-popliteal by pass with vein-graft.
(a) Angiography showed a tight stenosis at the level of the anterior tibial artery and of the tibial-peroneal trunk origin.
(b) Two stents were positioned (kissing stents).
(c) A final angiography revealed a regular flow at the level of the arterial bifurcation.

To improve long-term results, the use of cutting-balloons can be a valid consideration. These devices have blades and wires that act by concentrating their force and fracturing a plaque in a slow and controlled way. Thus the frequency of an extensive dissection is reduced and the vessel baro-trauma is decreased as a result of the lower inflation in the balloon that is required to make the vessel correctly expand. A multi-centre registry, including 51 patients with infrapopliteal disease, showed a 12.5 dissection rate [4].

Another balloon therapy for infrapopliteal revascularisation is cryoplasty that is gaining wider popularity. Once the balloon is inflated, its surface is cooled down to -10°C and the vascular lesion is cooled down as well. It exerts mechanical and biological effects that contribute to preventing restenosis [5].

Stenting in the BTK regions is frequently used as a bailout technique in case of flow-limiting dissections after intervention, of restenosis and of elastic recoil. However there are significant data recommending BTK stenting as an effective and durable primary endovascular strategy for CLI.

Feiring et al. were the first to demonstrate, in a large retrospective series, the safety and utility of infrapopliteal lesions primary stenting using coronary stents [6].

The first RCT was the Inperia trial published by Rand et al. in 2006. The trial investigated carbon-coated-stents vs. balloon angioplasty in the BTK region. A total number of 51 patients, with 95 lesions, were enrolled (PTA 53 lesions, stent 42 lesions). Cumulative primary patency at 6 months was 83.7% for stent and 61.1% for PTA ($p < 0.05$) [7].

Although 6-month results were superior in the stent group, 9-month follow-up, extended to a group of 88 patients (InPeria II), showed similar results in clinical outcome and limb salvage (stent 96% vs. PTA 91%) [8].

An open debate is nowadays correlated with which type of stent, balloon-expandable or self-expanding, is more for BTK lesions. One of the major limits of balloon-expandable stents is their short length that allows treatment of only short focal lesions that are not representative of the typical long BTK lesions.

The Xcell study was a prospective multi-centre registry of patients with CLI. Its aim was to evaluate the efficacy and safety of the Xpert self-expanding stent. At 6-month follow-up, the target lesion revascularisation in 115 patients was 18.3%, with a major amputation rate of 6.1%. Wound healing was clearly evident (100% healing) in 53.5% [9].

It is obvious that, prior to stenting, the vessel needs to be adequately pretreated with angioplasty or debulked with an atherectomy device in order to allow the stent to expand properly. It is also important to have a good distal flow to prevent stent thrombosis, as well as a vessel diameter greater than 2 mm.

The possibility of not having a permanent metallic implant (bioabsorbable stent) has emerged as an exciting technology to combine mechanical prevention of vessel recoil with the advantages of a long-term prospective. A bioabsorbable stent can allow a positive remodelling on lumen enlargement to compensate for development of intimal hyperplasia or new lesions.

A multi-centre randomised trial, investigating infrapopliteal absorbable magnesium stents (AMS) vs. angioplasty (AMS_INSIGHT 1 trial), indicated that AMS technology can be safely applied, but it did not demonstrate AMS efficacy in the infrapopliteal vessels as regards long-term patency over standard PTA [10]. Data concerning 117 patients showed a significantly higher binary restenosis rate at 6 months (68% vs. 42% $p = 0.01$) with a rate of late lumen loss nearly doubled (1.4 vs. 0.7 mm – $p = 0.001$). In conclusion, the authors stated that reliable stent design modifications are required and further clinical studies should be carried out before a potential widespread application of this technology.

In CLI, the real improvement in a patient's outcome corresponds to amputation avoided and obviously limb salvage is a worthwhile endeavour. The BASIL trial has demonstrated that PTA is an acceptable method of revascularisation – less pricey and more convenient than surgery [11]. In addition, PTA doesn't jeopardise distal vessels if surgery is required.

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Epistaxis: Endovascular Therapy

Antonin Krajina, Viktor Chrobok and Vanda Machova

Don't miss it !
Epistaxis
Special Session
Tuesday, September 18, 10:00-11:00
Room 3A

Most cases of epistaxis resolve spontaneously, and only 6% require medical treatment. The treatment of epistaxis is based on nasal packing, which is usually successful for the anterior septal area. However, it may fail, especially in posterior epistaxis [1, 2]. In these cases, the origin of the nosebleed lies more posteriorly on the nasal cavity. Posterior epistaxis occurs more frequently in older patients than anterior epistaxis. The most common factors associated with posterior epistaxis are a history of hypertension and previous nosebleeds [1].

Posterior nasal packing can lead to nasal trauma, vagal reaction, infection and re-bleeding from mucosal defects. Traditional gauze packing or balloon devices should be left up to 48 hours to prevent complications. Subsequent therapy can include either surgical endonasal coagulation and ligation or endovascular embolisation of the arteries supplying the posterior nasal fossa. An endoscopic otolaryngological approach has been used for direct electrocauterisation of the active bleeding site or even endoscopic ligation of the sphenopalatine artery (Fig. 1).
Ligation of the responsible nasal artery should be performed as near as possible to the bleeding point. Surgical ligating of the artery that is at a distance from the bleeding point must be avoided, since it limits access for endovascular therapy and seems to less effective because of the rich cross-circulation from the other side [3-5]. The same is true for proximal embolisation with microcoils. However, embolisation in some centres takes an earlier and more important role than surgery. Embolisation for intractable epistaxis treatment was first reported as an alternative to surgery and other methods by Sokoloff in 1974 [6].

