

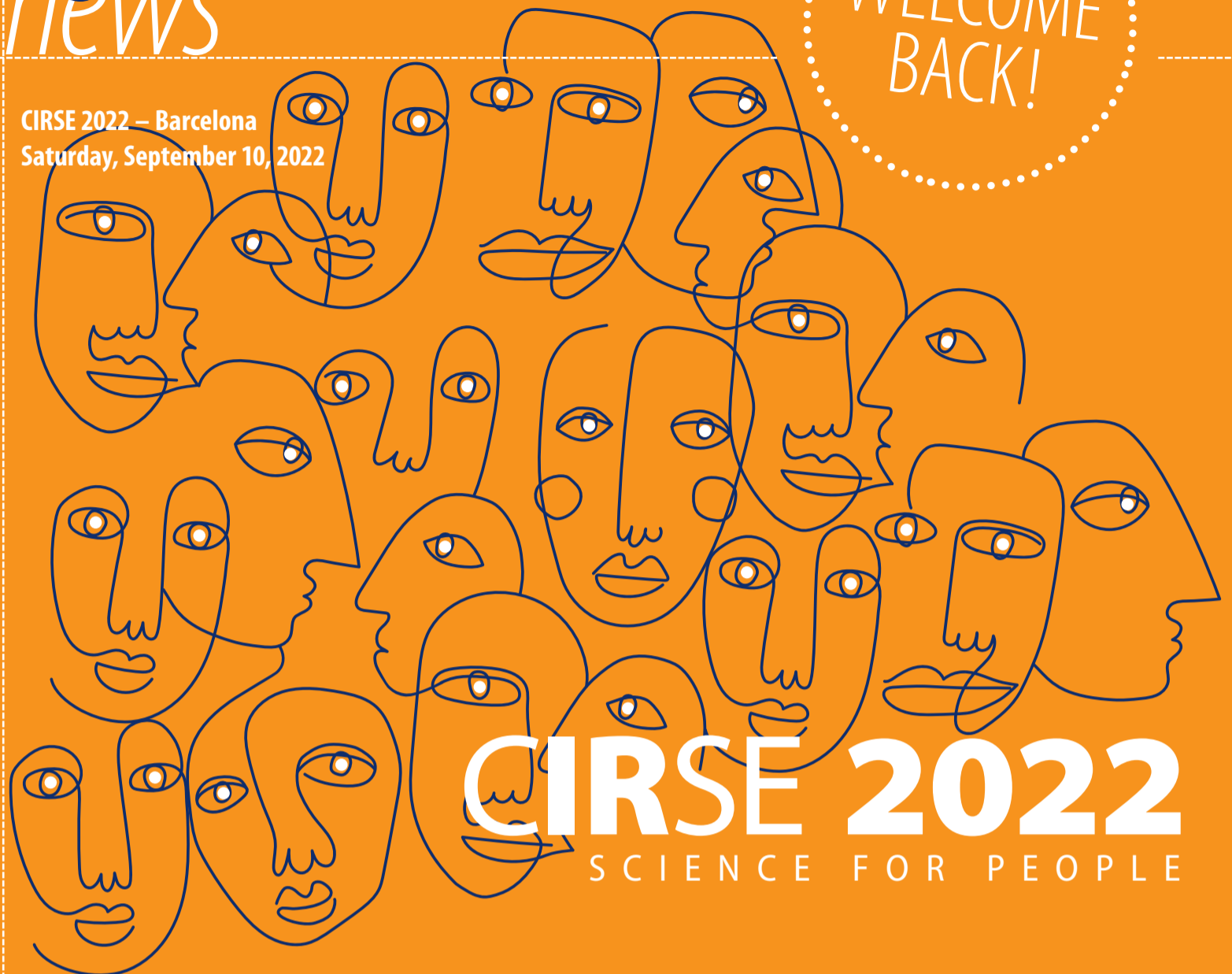
We are thrilled to be back live and in person for the IR meeting of the year!

Featuring more than 700 lectures given by a faculty of over 500 experts from around the world, CIRSE 2022 will certainly be a congress for the ages.

Today's programme will kick off with a dedicated PAD track including sessions on plaque management, updates on below-the-knee intervention, and the optimal scaffold in the SFA.

In addition, the most comprehensive First@CIRSE session to date will further push the evidence base in PAD treatment with data releases on a number of studies!

CIRSE 2022 – Barcelona
Saturday, September 10, 2022



Welcome to CIRSE 2022!

We are delighted to be back again in person, discussing the challenges and opportunities of our field face to face, making new connections and seeing old friends.

We are particularly happy because CIRSE 2022 is going to be an comprehensive outstanding congress, offering a comprehensive programme with two main foci: building evidence through research and enhancing patient-centred care: a science for people.

Endovascular focus

Today, on our first congress day, we will again host the PAD Day track, giving particular importance to what we have learned in the treatment of peripheral arterial disease and pushing the field further with new research. An important part of increasing our evidence base will be the **most comprehensive First@CIRSE session to date** which will feature the presentation of more study results than ever before.

Interdisciplinary Endovascular Aortic Symposium – IDEAS

From tomorrow onwards, IDEAS 2022 will offer truly interdisciplinary knowledge exchange in the field of aortic treatment. Among others, it will comprise six expert round tables featuring interventional radiologists and vascular surgeons from around the world. Discussed topics will include controversies in the devious neck, considerations in acute type B dissection, and a debate on standard EVAR within IFU, among others.

Venous track

CIRSE 2022 will also feature a strong venous focus with a hot topic symposium examining the state-of-the-art treatment of acute DVT, case-based discussions on IVC filter removal and venous cases gone wrong, an expert round table on the management of acute PE, hands-on device trainings, a workshop on venous access, a video learning session on paediatric vascular access, and much more.

The endovascular programme will be complemented by more hands-on training opportunities than ever before, with hands-on device trainings on closure devices, central lines and ports, venous stenting, EVAR, FEVAR and BEVAR, and many more.

Embolisation

The embolisation track will cover the entire range of embolotherapy, offering a series of fundamental courses on established treatments, such as uterine fibroid management and embolisation in bleeding, as well as case-based discussions providing practical tips and tricks, and sessions on some of the field's hottest topics, including PAE and treating complex visceral aneurysms.

Interventional oncology

The oncology sessions at CIRSE 2022 will hone in on a variety of topical subjects, such as renal cancer management, oligometastatic disease, and advanced technology in IO. In addition, workshops will provide practical tips and tricks on ablation for liver and lung metastases, respectively.

Non-vascular interventions

For interventionists focusing on non-vascular treatments, there will be a number of focus sessions, including on pain management, transplantation complications, and lymphatic leaks. A clinical evaluation course will provide the opportunity to learn about thyroid percutaneous procedures. At an expert round table discussion, a distinguished faculty will debate advanced biliary treatment.

Neuro-interventions

The neuro-intervention track will include a course on the fundamentals of stroke management, a workshop on acute stroke management, and an expert round table in which various distinguished experts will discuss the latest evidence in the field, from the results of the Racecat study to scrutinising the question of IVT or no IVT before EVT, among others.

To complement the sessions on scientific and clinical topics, CIRSE 2022 will also offer a wide array of content on IR management,

from pointers on how to establish a modern practice to what promises to be an extremely interesting round table discussion on multidisciplinary collaboration with representatives from numerous other medical specialities.

Investing in the next generation

CIRSE stays committed to engaging with the next generation of physicians with its extensive Students Programme allowing medical students to attend the congress free of charge. For young interventionists, the European Trainee Forum will additionally host a series of dedicated lectures focusing on topics of particular relevance to interventionists at the start of their career.

As you can see, the CIRSE 2022 programme will leave nothing to be desired. With the beautiful backdrop of the city of Barcelona, let's celebrate life, science and togetherness!



Afshin Gangi
CIRSE President



Thomas Kröncke
CIRSE 2022 SPC Chairperson

Join us at the Opening and Awards Ceremony!

After three long years, it will be a special delight to celebrate the IR community and its many achievements in an inspiring in-person opening ceremony officially launching the 37th annual CIRSE congress. President Prof. Afshin Gangi will lead through the ceremony, in which some of the greats of the IR community will be honored. Kicking things off, we will hear from SPC Chairperson Prof. Thomas Kröncke who together with his committee put together the fantastic programme we will enjoy over the coming days. We will also hear from our local hosts, headed by Dr. Mariano Magallanes Bas.

CVIR Editor-in-Chief Prof. Klaus Hausegger will bestow this year's Editors Medal on Prof. Mark Little for his team's interim analysis of the GENESIS trial.

Later on, Prof. Rolf W. Günther will take the stage to honour Prof. William T. Kuo with the Award of Excellence and Innovation in IR for his

work on the Excimer Laser-Assisted Removal of Embedded IVC Filters, which included the development of a new procedure and recognised treatment.

The awards will continue with Dr. Anne Marie Cahill, Prof. Luigi Solbiati, and Prof. Aghiad Al-Kutoubi joining the ranks of Distinguished Fellows, culminating in the conferment of CIRSE's highest honour, its Gold Medal, to Dr. John Kaufman and Prof. Hervé Rousseau.

The ceremony's musical accompaniment will be provided by a superb guitarist and Flamenco dancer, giving us a taste of a wonderful time ahead in beautiful Barcelona.

Don't miss this celebration of interventional radiology, its community, and togetherness!



