IR congress news

**CIRSE 2012 - Lisbon**
**Sunday, September 16, 2012**

**Education is central to CIRSE's mission, and our many projects and endeavours are bearing much fruit, helping to improve standards, increase awareness and expand the reach of the discipline. Our Annual Congress and Postgraduate Course is the highlight of every year, but our other projects are making quite an impact too…**

# Andreas Gruentzig Lecture

*Afshin Gangi,*
*CIRSE 2012 Gruentzig Lecturer*

**Honouring the German cardiologist, Andreas Gruentzig, who first successfully developed angioplasty for expanding lumens of narrowed arteries, CIRSE's annual Gruentzig Lecture has been given by some of the most outstanding personalities in the field of interventional radiology, and is one of the highlights of the meeting's scientific programme.**

**This year's Gruentzig Lecture will be given by Professor Afshin Gangi of the University Hospital Strasbourg, who is known worldwide for his expertise and pioneering work in musculoskeletal interventions. Prof. Gangi is a worthy recipient of this honour, and will deliver his lecture on "New frontiers in musculoskeletal tumour management".**

**Today at 14:30 in Auditorium 1**

# Education at Work ...

**European Board of Interventional Radiology**

Our boldest project of late has been the establishment of the European Board of Interventional Radiology in 2010, which is a decisive step towards creating a concrete IR qualification that is recognised across Europe. So far, 261 IRs have attained the EBIR qualification, with a further 25 signed up to take the rigorous exam during this congress.

To ensure that the exam is just and objective, CIRSE has enlisted the advice of an educationalist, who is helping the EBIR Committee to fine-tune the examination process. Changes have also been made to allow the EBIR Committee more independence, which will help ensure impartiality.

**IR Curricula**

Radiology training at both undergraduate and resident level still has a disproportionate focus on diagnostic radiology. While the imaging techniques are a crucial basis to both fields, undergraduates are often left unaware of their career options, and residents are often faced with programmes which may vary greatly from institute to institute.

To counter these issues, CIRSE has formed task forces to draw up set IR curricula, at both levels of medical training. The IR Curriculum should be ready by the end of 2013, and the undergraduate programme is already completed and ready for distribution.

**Student Programme**

In a further effort to spread awareness among undergraduates, CIRSE is once again running a Student Initiative, which supports their attendance of the Annual Meeting. This is the third year we are running the programme, and due to the positive feedback received in previous years, we have this year expanded the programme to cover undergraduates from all over Europe. Over 300 students have signed up to attend CIRSE 2012, and following highly successful introductory lectures in Portuguese and English yesterday, we hope that our undergraduate guests are finding plenty to inspire them.

**European School of Interventional Radiology**

So important is education, that a dedicated CIRSE body, the CIRSE Foundation, organises and runs educational meetings throughout the year. A key part of this is the European School of Interventional Radiology (ESIR), which coordinates small courses across Europe, covering a range of themes and catering for a range of abilities, from beginner to advanced.

In recent years, ESIR has been running 9 dedicated courses per year, as well as organising 4-5 special hands-on training courses in cooperation with our industry partners.

**Foundation Grants**

The CIRSE Foundation also offers educational grants to support young IRs as they strive to master their chosen specialist areas. Since 2000, the Foundation has directly invested well in excess of € 700,000 in grants and stipends for young IRs.

Currently, we offer nine Fellowship Education Grants to assist 3-month placements, and five Visiting Scholarship Grants, which support training placements of 2-3 weeks, as well as a number of industry-sponsored grants for specific procedures. The Foundation also offers advice and support to trainees who are looking for a suitable placement. A full list of previous grant recipients can be found on the back page of today's newspaper.

**ICCIR**

The International Conference on Complications in Interventional Radiology is a unique event. In June of this year, the second CIRSE Foundation ICCIR was held in Poertschach, in Southern Austria. The conference deals with IR cases that resulted in death or injury, examining the lessons that can be learned, and aiming to minimise reoccurrence. This is not an easy topic for a doctor to discuss, but it has proved to be a valuable learning tool for those attending, and will hopefully help reduce complications. The personal and intimate nature of the congress limits participants to 200.

**European Conference on Interventional Oncology**

The European Conference on Interventional Oncology (ECIO) is an event dedicated to research and education in the field of interventional oncology. In keeping with the multidisciplinary ethos required by such a complex field, the conference is open to all branches of oncological care, and runs a dedicated "Bring Your Referring Physician" programme. This allows IRs and their clinical colleagues to learn together, and improve the care that they can offer their patients. Due to both impressive attendance figures and a growing demand for interventional oncology education, it has been decided to hold ECIO on an annual basis, with the next event taking place in Budapest next June.

**GEST Europe**

Every second year, the Global Embolization Symposia and Technologies conference is held in Europe, under the auspices of the CIRSE Foundation. This congress allows for a focussed look at advances in embolisation, allowing IRs with a special interest in the field to hone their knowledge and exchange the latest research. The next GEST Europe congress will be held in Prague next May, and promises to be another key educational opportunity for those who practice the many forms and applications of embolisation.

**ESIRonline**

Last, but by no means least, is our online educational resource, ESIRonline. This website offers a veritable treasure trove of IR education, featuring almost 5,000 presentations from past meetings, from electronic posters to special sessions, available to download or view. The enormous scope of this resource has necessitated a new Editorial Board, headed by Prof. Mario Bezzi. The Editorial Board are overseeing the quality and archiving of material, and a new, streamlined ESIRonline will be launched shortly. Until then, all of our presentations can be accessed through our current site, and the presentations from CIRSE 2012 will be joining them very shortly…

Advertorial

COVIDIEN

# MWA
# Painful Adrenal Metastasis of NSCLC

## Information and background

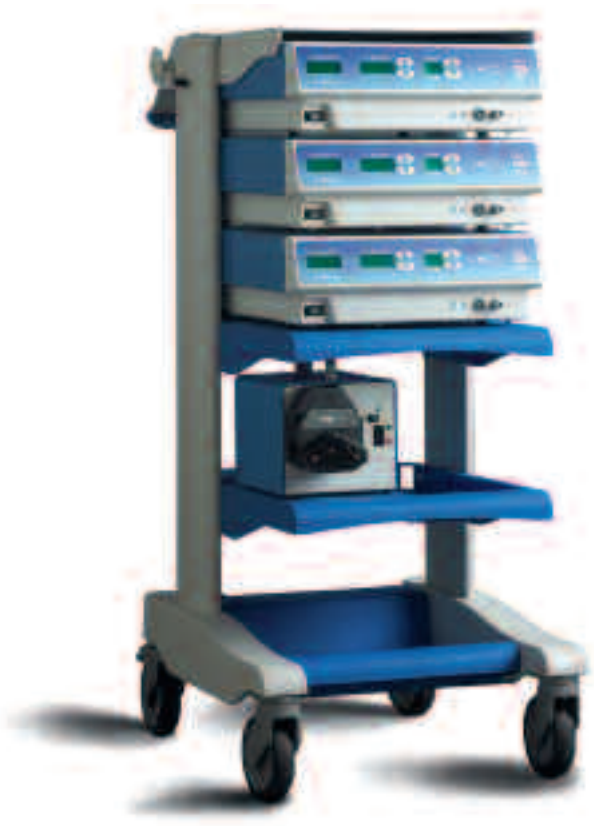
**Date of the procedure:** 9 January 2012
**Country:** Netherlands
**Hospital:** NKI-AVL
**Department:** Radiology
**Physician:** Dr Warner Prevoo
**Email:** w.prevoo@nki.nl

**Acquired experience in ablation**

Thermal ablation (radiofrequency ablation and microwave ablation) has been one of the major topics in interventional oncology at Netherlands Cancer Institute-Antoni van Leeuwenhoek Hospital in Amsterdam, The Netherlands for over 10 years. Main focus is on liver metastases, pulmonary metastases and primary renal tumors. Other fields of treatment: bone and breast.

**Materials and method**

Most patients treated with MWA were not eligible for surgical resection. Patient selection was decided upon in a multidisciplinary board. Pre ablation imaging was performed by ultrasound, CT and/or MRI. Previous treatment, indications, complications and results were also reviewed. MWA was performed with epidural anaesthesia. Most patients were admitted for 1 night. Post ablation follow-up studies were performed by CT scan after 1, 3, 6, 9 and 12 months.



*Evident™ MW Ablation System*

## Treatment

**Organ treated:** Left adrenal
**Type of tumour:** Metastasis of NSCLC
**Size of tumour:** 7 cm
**Image guidance used:** CT

**Patient selection criteria**

The patient in this case is a 52 old female with a very painful metastasis in her left adrenal gland from a NSCLC in her right lung. She needs painkillers 24/7 (Tramadol, Paracetamol). There were no surgical or other options for her so it was decided was to treat her with Microwave Ablation in a palliative setting trying to perform some tumor de-bulking.

**Needle selection criteria**

3 x 17 cm Evident™ microwave antennas.

**Needle insertion approach**

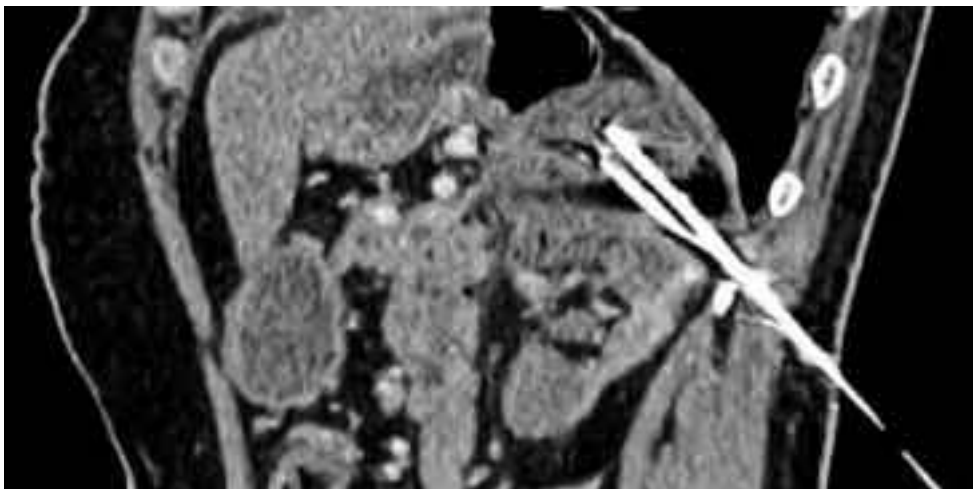
Needle placement was performed under CT-fluoroscopic guidance with the patient in supine position.

**Anesthesia**

Epidural anaesthesia. Pre treatment Kefzol 1500 mg iv was given. Treatment was performed with cardiac alpha and beta blockage.

**Procedural time**

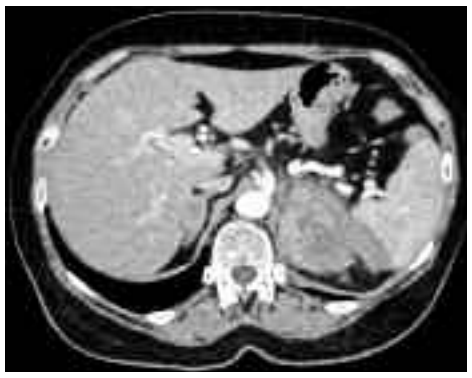
Approximately 60 minutes. 3 antennas were inserted percutaneously under CT guidance. MWA was performed 45 watts 10 minutes. After that the antennas were retracted 2 cm and a second treatment was performed



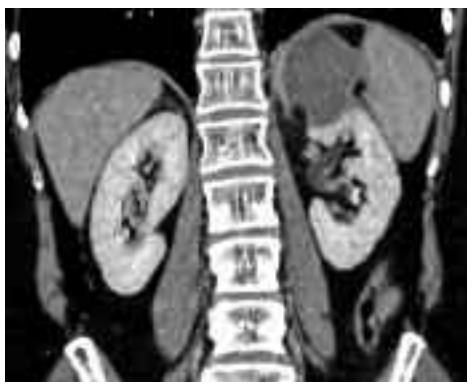
*Picture with needles inserted*

## Results and follow up

FU scan after 1 month showed a left adrenal tumor with only slight enhancement of the rim. No collateral damage. Most important: the patient didn't have any pain anymore and was off pain medication after 1 week.

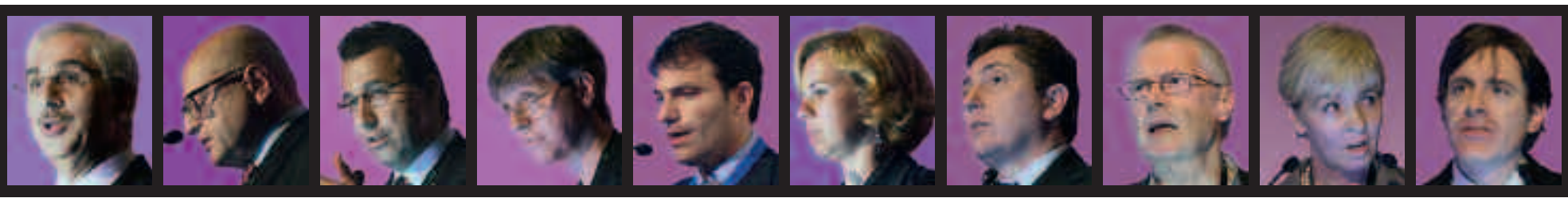


*Pre-treatment picture*



*Post treatment picture after 1 month*

# ECIO 2012 - Showcasing the latest advances in interventional oncology



**The Third European Conference on Interventional Oncology (ECIO) was a ground-breaking one: following the success of previous years, it was announced that the biennial congress will now become an annual fixture in the interventional radiological calendar.**

From April 25-28, 1,120 delegates from more than 60 countries joined us in Florence, Italy for ECIO 2012. These delegates took part in over 40 hours of educational sessions, covering a diverse spectrum of oncological considerations.

**Innovation Goes Annual**

This success underpinned the decision to make ECIO an annual event. The reasons for this shift are self-evident: as a fast-growing and dynamic field with rapidly evolving technologies, it is essential to offer specialists a regular forum for scientific exchange.

An annual ECIO will provide this forum, allowing both interventional radiologists and other cancer specialists the opportunity to stay up to date with advances in medical technology and trials, improve their expertise and meet with top specialists from around the world.

**Something for everyone**

In addition to the many IRs who attended, there were also a significant number of physicians from other disciplines, many of whom attended under the innovative "Bring Your Referring Physician" programme, which aims to facilitate the attendance of medical collaborators such as oncologists, hepatologists, surgeons, nephrologists and gastroenterologists.

Interdisciplinary collaboration is universally recognised as being the cornerstone of effective treatment, and this theme ran throughout the entire congress, with speakers from many oncological backgrounds – not to mention our joint sessions with the International Liver Cancer Association (ILCA) and the World Conference on Interventional Oncology (WCIO).

Recognising the importance of the conference, many representatives of medical device companies took the opportunity to attend and deliver a range of satellite symposia and learning centres. Furthermore, the state-of-the-art technical exhibition space allowed industry partners to showcase some of the latest equipment and devices used in interventional oncology.

**New advances, new formats**

New session formats were introduced to maximise the sharing of scientific know-how, including a "Meet the Professors" format in which expert practitioners discussed how they select and treat patients for given clinical cases. Cases ranged from transcatheter treatment of liver tumours to hepatic and extrahepatic tumour ablation, and e-voting enabled the audience to actively participate.

An Interactive Session on complication avoidance and management also featured e-voting, engaging the audience in a crucial aspect of the specialty, and new Hands-on Workshops allowed participants to practice ablation techniques under the guidance of experts.

With these and established sessions, such as workshops, clinical and technical focus sessions and guest lectures, ECIO 2012 showcased the excellent technical skills, sound clinical management and well-founded research that characterise interventional oncology.

**Honorary lecture**

This year's honorary lecture, *Treating cancer in the transparent patient*, was delivered by Prof. Andy Adam. The lecture dealt largely with the clinical and political aspects of interventional oncology, and Prof. Adam argued that in order to deliver robust and effective treatment safely, interventional oncology (and interventional radiology generally) must remain anchored within the radiology department, as well as developing their natural partnership with radiation oncologists further.

**Top themes**

Amidst the wealth of sessions on offer, two themes emerged as the most popular: interventional management of HCC, for which a wealth of supporting data already exists, and training in interventional oncology. The training session was so popular, that a similar session will be held here in Lisbon, on Tuesday at 10 o'clock.

**Training in Interventional Oncology**

Prof. Riccardo Lencioni (Pisa, Italy) gave a comprehensive overview of the spectrum of interventional oncology, which encompasses more than 20 procedures – with each being further customised and optimised to treat different diseases.