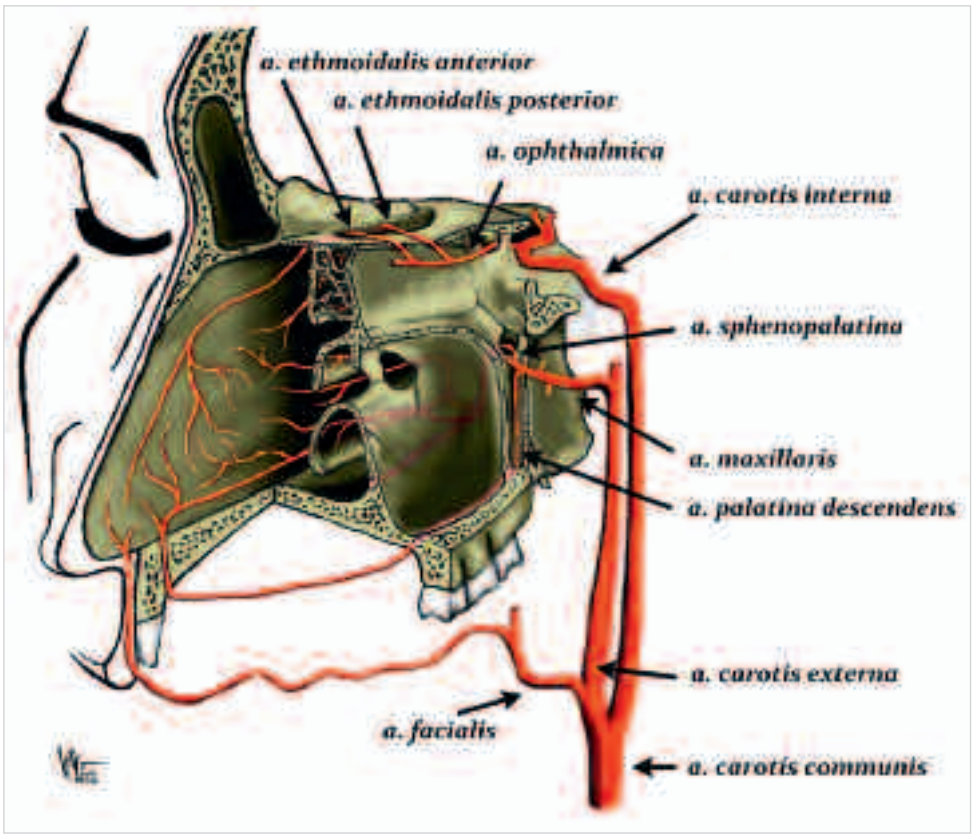

Fig. 1: Schematic arterial supply of the sinonasal cavity.

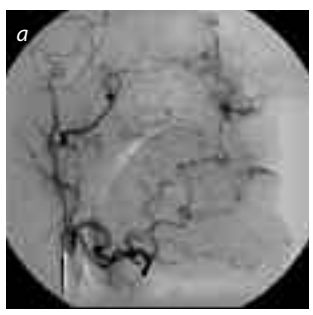

Fig. 2a: The external carotid angiogram of a patient suffering from hereditary haemorrhagic teleangiectasia and multiple episodes of epistaxis.

Fig. 2b: The selective maxillary angiogram demonstrating position of a microcatheter.

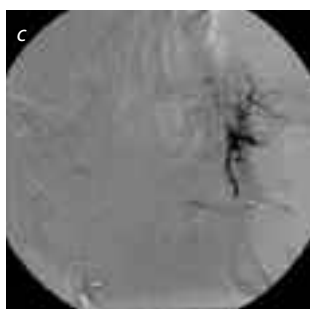

Fig. 2c: The selective facial angiogram which show supply to the nasal cavity.

The vast majority of posterior epistaxis treated by embolisation is idiopatic. The angiographic findings in these cases are normal. Specific angiographic signs include a tumour blush, teleangiectasias (Fig. 2a and b), a traumatic pseudoaneurysm, or even contrast extravasation. The selective internal carotid artery angiography can reveal another source of epistaxis, such as mycotic or traumatic aneurysm [2,7-13].

Complete selective external and internal carotid angiograms are essential. Separate selective angiograms should be well analysed for detection arterial variants and anastomoses between branches originating from the external carotid and internal carotid artery [14-16]. Bleeding can originate from unsuspected sites. First of all, familiarity with the particular arterial anatomy of this region is fundamental for safe and successful treatment. Among the most severe complications are stroke and blindness. Identification of the retinal opacification from the branches of the external carotid artery should lead to aborting the embolisation and referral to surgery (Fig. 3). Most often, the supply of the ophthalmic artery from the external carotid branches occurs due to collateralisation in chronic internal carotid artery stenosis or occlusion.

Embolisation should diminish flow to the bleeding nasal mucosa in such a way as to avoid necrosis of the skin of the nasal ala. Embolisation via the ophthalmic or ascending pharyngeal artery is considered to be dangerous. Therefore, embolisation is routinely performed with a microcatheter placed into the internal maxillary artery (Fig. 2b) distally to the origins of the middle meningeal and accessory meningeal artery due to the anastomoses with the internal carotid artery. Penetration of the micropacticles into the middle deep temporal artery may avoid post-embolisation pain and trismus. The most common size of polyvinylalcohol microparticles appears to be 150-350 microns. Coils are not recommended because of recurrent epistaxis due to proximal embolisation, and moreover, the artery cannot be again accessible distal to the proximal occlusion.