Distinguished Fellow

Anne Marie Cahill

Laudation: Alex Barnacle



Dr. Cahill is the division chief of paediatric IR at Children's Hospital of Philadelphia and the endowed chair of interventional radiology. She has just become a full professor of radiology at the Perelman School of Medicine, Univ. of Pennsylvania and is currently the president of the Society of Paediatric Interventional Radiology. Dr. Cahill has been the division chief of IR since 2005, the department growing from a staff of one (herself) to now eight paediatric interventional radiologists. It has been a labour of love for her with long clinical hours and much personal time dedicated to research, but a labour of love, nonetheless.

Dr. Cahill's interventional interests are broad and include vascular malformation therapy, innovative techniques for IR guided biopsy for precision oncology and endovascular intervention for renovascular hypertension. She serves on the board of the Renovascular Hypertension Paediatric Outcomes Consortium, a patient focused international research consortium, with the aim of increasing awareness of paediatric fibromuscular dysplasia from diagnosis to potential genomic based precision therapy.

Dr. Cahill has authored or co-authored over 100 publications. She is an invited reviewer for many journals, including Pediatric Radiology, JVIR, American Journal of Radiology and currently is on the editorial board of JVIR and CVIR Endovascular.

Dr. Cahill has graduated over 20 dedicated paediatric interventional fellows from Children's Hospital of Philadelphia. In addition, she has mentored many research students in performing clinical outcome research in paediatric interventional radiology. For her this has been the highlight of her career to date, to see her IR team graduate ambassadors of paediatric IR throughout the world.

Dr. Cahill currently is grant funded to support IR guided biopsy for precision therapy of relapsed neuroblastoma and is the primary investigator for the NIH funded PUMA gastrostomy pediatric trial. In addition, Dr. Cahill serves as a pediatric advisor for Siemen's Healthiness and Avanos Inc.

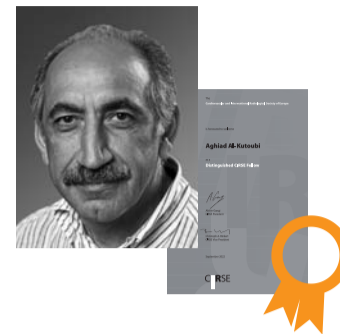
Finally, after the work is done, Dr. Cahill is a passionate Francophile, attending French classes weekly. When she is on vacation, she tends to go off the grid to parts unknown, trekking or biking in places such as Uganda, Bhutan or Myanmar.

Welcome our new Distinguished Fellows!

Distinguished Fellow

Aghiad Al-Kutoubi

Laudation: Robert Morgan



Born in Damascus, Syria, Prof. Al-Kutoubi graduated with MD from Damascus University in 1975 and moved to the UK to pursue postgraduate training in radiology.

In 1977 he joined the training programme in the radiology department at St Mary's Hospital, London and was impressed from the first days by the impact of "invasive imaging procedures." He assisted Dr. Sutton in the first balloon angioplasty procedure at St Mary's in 1978 and also learned from a great number of other pioneers.

Under Prof. Al-Kutoubi's directorship, the department of radiology at St Mary's continued to develop and, in collaboration with its medical and surgical units, offered a comprehensive range of vascular and non-vascular interventional procedures including portal intervention and tumour management.

Prof. Al-Kutoubi joined CIRSE in 1987 and participated as a member and presenter in the first meeting of the BSIR in 1988. He was elected CIRSE Fellow in 1997. He was involved in the RCR and served as an examiner and senior examiner for the FRCR.

In 1997 Prof. Al-Kutoubi transferred to the American University of Beirut to chair the

department of radiology and develop IR in the region. During his tenure as Prof. and chairman, Prof. Al-Kutoubi introduced EVAR in the Arab Middle East and developed a first-class comprehensive IR service in close collaboration with various colleagues from different medical and surgical specialties, particularly vascular, hepatobiliary and neurology. As a result, IR became the top choice for residents in training. The IR team included Dr. Haddad, Dr. Haydar and Dr. Muallem. Prof. Al-Kutoubi succeeded in connecting the various IRs and was the founding president of the Pan Arab Interventional Radiology Society (PAIRS). He subsequently was elected as its first fellow and honorary life president.

Consolidating the academic drive and addressing the local needs, Prof. Al-Kutoubi was one of the founders of the Arab Board of Radiology and Medical Imaging in 2002, of which he is now the president.

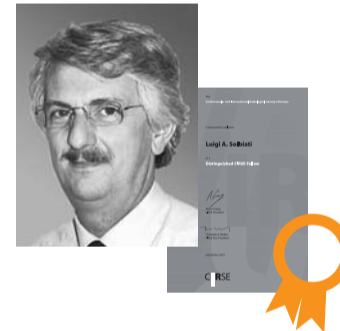
Prof. Al-Kutoubi joined the editorial board of CVIR in 2008 and served as the Middle East editor from 2011 to 2018.

A proud husband, father and grandfather, his hobbies include Arabic calligraphy and portrait sketching.

Distinguished Fellow

Luigi Alessandro Solbiati

Laudation: Philippe L. Pereira



Luigi Alessandro Solbiati worked for 35 years at the General Hospital of Busto Arsizio, from his initial role of assistant to that of chairman of the department of diagnostic imaging, oncology, and heading the division of interventional oncologic radiology.

In 2014, he was appointed a full professor of radiology at the School of Radiology of the University of Milan. He then moved to Humanitas University at Pieve Emanuele and Humanitas Research Hospital at Rozzano in Milan, where he is currently a professor of radiology and consultant of interventional radiology, respectively.

Prof. Solbiati has served in the leadership of numerous societies, including the Italian Society of Ultrasound in Medicine and Biology (1985-1991), SIRM, and the ESR executive council. In 2006, he presided over of the first World Conference on Interventional Oncology.

Prof. Solbiati's main fields of interest have always been interventional procedures in oncologic and non-oncologic diseases particularly perc. image-guided thermal ablation, imaging of the neck, sonography and contrast enhanced sonography. In 1982, he performed what is

considered the very first ablation ever, i.e. the ultrasound-guided percutaneous ethanol injection (PEI) of a large inoperable parathyroid adenoma. Furthermore, he was the pioneer of PEI of HCCs in 1985 and radiofrequency ablation (RFA) with cool-tip electrodes of HCCs and liver metastases in 1995, together with the group of Dr. Livraghi. Subsequently, Prof. Solbiati was one of the first users in the world of high-power microwave ablation (MWA) of solid tumours in 2009 and of image fusion of real-time US with CT, MRI and PET for the guidance of interventional procedures in 2003.

With his team, Prof. Solbiati is one of the leading experts in the world in RFA and MWA of liver malignancies and renal cell carcinomas, and also in laser and RF ablation of thyroid and parathyroid benign tumors, accounting for more than 6,000 patients treated.

Prof. Solbiati has published 187 original articles in peer-reviewed journals as of yet, 158 of them indexed in PubMed. Prof. Solbiati has given 642 presentations at congresses and courses in 23 countries.

Congratulations to this year's Gold Medallists!

Gold Medallist

John Kaufman

Laudation: Christoph Binkert



John A. Kaufman, MD, MS, is the inaugural chair of the Dotter Department of Interventional Radiology, director of the Dotter Interventional Institute and the Frederick S. Keller Professor of Interventional Radiology at the Oregon Health and Science University (OHSU) in Portland, Oregon. He also has appointments in diagnostic radiology, surgery and medicine.

A native of Boston, Dr. Kaufman worked at the Massachusetts General Hospital from 1991 until 2000, when he joined Dr. Fred Keller and Dr. Josef Rosch at the Dotter Institute in Portland, Oregon. He has worked there since. The son of a radiologist, he is the proud father and father-in-law of two interventional radiologists.

A proponent for the advancement of interventional radiology worldwide, his 2008 Joseph Rosch Lecture at CIRSE advocated for specialty recognition for IR, and in 2010 he co-led with Dr. Jim Reekers. This international workgroup published a global definition for the specialty. In addition, Dr. Kaufman chaired the task force that resulted in the 2012 recognition of interventional radiology as the 37th primary specialty in the United States,

setting the foundation for the IR residencies in that country.

A life-long educator, Dr. Kaufman advocates for inclusivity, diversity, and opportunity in IR regardless of nationality, gender, religion, ethnicity, or race. In 2016, though practicing in the United States, he sat for (and passed!) the EBIR exam. Dr. Kaufman has authored and co-authored many articles, chapters, and textbooks, with an academic focus on vena cava filters. He is an associate editor for CardioVascular and Interventional Radiology and an examination material contributor for the EBIR. In 2011, he was honored as a Distinguished Fellow of the Cardiovascular and Interventional Radiology Society of Europe, and in 2018 with the Gold Medal of the Society of Interventional Radiology.

Dr. Kaufman's active clinical practice is focused on vascular malformations and complex venous interventions but encompasses the broad spectrum of IR. He is a secretary-treasurer of the American Board of Radiology and chair of the OHSU Professional Board. Most important, he is married to Cathy Kaufman, and they have three children, eight grandchildren, and four dogs.

Gold Medallist

Hervé Rousseau

Laudation: José Ignacio Bilbao



Since 1985, Hervé Rousseau, MD, PhD has been involved in many interventional procedures in France, mainly with the first stents placed in human vessels in Europe. Furthermore, he has been on the cutting edge of research and development in vascular interventions, particularly in stent and stent graft development for peripheral vessels, TIPS. He was one of the first European vascular interventionists to use stent grafts in the treatment of thoracic aortic diseases.