These applications are rapidly growing, especially in "off-limit" organs for which there are limited treatment options, e.g. the pancreas. IO's clinical goals are becoming increasingly ambitious, with curative treatments now being offered.

It also utilises a broad spectrum of agents and mechanisms (biologics, chemical, immune, etc.), creating a complex scenario requiring broad knowledge of medicine. This complexity requires close exchange with other disciplines – not just medical oncology, radiation oncology and surgery, but also branches such as genomics, computational science and pharmacology.

While oncological knowledge is an important requirement, more important still is that the practitioner has an excellent base of IR skills upon which to build.

*Interventional oncology: the pieces of the jigsaw*

Dr. Tony Nicholson (Leeds, UK) examined the development of IR, and the lessons this history teaches us. Given the increasing complexity of the field, the current practice of many interventionalists crossing over directly from diagnostic radiology is not sustainable: procedures such as RFA can no longer be considered a basic core skill of all radiologists.

A crucial task for the interventional oncology community is to develop proper training programmes : a syllabus (outlining the breath of learning that should be covered) and a curriculum (which imparts the depth of knowledge and skills required), a task which CIRSE has already begun.

While interventional and diagnostic radiology will always be intertwined, it is prudent to recognise that IR is moving more notably into the field of minimally invasive therapy.

He also advocated strong involvement in research and data collation, and collaboration with other disciplines.

*Radiotherapy and chemotherapy: what and why the interventional oncologist needs to know*

Dr. Lizbeth Kenny (Brisbane, Australia) started with an overview of what radiation oncologists and other specialists offer the cancer patient.

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.

Multidisciplinary teams (MDT) ensure the best decisions are reached, which is of benefit to the patient, but also relieves individual physicians of the personal burden of making difficult decisions. MDTs allow for accurate staging and decision-making, integrated treatment, and facilitate good working relationships – an important factor in ensuring quality care.

Dr. Kenny advocated reducing costs, and believes that IR as part of a MDT can help this. However, good data is needed to show that IR procedures are equivalent to other treatments, and IRs must work to ensure their credibility as oncology physicians.

*Interventional oncology training at MSKCC*

The Memorial Sloan-Kettering Cancer Center IO training programme was presented by Dr. Stephen Solomon (New York, USA)

MSKCC currently offers 3 types of IR fellowships – a traditional 1-year programme; a 2-year programme that includes 18 months clinical work and 6 months of research; and an IO Research Lab Fellowship lasting 1 year.

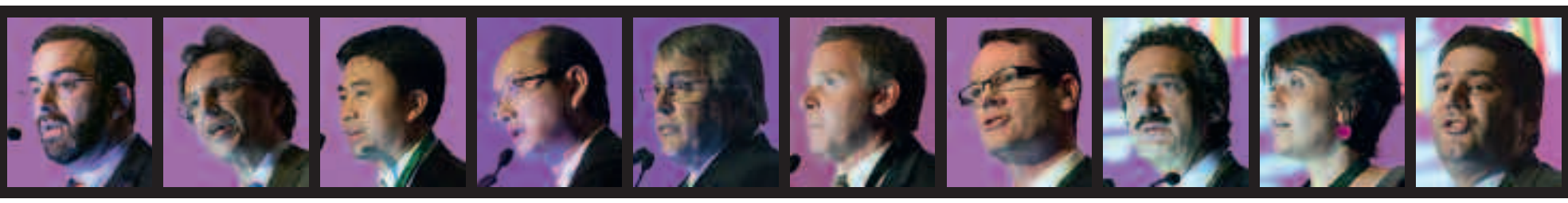
Four clinical fellows are taken at a time, and each is teamed with an attending physician, and given weekly clinical assignments and research time. Logs taken of procedures attended and levels of involvement show that by the end of the year, fellows are capable of being primary operators.

This effective programme is made possible by the IR faculty's visibility, extensive resources and clinical control. Fellows are also trained in history, physical exams and patient communication. The educational curriculum enables fellows to evolve into competent and independent practitioners.

**Education at ECIO**

There is clearly demand for top quality training and education in the field, and ECIO is proud to fill this demand with our new annual programme. Mark your calendars for Budapest, June 2013!

**For information on next year's ECIO in Budapest, visit www.ecio.org**



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1. Hilgard, P., et al. Radioembolization with Yttrium-90 Glass Microspheres in Hepatocellular Carcinoma: European Experience on Safety and Long-term Survival, Hepatology. 2010; 52(5): 1741-1749

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SCIENCE ADVANCING HEALTH

# HIFU in Pancreas & Liver

*Franco Orsi (EBIR)*

**Don't miss it !**
**HIFU in oncology**
**Special Session**
Sunday, September 16, 10:00-11:00
Auditorium 2

The use of focused ultrasound energy for ablating biological tissue was introduced by Lynn et al. in the 1940s and then by the Fry brothers (1951), but the technology was not introduced in clinical practice and further improved at that time, because of inadequate targeting imaging modalities. The advent of more sophisticated imaging methods for guidance has led to a resurgence of interest in HIFU and in its application in cancer treatment.

Unlike radiofrequency, microwaves or cryoablation, which are also used to ablate tumours under image guidance, HIFU is completely non-invasive and can be used to treat tumour tissues that are located deep within the body, if there is an acoustic window allowing for the transmission of ultrasound energy to the target. The US waves interact with the tissue at the targeted area and destroy tumours due to three major phenomena: heating, ischaemia due to coagulation of micro-vessels, and cavitation (the latter only if high energy is delivered).

Various trials are evaluating HIFU for several different types of cancers. Preliminary reports underlined a reduced toxicity with HIFU ablation compared with other ablation techniques because of the non-invasive nature of the procedure. Early devices never used widely in clinical practice were trans-rectal probes, which have been used predominantly to treat the prostate cancer. Extracorporeal devices are significantly larger and can be used to treat a variety of tumours, most commonly intra-abdominal solid ones. As a result, these extracorporeal ablative devices use transducers with a longer focal length and may be guided by both US or MRI for targeting the tumours.

Combination between imaging and ablative technologies for local therapy has made the procedure more reliable and practical, allowing for a safe and feasible application of HIFU treatments in clinical practice. To date, USgHIFU is the only one widely used to treat patients with various kinds of malignancies, including liver, pancreas, breast, kidney, bone, and soft tissue, both in Asia and Europe. MRgHIFU technology has been mainly evaluated in the treatment of bone malignancies and uterine fibroids. Investigation and applications of HIFU under several different image-guidance modalities are growing rapidly worldwide and it is confirmed by the dramatically increased number of papers published on this topic, both on clinical use and basic research.

Among the several indications already investigated in oncology, pancreatic and hepatic cancers represent some of the most interesting fields where HIFU may lead a future role in clinical practice.

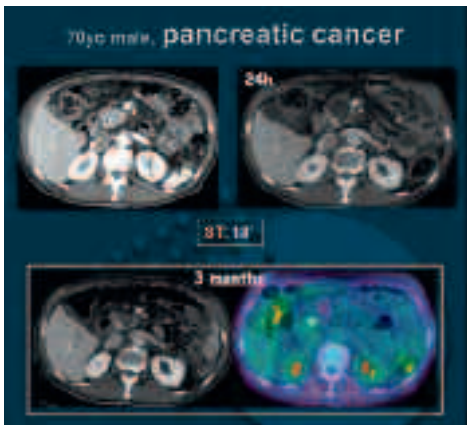



*Fig. 1*

**Pancreas**
Pancreatic cancer is the fourth leading cause of cancer deaths in Europe and in the United States and incidence is rapidly increasing. Unfortunately, most pancreatic cancers are not curable and less than 25% are amenable to surgical resection, which is the gold-standard treatment for this disease. Current treatment options for advanced pancreatic cancer include radiation therapy and chemotherapy, but due to the very poor long-term prognosis, research is continuously looking for alternative treatment strategies that may improve clinical outcomes of patients with pancreatic cancer, both in terms of survival benefit and pain palliation (Fig. 1). Several studies, exclusively from Asian authors, reported local tumour control with no side effects in unresectable pancreatic tumours. Moreover, patients experienced pain relief after HIFU treatment, including severe back pain, within 24-48 hours of the procedure. In a small study, cancer size was reduced by 20-70% in all treated patients, with a median survival time of 11 months in 50% of treated patients, while the other 50% remained alive as long as 16 months following treatment. The average survival time for all patients was approximately one year (11.25 months). At the European Institute of Oncology, 24 patients were selected to be treated with USgHIFU for a proof-of-concept preliminary study. 21 patients had a tumour located at the level of the pancreatic head and 18 were heavily symptomatic. All patients were treated, and MDCT and PET scans at 3 and 6 months showed tumour control in 22 out of 24 tumours; 2 patients were stable. 15 out of 18 patients were palliated and reduction of painkillers was then possible. According to the preliminary experience reported by the literature and by personal series, HIFU seems to provide a promising strategy for managing patients with advanced, inoperable and painful pancreatic cancer.

**Liver**
Several studies on HIFU treatment of HCC and secondary liver metastases in human clinical trials have already been published. Wu et al. used an USgHIFU to treat 68 patients with liver malignancies, showing complete tumour ablation in 30 cases in which surgical excision followed HIFU treatment. HIFU has also been used for palliation in patients with advanced-stage liver cancer by Li CX et al., who observed 87% symptomatic improvement after treatment. In 2005 in Oxford, UK, a total of 22 patients with liver metastases were treated with HIFU revealing a favourable adverse event profile when compared to open or minimally invasive techniques.

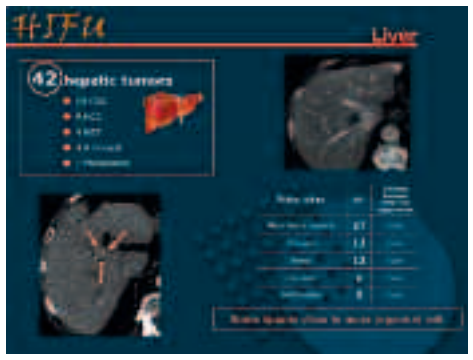



*Fig. 2*

The only randomised clinical trial is from Wu et al., which randomised patients between transarterial chemoembolisation (TACE) alone and HIFU after TACE. The median survival times were 11.3 months in the combined HIFU-TACE group and 4 months in the TACE-only group ($p = 0.0042$). Authors from Chongqing University (China) observed that ablation with HIFU can safely achieve large areas of coagulation necrosis in tumours close to major blood vessels, without damage to vascular integrity. In 21/42 lesions (average tumour size was 7.36 ± 4.25 cm), complete tumour necrosis was achieved in 21 patients (50%) after the first session of HIFU treatment. The average size of the tumours with incomplete necrosis was 9.95 ± 4.23 cm. For the responders, after a median of 16.5 months (mean 23.8 ± 17.2 months) of follow-up, local tumour progression occurred (within 2 cm of the main tumour) in one of 21 patients. The overall survival rates at 1, 2, 3, 4, and 5 years were 75.8%, 63.6%, 49.8%, 31.8%, and 31.8% respectively. Hence the authors stated that HIFU can safely achieve virtually complete necrosis of tumours close to major blood vessels, without damage to vascular integrity.

In another study, the same authors evaluated the long-term follow-up results of HIFU ablation in the treatment of 36 small HCC in 35 patients. The tumour size was smaller than 5 cm for a solitary tumour or a tumour number less than 3, with each tumour > 3 cm in diameter. Follow-up imaging at one month after HIFU showed an absence of tumour blood supply in all treated lesions. The survival rates at 1, 2, 3, 4 and 5 years were 96.3%, 87.5%, 80.2%, 71.3% and 71.3%, respectively. The cumulative tumour recurrence rates at the end of 1, 2, 3, 4 and 5 years were 20.3%, 30.8%, 30.8%, 39.5%, and 39.5%, respectively. No serious side effects or complications were observed in the patients treated with HIFU (Fig. 2).

They concluded that HIFU may show comparable results to other locoregional therapies for the treatment of small HCC. Up to January 2012, 32 patients with 42 liver tumours were treated with HIFU at the European Institute of Oncology: 9 HCC and 33 metastases (24 CRC, 4 NET, 4 breast and 1 from melanoma). Most of the tumours were treated using the HIFU technique due to being a risky site for other percutaneous approaches or because coagulative disorders of patients contra-indicating percutanous techniques. 89% of treated lesions were completely ablated at RM/CT/PET follow-up at 1 year. No side effects were recorded in this series.

In conclusion, data coming from literature and from personal experience in clinical application of HIFU for liver and pancreatic tumours are really promising, and thanks to the future technical improvements and increasing clinical experience, this technology will play a crucial role in oncology, where reduction of invasiveness is the emerging policy in clinical practice.

**Franco Orsi**
*(EBIR)*
*European Institute of Oncology*
*Milan, Italy*

*Dr. Franco Orsi works at the European Institute of Oncology, where he is director of the Division of Interventional Radiology. His interest in interventional radiology began while he was still an undergraduate at La Sapienza University of Rome, from which he graduated* cum laude *in 1990. Dr. Orsi's research includes studies into the use of HIFU in treating numerous cancer types, notably breast. He has been an invited speaker and moderator at many CIRSE and ECIO congresses, as well as serving on the faculty of ESIR courses. He served on the CIRSE Rules committee from 2007-2011, and is the author of nearly 50 peer-reviewed papers.*

Advertorial

# Treating Vertebral Compression Fractures with Dr. Tom Marshall

Senior musculo-skeletal and interventional radiologist at the Norfolk and Norwich University Hospital, United Kingdom.

Regional spinal intervention service which includes vertebroplasty/kyphoplasty for treatment of painful osteoporotic and metastatic vertebral compression fractures.

Executive officer of the BSSR (British Society of Skeletal Radiology) 2005-2008

Co-founder of the national vertebroplasty database and guidelines which are widely utilized throughout the UK.

Co founder of Global Diagnostics UK

**To hear more:**
**Come and meet me at booth 49 on Sunday from 12pm to 2pm**

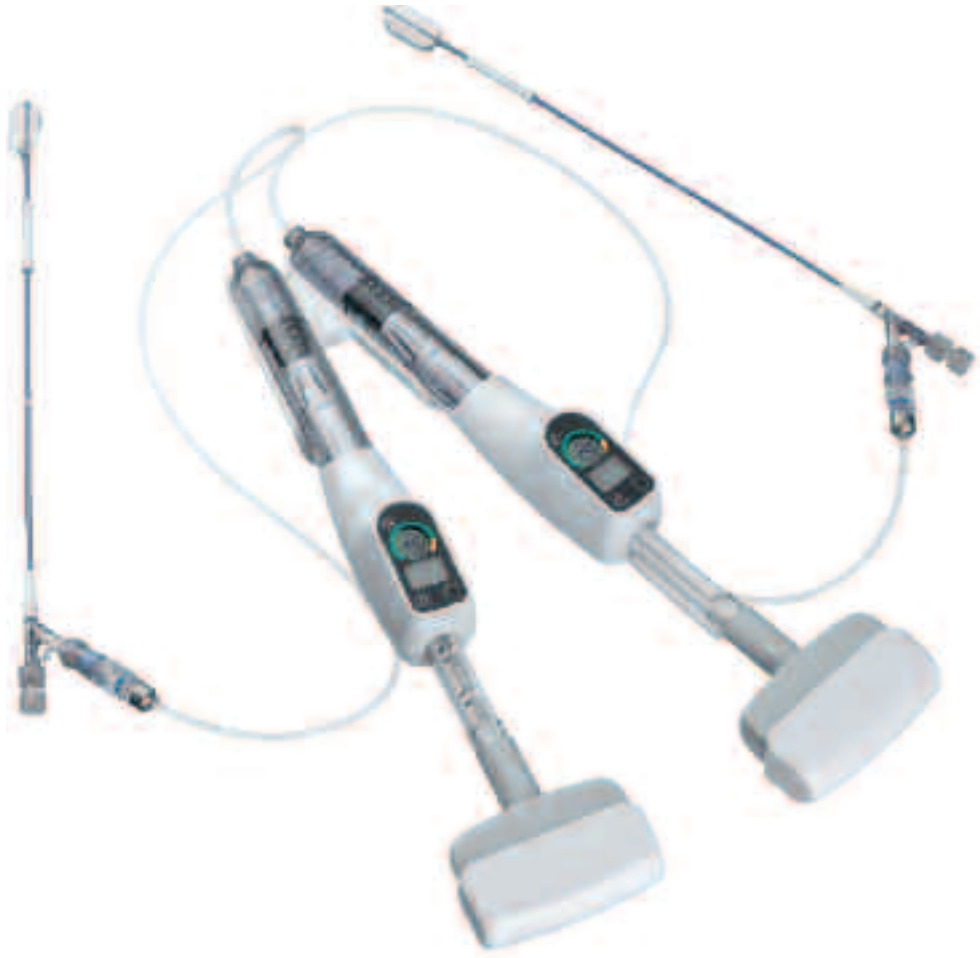
**Q: What are the challenges you face treating vertebral compression fractures in different indications?**
A: The biggest challenge is choosing the appropriate patients to treat. The multi-disciplinary team approach for patient selection by consensus helps in this context. Treating malignant vertebral fractures is also a challenge because of the significantly increased risk of cement leakage. Finally patients with multiple vertebral compression fractures – choosing which levels to treat can be difficult.