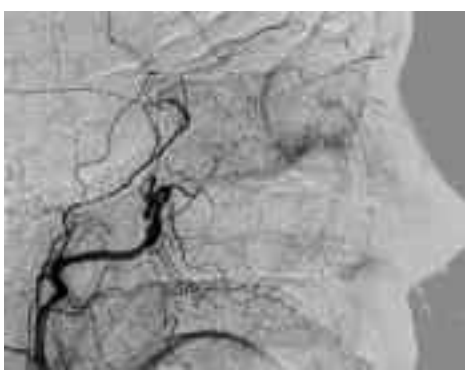

Fig. 3: The external carotid angiogram revealing supply of the retina. Embolisation in this setting could result in blindness.

Prof. Antonin Krajina is an IR at the University Hospital of Hradec Kralove in the Czech Republic, where he received his initial medical degree. His IR fellowship was completed at the Oregon Health Sciences University, Portland (USA) under Prof. Josef Rösch and Dr. Stanley Barnwell. His research and clinical career has encompassed many vascular procedures and devices, particularly portosystemic shunts, balloon and stent angioplasty, AAA stent grafts, intra-arterial infusions and neurointerventions. Prof. Krajina has held CIRSE Fellowship since 1996, and has served as an editor/reviewer for CVIR, JVIR, European Journal of Radiology and Acta Scandinavica Radiologica. This article was written in conjunction with his colleagues, Viktor Chrobok, Professor of Otorhinolaryngology, and Vanda Machova, a medical student.

The success rate of embolisation therapy that took into account late re-bleeds ranging from 72 hours to 33 days varied from 77-94% [17-20]. The results were influenced by the protocol used (bilateral internal maxillary and ipsilateral facial artery embolisation) (Fig. 2a and c), the underlying pathologies (the juvenile angiofibroma, haemorrhagic hereditary teleangiectasia), and the embolic material used. Endoscopic surgery had comparable success rate. However, major complications such as stroke or unilateral blindness are not associated with surgical therapy.

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Don't miss it !
Innovations in oncologic IR
Special Session
Tuesday, September 18, 08:30-09:30
Auditorium 2

Oncolytic Viral Therapy

Steven C. Rose

Steven C. Rose
UCSD Medical Center
San Diego/CA, USA

Prof. Steven Rose is a board-certified IR known for his pioneering work in oncology, particularly in the field of oncolytic viral therapy. He graduated from the University of Washington School of Medicine in 1976, and completed his angiographical and interventional training at the University of Colorado in Denver.
Prof. Rose teaches at the University of California San Diego, where he is the Section Chief of the Interventional Oncology Section within the Department of Radiology. He has been on the UCSD faculty since 1994.

Genetically, cancers are markedly different from non-cancerous host tissues. As it turns out, many viruses that replicate poorly within normal tissues are able to readily replicate within cancer cells and cause cell lysis. It has been known since 1904 that some patients, usually with leukemias or lymphomas, will go into remission following a viral illness or immunisation [1]. The field of oncolytic virotherapy did not progress significantly until the mid-1990s, when genetically engineered viruses were developed [2].

Live viruses are selected that have a relatively innocuous infectious state in humans, such as adenoviruses, herpes simplex I viruses, or vaccinia viruses, and that have been shown in-vitro and in-vivo to have some measure of cytolytic activity in tumour cell viruses such as hepatocellular carcinoma, colorectal adenocarcinomas, or melanomas. To improve the safety profile, select genes are deleted, such as viral thymidine kinase, which causes the virus to be dependent on high intracellular thymidine kinase (found in rapidly dividing cancer cells and not in stable host cells) in order to replicate. To improve the anti-tumoural effectiveness, other genes may be selectively inserted. One example is human colony macrophage granulocyte stimulating factor gene which augments stem cell recognition and immune response to cancer intracellular antibodies exposed after cell lysis in order to provide an anti-tumoural vaccine-like function.

One significant challenge to this therapy is delivering the viruses to the tumour. Most patients have cellular and humoural immune mechanisms that are effective at killing and clearing viruses circulating systemically. Fortunately, interventional radiologists can efficiently deliver these viruses directly to the tumours, either via arterial transcatheter techniques or direct interstitial intratumoral injection. As such, oncolytic virotherapy looks to be IR-centric.

Initial results indicate that this therapy is both safe and effective. In general, virtually all patients experience a flu-like syndrome (grade 1/2 toxicity) that is self-limited to less than 24 hours. Grade 3 toxicity is uncommon, and grade 4, 5 toxicities virtually never occur. In one small prospective single arm, multi-centre trial that involved transarterial infusion of live, replication-competent genetically engineered adenovirus in patients with gastrointestinal adenocarcinoma liver metastases, 43% of patients had a radiographic WHO response [3]. These responders had a median survival of 475 days compared with 143 days for non-responders. In another small, prospective randomised controlled Phase II, multi-centre and multi-national trial using a genetically engineered vaccinia virus injected intratumourally into patients with hepatocellular carcinoma compared a standard dose (1 x 109 pfu) versus a low dose (1 x 108 pfu) arm [4]. Median overall survival in the standard dose arm was 13.8 months versus 6.7 months in the low dose arm (HR 0.41; p = 0.025).