Professor Hervé Rousseau received his medical degree from Toulouse University of Paul Sabatier. Following his training in Toulouse, he became a fellow in the department of radiology at the University Hospital of Rangueil in Toulouse, where he became an assistant professor in 1987, in the department of radiology chaired by Professor F Joffre. In 1988 he obtained a master's in surgical science in Paris. After a two-year fellowship at Toulouse's CHU Rangueil, he continued his training, partly in the United States with Professor Amplatz, Professor Schwarten and Professor Castaneda-Zuniga until 1989. Since 1990 he has been a professor of radiology at his alma mater, Paul Sabatier. His

clinical interests are diagnostic imaging and interventional radiology in vascular diseases.

From 2000 to 2006, he has been the director of the Research Imaging Centre at the Paul Sabatier University. In 2007, Professor Rousseau along with Dr. Anne Nègre-Salvayre created a research centre on atherosclerosis and cardiovascular imaging (I2MC, INSERM U1048) at CHU Rangueil Toulouse.

Professor Rousseau has been a reviewer of numerous journals, published more than 500 papers and abstracts in peer-reviewed medical journals, and presented his work at many national and international symposia. He is a member of several medical societies and has been chairman of the French Society of Cardiovascular Interventional Radiology since 2002.

In addition, Professor Rousseau is a Distinguished Fellow of CIRSE, held numerous offices in CIRSE and was co-chairman of the CIRSE meeting in 2005.

Award of Excellence and Innovation in IR



Congratulations to this year's winner Prof. William T. Kuo

The Award of Excellence and Innovation in Interventional Radiology, sponsored by the Rolf W. Günther Foundation for Radiological Sciences, is awarded on a yearly basis for outstanding contributions to the advancement of interventional radiology. Since its establishment in 2012, this distinction has been granted to some of the most innovative physicians in the field. The award comes with a cash prize of €6,000.

This year, the Award of Excellence and Innovation in IR goes to Prof. William T. Kuo for his work on the Excimer Laser-Assisted Removal of Embedded IVC Filters, which included the development of a new concept and procedure and recognised treatment.

Prof. Kuo will receive the award and be officially announced as the winner during the opening ceremony starting today at 14:30 in auditorium 1.

The Innovation

Excimer Laser-Assisted Removal of Embedded IVC Filters is a new cutting-edge procedure that permits on a cellular/molecular level (via 306 nm XeCl excimer laser) the safe removal of many different IVC filters refractory to standard retrieval methods regardless of dwell time, including many permanent IVC filters.

Progress of this innovation and its recognition as an important treatment option were already summarised in numerous journals. In 2010, the first human case report was published in the *Journal of Vascular and Interventional Radiology (JVIR)*, and the innovative procedure led to the creation of the Stanford IVC Filter Clinic – now a national & international referral centre dedicated to treating patients with embedded IVC Filters.

After studying further results on over 500 patients, the overall safety and efficacy of the laser technique was validated in 2020 and published in the *Journal of the American Heart Association*. In addition, the study validated a new force-gauge protocol demonstrating how routine force gauge use in conjunction with the excimer laser not only avoids complications associated with excessive force, but also allows successful filter removal to be achieved safely using significantly lower force. The laser technique was acknowledged and referenced by a multidisciplinary consensus panel as an advanced technique that may be used to treat patients suffering complications from an embedded IVC filter refractory to standard retrieval methods.



About the winner

William T. Kuo is a professor of radiology and interventional radiology at the Stanford University School of Medicine, California, USA.

He is the author or co-author of more than 54 research papers and has contributed to numerous reviews and text books. His interest in IVC filters and pulmonary embolism have long been inspired by European leaders in IR especially Miguel A. De Gregorio, Professor Michael J. Lee, Professor Thomas Schmitz-Rode, Professor Christoph A. Binkert, Professor Stefan Müller-Hülsbeck, and of course Professor Rolf W. Günther. Their seminal work inspired him to pursue research and innovations in catheter-directed thrombolysis for acute PE and advanced IVC filter retrieval.



Rolf W. Günther Foundation
for Radiological Sciences

Congratulations to this year's Poster Award Winners!



EDUCATIONAL POSTERS

MAGNA CUM LAUDE

P-421 / Lympho what? – Pictorial overview of lymphangiography and the strategies for management of lymphorrhea

Chacon E¹, Acosta L¹, Diab C¹, Ozen M¹, Gabriel G¹, Raissi D¹, Galuppo R¹;
¹University of Kentucky, Lexington, United States

CUM LAUDE

P-315 / Imaging of chronic thromboembolic pulmonary hypertension before, during and after balloon pulmonary angioplasty

Páez-Carpio A¹, Zarco F¹, Vollmer I¹, Martin C², Serrano E¹, Corominas D¹, Domènech-Ximenes B¹, Cornellás L¹, Freixa X², Blanco P², Barberà J², Gómez F¹;
¹Department of Radiology, CDI, Hospital Clínic Barcelona, Barcelona, Spain, ²Pneumology Service, ICR, Hospital Clínic Barcelona, Barcelona, Spain, ³Cardiology Service, ICCV, Hospital Clínic Barcelona, Barcelona, Spain

P-493 / An interventional radiologists guide to regional anaesthesia in below the knee revascularization

Shah N¹, Kyaw Tun J¹; ¹Royal London Hospital, London, United Kingdom

P-427 / Techniques of lymphangiography and lymphatic interventions for treating post-operative lymphatic leaks

Kulkarni C¹, Moorthy S¹, Karumathil Pullara S¹; ¹Amrita Institute of Medical Sciences and Research Centre, Cochin, India

CERTIFICATE OF MERIT

P-172 / Anatomical variation of prostate artery and extra-prostate collateral flows

Jung H¹, So Y²; ¹Human Medical Imaging and Intervention center, Seoul, Korea, Republic of, ²SMG-SNU Boramae medical center, Seoul, South Korea

P-134 / An update on patient reported outcomes in interventional radiology

Irvine I¹, Greene L¹, Hayden R¹, Allen G¹, Cooper P¹, Francis A¹, Cullen A¹, Ryan A¹;
¹Division of Interventional Radiology, Department of Radiology, University Hospital Waterford, Waterford, Ireland

P-638 / Techniques for the retrieval of migrated SVC stents from the right atrium

Hesketh R¹, Ngo A¹; ¹University College London Hospital, London, United Kingdom

P-637 / Adrenal venous sampling: a technical review

Schoenheit T¹, Shields J¹, Liles A¹; ¹University of Michigan Department of Vascular and Interventional Radiology, Ann Arbor, United States of America

SCIENTIFIC POSTERS

MAGNA CUM LAUDE

P-595 / Benefit of repeat prostatic artery embolization on persistent or recurring lower urinary tract symptoms

Lehrer B¹, Boeken T², Di Gaeta A², Querub C², Al Ahmar M², Dean C², Pellerin O², Sapoval M²;
¹Université de Paris, Paris, France, ²Interventional Radiology Department, Assistance Publique-Hôpitaux de Paris, Hôpital Européen Georges Pompidou, Paris, France

CUM LAUDE

P-77 / Score to predict the occurrence of pneumothorax after CT-guided percutaneous transthoracic lung biopsy

Lamfichekh Y¹, Lafay V³, Calame P¹, Eberst G³, Grillet F^{1,2}, Westeel V³; ¹CHRU Besançon, Radiology, Besançon, France, ²Centre Léon Bérard, Radiology, Lyon, France, ³CHRU Besançon, Chest Diseases, Besançon, France

P-475 / Interim analysis results of a prospective monocentric study on totally percutaneous deep foot veins arterialization

Migliara B¹; ¹Pederzoli Hospital, Peschiera Del Garda, Italy

P-411 / Role of popliteal sciatic nerve block in endovascular revascularization of critical limb ischemia

Nardelli E¹, Maglia C¹, Discalzi A¹, Mancini A¹, Gobbi F², Calandri M¹, Fonio P¹; ¹AOU Città della Salute e della Scienza di Torino/Department of Interventional Radiology, Torino, Italy, ²AOU Città della Salute e della Scienza di Torino/Department of Anesthesiology, Torino, Italy

CERTIFICATE OF MERIT

P-158 / Three-year's single-center experience with inflammatory embolization in Brazil

Picada Correa M¹, Puton R¹, Saleh J¹, Noel R¹, Borges L¹, Jatczak L¹, Bajerski;
¹Invasc, Passo Fundo, Brazil

P-300 / Generation of synthetic subtraction angiograms in abdominal region using deep learning

Yonezawa H¹, Ueda D¹, Yamamoto A¹, Kageyama K¹, Walston S¹, Nota T¹, Murai K¹, Ogawa S², Sohigawa E¹, Jogo A¹, Kabata D³, Miki Y¹; ¹Department of Diagnostic and Interventional Radiology Graduate School of Medicine, Osaka City University, Osaka, Japan, ²Department of Radiology, Osaka Saiseikai Nakatsu Hospital, Osaka, Japan, ³Department of Medical Statistics, Graduate School of Medicine, Osaka City University, Osaka, Japan

Interview with CIRSE 2022 Scientific Programme Planning Chairperson Prof. Thomas Kröncke



Thomas Kröncke
CIRSE 2022 SPC Chairperson

research impacting our practice via the FIRST@CIRSE sessions and create a format providing insights into upcoming trials with the "Meet the PI" sessions. I am convinced that this aligns well with CIRSE's goal to spearhead new developments and the latest research in IR. These tracks will be an integral part of CIRSE 2022.

Looking at the many facets of IR, I think one achievement is also that, together with the support of Alex Barnacle, we have given paediatric interventional radiology more visibility within the CIRSE meeting and will continue to do so. The video learning sessions have also been a great success and I am sure that Adam Hatzidakis as the incoming SPC chairman will ensure that we will continue to offer this educational format in the future.

What was particularly important to you when creating a virtual congress for the 2020 and 2021 annual meetings?