**Q: What are the treatment options you consider when seeing patients with vertebral compression fractures?**
A: A significant number of patients with painful osteoporotic fractures can be managed without the need for cement augmentation, using good quality pain medication supplemented by bracing and long acting local anaesthetic injections, targetted fluoroscopically to the posterior paraspinal structures. Those fractures that remain symptomatic or show signs of instability are then treated with vertebroplasty or balloon kyphoplasty. If there is posterior vertebral wall retropulsion with signs of cord or cauda equina compression, spinal surgery is usually indicated with open decompression and surgical stabilization.

**Q: When and why do you use Balloon Kyphoplasty?**
A: I think the treatment of choice for acute traumatic anterior fractures and malignant fractures (metastatic and myeloma) is balloon kyphoplasty. In the former the balloon inflation can allow vertebral body height restoration and sagittal realignment. In the latter creating cavities within the vertebral marrow space with balloon inflation allows safe and controlled cement injection and significantly reduces the risk of cement leakage.

**Q: What should an Interventional Radiologist willing to start Balloon Kyphoplasty be aware of?**
A: Any Interventional Radiologist wanting to undertake balloon kyphoplasty should be aware that good quality training is essential to ensure safe practice. This should then be supplemented with a series of supervised cases to consolidate technical expertise. Developing a good relationship with spinal surgeons, oncologists and pain management teams is important to enable appropriate patient selection. Interventional Radiologists should recognize that Balloon kyphoplasty is an established, proven therapy with a substantial body of level 1 evidence supporting its efficacy in treating vertebral fractures.

**Q: What are the main advantages of using the new less compliant balloon called Kyphon Xpander II?**
A: I have performed a number of cases with the new balloons and have found that balloon expansion is better controlled with predictable radial expansion, reducing eccentric bulging through end plate or vertebral wall defects and enabling the potential for enhanced lift force generation for restoration of vertebral body height.



**Q: As a radiologist you work a lot under fluoroscopy. Are you concerned about being over exposed?**
A: As an interventional radiologist one always has to be aware of the potential risk of radiation exposure. However with careful technique, screening time during procedures such as balloon kyphoplasty can be kept to a minimum with negligible risk to the radiologist.

**Q: What precautions do you take in order to decrease the risk associated with radiation for you and your patients?**
A: Keeping screening time to a minimum (recognizing that continuous screening is required during actual cement injection), good quality beam coning (close collaboration with the radiographer is important here), good quality lead protection and keeping an appropriate distance from the fluoroscopy unit during screening.

**Q: For more than a year now you have been using the Kyphon Cement Delivery System. Do you see any advantage other than delivering the cement outside of the fluoroscopic field?**
A: I have been impressed with the Kyphon CDS; control over cement injection is significantly improved with 0.2ml aliquots of cement being delivered with each button depression. The ability to immediately stop the flow of cement with the saftety button on the device handle has improved the safety of cement injection and increased confidence particularly during complex malignant vertebral fractures. Finally the length of the connecting tube has meant that that I can keep a safe distance from the fluoroscopy unit during screening, minimizing radiation exposure.

**Q: In your hospital you work in collaboration with the surgeons. What advantages do you see in working closely as a multi-disciplinary team when treating patients with vertebral compression fractures?**
A: I think that working as part of a multi-disciplinary team is important for making the right decision about the optimal treatment for each patient. At my hospital the imaging for each case is discussed in the weekly radiology meeting and then the patient is seen by both the interventional radiologist and the surgeon so that the different treatment options can be discussed and the relative risks and benefits outlined. Having a good relationship with the spinal surgeon is also advantageous in those rare cases when I need their help when there has been a complication. Finally as the oncological/traumatic cases become more complex a multi-disciplinary approach is the optimal approach to minimize intra-operative complications and post-operative recovery time.

MICHELSON TECHNOLOGY AT WORK

# The case for vertebral augmentation

*William Clark*

**Don't miss it !**
**Vertebral augmentation**
**Hot Topics Session**
Sunday, September 16, 15:00-16:00
Auditorium 1

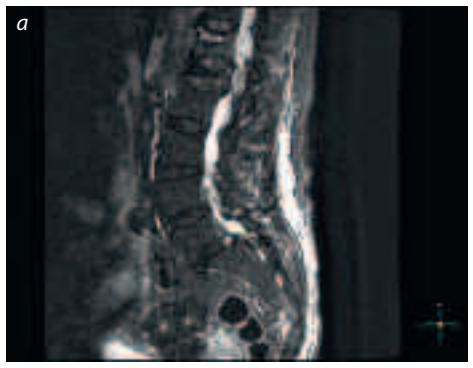
Conflicting evidence for and against the efficacy of vertebroplasty has placed vertebral augmentation in an uncertain position. The open label randomised controlled trial (RCT) findings of vertebroplasty and kyphoplasty are similar with the VERTOS2 trial (vertebroplasty) and the FREE trial (kyphoplasty) reporting similar positive results in a somewhat similar patient co-hort. The arguments surrounding evidence for vertebral augmentation have become centred on the negative findings of placebo-armed RCTs. There are two currently enrolling placebo-armed trials for vertebroplasty in the acute fracture setting which aim to answer this dilemma. Consequently, this article will focus on vertebroplasty.

There is apparent conflict between the "unblinded" randomised controlled trials, which are supportive of vertebroplasty and the two double-blinded (placebo-controlled) trials, published together in the New England Journal of Medicine (NEJM) in 2009. These found no efficacy for vertebroplasty. Many interventional radiologists would argue that patient selection and procedural technique explain the negative findings of the placebo controlled trials. They would say that tighter clinical inclusion criteria and a more generous volume of cement injection would produce more positive results. Evidence-based medicine experts, on the other hand, argue that the positive findings in the un-blinded trials are due to the placebo effect and the intrinsic biases of unblinded trials.

Proper analysis requires the following questions be answered:
- What are the mechanics of vertebroplasty?
- In which patient group should we use it?
- Have the sham trials effectively disproved vertebroplasty for acute fractures?
- What is the status of two placebo-armed trials currently enrolling?

In mechanical terms, there is only one good explanation for the efficacy of vertebroplasty – internal fixation of a non-united painful fracture. Internal fixation is described in general terms on the American Association of Orthopaedic Surgeons (AAOS) web page [1] in the following manner: "Internal fixation allows shorter hospital stays, enables individuals to return to function earlier and reduces the incidence of non-union (improper healing) and mal-union (healing in improper position)." It is curious that the AAOS has recently opposed vertebroplasty, because this is exactly the role of vertebroplasty in properly selected patients. In our clinical experience, vertebroplasty terminates the pain generated by fracture fragment motion, allows early mobilisation and hospital discharge and prevents ongoing vertebral collapse which can otherwise result in mal-union and kyphosis.

Most acute osteoporotic vertebral fractures do not cause severe pain, but some are severely painful. This acute, severe pain is likely caused by fracture fragment motion – as with painful fractures elsewhere in the skeleton. The vertebral body in this circumstance can become deformed and change shape in different positions. Erect radiographs will often show loss of vertebral height compared to supine images. Such fractures will progressively unite over a 6-8 week period (often in a deformed shape) and the acutely severe pain will reduce as the fracture fragments bond together into a coherent bone.



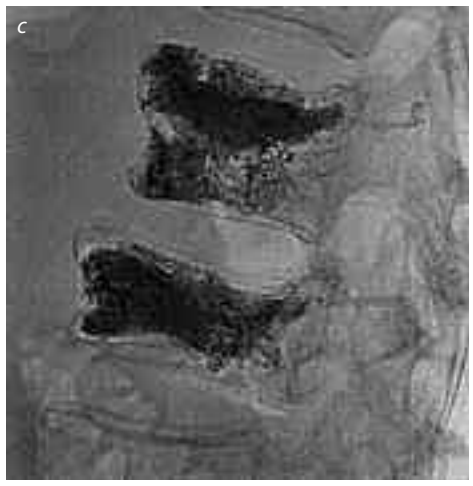




*Fig. 1: Images from a patient enrolled in the VAPOUR trial.*
*(a) MRI shows acute T12 fracture with an osteonecrotic cleft and a sub-acute fracture of L1 which is vertebra plana; (b) shows the bones in prone position prior to vertebroplasty – a gas cleft in the upper T12 and a gas cleft within the vertebra plana L1; (c) shows filling of both vertebrae – with good volume improvement in L1. There is adequate cement volume and distribution to completely support both vertebral bodies and provide good internal fixation.*

Fractures heal with consolidated bone much harder than normal trabecular bone. Once this has happened there is no mechanical explanation for vertebroplasty to provide positive effect. Unless there is non-union (intravertebral gas cleft), then I do not believe that vertebroplasty is effective in fractures greater than 6-8 weeks duration. This was the only true finding of the published sham trials – which are really trials of non-acute fractures.

The ideal patient for vertebroplasty is one with an acute vertebral fracture causing uncontrolled symptoms of pain or immobility. The case for vertebroplasty is strengthened when there is loss of volume in the fractured bone (best assessed with erect radiograph) or an osteonecrotic cleft. Our aim in this patient group is to control the acute pain syndrome and to "rebuild the bone" – often reversing loss of volume and preventing ongoing collapse. The acute pain syndrome caused by osteoporotic vertebral fractures is sometimes trivialised in the literature, but wrongly so. Some patients have uncontrolled pain or are immobilised by the fracture and lose their independence, and this is a major cause of hospitalisation. We use vertebroplasty to facilitate early mobilisation and hospital discharge before the patient loses confidence in ambulating. Some patients are intolerant of narcotic analgaesics and develop constipation or delirium which makes the acute pain syndrome difficult to manage with conservative measures. Others cannot sleep at night, but suffer long nights sitting up in chairs. The aim of the procedure is to relieve the pain and suffering of the acute fracture syndrome. A secondary benefit is restoration of lost vertebral volume and prevention of ongoing vertebral collapse, kyphosis and possibly chronic pain.

Painful, acute fractures (less than 6 weeks old) were poorly assessed by the two published sham trials for three reasons. The first was poor enrolment numbers (26 patients in each trial). The second was exclusion of inpatients – by definition the most symptomatic acute fractures and the group most likely to benefit from internal fixation. The third was inadequate cement volumes for acute fractures. One trial used an average of 2.8cc cement. This is inadequate for an acutely collapsing vertebral body, as well described in article by Bronck Boszczyk [2]. Bone cement behaves as a grout rather than a glue and a certain volume is required to adequately stiffen a vertebral body. Boszczyk calculated the required average volume for the various vertebral levels and found the volume used in the NEJM sham trials as inadequate. These trials were built on the principle that cement volume is irrelevant to vertebroplasty outcome. The converse is true for acute fractures where the unsupported, under-cemented bone will often continue to collapse. Only when the vertebral body is cemented top to bottom, back to front and side to side can we be fully confident that collapse can be arrested and in fact height restored (Fig. 1).

**William Clark**
*St. George Private Hospital*
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*Dr. William Clark is an internationally recognised expert in spinal interventions, who is based in Sydney, Australia. His current trial,* A Controlled Trial of Vertebroplasty for Acute Painful Osteoporotic Fractures*, should throw light upon the controversies that surround vertebroplasty, and will be completed in spring 2013. His other areas of professional interest include treatment of revascularisation of leg arteries and gonadal vein embolisation. Dr. Clark serves as both an editor for CVIR, and as a member of the Vertebroplasty Working Group of CIRSE's SoP Committee. He is currently the President of the Interventional Radiology Society of Australasia.*

The future of vertebral augmentation is in the treatment of severely painful acute fractures to control the acute pain syndrome and for acutely collapsing bones to restore anatomic height and prevent kyphosis. There are two currently enrolling placebo-armed RCTs of vertebroplasty for acute fractures. The VAPOUR (Vertebroplasty for Acute Painful Osteoporotic fractURes) in Sydney, Australia is enrolling osteoporotic patients with uncontrolled acute vertebral fracture pain with at least one fracture less than 6 weeks duration. The patients are a mixture of outpatients and inpatients and have an average fracture age of 2-3 weeks. We have already noted the restoration of anatomy which can be effected by vertebroplasty.

The other trial is the VERTOS4 trial which is a placebo-armed RCT of patients with acute fractures less than 6 weeks duration in the Netherlands. The selection criteria are a little different to the VAPOUR trial with slightly older fractures (average 4-6 weeks) and a higher proportion of outpatients.

These two current trials will be complementary and will provide better evidence for the efficacy of vertebroplasty in acute fractures. In the meantime, I would argue that vertebroplasty should be reserved for patients with acute fractures less than 6 weeks old who have uncontrolled pain and particularly when the bone is collapsing on either supine or erect films. It is useful in such patients to obtain erect radiographs as well as MRI on the same day – the effect of the upright posture on bone deformity can then be assessed.

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# When kyphoplasty and stentoplasty are a better solution than vertebroplasty

*Paul F. Heini*

**Paul F. Heini**
*Orthopaedic Hospital Sonnenhof*
*Bern, Switzerland*

*Prof. Paul Heini is an orthopaedic surgeon who is Head of the Spine Service of the Sonnenhof Orthopaedic Hospital, Bern. Prof. Heini is experienced in treating the full spectrum of injuries that occur in the neck, chest and spine, including cement injections for osteoporosis, intervertebral disc treatments, scoliosis and bone stabilising. Prof. Heini currently performs over 200 vertebroplasty procedures per year. He is an active investigator, and has performed research into the biomechanics of the spinal column, surgical treatment of osteoporotic vertebrae, and clinical outcomes of vertebral treatments.*

**Introduction**
Osteoporotic vertebral compression fractures (VBCF) are frequent and normally treated conservatively. However, in patients with severe pain and/or a progressive collapse on one or several vertebral bodies, stabilisation of the vertebrae with bone cement has become well accepted [1-5].

The procedure consists of the injection of high viscous acrylic cement directly into the fractured vertebral body (VB). Thereby the VB is stabilised and provides pain relief. Several techniques are used to apply the cement:
- Direct injection of the cement into the fracture site (vertebroplasty)
- Creation of a void prior to inject the cement with a balloon (kyphoplasty)
- Height restoration and stabilisation with a balloon-mounted stent prior to the cement injection.
- Injection of the cement directly into a mesh-like balloon (vesselplasty)

**Kyphoplasty vs. Vertebroplasty**
Vertebroplasty became popular for the treatment of vertebral fractures in the late '90s. Initially, its use was associated with significant complications when it was done by inexperienced hands, but on the other hand it turned out to be extremely effective for the treatment of painful osteoporotic compression fractures, as demonstrated in multiple case series and one RCT [4, 6, 7].

In the early 2000s, kyphoplasty was promoted. The principle of this technique consists in the creation of a cavity in the vertebral body with balloons that are inflated and thereafter removed. PMMA is then used to fill up the void and stabilise the VB. In kyphoplasty, high viscous cement has been used from the beginning that was applied with wide cannulas through a plunger system. Initially it was claimed that kyphoplasty allows height restoration, however it turned out that the positioning of the patient shows a higher impact than the balloon – after the deflation the major part of height gain is lost. On the other hand, it could be demonstrated that the risk for cement leakage was dramatically reduced in a kyphoplasty procedure when compared to vertebroplasty. In terms of clinical outcomes, the literature shows similar results for vertebroplasty and kyphoplasty. An RCT comparing conservative treatment with kyphoplasty demonstrated a clear advantage in favour of operative treatment. Kyphoplasty became very popular among trauma and spine surgeons because they usually perform the procedure under general anaesthesia. The company performed a very successful teaching and marketing offensive [8-13].

Meanwhile vertebroplasty has evolved, and specially adapted cements allow the procedure to be performed with similar reliability to a kyphoplasty procedure, and additionally, the cost issue has remarkably reduced the use of balloons. One can summarise that the kyphoplasty procedure for osteoporotic compression fractures no longer has a major advantage and therefore does not represent a better solution.