Potentially this therapy could be game changing with regards to treatment of liver and potentially other malignancies. Compared to ablative therapy that is critically dependent on size, intratumoural injection of oncolytic viruses appeared to be effective in treating much larger tumours due to the phenomenon of secondary or bystander infection. Anecdotally, this same phenomenon may allow some measure of activity for control of extrahepatic metastases as well. Compared to transarterial therapy using potent cytotoxic agents such as Yttrium-90, accidental delivery into hepatoenteric arteries carries no risk of ulceration, etc., since the viruses are incapable of replication in normal host tissues.

When considering patients for oncolytic virotherapy, some special factors must be considered. For example, patients who are immunocompromised may be at risk of viral dissemination, and patients receiving anti-viral therapy for HIV, HBV, or HCV potentially may interfere with the activity of the virotherapy.

In conclusion, oncolytic virotherapy appears to be both safe and effective. Clinical trial data is preliminary, and needs to be validated by large prospective randomised controlled trials, some of which are underway.

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The Future of Simulation

David Kessel

Don't miss it !
IR in the future
Special Session
Wednesday, September 19, 10:00-11:00
Auditorium 6

David Kessel
(EBIR)
Leeds Teaching Hospitals NHS Trust
Leeds, UK

Dr. David Kessel is a vascular radiologist at Leeds Teaching Hospitals NHS Trust, as well as a Visiting Senior Lecturer at the School of Computing, Leeds University. He is well known for his involvement in IR education, and has designed and hosted numerous hands-on and simulation workshops over the years, as well as delivering many lectures at CIRSE. He has been a key member of CIRSE's Simulation Task Force since 2006, was BSIR President 2009-2011, and has served on various RCR Education and IR committees since 2004. He is co-author of Interventional Radiology: A survival guide.

"Simulation training in all its forms will be a vital part of building a safer healthcare system" is a direct quotation from Professor Sir Liam Donaldson in the 150th report of the Chief Medical Officer of England. Patients and their advocates will be reassured that those providing their care are appropriately experienced. It follows that doctors, clinical teams and health care providers should welcome the uptake and adoption of simulation. Simulation will become increasingly relevant to doctors in terms of training, assessment of performance and revalidation. It is interesting to consider what this means in the context of radiology and specifically for interventional radiologists.

Without dwelling on semantics, we must differentiate between simulators and simulation. Simulators are devices which emulate real devices to allow practice using the device. Simulation describes environments intended emulating real situations relevant to individuals and teams. Simulations may involve the use of simulators, but they are not essential.

It is traditional to refer to the aviation industry when discussing simulation. Many of us will have flown here to Lisbon. Our pilots will have undertaken regular sessions in high-fidelity flight simulators. They will be familiar with the controls of the aircraft. Obviously this is good, but this alone should not fill us with confidence. What reassures me is that simulation training has been used to rehearse crew response to critical situations which might lead to the loss not only of life, but also from the industry perspective, hugely expensive aircraft and future custom. There is a huge pressure to ensure that this does not occur. In medicine the situation is simpler; we need to ensure that the focus of simulation and technology enhanced learning is high-quality service and patient care.

Thus, to be relevant within medicine, it is crucial that credentialing bodies set the agenda for simulation uptake. Currently this is not the case. For most of us, "simulation" probably conjures up an image of simulators being used in the practice of endovascular procedural skills. Endovascular simulators are increasingly sophisticated and seductive; it can be difficult to remember that they have been commercially developed without reference to any recognised training curricula. Simulators tend to illustrate the performance of techniques in isolation. Used in this way, they are not focused on patient care or team behaviour and they certainly do not relate to any formal education programme or objective. This is wrong and must change.

To date, interventional radiology has been slow to consider the real strengths of simulation in training. We have largely limited uptake to simply using the available simulators. It is essential that we must take a broader view than simple rehearsal of procedural techniques. Instead, we should use simulation to develop key skills of communication, leadership and situational awareness. It is easy to envisage how this might include the rehearsal of important scenarios likely to be encountered by individuals or teams.

For this to occur, we need to establish the objectives of the use of each simulation and also to demonstrate that they are fit for purpose. This entails developing curricula with specific training objectives, outcome measures and assessment tools. There are opportunities to review existing curricula and seek out the opportunities for the incorporation of simulation and to ensure that simulations integrate with the system of assessment. This is the responsibility of the credentialing bodies, and organisations such as CIRSE should take a lead in the process.

I envisage simulation developing different purposes. One focus will be the utilisation of high fidelity simulators and centred on acquisition of technical skills, learning procedural sequences of events, and rehearsal and training in the use of medical devices (Fig. 1). In the future, it may become possible to use mission rehearsal to predict accurately how a device will perform in patient specific anatomy and whether a procedure will be technically possible. At present, there is no doubt that simulators can offer useful experience, particularly early on in an operator's training. All of us can envisage the benefits of becoming familiar with the nuances of deployment of complex devices such as aortic stent-grafts. Simulators allow us to practice these repeatedly without wasting products and without any risk to patients.

Another direction will be related to using simulations to improve curriculum delivery and patient safety. Consider again stent-grafting. The benefits to a patient are that they can be certain that the operator is very familiar with the use of the device. For the clinician, manipulation of the device will become second nature, allowing full concentration on the performance of the procedure. If they have not used a particular device for a while, they can practice before a deployment. Even more valuable would be the ability to rehearse adverse events, such what to do in the event of device malfunction and how to prevent and troubleshoot problems.