Kröncke: I think that the barriers to attend a virtual congress should be very low. In other words, it was important to me that all our members but also newcomers and partners from the industry can attend sessions and

engage with the community easily. I think we achieved this goal and delivered a virtual meeting that stayed ahead of many other conferences with respect to its technical solutions and accessibility. The mix of live and on demand sessions was well received and we were able to deliver most of what people expect from a live congress at the Summits, with the only exceptions of course being hands-on workshops.

Which parts of the virtual congress would you like to see stick around?

Kröncke: The lively morning and end-of-day broadcasts, commenting on the highlights of the day and offering a glimpse of forthcoming sessions were watched by many of our colleagues. I think it is worthwhile to think of this as a good way to connect with those who cannot attend in person. But I think that we will also see other formats established during the pandemic stick around.

What would you like the meeting to focus on the years to come?

Kröncke: There is no specific topic I would put up front and I think that no single topic

will define IR in the future. Interventional Radiology has gone through great changes from a "name" to describe mainly vascular-oriented techniques and treatment options to a profession that delivers minimally invasive image-guided therapy in all fields of medicine. That is also a challenge, since new techniques are constantly emerging and there is a need for specialised training of established treatments in order to deliver high-quality care. Moreover, for the annual meeting we always have to meet many different expectations: the promise to deliver excellent education in IR and connect with the next generation, to highlight the newest trends, but also to give direction by inviting experts in the field to comment on evidence and best practice while leaving room for discussion with participants of our diverse congress. If we keep this in mind, the CIRSE annual meeting will continue to be the home of IR.

CIRSE would like to thank SPC Chairperson Prof. Thomas Kröncke and his Scientific Programme Committee for their outstanding work over the last three years.

What were your main foci during your tenure as SPC Chairperson?

Kröncke: My tenure pretty much coincided with the start of the COVID pandemic; a completely unprecedented situation for all of us which of course also strongly affected the SPC Committee's work. We soon realised that we needed to provide a virtual congress which meant that we had to create a CIRSE Summit from scratch. While this was fun and challenging, it also required new forms of communication with the CIRSE members, but also a more focused approach on the many developing topics within IR and our community.

However, I am proud that during my (extended) tenure we were able to expand on the latest

TACE

Roberto Iezzi

The last decade has seen important developments in the treatment of metastatic colorectal cancer (mCRC), particularly in the use of newer multidrug regimens and their combination with targeted locoregional therapies [1–2]. Increasing data on the ability to treat liver metastases with locoregional therapies has also solidified this treatment management. Understanding the timing and role of these techniques in the multidisciplinary care of the patient is critical [3]. In this scenario, interventional radiologists could play an expanding role in offering safe and effective integrated options in the continuum-of-care as curative or palliative approaches, helping to improve local control of tumours with multimodality treatment. In detail, catheter-directed therapies, such as transarterial chemoembolisation, are potential techniques for managing patients with unresectable liver metastases to selectively deliver high doses of chemotherapy to the tumour bed and to embolise the target vessels, with minimal systemic bioavailability while sparing the surrounding liver tissues [4–5].

The success of the procedure is strictly dependent on multiple clinical and technical factors, including thorough knowledge of procedural aspects as well as intra-procedural pain management, appropriate patient selection and clinical indications, prevention, early detection, and management of complications.

1. Procedural aspects

Standardisation of techniques and protocols is mandatory and expected to improve safety and efficacy [5–8]. Pre-treatment planning is based on accurate CT/MRI exams. A trans-femoral or trans-radial approach, using a 4–5 F arterial introducer sheath, can be used, with the trans-radial approach representing an attractive accepted alternative, characterized by several advantages. Identification of the appropriate anatomy of the hepatic artery, of any possible branches related to non-target structures, excluding any arteriovenous

fistulae, as well as recognition of the right feeding artery, using cone beam CT (CBCT) and eventual navigation software, is mandatory. A selective lobar catheterization is usually performed with a coaxial technique, placing a micro-catheter in the right or left hepatic artery that is feeding the tumour lesions. A slowly infused solution of small-sized microparticles loaded with Irinotecan is usually delivered. The procedural endpoint is to deliver the planned dose of anticancer agent, obtaining a “near-stasis” flow [5, 8]. On the basis of the extent and distribution of the disease, two (unilobar disease) or four (bilobar disease) treatments are usually planned.

2. Pain management

The most frequent adverse event is post-embolisation syndrome (PES), with abdominal pain generally seen in as many as 40% of patients after treatment, being severe in 25% of patients. In the setting of moderate to severe symptoms, if not treated promptly, significant effects on the prognosis and quality of life in patients can occur [5]. The CIREL registry confirmed that there is no standardization of peri-procedural management, with significant differences in procedural medications [9]. Based on this background, an adequate knowledge and standardisation of peri/intra-procedural pain management are mandatory to increase the number of patients treated and to reduce the rate of an uncompleted treatment cycle.

3. Clinical indication

The ESMO guidelines showed that chemoembolisation may be considered as a treatment option for patients with liver-limited disease, failing the available chemotherapeutic options, even if characterized by a low level of evidence [8,10,11]. However, the CIREL registry demonstrated that this indication – salvage treatment in progressive patients – was followed in only 30% of patients enrolled. In detail, in this real-life prospective registry, chemoembolisation was used as an

intensification treatment, with concomitant systemic therapy in about 27% of patients, and as a consolidation or closing treatment with or without systemic therapy after a stable disease for more than three months, in about 16% of patients, in order to also provide “chemo-holidays”. 14% and 13% of treatments were classified as first-line for chemo-naive patients and combination treatment with ablation with curative intent, respectively [12].

4. Multimodality approach

Chemoembolisation can also be combined with systemic therapies in order to improve the local control and progression-free survival. In the CIREL registry, 27% of patients received concomitant systemic chemotherapy [13].

In the study of Joharatnam-Hogan et al. [14], the use of multimodal therapies within a multidisciplinary setting compared to systemic treatment alone demonstrated significant improvement in the survival of individuals with metastatic colorectal cancer. In this study, patient selection for multimodal therapy requires a multidisciplinary decision, performed by a multidisciplinary tumour board (MTB). The MTB should take into consideration the clinical specificities beyond liver tumour burden, such as comorbidities, compliance to treatment, general performance status, and history of the disease in order to select the best approach for the individual patient following the principles of the precision medicine.

In conclusion, chemoembolisation for the treatment of patients with colorectal liver metastases requires familiarization and practice of all technical as well as clinical aspects to provide the most optimal effective and safe treatment. The era of quality-driven health care provides tremendous opportunities for interventional radiologists to showcase the field’s value, build credibility, and ensure the survival and growth of the specialty.

Don't miss it!

Updated evidence of intra-arterial therapies in metastatic colorectal cancer

Saturday, September 10, 11:30-12:30
Room 112



Roberto Iezzi
Catholic University
Rome/IT

Roberto Iezzi is an associate professor of radiology at Catholic University in Rome, Italy, the chairman of Diagnostic and Interventional Radiology at “Gemelli Molise” in Campobasso, Italy, and a consultant of interventional radiology at “Fondazione Policlinico Universitario Agostino Gemelli” in Rome, Italy. He obtained his medical degree in 1999, completed his residency in 2003, and received a master degree in interventional radiology in 2014. He is an active member of the Italian Society of Radiology (SIRM), European Society of Radiology (ESR), and Cardiovascular and Interventional Radiological Society of Europe (CIRSE). In his professional and scientific work, Prof. Iezzi has been focusing on cardiovascular and interventional radiology, with particular reference to interventional oncology. He has authored and co-authored more than 130 articles in peer-review journals, is co-author of several book chapters, and has given over 200 invited lectures at national and international meetings. He is founder and co-director of the MIOlive (Mediterranean Interventional Oncology Live) Congress. He is editorial board member of Journal of Cardiology and Therapy (JCT), International Journal of Diagnostic Imaging (IJD), Case Report in Radiology (CRR), and Life – MDPI.

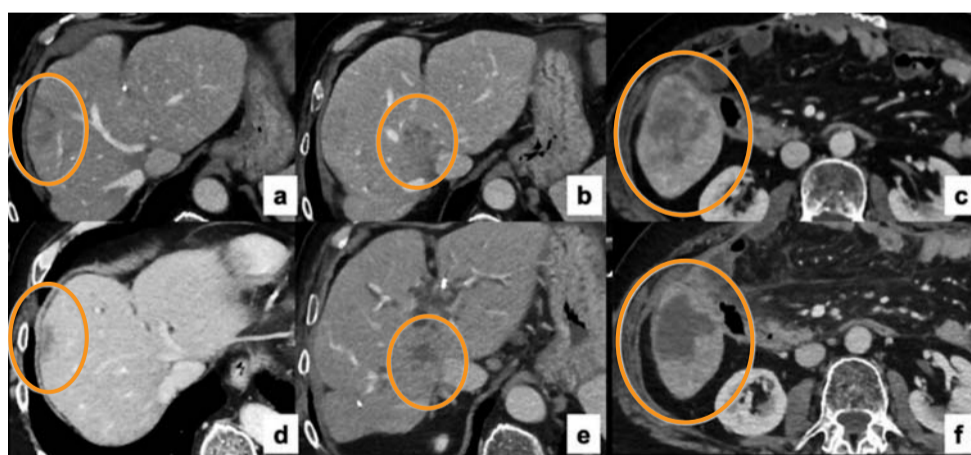


Figure 1: R.R. 67yo ♀ – Unilobar liver-only mCRC. Stable disease for more than 3 months after 2-lines of standard chemotherapy, asking for a chemoholidays (a-c). Two lobar chemoembolisations (Irinotecan DEB-TACE – 4-weeks interval) were performed, obtaining an optimal local disease control, as confirmed at CT-images obtained at 3-month follow-up (d-f).