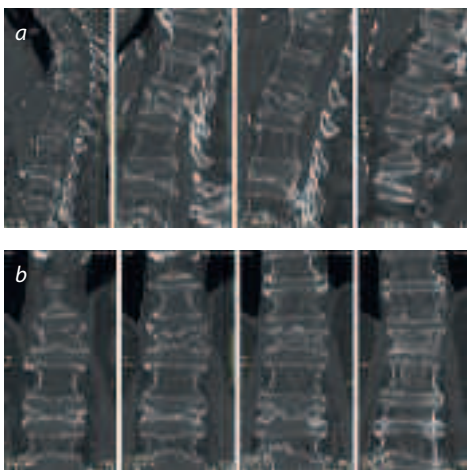
The use of a balloon for a cavity creation might be advantageous when treating pathologic fractures in tumours. Due to the inhomogeneous pattern in tumorous lesions, the cavity might facilitate the cement filling. This is a personal observation however, and there are no clinical data available that address this aspect [14].

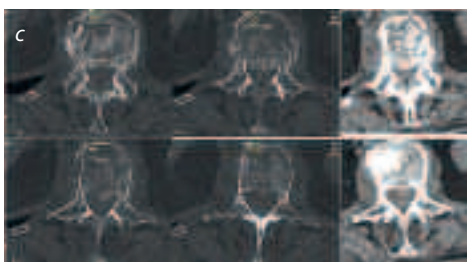
**Stentoplasty vs. vertebroplasty/kyphoplasty**
Stentoplasty represents a percutaneous minimally invasive intervention like a vertebroplasty or kyphoplasty procedure. Two balloon-mounted stents are placed through the pedicles of the fractured vertebral body. The balloons are then deployed by an inflation system under fluoroscopic control until the vertebral height is restored. The balloons are then retrieved and the stent and the surrounding bone are filled with bone cement. Based on extensive in vitro testing, the stent provides a better height restoration in comparison to any other percutaneous procedure including vertebroplasty, kyphoplasty and other devices that are deployed in the vertebral body [15].

The use of the vertebral body stent is indicated in acute and subacute painful VBCF with at least 35% of height loss/15° kyphotic deformity with the potential of reducibility. In consolidated and fixed fractures, the use of a stent is no longer indicated. The fracture type needs to be assessed based on normal X-rays and a CT or MRI scan. The fracture to be treated needs to be mobile (higher collapse in the standing film in comparison to the images in supine position). Therefore the indication is restricted to fractures up to 4 weeks or if there is a so-called non-union (Kummel's disease). Burst type fractures can be treated by a stentoplasty procedure as long as the posterior wall involvement is minor (< 25%) and no neurologic symptoms are present. Respecting these aspects, the treatment of traumatic fractures is possible as well [16].

An important group is fractures related with metastatic lesions and myeloma. The stenting provides a well-defined cavity which allows a more controlled and accurate stabilisation of the vertebral body with bone cement [14].

*Fig. 1: Assessment of fracture based on its severity – the Magerl classification [17]. The decision for a treatment is based on its type and severity and of course, the general state of the patient.*



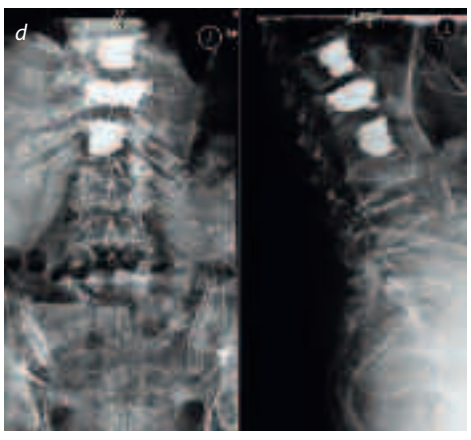




*Fig. 2: This 88-year-old lady presented with immobilising back pain. She lives by herself on a farm, taking care of her 60-year-old daughter who is mentally disabled. The patient is treated with Fentanyl TTS without significant effect. She is furthermore under cumarine, due to a cardiac arrhythmia. She has had osteoporosis treatment for 4 years. The preoperative CT scan demonstrates a situation with multiple fractures, of which L1 is a fresh lesion with a complex fracture pattern (a, b). There is posterior wall involvement with a spinal canal narrowing (which was not clinically apparent) (c). Based on the preoperative imaging, a discussion was launched whether simple cement reinforcement is possible or an internal fixation with cemented screws and cementing of the deficient anterior columns is necessary and would be more appropriate. For a simple vertebroplasty procedure, there were concerns of immediate cement leakage and thus an insufficient stability. The stent might be the better solution, as one can re-align the fragments by its expansion and this would allow a better filling of the vertebral body. Therefore the patient was informed to have either a percutaneous stentoplasty procedure or perhaps even an open intervention, and was put in general anaesthesia for this procedure. A stentoplasty procedure with two large stents that were expanded to its maximum allowed the vertebral body to expand and provided a solid frame for the cement injection. It was possible to fully support the vertebral body and therefore no additional stabilisation was carried out. The filling volume was 10 cc of PMMA, in addition the adjacent vertebrae were prophylactically treated by a vertebroplasty procedure (d). The patient was referred for rehabilitation two days after the procedure and was due to return home after a further 2 weeks with the support of the community nurse.*

The indication for a stentoplasty needs to be based on the "personality" of the fracture and the general condition of the patient. The surgeon has to decide whether a simple vertebroplasty procedure is sufficient or if a stentoplasty is more appropriate – in rare cases, if even a more invasive intervention with open surgery is required (Fig. 1). Therefore any surgeon who is performing this intervention has to be familiar with the treatment of vertebral fractures and be able to provide a correct assessment of the lesion to be treated [17]. For the general assessment of the patient, especially also the medical treatment of osteoporosis, an interdisciplinary exchange with the treating physicians is required and essential.

What has been stated regarding the difference between kyphoplasty and vertebroplasty applies also for vertebroplasty and stentoplasty, with the exception that the height gain with the use of the stent is superior to vertebroplasty and kyphoplasty.

In fresh, complex fracture patterns and fractures with an important deformity, the stentoplasty procedure represents a better treatment solution than kyphoplasty or vertebroplasty. The indication for use of the stent is growing with increasing experience. On the one hand, the treatment of traumatic fractures appears extremely efficient, on the other hand its use for complex lesions in the elderly appears helpful. This shall be demonstrated in two case presentations.

>>

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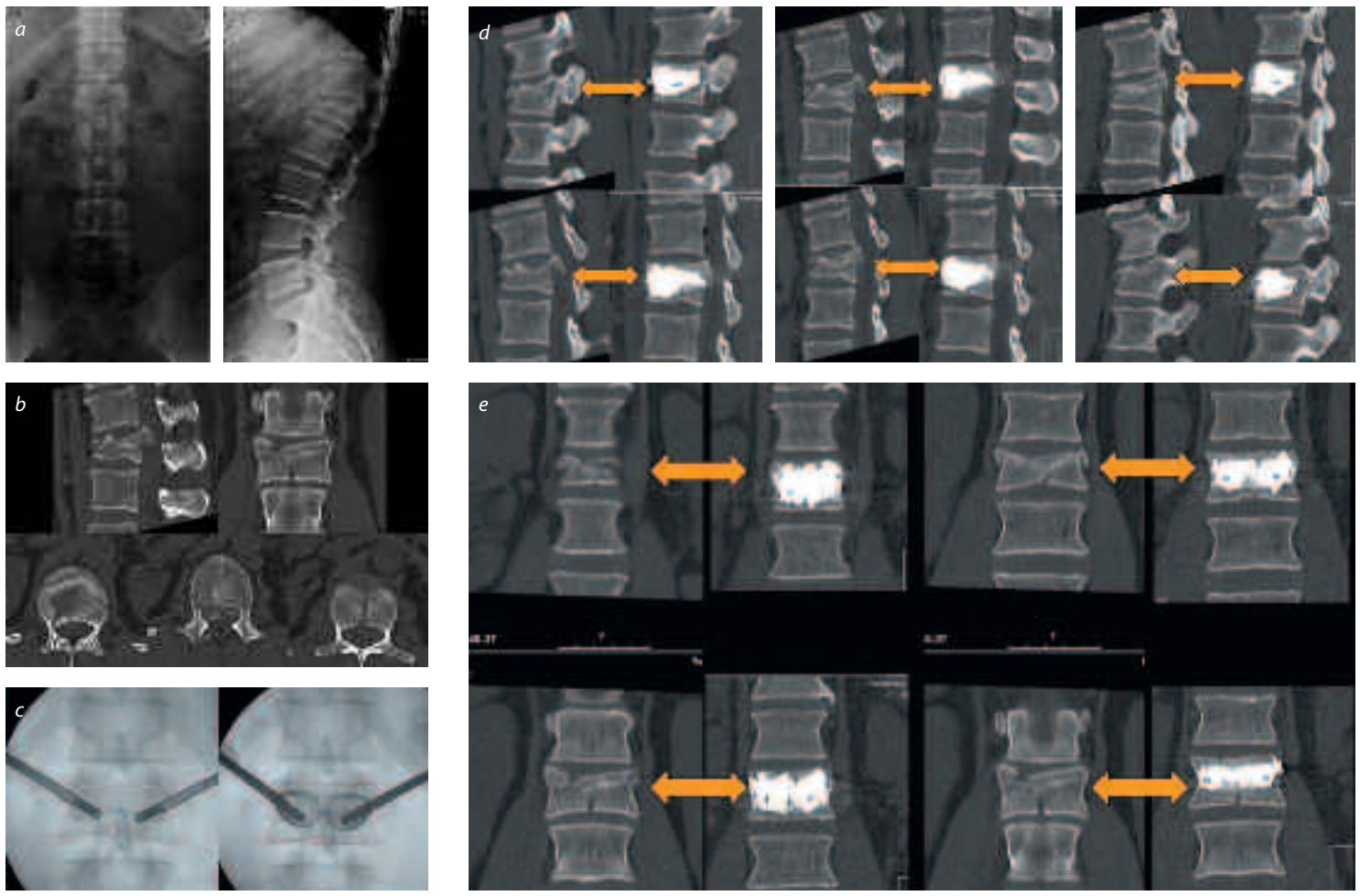


*Fig. 3: This male patient sustained a fracture of L1 during a skiing accident. The patient was able to walk after the accident. A standing film was performed in the emergency room, depicting a severe kyphotic deformity at L1 (a). The CT scan demonstrates a so-called "burst spilt fracture", Magerl Type A3.1 of L1 (b). A percutaneous stentoplasty was performed that allowed a nearly complete restoration of the vertebral body, which is demonstrated in the intraoperative pictures (c) and the postoperative CT scan where reconstructions at identical levels are presented (d, e). The fracture remains in a stable situation at long term follow-up (f).*

Advertorial

COOK MEDICAL

# Techniques for Transluminal Biliary Biopsy: An Interview with Dr. Kamarjit Mangat

**Editorial note:**
Please join Dr. Mangat for an in-depth discussion of this procedure at the Cook Medical Learning Centre on Monday, 17 September at 9.30.

**Q: Please explain the procedure for a percutaneous transluminal biliary forceps biopsy.**

It's performed as part of a percutaneous transhepatic cholangiography (PTC) procedure in cases where there's a suspected malignant growth or a bile duct stricture causing biliary obstruction. You perform the procedure as follows: first, you gain access to the bile ducts and cross the biliary structure in the routine PTC fashion in order to put in an internal/external drain or a metal stent. Once the stricture is crossed, you advance a long, 7.0 French sheath up and into the centre of the stricture. Then, alongside the wire, you introduce the transluminal biliary biopsy forceps, taking central and peripheral samples of the bile duct stricture as needed. These locations, according to our pathologists, are where there are more likely to be malignant cells. The device is simple to use: one button allows you to retract and open the cup. When the cup is open, you can push it forward – not far, only a millimeter or so – with the 7.0 French sheath. Close the forceps to grab some of the abnormal tissue then retract the forceps via the sheath, leaving the sheath and wire in place. Repeat that process two to three times, taking small samples each time. Then finish off the PTC normally, just as if a biopsy hadn't been taken.

**Q: What challenges did you face when you started doing this procedure?**

There's been a learning curve. We formerly used a short 7.0 French sheath and biopsy forceps. The problem was that the forceps wouldn't track along the bile ducts as you wanted because they'd come out the end of the short sheath in the periphery of the bile duct. This made it difficult to reach the stricture itself and get the push to obtain a reasonable core. I modified the initial method by using a long 7.0 French sheath to act as a guide to get the forceps into the right place and act as a pusher once the cup is open. That change has made a massive difference.

The other challenge is to convince your colleagues that it works. With the first 10 procedures we had a reasonable yield, but more importantly, the initial procedures proved PTC success was possible. Since I've changed to the longer 7.0 French sheath, the yield for accurate results has been very good. My colleagues are convinced now, so we're left to our own devices to carry out the procedure as the first option. More often than not we get a positive result, which saves the patient from having to have a separate procedure.

**Q: What results are you seeing with the percutaneous transluminal biliary forceps biopsy compared to percutaneous liver biopsy?**

As these sort of bile duct strictures lack a visible mass, the diagnostic yields from brush/bile cytology were less than 10-15%. In comparison, with this method (excluding the first ten patients, who were within our learning curve) our results are more than 90% accurate.

**Q: What would be your recommendations to a radiologist who wants to start performing this technique?**

First, talk to your local pathologists to inform them that you will be sending bile duct biopsies.

Second, inform your clinicians that it's possible to carry out a biopsy in this way. Third, you need to be aware that to get good results you need to use the longer 7.0 French sheath to push the open forceps into the stricture. That is the key to getting good results.

As with everything, there will probably be a learning curve. Perseverance is key.

Advertorial

# JETSTREAM Atherectomy System Available to European Market

European physicians soon will have an atherectomy system to use in treating peripheral vascular disease – the JETSTREAM Atherectomy System. Bayer HealthCare is planning to introduce the device at the annual meeting of the Cardiovascular and Interventional Radiological Society of Europe (CIRSE).

With individual catheters sized to treat a range of vessel diameters, continuous active aspiration and unique technology allowing its use in thrombus, soft plaque and calcified lesions, the JETSTREAM device offers a significant new therapy option for the millions of Europeans suffering from peripheral artery disease (PAD). Catheters used with the JETSTREAM system are designed for enhanced flexibility in complex anatomy of the legs and offers unique expandable blade technology which enables the physician to treat blockages in vessels from the superficial femoral artery to below the knee with a single device.

"JETSTREAM provides an important alternative to surgery," said Anderson Mehrle, M.D., of Jane Phillips Medical Center in Bartlesville, OK, USA who has successfully used the device to treat more than 200 patients. "We can quickly restore blood flow to the limbs by removing calcifications in diffusely diseased segments – including traditional zones where stents cannot be used – without the higher risks inherent in surgery." Dr. Mehrle is a featured speaker at a CIRSE satellite symposium on September 15, 2012.

The 1.6 mm and 1.85 mm JETSTREAM G3 SF catheters feature small, fixed cutters and longer catheter lengths for better navigation through the tortuous smaller arteries in the lower leg where heavy calcification and Chronic Total Occlusions (CTOs) are common.

All JETSTREAM catheters offer differential cutting technology to cut through stenotic occlusions while preserving the soft tissue of the vessel walls.

While JETSTREAM was developed in the US, this product launch does not represent the first use of the device in Europe. The multi-center, 172-patient clinical study for this technology was conducted at nine centers in Europe. Study investigators successfully used JETSTREAM technology to remove 99 percent of the occlusions. Patients demonstrated significant clinical improvement post-procedure at 30 days, six and 12 months on both Rutherford and ABI scores.

"The addition of JETSTREAM demonstrates Bayer's comprehensive approach and commitment to offer treatment options to the estimated 27 million people in Europe and North America who have peripheral artery disease," said Jack Darby, Head of Bayer's Interventional franchise. "We're thrilled to bring this atherectomy device to the European market alongside our solutions for physicians treating peripheral thrombus including the Medrad Mark 7 Arterion Fluid Delivery System for use in diagnostic angiograms and the AngioJet family of thrombectomy devices for the removal of intravascular thrombus in the upper and lower extremities."


**About JETSTREAM**

The JETSTREAM System is an innovative peripheral revascularization platform designed to restore flow through the many types of plaque encountered in peripheral arterial disease (PAD). Offering a range of sizes to treat vessels above and below the knee, the JETSTREAM System consists of a single-use catheter with control pod and a reusable, compact console that mounts to a standard I.V. stand. The catheter has a unique, front-facing cutting tip that debulks both hard and soft plaque, as well as calcium, thrombus and fibrotic lesions.

The JETSTREAM System is the only atherectomy technology on the market to offer active aspiration, which continually removes excised stenotic material and thrombus from the treatment site and delivers it to a collection bag located on the console.

With unique technologies and features that provide effective atherectomy in difficult arterial obstructions while preserving options for further treatment, the JETSTREAM System gives physicians a powerful tool to help fight the debilitating progression of PAD.