Moving away from individual simulation is valuable in establishing team behaviours and responses to both routine and adverse procedural scenarios (Fig. 2), for example, ensuring that every member of the team knows their role in the management of arterial rupture during angioplasty. Individuals would know who was responsible for providing a balloon for immediate balloon tamponade, resuscitation and monitoring, calling for assistance and fetching a stent-graft of appropriate size. Highly immersive simulations, such as used by Orzone, clearly lend themselves to this. The value of being certain that everyone in the team is familiar their role and responsibility in such an emergency is enormous. It would be possible to assess and develop communication and leadership skills in this way.

Simulation can also help develop understanding between teams who may need to collaborate in emergency settings such as major trauma. Teams can and should rehearse their interactions e.g. transfer of the severely injured patient from the emergency department via CT to angiography for the delivery of definitive therapy. Such simulations will reveal logistical difficulties and improve interdisciplinary relationships.

These mission-critical behaviours which impact on the delivery of quality patient care could be assessed and simulation-based training would become a regular part of team demonstration of competence.

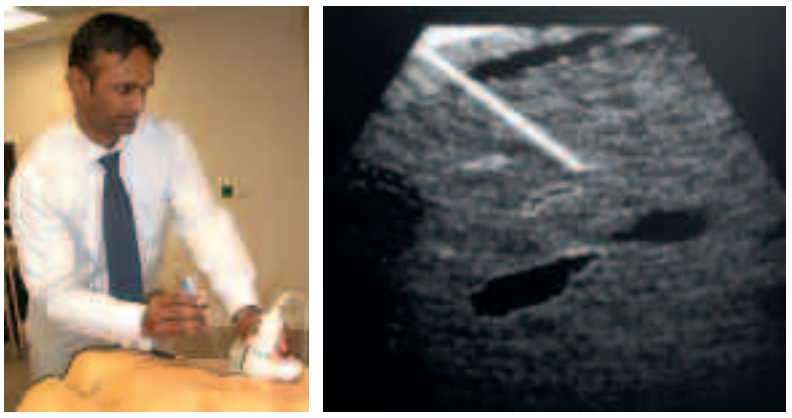

Fig. 1: Augmented reality training for ultrasound-guided liver puncture.

Fig. 2: Simulation of safer surgery pre-procedure checklist for whole angiographic team.

Another aspect where simulation has the potential to be increasingly valuable is in assessing communication ability and accuracy using actors to interact with medical staff in different contexts. The ability to explore a doctor's ability to explain a procedure and to ensure adequate discussion of alternatives, risks benefits and likely outcomes is evident.

It is certain that in the near future, we will see greater use of simulation in the assessment of individual and team competence and subsequently demonstration of ongoing fitness to practice. Demonstration of competence may become part of the requirement for insurance of the individual and the organisation. Our duty is to ensure that the simulations are truly relevant and fit for purpose.

Today's Featured Papers

will be presented in the Free Paper sessions, taking place from 17:00-18:00

FP 3007
Clinical practice development
Safety of conscious sedation during interventional radiology procedures
R. Yella, S.M. Gregory, C. Gonzalez-Junyent, G.S. Goh, G.J. Munneke, L. Ratnam, M. Gonsalves; London/UK
Room 1.15

FP 3008
Gynaecological intervention (including UFE)
Incomplete uterine fibroid embolization for patients who want to conceive
J.M. Pisco, M. Duarte, T. Bilhim, H. Rio Tinto, L. Fernandes, J.A. Pereira; Lisbon/PT
Auditorium 3

FP 3009
Oncologic intervention 4
Role of transarterial chemoembolization as bridging strategy in T2 HCC patients on the waiting list
E. Bozzi, I. Bargellini, F. Turini, A. Cicorelli, R. Cioni, C. Bartolozzi; Pisa/IT
Auditorium 4

Advertorial

New Product Launches

ATRIUM

V12 RX covered stent

The V12 RX covered stent is the latest addition to Atrium's complete line of V12 balloon expandable PTFE covered stents. The new .014" rapid exchange, low profile (5 and 6Fr introducer sheath compatible), highly deliverable V12 RX stent platform is the ultimate solution for small vessel applications and tortuous anatomy.

V12 RX is a fully encapsulated customizable balloon expandable PTFE covered stent. Atrium is the first and only company to provide you with a high quality covering technology that is engineered to optimize healing, reduce restenosis, and prevent bleed through. Let Atrium, the world leader in balloon expandable covered stents, and its superior V12 product offering deliver the results you expect, where you need it and when you need it. To find out more about Atrium's V12 family and how it can benefit your patients please visit us at www.atriummed.com or our Atrium booth 6 during CIRSE.

BAYER

JETSTREAM Atherectomy System

Bayer expands its portfolio of interventional products with the introduction of the JETSTREAM Atherectomy System for restoring flow and preserving options in the treatment of peripheral arterial disease (PAD) .
This rotational atherectomy system offers a range of catheter sizes to treat both above (ATK) and below the knee (BTK) peripheral arterial disease. Indicated for use in multiple lesion morphologies including calcium and thrombus, the JETSTREAM technology features differential cutting to remove lesion materials while preserving the soft vessel walls.
The JETSTREAM System also provides continuous active aspiration and a unique front-cutting head on all the family of catheters. The Navitus catheter expandable blade technology enables physicians to treat both the common and superficial femoral arteries with one device. Initially, the JETSTREAM System will be marketed to select countries through Bayer direct sales offices and local distributors.