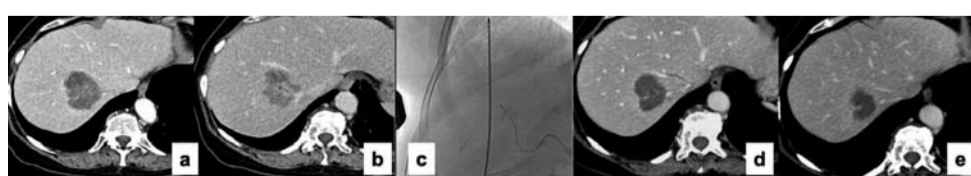


Figure 2: T.E. 82yo ♀ – Methachronous Unresectable mCRC (4.9cm) (a-b) – Cardiac Comorbidities. Single-step combined treatment with RFA followed by chemoembolisation (Irinotecan DEB-TACE) was performed (c), as first-line treatment, with an optimal local control, as confirmed at 6mo CT- follow-up (d-e).

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Don't miss it!

PAD Day: What is the optimal scaffold in the SFA in 2022?

Saturday, September 10, 17:30-18:30
Auditorium 1



José Joaquín Muñoz Ruiz-Canela
Regional University
Hospital of Malaga
Malaga/ES

Dr. JJ Muñoz is the coordinator of the department of vascular and interventional radiology at the Regional University Hospital of Malaga in Malaga, Spain. He has published numerous book chapters and journal articles for national and international publications; he is also the author of the book: *Learning Vascular and Interventional Radiology*. In addition, he has participated in many national and interventional congresses with papers, posters and speaking lectures. He was the president of SERVEI from 2007-2009 and is a member of SIDI and CIRSE.

SFA – covered stents

José Joaquín Muñoz Ruiz-Canela

Treatment of superficial femoral artery (SFA) occlusive disease remains one of the most challenging procedures for the peripheral vascular interventionalist. Unlike interventions in other vessels, especially stenting of coronary, renal or iliac arteries, long-term patency following a SFA intervention has been difficult to achieve. Avoidance of femoral-popliteal bypass surgery using venous conduit is reasonable because many of these patients have concurrent coronary artery disease and the saphenous vein may be needed later for coronary artery bypass surgery [1]. Many patients are simply managed medically; some, though relatively few, do achieve significant relief from symptoms with an exercise programme [1].

A large number of devices have been developed and studied for the treatment of SFA disease, likely due to the generally inadequate long-term results of balloon angioplasty for all but the simplest and shortest lesions [1].

Compared to femoropopliteal bypass, the interventional data remain limited, with only



a handful of studies examining patency rates for more than one or at most three years, while surgical follow-up data often extends to ten years. This limitation is in part due to the “moving target” nature of intervention compared to surgery. While femoropopliteal bypass has been a stable procedure for decades, interventional devices constantly evolve, so that by the time a study with one- or two-year follow-up is completed, the device is often outdated either because a new and improved iteration has replaced the original device, or because an entirely new device has come into development. Complicating the issue further is that many trials include lesions that are simpler and shorter than the “real world” disease doctors face daily. For example, many trials exclude long lesions, chronic total occlusions, severely calcified stenoses, vessels with poor distal run-off, and ostial SFA disease [1].

In many practices, these features are more the rule than the exception. The morphologic features that occur in the distal SFA and proximal popliteal artery make it easy to

understand why satisfactory long-term interventional results have been difficult to achieve, even with a host of different approaches. The length of the SFA and the extreme flexion, not to mention shortening/extension, torsion, and compression also make long-term studies difficult [1]. Lesions in the SFA are complex in morphology and it is a unique vessel characteristic.

Although many devices have targeted various morphologic challenges (e.g. calcification, elastic recoil, dissection, thrombus), none has addressed the challenge of long lesion length. In general, the restenosis rate is linearly related to the length of the vessel treated for nearly every device available. Although most clinical trials report an average lesion length of <10 cm, patients with severe diffuse disease and/or chronic total occlusion often have lesion lengths >25 cm and sometimes longer [1].

Endovascular strategies

- Plain balloon angioplasty (POBA)
- Bare metal stents (BMS), nitinol stents
- Paclitaxel based therapy
- Drug coated balloons (DCB)
- Drug coated stents (DES)
- Self-expandable covered stents
- Others: atherectomy (AT), etc.

Rationale to use covered stents [1]

- To reduce the incidence of restenosis
- To reduce the in-stent restenosis (ISR) to edge restenosis which is easier to treat and the incidence is independent of lesion length
- Clinical data is encouraging

Viabahn Endoprosthesis [2]

- It is an endoluminal bypass with potential edge restenosis
- In contrast with other stents, Viabahn has an length independent restenosis rate
- Some studies compare covered stent grafts versus others treatments on femoropopliteal lesions

Femoro-popliteal by pass versus Viabahn [3]

- Identical results for the two procedures
- Lesion length in Viabahn group 25.6 cm
- Similar results at one, two, three and four years
- Utilised the older version of Viabahn without heparin bonding and the contouring proximal edge

VIPER study [4]

- Gore VIPER clinical study data primary patency as a function of proximal oversizing
- Is a single arm study with 119 patients, with long SFA lesions (mean length 19 cm), chronic total occlusion 56% and moderate to severe calcifications in 61% of the patients
- One year primary patency was 74%, secondary one year patency was 92% with Doppler ultrasound (DUS)
- One year primary patency was 88% oversizing <20% and 70% when oversizing <20%
- Sizing is critical: primary patency is significantly better when IFU sizing is not exceeded at the proximal edge

VIASTAR study [5,6]

- Is a physician initiated, prospective, randomized multicenter trial
- It compares Viabahn (V) versus bare metal stents (BMS) in complex lesions

- The average lesion lengths were 19 cm (V) vs 17 cm (BMS)
- CTO procedures were 78% versus 70%, respectively
- One year primary patency were 78% versus 54% p=0.009, respectively
- One year primary patency of lesions>20 cm 73% versus 33% p=0.004, respectively
- It was significantly higher primary patency results using covered compared to BMS. This improvement is even greater in long, complex lesions

RELIN study [7]

- Is a prospective randomised trial comparing Viabahn versus PTA
- There were 39 versus 44 patients, respectively
- The mean of lesion length was 17 versus 19 cm and the incidence of CTO's 23% vs 25%, respectively
- One year primary patency was superior in the Viabahn group (74.8%) versus PTA group (28%)

Japan IDE trial [8]

- Is a single arm, prospective study with 103 patients
- The mean of the lesions was 23 cm and CTO was 66%
- Used learning from VIPER for recommendations
- At 24 months primary patency was 92%, secondary patency 87.2% and freedom from TLR 78.8% and 79.1% at five years

VANQUISH trial [8]

- Physician initiated, prospective, multicenter study
- Enrolled 424 limbs in 371 patients treated with a Viabahn stent-graft placement in femoropopliteal artery
- The purpose of this study was one year patency outcomes in real world setting and evaluating the role of hypercoagulability
- A full-coverage stent-graft was selected in 343 limbs (81.1%), where as the remaining 80 limbs (18.9%) underwent spot implantation
- The one year primary patency in full coverage group was 80.3% and in the spot group 68% (p=0.025)
- A smaller vessel size was significantly associated with loss of patency
- The prothrombotic state was not associated with loss of patency

VIABAHN in chronic limb threatening ischaemia [8]

- Most studies focus in intermittent claudication (IC)
- There are some studies focusing in Viabahn in chronic limb ischemia (CLI) patients
- Technical success was 93%
- Most patients were treated with one or two endografts with 6 mm the most common diameter
- The hospital stay was three days (IQR two to seven days) and 30-day mortality was 2%
- Survival at two years was 78% and 62% were free from other reinterventions
- The two-year patency rates were primary 60%, assisted primary 63% and secondary 86%
- The two-year freedom from minor amputation was 95% and major amputation 99%

SFA covered stent possible indications

- Complex long lesions from 10-25 cm
- Complications of PTA (arterial rupture, dissection) in long lesions
- Long chronic total occlusions
- Complex lesions from 3-10 cm

Key technique points [1]

- Stent “normal to normal” vessel
- Do not worry about covering collaterals in SFA
- If stenting back to the proximal SFA, it is best to stent back to the SFA origin
- Use ipsilateral angulated view to align the Viabahn with the SFA origin
- Do not cover vessels < 4.5 mm in diameter
- Do not oversize Viabahn more than 20% of true diameter
- Dual antiplatelet therapy for a minimum of six months and preferably indefinitely if not clinically contraindication
- Posdilata with PTA but do not allow the balloon to extend pass the edge of the Viabahn stent to avoid edge dissection and restenosis
- Perform DUS every four months for one year then every six months, treat if peak systolic velocity > 300 cm/sec
- Consider telescoping from 5 mm Viabahn distally to larger 6 mm. Viabahn proximally, always overlap Viabahn stents by 1-2 cm

Summary

- SFA complex lesions are a challenge to treatment
- Covered stent are an endoluminal by pass
- A high percentage of long lesions and CTOs
- Studies have demonstrated a better performance compared with BMS and similar technical outcomes compared to FP bypass surgery with faster recovery
- Possibility of edge restenosis and thrombosis
- VIABAHN: smaller profile, contouring proximal edge and heparin bonding
- We have to choose an adequate size device
- Monitoring one year with DUS
- In case of thrombosis use thrombolysis
- BMS stenosis could be treated with covered stent (RELIN STUDY)
- Self-expanding covered stents can also be safely used in patients with CLI

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Drug eluting stents

Hans van Overhagen



Critical limb threatening ischaemia (CLTI), previously named critical limb ischaemia (CLI), is the end stage of peripheral artery disease (PAD) and diabetic foot. It is characterized by rest pain and tissue loss.