# Visceral Artery Aneurysms: Epidemiology and indications for treatment

*Paulo Vilares Morgado*

**Don't miss it !**
**Visceral artery aneurysms and pseudoaneurysms**
**Special Session**
Sunday, September 16, 10:00-11:00
Auditorium 8

**Paulo Vilares Morgado**
*Hospital S. João,*
*Porto Medical School*
*Porto, Portugal*

*Dr. Vilares Morgado works in the north-western Portuguese city of Porto, where he specialises in interventional oncology. Amongst other research work, he recently led the Portuguese arm of a European RCT comparing the use of a vascular closure device with manual compression. His other professional interests include UFE, aneurysm treatment, hepato-biliary work and tumour ablation. Dr. Vilares Morgado is a familiar face at CIRSE, having been an invited speaker and moderator at several annual congresses, as well as Chairman of the Local Host Committee for CIRSE 2009, which was also held in Lisbon.*

Visceral artery aneurysms (VAAs) are generally defined as aneurysms that involve the branches of the celiac, superior mesenteric, inferior mesenteric or renal arteries. VAAs are rare with a reported incidence of 0.01-0.2% on routine autopsies. However, VAAs are clinically important and potentially lethal; 22% of all visceral artery aneurysms present as clinical emergencies; 8.5% result in death. VAAs include both true aneurysms, limited by all three layers of the arterial wall, which undergo progressive dilation and wall thinning, and pseudoaneurysms (VAPAs), where there is a tear of the vessel wall and a periarterial haematoma, corresponding to a contained rupture of the artery that is lined by adventitia or by perivascular tissues.

Most VAAs are secondary to vessel wall degeneration, and demonstrate deficiency of the arterial media with loss and/or fragmentation of elastic fibres and reduced smooth muscle. Arteriosclerosis, congenital syndromes, fibromuscular dysplasia, gestational alterations, and collagen disorders are other possible causes of VAAs. Pseudoaneurysms can develop as a result of blunt or penetrating trauma, inflammation, infection, vasculitis, and iatrogenic trauma secondary to surgical, endoscopic and radiological procedures.

**Indications for treatment**
As a result of improvements in cross-sectional imaging technology including ultrasound (US), multidetector computed tomography (MDCT) and magnetic resonance imaging (MRI), VAAs are diagnosed with increased frequency. The main indication for treatment is the size of the aneurysm. Because of the lack of data on the natural history of untreated aneurysms, there is debate regarding the size criteria for intervention vs. surveillance. The general consensus is that when a true aneurysm is 2 cm or larger, irrespective of anatomical site, the rupture risk is probably sufficient to indicate treatment. Aneurysms smaller than 2 cm are generally observed by serial imaging close watch.

Other indications for treatment include symptomatic patients and documented evidence of growth of the aneurysm. In addition, most interventionalists treat smaller true aneurysms (1-2 cm or even less) in women of childbearing age, pregnant women and liver transplant recipients; rupture of splenic artery aneurysms in pregnant women is associated with maternal and fetal mortality. Whereas the decision to intervene in a true aneurysm may depend on a size threshold above which the potential for rupture increases, it is generally advised that all pseudoneurysms should be treated, whatever their size or location.

**Splenic artery aneurysms and pseudoaneurysms**
In contrast to splenic artery aneurysms, which are historically the most common VAAs, hepatic artery aneurysms are the most frequently reported VAAs during the past two decades, owing to the growing use of percutaneous biliary procedures, liver transplantation, and nonoperative management of blunt abdominal trauma. True splenic artery aneurysms (SAA) are the most common type of VAA, accounting for up to 60% of all VAAs, with an estimated prevalence of less than 0.1%. They may be associated with other mesenteric aneurysms (3%) and with renal artery aneurysms (4%). SAAs are 3-4 times more common in women than men and are associated with multiparity.

Pseudoaneurysms of the splenic artery are generally caused by inflammation, infection including pancreatitis and trauma. Pseudoaneurysm size does not correlate with risk of rupture. Indications for treatment of SAAs are symptomatic aneurysms (LUQ pain radiating to the left shoulder), aneurysms with a diameter > 2 cm, smaller aneurysms in women of childbearing age, and patients with SAA who are candidates for liver transplantation.

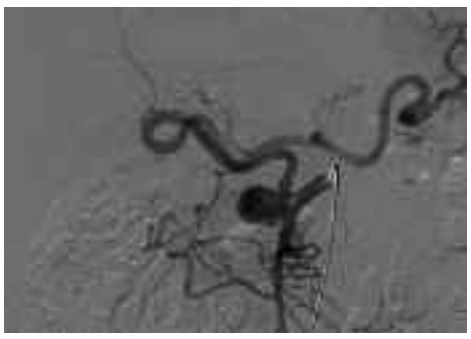

*Fig. 1: Celiac artery stenosis: Collateral via pancreaticoduodenal arcade that developed as a single channel with a saccular aneurysm.*

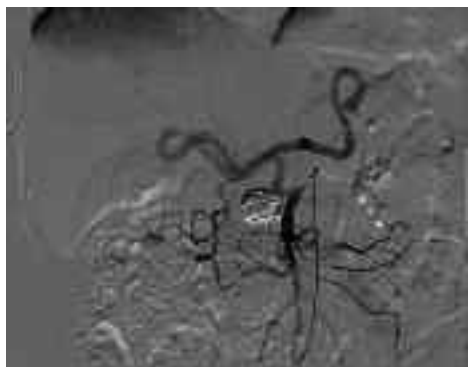

*Fig. 4: Pancreaticoduodenal arcade aneurysm: Coil embolisation with aneurysm packing*

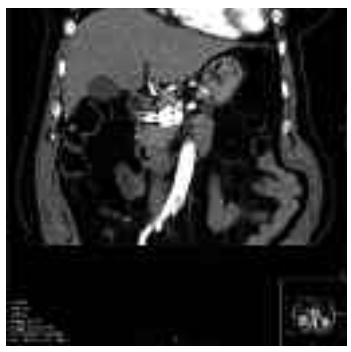

*Fig. 5: Pancreaticoduodenal arcade aneurysm coil-packing: 4 month CTA follow-up*

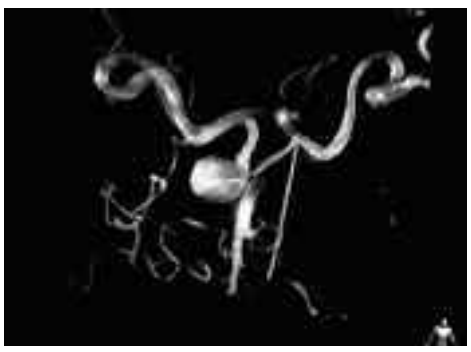

*Fig. 2: Pancreaticoduodenal arcade aneurysm: Conebeam CT image.*

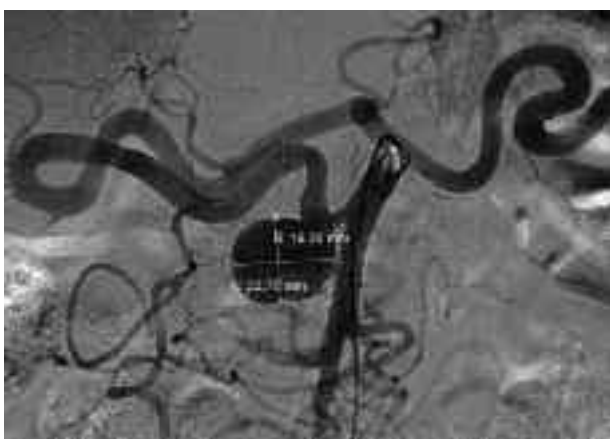

*Fig. 3: Pancreaticoduodenal arcade aneurysm: Coil embolisation planning.*

**Hepatic artery aneurysms**
Hepatic artery aneurysms (HAA) are the second most common true VAA. True HAAs are more common in men than in women (ratio of 3:2), occur mainly in patients aged between 60-70 years, and are commonly associated with hypertension in up to 72% of patients. Up to 31% of patients with HAA have VAAs at other sites, but most HAAs are solitary and are due to atherosclerosis. Other aetiologies include connective tissue diseases like polyarteritis nodosa, fibromuscular dysplasia, and mycotic aneurysms.

True HAAs are four times more frequent in the extrahepatic than the intrahepatic arteries. Fifty percent are the result of percutaneous biliary interventions. The main risk factors for HAA rupture are the presence of multiple HAAs and nonatherosclerotic aetiology. Mortality rates of up to 21% have been reported for ruptured HAA. The majority of HAA are found incidentally on axial imaging. Rapidly expanding aneurysms may manifest with back or abdominal pain. When rupture occurs, haemorrhage is more common into the biliary tree than to the peritoneum, and it may present with jaundice, biliary colic and upper gastrointestinal haemorrhage. The indications for HAA are similar to those for all VAAs.

**Celiac artery aneurysms**
True aneurysms of the celiac artery (CAA) are rare (approximately 4% of all VAA), although true and false aneurysms involving the branches of the celiac artery are more common. True CAAs are usually atherosclerotic in aetiology. Most CAAs are asymptomatic and are found incidentally on cross-sectional imaging. Symptomatic CAAs may mimic acute pancreatitis. CAAs are strongly associated with other aneurysms, including aortic, renal, femoral, and popliteal aneurysms.

**Aneurysms of the SMA**
True and false aneurysms of the SMA (SMAA) are rare. They usually involve the most proximal 5 cm of the SMA. Underlying aetiologies include atherosclerosis, collagen vascular disease, cystic medial dysplasia, polyarteritis nodosa, and infection. SMAA may be an incidental finding on axial imaging or may present with abdominal pain and bleeding. True gastroduodenal aneurysms (GDA) and pancreaticoduodenal aneurysms (PDA) are relatively uncommon, but well described in the presence of celiac artery stenosis or occlusion.

**Other aneurysm types**
Pseudoaneurysms of the GDA and PDA are much more common. They usually have an inflammatory or infectious aetiology like pancreatitis and as with all pseudoaneurysms, they should be treated irrespective of size. Renal artery aneurysms (RAA) account for 22% of all VAAs. The main causes are atherosclerosis, fibromuscular dysplasia and arteritides. The indications for treatment are similar for VAAS elsewhere: aneurysm size of 2 cm or larger, symptomatic aneurysms (hypertension, haematuria, and flank or abdominal pain).

**Treatment and imaging**
Pseudoaneurysms are often associated with trauma, but they may be due to dissection and should in general be treated. Surgical and endovascular treatment of VAAs share the common goal of preventing aneurysm expansion and rupture. Treatment of VAAs, either by surgery or endovascular procedures should be individualised depending on the location of the aneurysm, regional vascular anatomy, and associated or coexisting conditions.

High-resolution multiplanar cross-sectional imaging answers questions concerning access vessel pathology, vessel tortuosity, suitability of a particular treatment strategy, colateral blood flow and may reveal any other aneurysms. Operator ability to treat VAAs requires knowledge of vascular anatomy and collateral pathways, training in the catheterisation of visceral arteries, familiarity with various interventional tools, and experience in complex embolisation and stenting procedures.

Many of the embolic agents used to treat VAAs, such as coils and liquid agents like Onyx (Ethylene vinyl alcohol copolymer), create radiographic artifacts on follow-up imaging and may mask VAA reperfusion or aneurysm sac growth. As a result, there is no agreed protocol for imaging after endovascular treatment. Possible follow-up imaging may include magnetic resonance angiography (MRA), computed tomography angiography (CTA), Doppler ultrasound (DUS) or a combination of these. Scan intervals at 1, 3 and 6-month or, more frequently, annual intervals are recommended, according to location and body profile.

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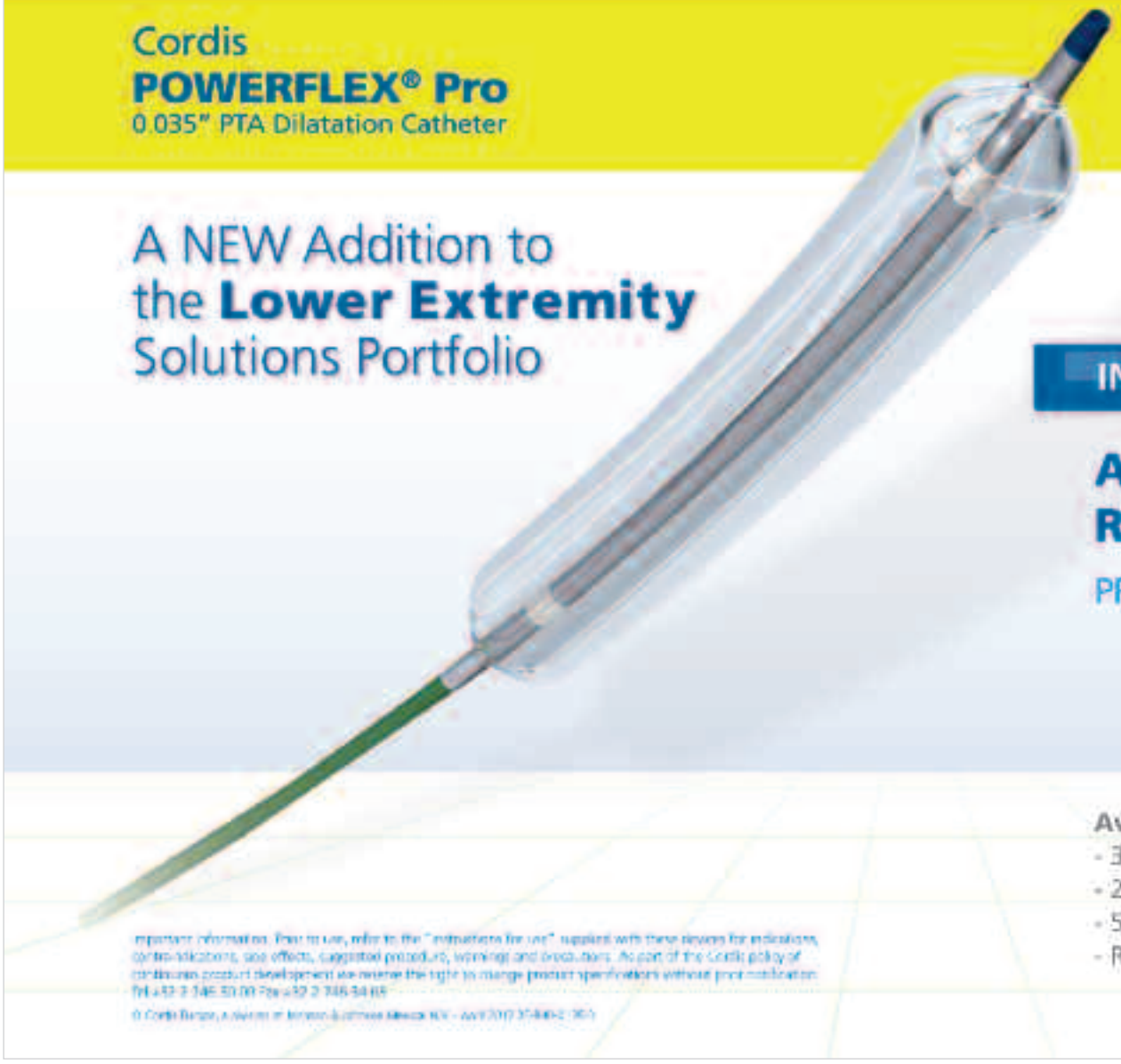