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BOSTON SCIENTIFIC

Innova™ Self-Expanding Bare-Metal Stent System

The Innova™ Self-Expanding Bare-Metal Stent System is designed to treat peripheral vascular lesions in arteries above the knee, specifically the superficial femoral artery (SFA) and proximal popliteal artery (PPA).

The innovative design and stent architecture used in the Innova Stent platform provide excellent radial strength while remaining flexible and very fracture-resistant, which is critical to sustaining patency in treated SFA and PPA lesions. The Innova Stent System consists of a Nitinol, self-expanding bare-metal stent loaded on an advanced low-profile delivery system. Deployment accuracy is enhanced with a triaxial catheter shaft designed to provide added support and placement accuracy as well as radiopaque markers to enhance ease of use. The Innova Stent is 6F (2.0 mm) compatible and is available in sizes from 5 mm to 8 mm in stent diameter and 20 mm to 200 mm in length.

BOSTON SCIENTIFIC

PROMUS Element™ Plus BTK Stent

The PROMUS Element™ Plus BTK Stent has been approved with Below The Knee indication and is aimed to provide physicians improved DES performance in treating patients with Critical Limb Ischemia (CLI) or severe lower leg claudication in infrapopliteal lesions. The PROMUS Element Stent uses a proprietary PtCr (platinum chromium) alloy designed specifically for stenting, which enables thinner struts and enhanced visibility. The innovative alloy and stent design offers a more conformable stent with less recoil and higher radial strength. It employs an advanced low-profile delivery system featuring a dual-layer balloon and Bi-Segment™ inner lumen catheter designed to facilitate precise stent delivery across challenging lesions. The everolimus drug and fluorinated copolymer stent coating have been studied in multiple randomized clinical trials and 'real-world' registries in both Coronary and Peripheral Artery Disease, demonstrating excellent long-term safety and efficacy. The Promus Element™ Plus BTK will be available in both Over-The-Wire and Monorail ™ platform, and is available with a reference vessel diameter of 2.25 mm to 4 mm and from 12 mm to 38 mm in length.

BOSTON SCIENTIFIC

TruePath™ CTO Device

The TruePath™ CTO Device, is designed to facilitate the crossing of chronic total occlusions within the peripheral vasculature.
The TruePath™CTO Device features a rotating diamond-coated tip designed to break through occluded peripheral arteries and facilitate the placement of conventional guidewires. The ultra-low 0.018" (0.46 mm) profile is engineered for optimal crossing and once positioned; the distal tip rotates at 13,000 rpm through calcified lesions and other fibrous blockages.

The ReOpen clinical study evaluated the TruePath™ CTO Device in 85 patients with peripheral artery lesions. Study results demonstrated the device is safe and effective in facilitating the crossing of intraluminal CTOs following resistance or prior failed attempts with a conventional guidewire. In the study, technical success was achieved in 80.0 percent of patients, while improved post-procedure blood flow was demonstrated in 82.4 percent of patients. Safety was demonstrated with a 98.8 percent freedom from clinical perforation at the time of procedure.

CAUTION: The law restricts these devices to sale by or on the order of a physician. Indications, contraindications, warnings and instructions for use can be found in the product labeling supplied with each device. Information for the use only in countries with applicable health authority product registrations

COOK MEDICAL

Osteo-Site® Ratchet Bone Biopsy and Infusion Needle

Drill into hard bone easily with a ratchet-style needle.

Cook Medical's versatile line of high-quality, ultrasharp, ergonomic Osteo-Site needles allows clinicians to access, biopsy and infuse bone in a variety of situations, ensuring that any procedural need can be met.

Cook's new Osteo-Site Ratchet needle is designed for situations in which hard bone penetration is needed.

- A ratchet-style unidirectional drilling action and unique spade-tip design allow hand-drilling into hard bone.
- Hand control allows smooth drilling while reducing risk of incidental loss of pressure or direction.
- The quiet drilling operation can help maintain patient comfort.
- The outer cannula is marked in 1 cm increments to help guide drilling and gage depth.

COOK MEDICAL

Aprima™ Access Nonvascular Introducer Set

Redefine access with a set engineered to make every aspect of your procedure go smoothly.

Cook Medical offers the widest assortment of drainage products available, designed to access, target and treat any drainage objective. The Aprima Access set redefines access with our long-established focus on patient comfort and procedural ease.

- The Transitionless-Tip™ design requires less insertion force than standard access sets[1] and virtually eliminates hang-ups during entry, which helps provide seamless access and reduce the risk of patient trauma.
- The entire shaft and distal tip – not just one small band – are radiopaque to maximize fluoroscopic visibility during placement.
- The set includes an EchoTip® echogenic access needle for optimal ultrasound visibility, a Cope Mandril wire guide, and the hydrophilic-coated coaxial introducer sheath, which work together to ease every step of the placement process.

[1] *Benchtop testing performed against industry standard products. Data on file.*

COOK MEDICAL

Peripherally Inserted Central Venous Catheters

Provide the right PICC for any treatment and every patient.

Cook Medical's diverse array of venous access products, from PICCs and ports to both acute and long-term CVCs, is designed to make sure clinicians are never left without an answer for their patients.

Our new 3.0 and 6.0 Fr Turbo-Ject power-injectable PICCs continue our mission of providing the right device in any situation.

- A complete line of PICC options can ensure that you always have the tool you need, from silicone and power-injectable polyurethane options to catheters uniquely impregnated with the antibiotics minocycline and rifampin to help prevent CRBSIs.
- More sizes and configurations can increase treatment options and help improve patients' lives every day.
- New 3.0 and 6.0 Fr power-injectable PICCs add to an already diverse product selection.