In Europe, the incidence of CLTI is increasing due to higher life expectancy and an increasing incidence of diabetes.

Treatment strategies in CLTI include lifestyle changes, such as smoking cessation and weight reduction, and medical treatments such as antiplatelet therapy, lipid and hypertension control and revascularisation in order to create unobstructed arterial blood flow into the foot [1].

Traditionally, revascularisation was performed by means of bypass surgery, but endovascular techniques have gradually become the first choice of treatment as they are less invasive and reduce perioperative morbidity and mortality. In addition, there are no trials for below the knee revascularisation comparing endovascular techniques with bypass surgery and the published meta-analyses show similar results regarding leg preservation [2,3].

Percutaneous transluminal angioplasty (PTA) has been and still is the basic procedure used to open up a blood vessel after the stenosed or occluded lumen has been crossed with a guidewire. In intravascular ultrasound (IVUS) studies, it has been shown that the main effect of PTA is established by creating a limited dissection (4). The human body, in an attempt to heal this wound, however, sometimes reacts with (neo)intimal hyperplasia which subsequently results in restenosis, thus decreasing the long-term effects of PTA [5].

Drug eluting stents (DES), metal stents coated with cell hyperplasia reducing medication, were considered a possible solution to restenosis and were first successfully introduced in the coronary arteries [6].

The first reports regarding the use of DES in arteries below the knee (BTK) appeared around 2012 [7,8,9]. The trend in these reports was that patency was improved BTK after using DES compared with PTA only or bare metal stents (BMS). This was confirmed in a meta-analysis by Katsanos and colleagues who concluded that "DES for focal infrapopliteal lesions significantly inhibit vascular restenosis and thereby improve primary patency, decrease repeat procedures, improve wound healing and prolong overall event-free survival". They did not find significantly less amputations, which might be explained by the small number of patients and the inclusion of patients with claudication in the trials whose limbs are not at risk [10].

After these encouraging initial results, however, for no obvious reason the interest in interventional radiology shifted towards the use of drug eluting balloons, because "you do not want to leave anything behind".

As we believed that the benefits and drawbacks of DES BTK in CLTI had not been researched properly and thoroughly enough, we initiated the Percutaneous Transluminal Angioplasty and Drug-Eluting Stents for Infrapopliteal Lesions in Critical limb Ischaemia (PADI) Trial in the Netherlands, in which patients with CLTI only and lesions below the knee were randomised for a paclitaxel-coated coronary DES (Taxus Liberte, Boston Scientific) or PTA with bail-out BMS (standard practice) [11,12].

The primary endpoint of the PADI trial, patency on CTA at 6 months follow-up, was significantly better in the per protocol analysis for DES compared with PTA±BMS, which was consistent with previous reports from others. In addition, at 6 months follow-up there were almost twice as many major amputations after PTA±BMS (20.5%) compared with DES (9.8%) but the difference did not reach statistical significance (Fig 1) [12].

At 5-year follow up this trend continued. The estimated 5-year major amputation rate was lower after DES (19.3%) than after PTA ±BMS (P=0.09) (Fig 2). The 5-year amputation free survival and event free survival rates were significantly higher after DES (Fig 3) [13].

In collaboration with the Dutch health insurer VGZ, we showed that DES are cost effective in BTK treatment in CLTI due to higher hospital costs of amputation and rehabilitation in the PTA±BMS group [14].

In 2018, Katsanos and colleagues, in a systematic review and meta-analysis reported an increased risk of death following the application of paclitaxel coated balloons and stents in the femoropopliteal artery. The vast majority of these patients had intermittent claudication (89%) and were treated with drug eluting balloons (DEB) [15]. Later, the same group reported in a systematic review and meta-analysis a significantly lower amputation free survival after using paclitaxel coated DEB compared with non-coated PTA balloons in infrapopliteal arteries [16].

These worrisome publications urged us to extend the follow-up in the PADI trial and study the long-term follow-up in our patient population with a special focus on survival and mortality. We observed a very poor 10-year survival in general, with a mortality of 79.6%. There was no significant difference between mortality in the DES group compared with the PTA±BMS group (Fig 4). In addition, there was no specific dose related mortality or dose per weight mortality.

One should consider that the paclitaxel dose of drug eluting devices differs with the type of device and its intended diameter and length. DES generally have a much lower dose than DEB with the same intended diameter because the surface on which the medication is applied is much smaller. For the same reason, the paclitaxel dose on smaller crural devices is lower than on larger femoropopliteal devices. Finally, DES present a scaffold which may offer possibilities for slower and more controlled release [17].

The PADI trial has been criticized for using short coronary DES, whereas patients with CLTI often have long lesions. Unfortunately, longer DES devices were and are still not commercially available. Recently, however, Boston Scientific has designed a stent specifically for BTK lesions. In the SAVAL trial, a longer self-expandable DES has been introduced and has been compared with PTA only. The first results should be released soon and we are anxious to see them!

Don't miss it!

Update on advanced below-the-knee interventions

Saturday, September 10, 8:30-9:30
Room 117



Hans van Overhagen
Haga Teaching Hospital
Den Haag/NL

Dr. van Overhagen completed his medical studies at Leiden University before going focusing on interventional radiology at the Erasmus University in Rotterdam. He is particularly skilled in vascular interventions such as stroke, CI(T)I and AMI, and is the principle investigator of the PADI and Puccini trials, as well as the European PI of the SAVAL trial. He is an active member of CIRSE, the Netherlands Society of Interventional Radiology, and the Netherlands Society of Radiology, and is the Co-founder Radiologie Interventie Dag Nederland. A CIRSE fellow, Dr. van Overhagen has authored or contributed to numerous CIRSE Academy courses and SOP documents, especially on stroke and CL(T)I, and is currently on the CIRSE 2022 Scientific Programme Committee.



For this article's references, please scan the QR code on the right.

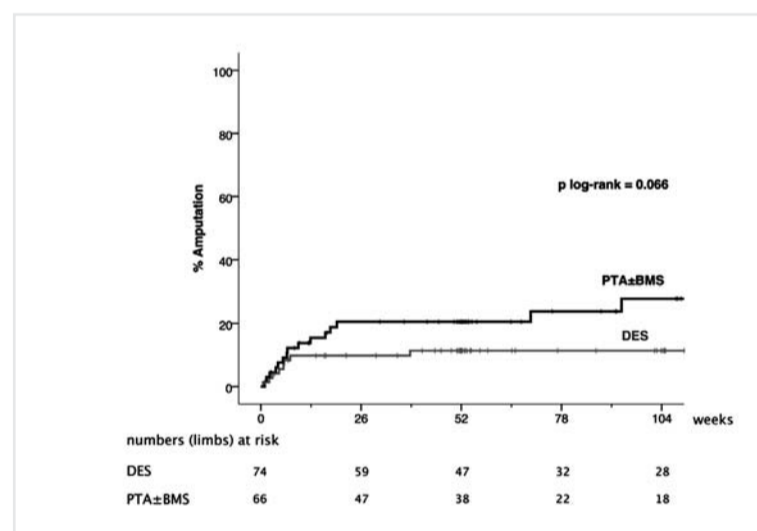


Figure 1: Kaplan-Meier curves representing the estimated 2-year cumulative incidence rates of major amputation per Limb after PTA±BMS and DES. (Circ Cardiovasc Interv. 2016 Feb;9(2):e002376. doi:10.1161/CIRCINTERVENTIONS.114.002376.PM ID: 26861113).

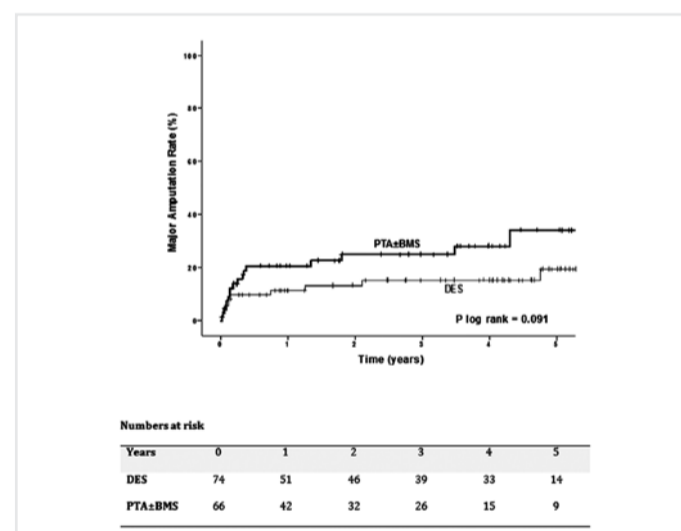


Figure 2: Kaplan-Meier curves representing the estimated 5-year cumulative incidence rates of major amputation per limb after PTA±BMS and DES. (J Am Heart Assoc. 2017 Apr 14;6(4):e004877. doi:10.1161/JAHA.116.004877.PMID: 28411244).