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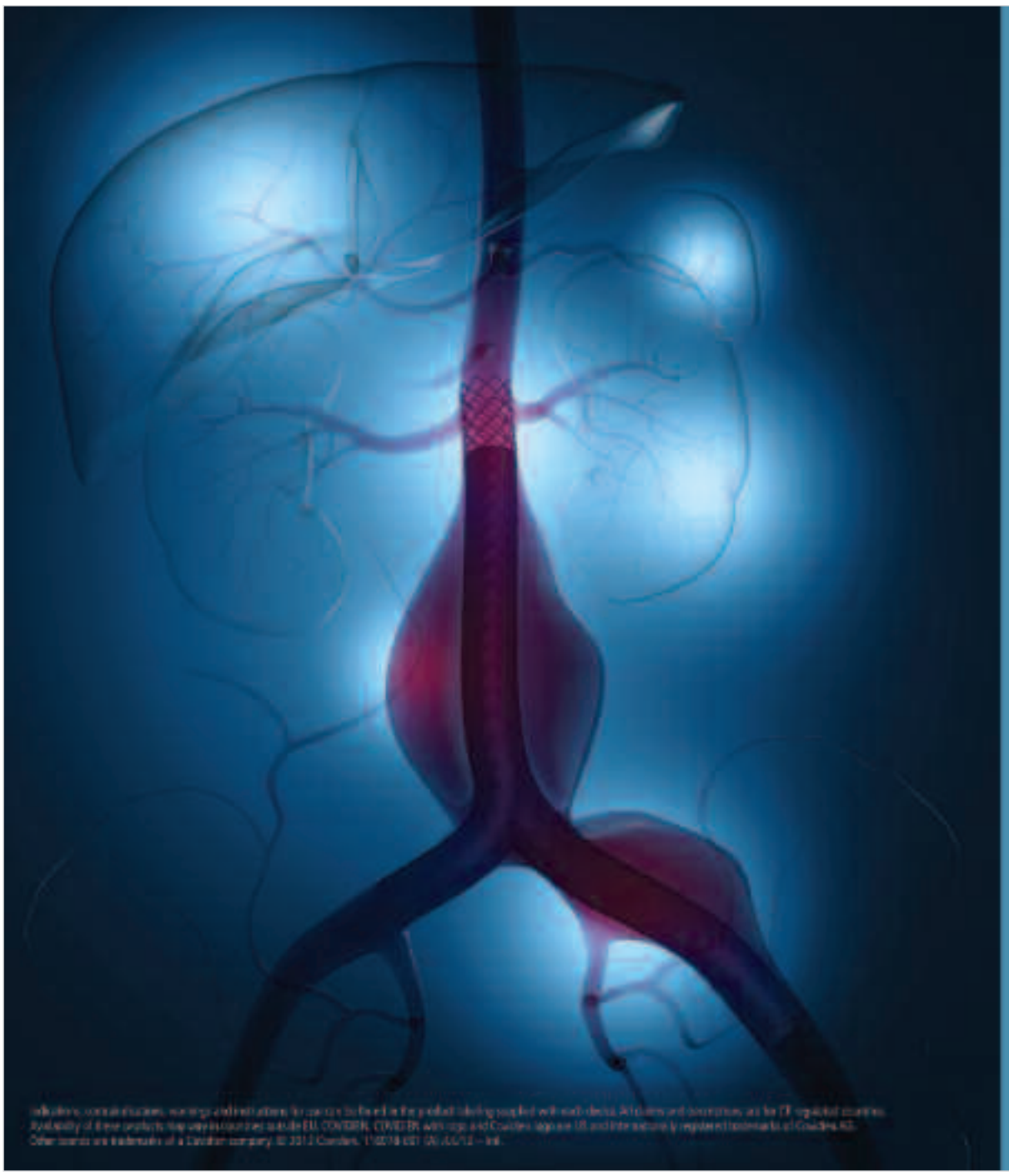

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# Infiltrations & RF in disc treatment

*Dimitrios Filippiadis and Alexis Kelekis (EBIR)*

**Don't miss it !**
**Disc treatments across Europe**
**Special Session**
Sunday, September 16, 08:30-09:30
Auditorium 2

**Dimitrios Filippiadis**
*University General Hospital ATTIKON,*
*Athens, Greece*

*Dr. Dimitrios Filippiadis, a former CIRSE Foundation Grant Recipient, now works at the University Hospital of Athens. His main professional interests are vertebroplasty, oncology, and musculosketal and non-vascular interventions. At last year's CIRSE General Assembly, he was elected to the Membership Committee.*

*His colleague and co-author, Alexis Kelekis, is a renowned expert on bone interventions and teaches at the University of Athens. He is a familiar face at CIRSE, having attended as a speaker and moderator many times, as well as serving on the Scientific Programme Committee since 2010. He has also held positions on the Foundation Advisory Council, and SoP and Rules Committees.*

Low back pain and neuralgia account for the vast majority of cases whenever a painful syndrome is concerned. In western countries, 70-90% of the population will experience a minimum of one episode during their lifetime, with intervertebral disc herniation accounting for 26-39% of these cases. The vast majority of these patients (~80%) will report spontaneous regression of symptoms within 3-12 months with nothing else but conservative therapy. Interventional radiology provides attractive alternatives to these patients, either by means of percutaneous infiltrations (attempt to provide enough time for natural recovery to occur) or as minimally invasive therapies for disc herniation.

Percutaneous image-guided steroid infiltrations (foraminal or epidural) are palliative therapies for symptomatic intervertebral disc herniation which can be performed either in combination to a conservative therapy course or as an intermediate treatment between conservative therapy and minimally invasive percutaneous disc decompression treatments. Percutaneous foraminal or epidural infiltrations are minimally invasive therapeutic or diagnostic procedures that involve injection of corticosteroid with or without local anaesthetic inside the epidural space or around a nerve root. The main purpose of this treatment is to control painful symptoms during the acute phase until natural recovery occurs (in this case injectate consists of 1.5 cc of corticosteroid mixed with 1 cc of local anaesthetic). In our department, usually we mix 1.5 cc of Cortivasol to 1 cc of Lidocaine Hydrochloride 2% and the injectate is delivered by means of a 22 G spinal needle. Concerning cervical spine infiltrations, we do not use local anaesthetic (but dilute a steroid with normal saline) since in cases of epidural dispersion, respiratory depression might occur due to C3, C4 and C5 nerve root anesthetisation. Furthermore, in the thoracic and lumbar spine, infiltrations can be performed as diagnostic tests (1.5 cc of local anaesthetic is solely injected) in order to verify the controlled anatomic structure as a pain source of back pain or neuralgia.

Percutaneous, minimally invasive decompression techniques of intervertebral discs are image-guided therapeutic treatments for intervertebral disc hernia. During these techniques, a trocar is used to puncture the outer annulus of the disc. Through this trocar a variety of thermal, chemical or mechanical decompression devices is introduced inside the nucleus pulposus, with the least disruption of surrounding tissues, assuring its partial removal. Decompression treatments are based on the Hijikata theory (1975) upon the intradiscal pressure effect: "Reduction of intradiscal pressure, reduced the irritation of the nerve root and the pain receptors in the annulus and peridiscal area". In other words, removal of a small nuclear volume results in significant intradiscal pressure decrease. Mechanical decompression is achieved by means of mechanical high-rotation-per-minute devices (with spiral tips or metallic wires/laminae which promote disc removal) or by a pneumatically driven, suction-cutting probe. Thermal decompression is achieved by laser fibre, plasma energy (coblation) electrode and radiofrequency coil/electrode. The latter technique is the only one during which the coil is deployed not at the nucleus pulposus, but at the annulus fibrosus aiming at nerve endings destruction. Chemical decompression is achieved by means of alcohol gel (discogel) or ozone intradiscal injection which causes dehydration and breakdown of nucleus pulposus.

Indications for percutaneous infiltrations include radiculgia without neurological deficit, postoperative patients with recurrent pain, equivocal neurological examinations, spinal nerve root compression or inflammation. Indications for percutaneous decompressive disc therapies include the presence of symptomatic (refractory to 4-6 weeks conservative therapy course) intervertebral disc herniation occupying less than 1/3 of the spinal canal as confirmed by Magnetic Resonance Imaging (MRI). Contraindications include local or systemic infection, uncorrected coagulopathy or a patient unwilling to provide informed consent. Specifically for percutaneous decompressive disc therapies presence of sequestration is an absolute contraindication.

It is suggested that image-guided percutaneous epidural steroid infiltrations are more effective concerning pain reduction and mobility improvement than placebo, local anaesthetic alone or bed rest. Following an average of 6-13 days after the infiltration session, 65% of patients experience at least 50% pain reduction, an improvement that lasts for an average of 9-15 months. Meta-analyses upon epidural steroid infiltrations report a 14% positive treatment effect over placebo and provide evidence suggesting that these injections constitute an excellent therapy for pain management. In addition, it is reported that 30% of surgical candidates decide against surgery after epidural infiltration sessions.

The mean success rates for all decompression techniques is approximately 85%, whereas the mean potential complication (clinically significant) rate is < 0.5%. Image-guided minimally invasive decompression techniques in comparison to conservative therapy seem to result in statistically significant better and longer-lasting outcomes concerning pain reduction and mobility improvement. Infection (spondylodiscitis) with or without epidural abscess is the most commonly encountered complication of the decompression techniques (0.24% per patient and 0.091% per disc of patients). Specifically thermal decompression techniques are governed by a 2.5% complication rate which mainly includes the possibility of thermal discitis (sterile inflammation of vertebral end-plates due to damage during the session). Less frequently encountered complications include material failure, allergic reaction, reflex sympathetic dystrophy, puncture of thecal sac, haemorrhage and neurological injury, pneumothorax and vasovagal reactions.

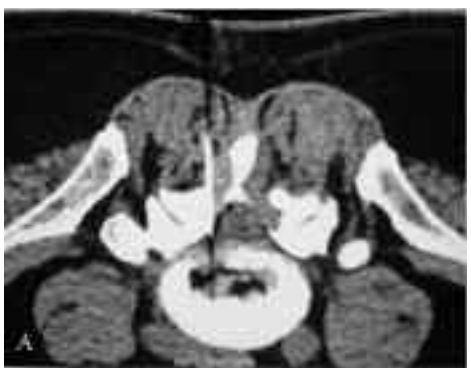

*Fig. 1a: CT-guided percutaneous epidural infiltration – air is used as contrast medium to verify the needle's desired position within the epidural space and outside the dura.*

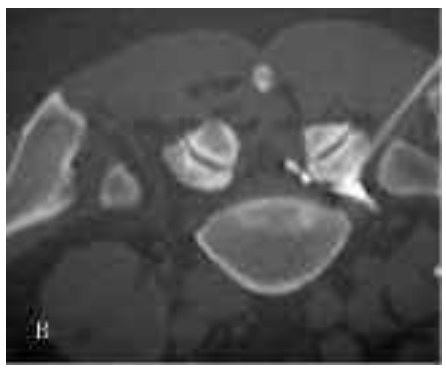

*Fig. 1b: CT-guided percutaneous trans-foraminal infiltration – iodinated contrast medium is used to verify the needle's desired position within the foramen and illustrate the potential dispersion of the injectate.*

*Fig. 2: Fluoroscopy guided foraminal infiltration in a patient with posterior fixation and recurrent neuralgia.*

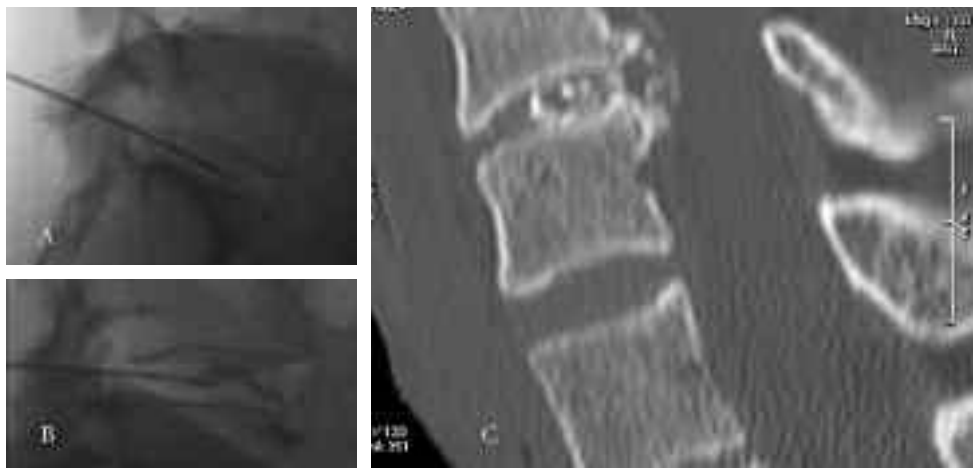

*Fig. 3: (a) Fluoroscopy-guided mechanical decompresion of L5-S1 intervertebral disc.*
*(b) Fluoroscopy-guided chemical decompresion of L4-L5 intervertebral disc (different patient). Injection of discogel is performed under continuous fluoroscopic control.*
*(c) CT scan, saggittal reconstruction – patient post discogel injection in a C5-C6 interbertebral disc. Notice the dispersion of discogel within the nucleus pulposus and the herniation as well.*

| Decompression Type | Method | Definition |
|---|---|---|
| MECHANICAL DECOMPRESSION | Automated Percutaneous Lumbar Discectomy (APLD) | Pneumatically driven, suction-cutting probe |
| | Percutaneous disc decompression (PDD) | Mechanical high-rotation-per-minute device with spiral tips or metallic laminae |
| THERMAL DECOMPRESSION | Percutaneous Laser Decompression | Laser energy vaporises a small volume of nucleus pulposus |
| | Intradiscal electrothermal therapy (IDET) | Flexible thermal resistive coil (electrode or catheter) coagulates the disc tissue with radiant heat |
| | Intervertebral Disc Nucleoplasty | Bipolar radiofrequency energy causes molecular dissociation and dissolves nuclear material |
| CHEMICAL DECOMPRESSION | Discogel | Gelified ethanol causes dehydration of nucleus pulposus |
| | Ozone therapy | Ozone's chemical properties and the reaction of hydroxyl radical with carbo hydrates and amino acids leads to breakdown of nucleus pulposus |

In conclusion, image-guided foraminal or epidural steroid infiltrations are safe and efficient diagnostic and therapeutic techniques for the management of neck/back pain and neuralgia, especially when these symptoms are refractory to the initial conservative therapy. Minimally invasive, image-guided, percutaneous decompression techniques yield significant and long-lasting results upon pain reduction and mobility improvement in symptomatic patients with disk herniation. These techniques nowadays are considered either first-line therapies or attractive alternatives to surgical treatments due to their high success rates (~ 85%) and the low potential complication rates (< 0.5%).

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**Don't miss it !**
**Controversies in EVAR**
**Special Session**
Sunday, September 16, 08:30-09:30
Auditorium 6

# The Limitations of EVAR

*Peter R. Taylor*

**Peter R. Taylor**
*Professor of Vascular Surgery, Guy's & St Thomas' NHS Foundation Trust, London, UK*

*Prof. Peter Taylor is a noted vascular surgeon at the Guy's and St. Thomas' NHS Trust, London. He is a Past-President of the Vascular Society of Great Britain and Ireland, and during his tenure, established strong reciprocal links with the British Society of Interventional Radiology. He has a particular passion for arterial interventions, and has worked closely on endovascular therapies with Prof. Andy Adam and Dr. John Reidy.*

*He joins us at CIRSE to discuss one of the ongoing IR controversies: the use of EVAR for AAA. He will be debating this matter with former CIRSE President, Prof. Johannes Lammer.*

The advent of endovascular repair for abdominal aortic aneurysms, which was first performed by Volodos in the Ukraine and subsequently Parodi and Palmaz in Argentina during the last two decades of the last century, was met with unbridled enthusiasm. Patients seemed to tolerate the procedure well, they left hospital early, the use of intensive care beds was not necessary and the blood loss did not require transfusion. However the early devices were clearly untested prototypes and were inserted in all sorts of unsuitable aneurysms and patients. Recommendations for oversizing the device varied widely between 5-30% related to either the inner or the outer diameter of the aorta. These early devices were prone to stent fracture, migration, fabric tears and modular disconnection.

Other problems were apparent even at this early stage. One single-piece device was withdrawn from the market due to an unacceptably high rate of limb occlusion from twisting of the unsupported fabric. Almost every device has been withdrawn from clinical use and either abandoned or redesigned and introduced back into clinical practice. The most common modification was the introduction of active fixation of the device to the aortic wall in the form of hooks, barbs, pins or anchors to overcome the haemodynamic forces causing distal migration. The degree of overlap for modular devices was increased considerably from the early 0.5 cm recommended in some. The necessity for placing fabric from just below the renal arteries to the iliac bifurcation became apparent if good results were to be obtained.

The advent of the EVAR trials in the UK and the DREAM trial in Holland during the last decade of the 20th century tested EVAR against open repair in randomised controlled clinical trials. The results were initially encouraging. EVAR was associated with lower overall mortality and lower aneurysm-related mortality at 6 months. However the longer term results make disappointing reading for the endovascular enthusiast. EVAR has no survival advantage in terms of both overall survival and aneurysm-related death at 2 years. The catch-up is made up of an excess of cardiovascular deaths and more importantly, an increased incidence of aneurysm rupture in the long term. Long term surveillance is therefore mandatory for endovascular devices. However, one of the most worrying aspects of the late results of the trials is that surveillance may not detect all patients at risk of rupture post EVAR. In contrast the excellent long term results for open repair, with no reported death from aneurysm rupture, suggest that a CT scan should be performed every 5-10 years.

That is not the only bad news for EVAR. In cost-effective analyses, EVAR is more expensive in the short term and is associated with more complications and re-interventions than open surgery in the long term. This was also found in the DREAM trial, which included abdominal complications such as bowel obstruction and incisional hernias, which the EVAR trials excluded. EVAR is also associated with lower quality of life than open repair (apart from the first three months) so that in every cost-effective analysis EVAR is dominated by open repair. This is particularly concerning given the economic crises which afflict the economies of so many countries at present. Can we really afford to put patients at risk of continued rupture with no real advantage in terms of cost or quality of life? Can we really continue to spend money on inferior methods of treatment?