Advertorial

New Product Launches

CORDIS

POWERFLEX® Pro .035" PTA

Cordis announces the launch of the POWERFLEX® Pro .035" PTA DILATATION CATHETER in Europe.

POWERFLEX® Pro is a .035" PTA workhorse solution that delivers advanced crossability and remarkable versatility to treat routine, or challenging cases in the lower extremities.

POWERFLEX® Pro was developed to meet physicians' needs for a lower profile, puncture resistant, PTA balloon, in a wide range of sizes. This balloon catheter offers many features and benefits to aid in patient treatment; including long lengths up to 220 mm to treat long lesions in one uniform dilatation, short balloon shoulders for accuracy and post-dilatation ballooning, along with a rated burst pressure of up to 18 atmospheres to treat calcified lesions.

POWERFLEX® Pro demonstrates the company's commitment to deliver solutions for the treatment of Peripheral Vascular Disease (PVD) and is the most recent addition to CORDIS Lower Extremity Solutions Portfolio.

COVIDIEN

OneShot™ Renal Denervation System

Covidien, a global leader in vascular therapies and RF technology, is proud to announce the introduction of the OneShot™ renal denervation system. The OneShot system's balloon catheter features a proprietary, continuous spiral electrode and integrated irrigation to optimize procedural speed, consistency, and ease-of-use.

Quick. Consistent. Controlled.

- **Single-treatment RF ablation reduces procedure time: 2 minutes total** ablation per artery
- **Spiral electrode creates standardized, reproducible ablation pattern:** no need for catheter repositioning or multiple ablations per artery
- **Integrated irrigation cools and protects surrounding tissue,** reduces char formation, and increases depth of lesion
- **Low pressure balloon ensures consistent wall apposition and ablation pattern.** Available in 5-7 mm diameters, allowing physicians to treat a wide range of vessels
- **Designed for delivery over a standard 0.14" guidewire to allow for ease-of-use** with tools familiar to interventionalists

Visit us at booth 30 or our Learning Center for hands-on demonstrations.

116091-001 (A) JUL/12 - Intl

COVIDIEN

Viance™ Crossing Catheter Enteer™ Re-entry System

A different approach to CTO you can really feel.

Designed to ensure that the expert hand of the physician is front and center, the Viance™ crossing catheter and the Enteer™ re-entry system work intuitively to provide effective treatments.

Viance™ Crossing Catheter – Finesse over Force
A precision instrument designed to quickly and safely deliver a guidewire via the true lumen, the Viance™ crossing catheter puts the control of crossing where it belongs: in your hands. Providing an effective frontline option for CTOs, the Viance™ catheter enables you to utilize a proactive technique to cross total occlusions via the true lumen.

Enteer™ Re-entry System – The power of intuitive control
The Enteer™ re-entry system, consisting of the catheter and guidewire, gives you intuitive control to reliably target the true lumen from the subintimal channel above or below the knee. The system requires no capital equipment. It's designed to be nothing less than a precise extension of your own expert hand.

116091-001 (A) JUL/12 - Intl

INSIGHTEC

ExAblate O.R.

ExAblate O.R. is the new generation MR guided Focused Ultrasound therapy for treating uterine fibroids, adenomyosis and bone metastases

Reduced treatment time, expanded patient population and increased treatment durability are new features offered by InSightec's ExAblate O.R. This 3rd generation system implements the experience of thousands of treatments. It enables physicians to treat the targeted region in less time, streamlining workflow and improving the user and patient experience. Women who could not previously be treated effectively, i.e. scars, bowels in beam path, and fibroids of varying sizes, can now also be treated.

ExAblate is a non-invasive treatment with proven quick recovery, safe symptom relief, and effective, durable results, that preserves the uterus and fertility. It also provides effective pain palliation of bone metastases, osteoid osteoma and other painful osseous conditions.

MERIT MEDICAL

ONE Snare™ – Endovascular Snare System

Merit Medical is pleased to introduce the ***ONE* Snare™ Endovascular Snare System**, with a single 90-degree angle loop for retrieval and manipulation of IVC filters, coils, stents and other foreign bodies. The Nitinol and gold plated tungsten loop construction provides excellent visibility and structural integrity. The core wire provides flexibility and super elasticity to accommodate tortuous vessel navigation. The *ONE* Snare Endovascular Snare System includes a snare, a snare catheter, a new peel-away introducer tool designed to simplify snare deployment, and a torque device. Available in 9 different kit configurations with 7 snare loop sizes ranging from 5mms to 35 mms to accommodate a broad range of vessel sizes.

The *ONE* Snare, along with the interlaced triple loop *EN* Snare® Endovascular System are two retrieval options designed to provide you with the accuracy and reliability needed to capture or manipulate any foreign object within the vasculature.

PHILIPS

Industry leading image quality at a fraction of the dose

Philips new generation of interventional X-ray systems, the AlluraClarity family incorporates a set of techniques, programs, and practices that ensure excellent image quality, while reducing radiation exposure to people in X-ray environments.

During interventions you can't afford to make a trade-off between image quality and X-ray dose. But what if you could significantly reduce X-ray dose with no impact on image quality and no change to your preferred way of working?
Now you can with Philips revolutionary new generation of interventional X-ray systems: the AlluraClarity family.

Please visit **www.philips.com/AlluraClarity** for more information.

Not available in the US.