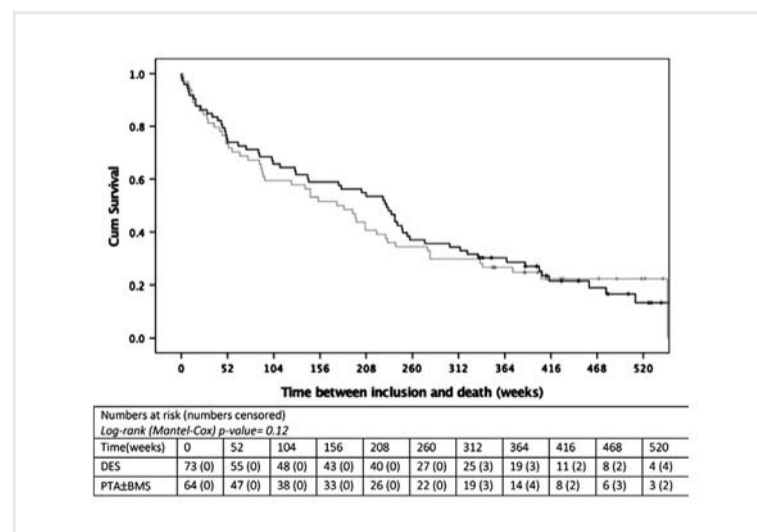


Figure 4: 10-years Kaplan-Meier survival curves for DES (black line) versus PTA±BMS (grey line). (Cardiovasc Intervent Radiol. 2020 Dec;43(12):1881-1888. doi: 10.1007/s00270-020-02602-6. Epub 2020 Jul 28).

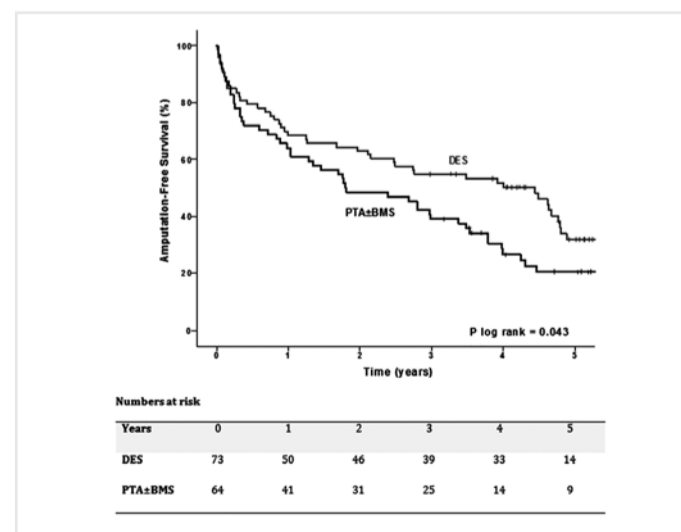


Figure 3: Kaplan-Meier curves representing the estimated 5-year cumulative incidence rates of amputation-free survival per patient after PTA±BMS and DES. (J Am Heart Assoc. 2017 Apr 14;6(4):e004877. doi: 10.1161/JAHA.116.004877.PMID: 28411244).

Don't miss it!

New frontiers in pain management
Saturday, September 10, 11:30-12:30
Room 115

Percutaneous cryoneurolysis: a primer for non-users

Dimitrios Filippiadis



Dimitrios Filippiadis
National and Kapodistrian
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Athens/GR

Dr. Dimitrios Filippiadis serves as associate professor of diagnostic and interventional radiology at the second department of radiology of the Medical School of National and Kapodistrian University in Athens, Greece. He also serves as chairperson of CIRSE's Online Education Committee and general secretary of the Greek Society of Interventional Radiology. His work has resulted in over 110 scientific publications, hundreds of scientific and business presentations, 32 book chapters, and substantial industrial and scientific grant support. He is a CIRSE Fellow and the recipient of more than 15 major honors/awards.

We live in a vintage era where everything old seems new; percutaneous cryoneurolysis could not be the exception to this rule. The first reports on the application of cold for pain reduction date back to the Napoleonic wars, whilst the first published data was released in the 1970s. Cryoneurolysis is a technique involving the application of extreme cold upon nerves for palliation of benign or malignant pain resistant to conservative medication. The pathophysiology behind cryoneurolysis includes a cascade of events that interrupt nerve conduction without causing irreversible damage to the nerve. Temperatures below 10°C result in a temporary signaling inactivation, while at -5°C, a conduction block occurs that lasts for hours to days; both these events are related to disruption of the Na/K pump. At -20°C, loss of axonal continuity occurs, leaving the myelin sheath and the endoneurium intact (Sunderland 2 injury). As opposed to tumor ablation, cryoneurolysis is not dependent on the induction of osmotic gradients for cell death requiring different protocols than historically used by interventional radiologists for cancer management. Goal temperatures during cryoneurolysis should not be below -40°C. The intensity and duration of the analgesic effect depend on the degree of damage from the ice ball and usually lasts for several (6-12) months.

Imaging guidance with precise anatomic delineation, high spatial resolution and good tissue contrast contribute to the safety and efficacy of the technique by offering safe and effective access even to deep nervous system structures as well as monitoring and documentation of the ice ball (i.e. neurolytic zone). Multiple cryoprobes (range of diameter from 8 to 24 Gauge) can be simultaneously used if necessary; at present, the most commonly utilized gases for ice ball formation include argon, nitrous oxide and carbon dioxide. Depending on the system used and the gas utilized, single or double alternating freeze-thaw cycles are applied. Advantages of cryoneurolysis over radiofrequency or chemical neurolysis include visibility of the ice

ball, which offers high targeting and a reduced chance of post-treatment neuroma formation.

Indications for cryoneurolysis include acute or chronic pain related to peripheral neuropathies and neuropathic syndromes (including among others pudendal, occipital, genicular, genitofemoral and lateral femoral cutaneous nerves for the respective neuralgias) of benign origin, osteoarthritis and joint replacement symptoms, facet and sacroiliac joint syndrome as well as cancer pain. Post-operative (usually related to mastectomy or thoracotomy) and phantom limb pain, complex regional pain syndrome type I, Morton's neuromas or Schwannomas, digital neuralgia, postherpetic neuralgia and hip adduction spasticity along with obturator neuralgia are also included [4] in the list of indications. Contraindications include the inability to consent, anatomy-related issues precluding safe access to a region of interest, bleeding disorders and coagulopathy, infection, cold urticaria, cryoglobulinemia and Raynaud's syndrome. A positive diagnostic block (injection of local anesthetic with or without corticosteroid with subsequent pain relief) should precede. Percutaneous cryoneurolysis can be performed either as first-line therapy post a positive diagnostic block or as an incremental strategy after a recurrence of symptoms post infiltration or chemical neurolysis with ethanol or phenol.

Numerous studies in the literature report significant pain reduction post application of cryoneurolysis for acute or chronic benign or malignant pain resistant to medication. Percutaneous cryoneurolysis is a safe procedure with minimal risk of complications, including local bruising, bleeding and infection, frostbite, alopecia, depigmentation and necrosis (if the skin is involved) or local vascular thrombotic events. Under- or overlysis of the target nerve may result in allodynia, neurogenic symptoms, and/or exacerbation of underlying symptoms. Proper patient selection, pathology-tailored approach and imaging guidance with close monitoring of the ice ball are the keys to a safe and efficacious

session. Current limitations of cryoneurolysis include the lack of real time knowledge of in vivo temperatures as a function of time and individual patient or nerve characteristics in order to under- or overlysis.

Percutaneous cryoneurolysis leads a continuously expanding role in pain management with minimally invasive, imaging-guided techniques. In the era of the opioid crisis, it is the right moment for interventional radiologists to build relations with referring doctors, hospital administrators and local media, proposing a non-opioid procedure that can provide significant pain.

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Chyloretroperitoneum

Christof M. Sommer

- Chyloretroperitoneum.
- Excuse me?
- Chyloretroperitoneum!
- Pardon me??
- CHYLORETROPERITONEUM!!
- Please what is this???
- This is a relevant pathologic condition that IRs interested in lymphatic pathology and its treatment should be aware of!!!

Chyloretroperitoneum is a potentially life-threatening medical condition with pathologic lymph or chyle collections in the retroperitoneal cavity. Typically, chyloretroperitoneum manifests as abdominal pain and swelling, chest pain, urinary symptoms including renal failure, wound discharge, and/or scrotal edema with drainage volumes ranging from several hundred milliliters to several liters per day. Iatrogenic and non-iatrogenic causes have been described, and the time between symptom onset and correct diagnosis can range from days to years. As described below, optimal therapy consists of a multidisciplinary and multimodal approach.

Wrap-up of the underlying anatomy

The retroperitoneal cavity is bound by the peritoneum parietal ventrally and by the fascia transversalis dorsally. Its five compartments include:

- #1 the right lateral compartment and**
- #2 the left lateral compartment:**

Each lateral compartment can, in turn, be divided into three spaces: the anterior pararenal space, the perirenal space, and the posterior pararenal space. The anterior pararenal space contains, among others, the pancreas, the duodenum, and the ascending and descending colon. The perirenal space contains the kidney and adrenal gland, the ureter, and blood vessels, lymph ducts and lymph nodes, among others. The posterior pararenal space contains virtually all adipose tissue.

- #3 the central vascular retroperitoneal compartment:**

This compartment lies between the two lateral compartments described above, posterior to the anterior pararenal space on one side and anterior to the spine on the other. The central vascular retroperitoneal compartment contains, among others, the aorta, the inferior vena cava, the sympathetic trunk, and major portions of the lymphatic system.

- #4 the right posterior compartment and**
- #5 the left posterior compartment:**

The two posterior compartments more broadly include the psoas major and iliacus muscle, reaching deep to the lesser trochanter.