What are the changes since the randomised trials reported? Sadly the cost of new devices has not decreased as some predicted. They cost the same or more than their predecessors. Have we learnt how to use endografts? Data from many sources suggest that devices are being inserted inappropriately into infrarenal abdominal aortic aneurysms. Failure to adhere to the manufacturer's instructions for use has been shown to be associated with continued aneurysm growth and an increased risk of rupture. Poor patient selection may be made on grounds other than the operators' experience or bias.

The randomised trials showed that EVAR does worse than open repair in both elderly patients and in those with large aneurysms. Clearly young patients with a long life expectancy are not suitable for EVAR due to the high incidence of re-interventions. A debate last year at CIRSE voted clearly in favour of open repair in this group of patients. So what is the precise age at which EVAR is applicable if it's not old and not young? The EVAR 2 trial showed conclusively that patients unfit for open repair derived no benefit from endovascular repair in terms of survival when compared to a group of patients treated medically. So fit patients don't benefit from EVAR neither do unfit patients. It would seem therefore that EVAR should only be used in a tiny proportion of patients with small aneurysms.

There's more: anatomical criteria are paramount in selecting patients for endovascular repair. Neck length, diameter, shape and tortuousity are important in determining suitability for EVAR. Likewise iliac diameter, calcification and tortuousity can make endovascular repair impossible. In contrast, the only criteria for open repair is fitness for surgery. A short neck can be dealt with by simply moving the proximal clamp above one or both renal arteries. Likewise complex aneurysms involving the common and internal iliac arteries can be easily dealt with while maintaining perfusion of one or both internal iliac arteries.

What are the other advantages of open repair? It can be applied to patients not suitable for EVAR, it is cheaper, it is associated with less complications and re-interventions and the risk of aneurysm rupture in the long term is negligible so that graft surveillance is unnecessary. Open repair is also more cost-effective than EVAR, which may be important if your country isn't supported by Germanic economic policies.

These facts add an air of sobriety to the endovascular party which was in full swing during the first decade of the new century. The mantra "Stent Everyone" is suddenly revealed as wildly inappropriate and even life-threatening. How long before a clinician is taken to court for treating a patient (who was a good candidate for open repair) with EVAR who subsequently died of a ruptured aorta? It's time for a radical rethink in assessing the role of EVAR in treating infrarenal abdominal aortic aneurysms. Facts show that the role of EVAR in treating infrarenal aortic aneurysms is and should be limited.

# Today's Featured Papers

*will be presented in the Free Paper sessions, taking place from 16:15-17:15*

**FP 1401**
**Dialysis intervention and venous access**
**Paclitaxel-coated balloon angioplasty versus plain balloon dilatation for the treatment of failing dialysis access: a prospective randomized controlled trial**
*K.N. Katsanos, P.M. Kitrou, S. Spiliopoulos, A. Diamantopoulos, D. Karnabatidis, D. Siablis; Patras/GR*
**Room 3B**

**FP 1402**
**Embolotherapy 1**
**Prostatic arterial embolization: criteria to predict treatment outcome**
*T. Bilhim, J.M. Pisco, H. Rio Tinto, L. Fernandes, J.A. Pereira, M. Duarte, L.C. Pinheiro, A.G. Oliveira, J. O'Neill; Lisbon/PT*
**Auditorium 8**

**FP 1403**
**Experimental work in IR 1**
**Mid-term recanalization after embolization using hydrogel-coated coils versus fibered coils in an animal model**
*J.-P. Pelage[1], S.H. Ghegediban[2], A. Fohlen[1], J. Namur[2], A. Laurent[3], M. Wassef[3]; [1]Caen/FR, [2]Jouy-en-Josas/FR, [3]Paris/FR*
**Auditorium 4**

**FP 1404**
**Imaging**
**Preinterventional cerebral blood volume (CBV) mapping predicts final infarct volume in patients with acute cerebral artery occlusion (MCA or ICA) and endovascular recanalization**
*M. Wagner, D. Falk, R. du Mesnil de Rochemont, O.C. Singer, J. Berkefeld; Frankfurt/DE*
**Room 1.15**

**FP 1405**
**Oncologic intervention 1**
**Reevaluating the role of metallic stenting in tracheobronchial pathology**
*A. Laborda[1], J.M. Lozano[2], C. Serrano[1], H. Caballero[2], A. Sebastian[1], I. De Blas[1], M.A. de Gregorio[1]; [1]Zaragoza/ES, [2]Bogota/CO*
**Auditorium 7**

**FP 1406**
**Oncologic intervention 2**
**Intra-arterial infusion of Irinotecan-loaded Dc beads (DEBIRI) versus intravenous chemotherapy (FOLFIRI) for liver metastases (LM) from colorectal cancer (CRC): conclusive results of a randomized phase III study**
*G. Fiorentini[1], C. Aliberti[2], P. Coschiera[1], M. Tilli[3], L. Mulazzani[1], D. Rossi[1], A.M. Baldelli[1], V. Casadei[1]; [1]Pesaro/IT, [2]Padova/IT, [3]Ferrara/IT*
**Auditorium 6**

**FP 1407**
**Peripheral vascular disease intervention 1**
**5-year THUNDER angiographic follow-up: patients with PAD treated with uncoated balloons versus Cotavance® Paclitaxel drug-coated balloons (Paccocath)**
*G. Tepe; Rosenheim/DE*
**Auditorium 2**

**FP 1408**
**Renal and visceral artery intervention**
**Role of Symplicity system for the treatment of arterial hypertension resistant to conventional therapy**
*G. Simonetti, A. Spinelli, R. Gandini, V. Da Ros, V. Gisone, M. De Francesco, L. Violo, N. Di Daniele, R. Lauro; Rome/IT*
**Auditorium 3**

**FP 1409**
**TIPS, biliary and portal vein intervention**
**Use of biodegradable biliary stent: initial experience in 14 benign strictures**
*M.E. Giménez, D. Berkowski, M. Palermo, P. Cordoba, A. Ferreres, J.M. Verde; Buenos Aires/AR*
**Room 3.A**

# Making History – Shaping the Future

## The Czechoslovak Congress of Radiology, 50 years on

**The Czech Society of Interventional Radiology invites you to mark the 50th anniversary of the first Czechoslovak Congress of Radiology**

Dear Friends and Colleagues,

Allow me, on behalf of the Board of the Czech Society of Interventional Radiology, to cordially invite you to the annual congress of the Czech Society of Interventional Radiology, to be held in Karlovy Vary (Carlsbad) on May 30 – June 1, 2013.

Karlovy Vary, a world-famous spa city, and its Grandhotel Pupp are intimately related to the history of international interventional radiology. It was here that in 1963, Prof. Charles Dotter gave the first lecture on catheter-based treatment. The year 2013 marks the 50th anniversary of that memorable event *(Congressus Radiologicus Čechoslovacus)*.

By once again choosing Karlovy Vary and the Grandhotel Pupp as the congress venue, we have a unique opportunity for a jubilee meeting which will attract not only interventional radiologists, but also representatives of other medical professions related to interventional procedures. The list of invited speakers features many intellectual successors to Charles Dotter, such as Josef Rösch (DVD presentation), Fred Keller (Rösch Lecture), John Kaufman and Jiri Vítek. Other prominent speakers will include top representatives of the Cardiovascular and Interventional Radiological Society of Europe (CIRSE), such as Michael Lee, Anna-Maria Belli, Elias Brountzos and Jan Peregrin. The ceremonial programme (in English) scheduled for Friday will include lectures exploring novel procedures and techniques in interventional radiology, as well as a round-table discussion.

A traditional part of the congress is a range of presentations and workshops delivered by representatives of companies related to the field. The Saturday programme (held in Czech) will provide enough space for lectures given by other medical and non-medical professionals. The event will also provide an excellent opportunity for participants to meet representatives of a wide variety of exhibitors.

Last but not least, the congress will serve as a place for attendees to mingle informally and talk to friends and colleagues. The celebration of the 50th anniversary will include a busy social programme.

Dear colleagues and friends, you are cordially invited to a spa city of international repute and the Grandhotel Pupp, one of the oldest hotels in Europe, and the most luxurious in the Czech Republic. Come and join us for the exciting atmosphere of our annual international congress in the enchanting setting of Karlovy Vary spa!

*Assoc.Prof. Miloslav Roček, MD, PhD, FCIRSE*
*Congress President*
*www.csir2013.cz*

**Congressus Radiologicus Cechoslovacus Karlovy Vary (Carlsbad) 1963**
***How, when and where it all began***

From May 30 – June 1, 2013, the Czech Society of Interventional Radiology will be celebrating the 50th anniversary of the first Czechoslovak Radiological Congress. It will be held in the very same building, the Grand Hotel Pupp in Karlovy Vary, where the 1963 Congress was held (Fig. 2). I was secretary of the 1963 Congress and its happenings are, even after 50 years, still vividly entrenched in my mind (Fig. 3).

It was a special meeting that had two goals. First, we wanted to show, to both the national and the many international participants, the high quality of Czech angiography. And secondly, we wanted to obtain new ideas from prominent European and American angiographers for future work. A great part of the meeting concentrated on diagnostic angiography. We learned a lot. The most innovative ideas were presented by Charles T. Dotter from Portland, Oregon (Fig. 4). Originally, we invited him for a 30-minute presentation. He accepted, but wrote me (we were pen pals by that time!) that a 30-minute talk would not justify making such a long transatlantic trip. And so he received one hour.

Despite the fact that he talked fast, his presentation "Vascular catheterization and angiographic techniques for the future" lasted almost one and a half hours. It was the most exciting lecture I had ever heard. After Charles had given a complete overview of catheter angiography, he discussed new and future techniques, including flow-guided catheterisation, catheter biopsy and controlled exit catheterisation. At the end, he presented the most bold and exciting technique: catheter endarterectomy.

*Fig. 4: CT Dotter lecturing at Karlovy Vary*

He finished with an historic conclusion which laid the foundation for interventional radiology: ***"The angiographic catheter can be more than a tool for passive means for diagnostic observation; used with imagination, it can become an important surgical instrument."***

Charles received a wildly enthusiastic standing ovation after this prophetic conclusion.

A few months later on January 16, 1964, Charles performed the first percutaneous transluminal angioplasty of a stenotic superficial femoral artery and, thus, gave birth to Interventional Radiology. The events of those two days, June 10, 1963 and January 16, 1964 fundamentally changed forever the way medicine is practiced and the direction of radiology. Most importantly, it was the beginning of a series of advances in percutaneous image-guided procedures that have benefitted the lives of millions of patients.

*Josef Rösch*

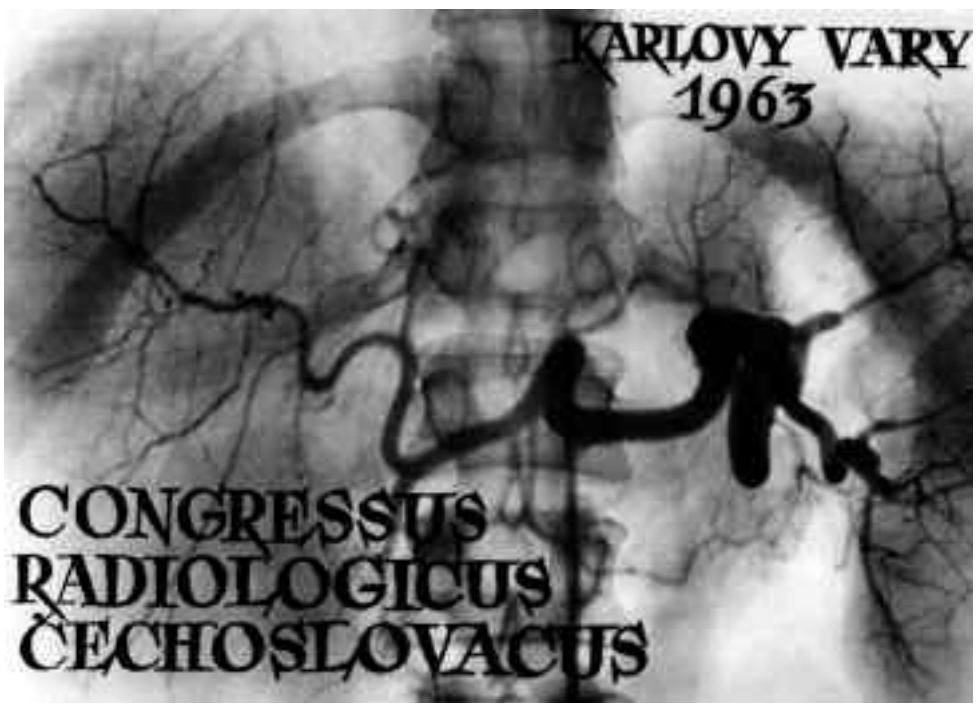


*Fig. 2: Logo of Karlovy Vary Congress*


*Fig. 1: Prague Poster 2002*

*Fig. 3: Karlovy Vary name tag*

*Fig. 5: Multisite teleconference at Prague Symposium with simultaneous transmission from Miami and Portland – USA, Perth – Australia to Prague*

**Dotter Institute and Czech Interventional Radiology**

The Dotter Interventional Institute, established at Oregon Health & Science University (OHSU) in Portland, Oregon in 1990, developed and kept a close relationship with Czech interventional radiologists. This relationship has had several facets. Some Czech interventionalists came to the Dotter Institute to learn its clinical, research organisation, diagnostic and therapeutic techniques. Both Dr. Antonin Krajina and Dr. Frantisek Charvat had clinical fellowships that helped them establish their own interventional divisions. Most Czech interventionalists had short or long-term research fellowships. Some of them, particularly Drs. Jan Peregrin and Jan Sochman, travelled to the Dotter Institute to work on their own research projects. Both of these physicians were appointed to the OHSU faculty as Visiting Research Professors of the Dotter Institute. Other Czech interventionalists contributed to our research projects. Drs. Milan Hajek and Radek Svarz were involved in developing our tele-education programmes. They also helped with us with our multiple live case transmissions.

Based on their work at the Institute, Czech interventionalists authored or co-authored 15 papers in peer-reviewed interventional journals. One of Drs. Sochman's and Peregrin's papers on a new type of aortic disc prosthesis received the most outstanding scientific study award by the SCVIR in 2000. Another of their papers published in CVIR in 2006 was selected at CIRSE in Athens, Greece as the best paper.

The close relationship between the Dotter Institute and Czech interventional radiologists led to eight "International Symposia on Interventional Radiology" in Prague between 1994 and 2002 (Fig. 1). These were organised primarily by Dr. Rösch from the Dotter Institute and by Prof. Jan Peregrin from the Institute for Clinical and Experimental Medicine in Prague.

These three-day symposia focused on education for interventional radiologists from Central and Eastern Europe. Programmes consisted of presentations, discussions and hands-on experience. Prominent interventionalists served as the faculty, updating participants on recent developments in IR. Popular topics included transmissions of live cases and televideo panel discussions from 12 institutions in Europe, USA and Australia that were broadcasted on the Internet in the 2001 and 2002 symposia (Fig. 5). Attendance at the Prague symposia averaged approximately 350 physicians per year, with attendees representing 36 countries. To encourage participation of young radiologists from Eastern European countries, the Dotter Institute established a special travel fund to pay for their lodging and symposia expenses. Since 1995, donations from the Dotter Institute and several interventional device companies have enabled 612 young physicians from 16 Eastern European countries to attend these symposia.

The Czech Interventional Symposia were the precursor to the European School of Interventional Radiology organised by the Cardiovascular and Interventional Radiology Society of Europe.