STERYLAB

MULTICORE®

MULTICORE® provides an optimised needle visualization under ultrasound guided biopsy procedures. By the natural of its constituent material it functions at any angle of entry into the body in relationship to the generation of sound waves by the ultrasound transducer. Thanks to its perfect smoothness, avoids any risk of seeding of malignant cells along the needle's path from the patient's body out. Specimens provided through **MULTICORE®** are particularly abundant and allow a quick, safe and easy biopsy procedure, either performed manually or through the most common imaging guiding systems, such as CT, US, MRI.

Advertorial

New Product Launches

STERYLAB

PARAGON®

Sterylab, in the biopsy field for 40 years, thanks to innovative technologies and advanced engineering, presents **PARAGON®**:

The NEW MILESTONE of Bone-Marrow Biopsy.

Main advantages:

- 100% success in retrieval of intact specimen
- No need for bone luxation
- Easy and fast maneuvre
- One maneuver for bone marrow biopsy and aspiration
- Bone marrow aspiration after biopsy
- Minimally invasive, less pain: 11G can replace standard 8G

View it at:
http://www.sterylab.it/Marketing/Paragon/

VIDACARE

Introducing the Coaxial Biopsy Tray, an innovative and versatile solution for your bone biopsies

OnControl® Bone Access System is the first significant advance in bone biopsy technology in 40 years. Clinicians now have the ability to effectively, safely and rapidly obtain superior bone biopsies. Vidacare® is introducing an addition to the OnControl® Bone Access System, the Coaxial Biopsy Tray designed specifically for multiple bone biopsies in the same location.

- Rapid access for hard bone lesions with a uniquely designed power driven needle technology
- Precise access to the most difficult target lesions
- Enables multiple bone biopsies in the same location
- Exceptional core biopsy samples, quickly and consistently
- Versatile design provides options for your specific needs

Visit us at the 2012 CIRSE Conference
in Lisbon at Booth #61
For information and supporting research,
please visit **www.vidacare.com**.

Don't miss the Morbidity & Mortality Conference Today at 15:00 in Auditorium 1

The Morbidity & Mortality Conference is an important part of each CIRSE Congress, analysing interventional radiology cases which have led to complications or deaths that could have been avoided. This provides a valuable learning experience for attendees, who can benefit from the experience of their colleagues, allowing them to avoid the same pitfalls.

The cases discussed will cover a range of topics, both vascular and non-vascular, and will be presented by experienced IRs. Once presented with a case, audience members will be asked to vote on their preferred course of action – allowing you to see how you might have fared when faced with that difficult decision.

Don't miss this golden opportunity to learn from someone else's mistakes

CIRSE Meets… Italy

The Italian Vascular and Interventional Radiology Section, with over 700 members, is part of SIRM (Italian Society of Medical Radiology). Since its foundation in 1974, it boasts a long history, a great tradition, a wide representation throughout the country and a very large field of interests and clinical applications. It is interested in promoting IR and training young radiologists.

Every year the Italian Vascular and Interventional Radiology Section plans important congresses, such as "Movie Interventional", in Turin, showcasing live and pre-recorded procedures; "Gargano", a morbidity-mortality meeting in Puglia; the "Postgraduate Campus" for young radiologists in training; the "Itinerant courses", short teaching and informative conferences held in different small towns; and the National Congress of the Italian Vascular and Interventional Radiology Section, which is organised every two years, traditionally choosing a beautiful Italian city as its venue.

The near future will surely see further development of interventional radiology in Italy, fields of interest will expand and more will be offered to patients. The Italian Vascular and Interveninional Radiology Section is now a CIRSE Group Member and looks forward to a growing cooperation with international colleagues and other European scientific societies.

The CIRSE meets… programme has proved to be an important platform for establishing and strengthening the relations between CIRSE and its distinguished Group Members – the National Societies in the field of Interventional Radiology. Experts from various regions around the world have provided interesting insights into the current status of Interventional Radiology, as well as the state of specific procedures and conditions in their home countries.

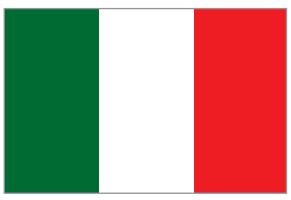
Tuesday, September 18, 10:00-11:00
Auditorium 2

CM 2605 **Transcatheter management of hepatocellular carcinoma**
Moderators: F. Florio (San Giovanni Rotondo/IT), M.J. Lee (Dublin/IE)

2605.1 **Indications for transarterial treatment of HCC**
I. Bargellini (Pisa/IT), R. Cioni (Pisa/IT)

2605.2 **TACE with drug eluting beads**
M. Grosso (Cuneo/IT)

2605.3 **Radioembolization**
R. Golfieri (Bologna/IT)



EDUCATION IN INTERVENTIONAL RADIOLOGY

ESIRonline

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Interventional Radiology at your fingertips

Missed a session? Log into ESIRonline to view presentations from this year's CIRSE!

Presentations will be available to view shortly after the CIRSE Congress - notification will be sent to Members by email

EBIR

European Board of Interventional Radiology
The European qualification in Interventional Radiology

Certify your Expertise in Interventional Radiology

The EBIR is the European interventional radiology qualification, and aims to standardise the profession's training and expertise in interventional radiology across Europe.

Register now for the next EBIR examinations, which will take place during ECR 2013 in Vienna and CIRSE 2013 in Barcelona.

Don't miss your chance!

For application deadlines and detailed information, please visit our website at www.cirse.org/ebir

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CIRSE

ESR European Society of Radiology