*Josef Rösch, Fred Keller*

**www.csir2013.cz**

Advertorial

# Gore Scientific Programme


## Sunday, 16 September

**8.00 – 8.20**
**Gore Breakfast Symposium / Room 3A**

**Latest clinical evidence on stents versus stent grafts for SFA occlusive disease: What approach makes sense?**
*Moderators: G. Krupski, Reinbek, Germany; E. Verhoeven, Nuremberg, Germany*

- VIASTAR 1-year multicenter prospective randomized trial results: Does SFA endoluminal bypass really outperform stents for SFA occlusive disease and when do I use them?
  *J. Lammer, Vienna, Austria*

**11.30 – 13.00**
**Gore Learning Center**
*Refreshments will be served*

**Learning by Sharing – Dealing with challenges in EVAR and TEVAR**
*Moderator: B. Katzen, Miami, USA*

- Hostile aortic necks: Approaches and techniques for best clinical outcomes with the GORE® EXCLUDER® AAA Endoprosthesis featuring C3 Delivery System
  *G. Robinson, Hull, UK*
- Durability paired with innovation: Best treatment options for tortuous iliac arteries
  *N. Nyman, Stockholm, Sweden*
- Emergency repair in the thoracic aorta: Logistic challenges and practical examples
  *M. Hamady, London, UK*
- Acute Type B dissection: When and how to treat, personal experience and practical examples
  *J. Brunkwall, Cologne, Germany*

**14.30 – 15.30**
**Gore Learning Center**
*Refreshments will be served*

**Latest innovation in peripheral stenting: Is there still room for a new generation stent design? Updates and interactive review of challenging cases**
*Moderators: D. Scheinert, Leipzig, Germany*

- Is there still room for a new stent design?
  *F. Thavaut, Strasbourg, France*
- Early clinical experience with the GORE® TIGRIS Vascular Stent
  *M. Piorkowski, Leipzig, Germany*
- Interactive review of challenging cases:
  – *M. Galli, Como, Italy*
  – *G. Krupski, Reinbek, Germany*
  – *N. J. Mosquera, Ourense, Spain*

## Monday, 17 September

**11.30 – 12.30**
**Gore Learning Center**
*Refreshments will be served*

**Where and when is endoluminal bypass the treatment of choice in peripheral artery disease? Interactive review and discussion of challenging cases**
*Moderator: C. Rabbia, Turin, Italy*

- Long de novo SFA lesions case: Is there a connection between stent graft oversizing and outcomes in long de novo SFA lesions? What does the 1-year VIPER data indicate?
  *R. Pini, Turin, Italy*
- In-stent restenosis case: Endoluminal bypass for the treatment of SFA in-stent restenosis. What does the RELINE trial indicate?
  *K. Deloose, Dendermonde, Belgium*
- Complex popliteal aneurysm case
  *L. Canaud, Montpellier, France*
- Troubleshooting case: Other aneurysms
  *D. Savio, Turin, Italy*
- AV access case
  *P. L. Riley, Birmingham, UK*

**14.30 – 15.30**
**Gore Learning Center**
*Refreshments will be served*

**Expanding TIPS indications**
*Moderators: D. Yu, London, UK; A. Krajina, Hradec Kralove, Czech Republic*

- Is TIPS effective as bridge to liver transplant?
  *G. Maleux, Leuven, Belgium*
- Feasibility and efficacy of TIPS in children
  *R. Aggazi, Bergamo, Italy*
- Effect of TIPS on PVT in patients with cirrhosis
  *A. Luca, Palermo, Italy*
- Results GORE® VIATORR® TIPS Endoprosthesis to treat Budd Chairi Syndrome
  *J. C. García Pagán, Barcelona, Spain*

## Tuesday, 18 September

**11.30 – 12.30**
**Gore Learning Center**
*Refreshments will be served*

**Progression in the treatment of biliary obstructions**
*Moderator: P. Goffette, Brussels, Belgium*

- GORE® VIABIL® Biliary Endoprosthesis: Clinical results for malignant and benign biliary obstructions
  *F. Fanelli, Rome, Italy*
- Tips and tricks using biliary stent for benign and malignant biliary obstructions
  *P. Almeida, Viseu, Portugal*

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Advertorial

# Gore Aortic Endovascular Products at CIRSE 2012

## Conformable GORE® TAG® Thoracic Endoprosthesis
***Conformability without Compromise***

*The Conformable GORE® TAG® Thoracic Endoprosthesis is currently the only TEVAR device indicated for traumatic transection in the United States. Already approved in Europe, Latin America, and other regions of the world, this latest approval has contributed to continued significant growth in market share in the thoracic device market.*

*The Conformable GORE® TAG® Device is the only thoracic endoprosthesis specifically designed to treat the anatomy of young trauma patients, with the ability to treat down to 16 mm aortas and extremely tapered anatomy. The device offers conformability and ease of use, while accommodating tapered anatomy and resisting compression. The broad oversizing window for the device ranges from 6 to 33 percent, allowing physicians to choose the appropriate radial force to create the appropriate radial fit of the device for the patient anatomy and specific etiology.*

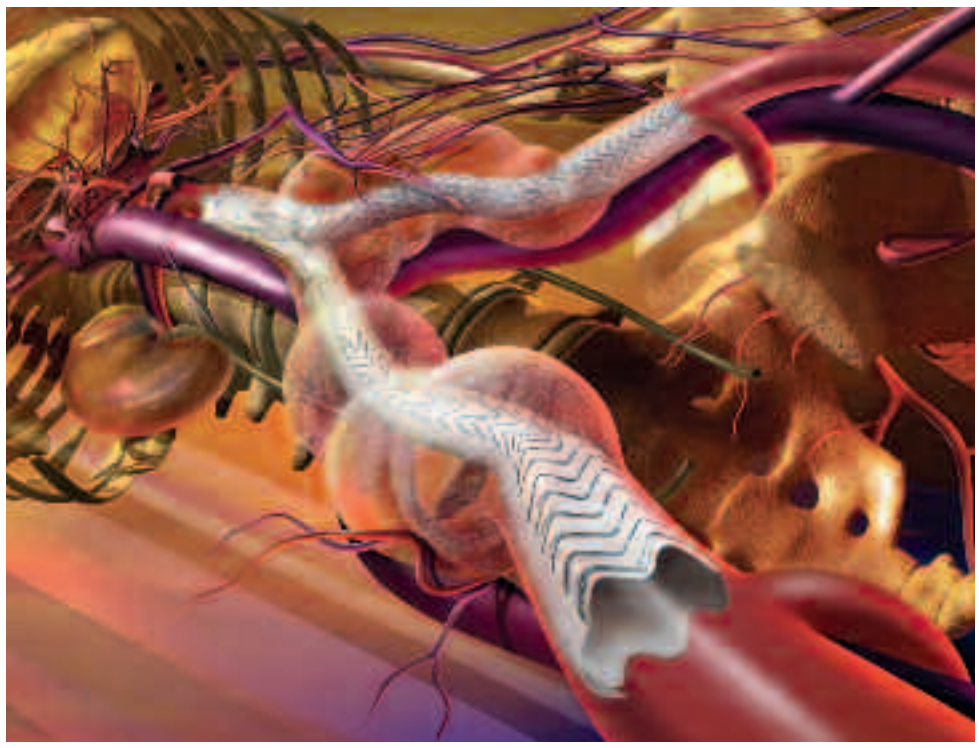
*The device is available in diameters of 21-45 mm, allowing for the treatment of patients with aortic diameters of 16-42 mm. Tapered device configurations are also available. The simple, singlestep deployment system provides flexibility for navigating tortuous anatomy.*

*Paired with the GORE® DrySeal Sheath, which optimizes control with minimal blood loss, the Conformable GORE® TAG® Device exemplifies Gore's continued commitment to innovative solutions intended to maximize patient outcomes.*

CONFORMABLE

GORE TAG® THORACIC ENDOPROSTHESIS

## New GORE® EXCLUDER® AAA Endoprosthesis Sizing Options Available
***Broader Range of Sizes Now Accommodates More Patient Anatomies***



*With the introduction of 23 and 27 mm contralateral legs, the GORE® EXCLUDER® AAA Endoprosthesis can now treat iliac diameters of 8-25 mm. The new diameter devices provide physicians with the ability to repair abdominal aortic aneuryms (AAAs) in a broader range of anatomies eligible for minimally invasive endovascular AAA repair.*

*"By adding new diameter options to the GORE® EXCLUDER® Device, patients with large iliac arteries can now be treated with fewer components. This will simplify the EVAR procedure for these patients, widen its applicability and reduce its costs," said Michel Makaroun, MD, Professor and Chair, Division of Vascular Surgery, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania.*

*With more than 135,000 devices distributed worldwide, the GORE® EXCLUDER® AAA Device is characterized by its long-term durability, flexible on-and-off catheter characteristics, active infrarenal fixation, and strong clinical data. In addition, the GORE® C3 Delivery System offers physicians the control and confidence desired for endograft positioning.*

*The GORE® EXCLUDER® Device is supported by a highly rated clinical support team, a comprehensive educational offering, and Gore's outstanding community awareness programs.*

GORE EXCLUDER® AAA ENDOPROSTHESIS

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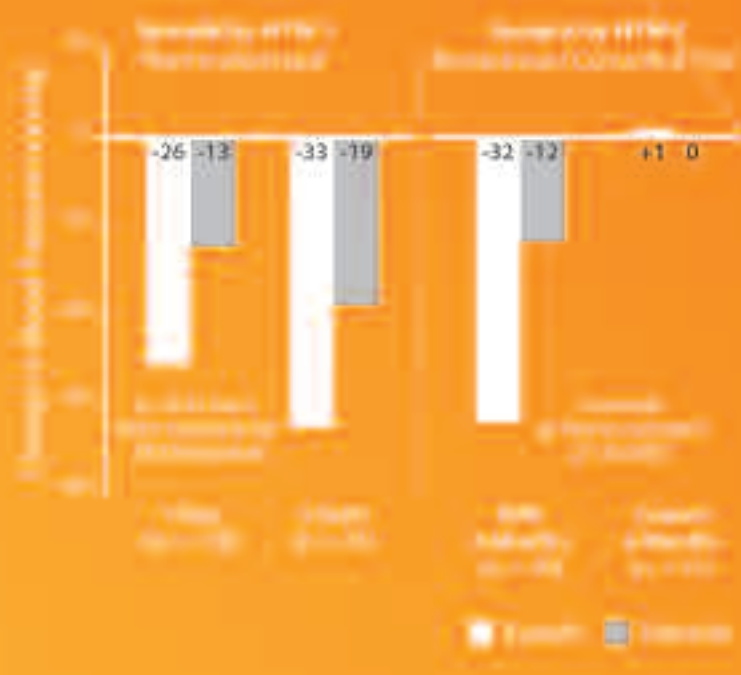


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*Based on published data from a randomized, controlled study and long-term data beyond two years.
†Symplicity HTN-3 Investigators. The Lancet. 2014.
‡Symplicity HTN-1 Investigators. Hypertension. 2011.
‡ ‡Expanded results presented at the American College of Cardiology Annual Meeting 2013.

# Simulator Gallery – bringing education to life

**The CIRSE Simulator Gallery is located in Pavillion 1, and features some of the most advanced simulators available, thanks to the kind support of of our industry partners Mentice and Simbionix. The Hands-on Workshops conducted there allow for round-table discussions followed by practice with the aid of high-fidelity simulators.**

Each session is intended for delegates with a specific level of experience (core, intermediate or advanced), and relate to a specific clinical or procedural topic. Expert faculty will guide the discussion, and demonstrate how to perform the techniques correctly.

These workshops are limited to eight participants, allowing for in-depth learning. A few available places remain, and those interested in participating are advised to enquire at Registration. Please note that there is an additional charge of € 75 to participate in the Hands-on Workshops. Alternatively, come along to the Simulator Gallery half an hour before the session begins and sign up for our waiting list – should any participants not arrive on time, the waiting list will work on a first come, first served basis.

## The remaining topics of the CIRSE 2012 Hand-on Workshops are:

**Sunday, September 16**
**Basic embolization techniques**
(core/intermediate level)

Group 4: 08:30-10:40
Group 5: 09:40-11:50
Group 6: 10:50-13:00

**Monday, September 17**
**Acute aortic syndromes**
(intermediate level)

Group 7: 08:30-10:40
Group 8: 09:40-11:50
Group 9: 10:50-13:00

**Tuesday, September 18**
**Contemporary carotid artery stenting**
(intermediate/advanced level)

Group 10: 08:30-10:40
Group 11: 09:40-11:50
Group 12: 10:50-13:00

## Bring your IR education to life!


### Entrance Level

**MR** Meeting Rooms
**LC** Learning Centres
Meeting Point for Hands-on Workshop "Vertebral augmentation techniques"

# CIRSE 2012 Party

## Tuesday, September 18, 20:00
## Pátio da Galé, Lisbon

**Held at the stunning location of the Pátio da Galé, the CIRSE 2012 Party will be the perfect opportunity to meet colleagues and friends on a late summer evening.**

**Dinner will be served in the impressive Sala dos Riscos. After dinner, the German band "Fresh Music Live" will entertain you with live versions of well-known modern songs and standards in their own inimitable style.**

**A great party is guaranteed!**

**You can choose to us for the dinner and the party or, if you prefer to have dinner elsewhere in the city, the party only.**

## Make sure to secure your tickets for the CIRSE 2012 Party!

## Please refer to the "Hotel, Tours & Social Events" counter at the congress centre.

*Kindly note that the CIRSE Party is a seated dinner. Table or seat reservation is not possible.*
*CIRSE supports compliance with ethical standards. Therefore, CIRSE emphasises that the present offer (made by KUONI Destination Management operated by Buzz Portugal DMC) is directed to participants of CIRSE 2012 and recommends that the participants who want to accept the present offer shall bear any and all costs in this context themselves.*

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.

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## 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**.



# Alliance for MRI – the latest news

**Background**

In December 2002, a health and safety proposal was made at the European Commission, seeking to protect workers in heavy industry from excessive exposure to electromagnetic fields (EMF), which can cause pain, dizziness and twitches. It was a sensible suggestion, but did cause a few delegates to raise the question: will this affect medical MRI usage? They were assured that it would not, and in April 2004, the directive was accepted and a transposition deadline of 30 April 2008 was adopted by the EU.

**True implications**

Unfortunately, the directive was indeed to have profound implications for the medical use of MRI, and in order to negotiate a solution, the Alliance for MRI was founded by various European, national and scientific interest groups, and began lobbying work and negotiations.

**Current status**

Once the full impact of the directive was understood, the European Commission issued a reprieve until April 2012. As discussion could not be finalised by this time, the legislation has been postponed again, until 31 October 2013, in the hope that a solution can be reached.

Under the Danish Presidency, the following amendment was proposed:
*"Based on the discussions, a revised MRI derogation with a narrower scope, limited to certain MRI activities, has been introduced by the Presidency in the compromise proposal on the basis of an assumption that not the whole MRI sector faces the problem of exceeding the exposure limit values contained in the Presidency compromise proposal."* [1]

The Alliance for MRI welcomes this suggestion, as it clarifies the safety standards in place for workers' safety, but maintains that there is no need for limit values for MRI technology. They are therefore encouraging all doctors who work in imaging to raise awareness of the importance of the MRI Derogation for patients in Europe.

**What you can do:**

- Contact your MEPs ahead of the Employment and Social Affairs Committee vote at the beginning of October
- Contact your Ministries of Labour and Social Affairs/Health and Safety

[1] *taken from the EMF Directive Council Progress Report*

**MRI:**
- Safer – free from hazards of ionising radiation
- Unrivalled quality – excellent at imaging soft tissue
- Unique information – demonstrates body's mechanical and physiological properties
- Excellent potential for IR – can visualise borders of tumours
- Low risk – in use for over 25 years; negligible evidence of ill-effects

**Endangered scenarios:**
- Interventional MRI
- Some functional MRI – research on deaf-blind studies
- Imaging of children – nurse-supervised to avoid anaesthesia
- Anaesthetised patients or those who require monitoring
- Research applications
- Servicing and maintenance of MRI machines

**More information on the campaign and the facts surrounding it can be found at www.alliance-for-mri.org**

Alliance for MRI

**The Alliance for MRI is encouraging all doctors to get involved on behalf of their patients**

# World leaders in balloon expandable covered stents

NEW

Post dilate to 8mm*

5mm-7mm
Vascular
V12RX
covered stent

Post dilate to 12mm**

5mm-10mm
Vascular
V12OTW
covered stent

Post dilate to 22mm

12mm-16mm
Vascular
V12OTW
covered stent

- Ability to **customize**
- Ability to **post-dilate** and **flare**
- 5 times **lower TVR** rates‡

ATRIUM
MAQUET GETINGE GROUP

Find out more about Atrium's **V12 covered stent** at: **www.atriummed.com/AdvantaV12**

*6 & 7mm diameters are capable of post-dilation to 8mm. **38 & 59mm lengths are capable of post-dilation to 12mm.
‡At 18 months; COBEST Study *JVS* Dec. 2011.

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V12 is CE approved for restoring patency of iliac and renal arteries. Renal approval is for 5-7mm sizes. V12 is not available in the U.S.

# The CIRSE Foundation Grants: helping to support the future of Interventional Radiology since 2000

**Since 2000, the CIRSE Foundation has invested more than € 700,000 in directly supporting young IRs as they work towards mastering their chosen therapy specialisations.**

Some of these grants were made possible through the generosity of our corporate partners, whom we would like to warmly thank for their unwavering support.

Many of these grant recipients have become not only excellent interventionists, but also active and valued members of the CIRSE Society – representing an excellent investment on behalf of patients, the specialty and the society.

**Here we introduce you to the CIRSE family of grant recipients, and we look forward to seeing it grow!**

CIRSE foundation

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