A superb graphical illustration that allows the understanding of the different compartments and spaces at a glance can be found in the free access publication by Coffin et al. (PMID: 25547251; <https://pubmed.ncbi.nlm.nih.gov/25547251/>). Given the narrow topographic circumstances of the retroperitoneal cavity, it is obvious that a range of conditions in different organs can lead to primary and

secondary chyloretroperitoneum. The most common include lumbar trauma, urogenital infection, chemotherapy for lymphoma and different surgical procedures such as anterior spinal surgery, lumbar decompression, living donor nephrectomy, kidney transplantation, nephroureterectomy, retroperitoneal lymphadenectomy, pheochromocytoma resection and abdominal aortic repair.

Imaging issues

Depending on the underlying cause of the lymphatic fistula – spontaneous, posttraumatic, or postoperative – the chyloretroperitoneum may have typical or atypical imaging features. Conventional CT and MRI focus on the detection of pathologic fluid collections, whereas the detailed knowledge of the radiological anatomy allows the diagnosis of chyloretroperitoneum in the context of a specific clinical history. Dedicated imaging techniques such as iodised oil-based CT lymphangiography or gadolinium-based MR lymphangiography visualise the lymphatic system and the underlying lymphatic pathology. Thus, the diagnosis of chyloretroperitoneum can be made specifically on the basis of pathologic contrast material extravasation or pathologic lymphatic flow dynamics even and especially in highly complex settings (e.g., in patients after multivisceral resection or with congenital or diffuse lymphatic disease). At this point, attention should be drawn to the possible and diverse communication pathways between the different cavities, compartments and spaces. Incomplete fusion of fascial planes during embryonic development or complex surgery in different compartments allows fluid to migrate from one compartment to another. This insight explains the regularly observed phenomenon of accumulation of lymph or chyle in one body cavity. However, the underlying lymphatic fistula is in another adjacent body cavity (e.g., an aspect of chyloperitoneum may be observed after radical retroperitoneal lymphadenectomy, although the lymphatic fistula is actually in the central vascular retroperitoneal compartment). These potentially misleading imaging aspects of conventional CT or MRI underscore the great potential of dedicated lymphatic 3D

and dynamic imaging and the challenge of performing lymphatic treatments in the right place. A better understanding of the pathophysiological changes in lymphatic flow, from temporary and partial reflux to excessive flow reversal, should be a goal of future lymphatic research, as it may be considered a prerequisite for improved management of patients with spontaneous and iatrogenic lymphatic fistulae.

The treatment of chyloretroperitoneum

As with all types of lymphatic fistulae, the best therapeutic results can be achieved as a team. The multidisciplinary management of patients with chyloretroperitoneum consists of dietary modification (low-fat or fat-free diet) and repetitive subcutaneous injections of octreotide with the goal of minimising the amount and flow rate of lymph and chyle transported via the lymphatic system. Fluid infusion therapy and parenteral nutrition are the standard procedures to compensate for the significant loss of intravascular fluid and avoid cachexia and immune incompetence. Percutaneous drainage helps to quantify the chyloretroperitoneum and is, therefore, important during treatment as a marker of clinical success. In addition, repeated drainage therapy or paracentesis result in pain relief when large volumes of lymph or chyle are trapped in the retroperitoneal cavity or displaced from the retroperitoneal cavity into the peritoneal or pleural cavity via above mentioned communication pathways. Among the most effective treatments for chyloretroperitoneum are interventional radiological procedures that allow healing within days or a few weeks. Therapeutic conventional lymphangiography with iodised oil (transpedal or intranodal), interstitial embolisation with glue, sclerotherapy with ethanol, or a combination of those procedures can be performed as technically safe and clinically effective treatments, either one or more times applied depending on the underlying lymphatic pathology. The salvage strategy usually consists of radiation therapy and surgical revision, but this carries the risk of complications and treatment failures.

Don't miss it!

Lymphatic leaks: imaging and intervention
Saturday, September 10, 8:30-9:30
Room 112



Christof M. Sommer
Heidelberg University Hospital
Heidelberg/DE
Stuttgart Clinics
Stuttgart/DE

Christof M Sommer is a physician, interventional radiologist and scientific author. He works at Heidelberg University Hospital in the Clinic for Diagnostic and Interventional Radiology and at Stuttgart Clinics in the Clinic for Neuroradiology. He is a professor at the Ruprecht-Karls-University Heidelberg and is an active member of various professional societies such as the DRG, DGNR, ESR, ESMINT and CIRSE. Currently, Prof. Sommer is specializing in interventional neuroradiology and healthcare management.

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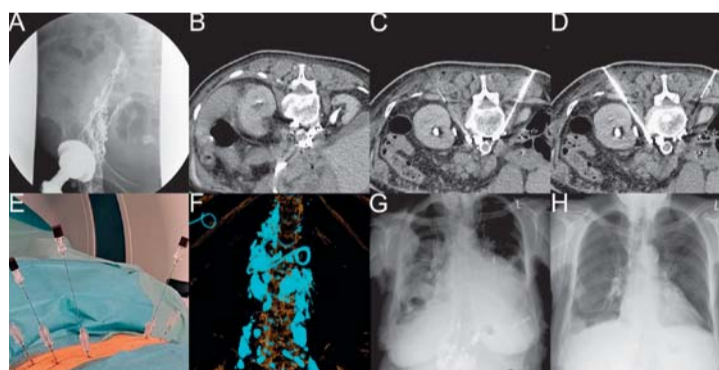


Figure 1: Reference case #1 with a retroperitoneal lymphatic fistula in the form of chyloretroperitoneum after necrotising pancreatitis, which also shows an aspect of chyloperitoneum and chylothorax.

Repetitive iodised oil based transpedal lymphangiographies, internal and percutaneous drainage therapies and interstitial embolisations during a six-month period resulted in ultimate clinical success with resolution of chyloretroperitoneum, chyloperitoneum and chylothorax under regular diet

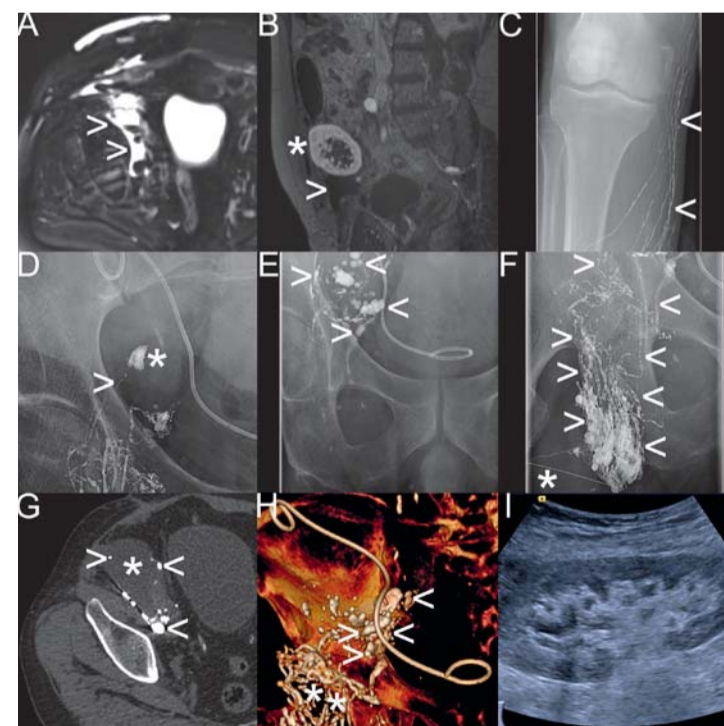


Figure 2: Reference case #2 with retroperitoneal lymphatic leakage in the form of a typical lymphocele after kidney transplantation.

Iodised oil based transpedal lymphangiography and subsequent interstitial embolisation with a 4:1 iodised oil/glue mixture (5 ml) resulted in resolution of the lymphocele and preservation of the kidney transplant

Don't miss it!**Upper limb DVT Saturday**

Saturday, September 10, 10:00-11:00
Auditorium 2



Rick de Graaf
Clinical Center
Friedrichshafen
Friedrichshafen/DE

Dr. Rick de Graaf studied medicine at the University of Maastricht in the Netherlands. He obtained his PhD at the Department of Surgery and Medical Microbiology of the Maastricht University Medical Centre, The Netherlands. He received his training in Radiology at the Maastricht University Medical Centre and obtained his board license in 2010. After clinical and research fellowships at renowned international institutes (Montefiore Medical Centre, dr. Frank Veith, NYC and Prof. Rene Chapot, Alfred Krupp Clinic, Essen), he focused on the minimal invasive treatment of (neuro-) vascular diseases. In 2010 he started the endovascular treatment of deep venous obstructions at the interventional Radiology department in Maastricht. This has led to international collaboration with the University Hospital in Aachen and the Angiology department of the Arnsberg Clinic, Germany. His venous dedication is illustrated by the numerous invited lectures and visiting scholarships. With over 100 scientific publications and numerous presentations with strong focus on venous interventions he became a respected physician in the community. In 2018, Rick de Graaf acquired the position of Chief of Radiology, Interventional Radiology and Nuclear Medicine, and is Coordinating Director of Vascular Medicine at the Clinical Centre of Friedrichshafen, Germany. His main focus is on peripheral arterial and venous disease with a special interest in pelvic congestion syndrome.

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Endovascular treatment of upper limb DVT

Rick de Graaf

Venous thromboembolism (VTE) is a major public health issue and deep vein thrombosis (DVT) affects about 1/1000 patients. Each year, VTE kills more patients in Western Europe than breast cancer, prostate cancer, AIDS, and road traffic accidents combined [1].

Upper extremity deep vein thrombosis (UEDVT) accounts for approximately 5 to 10 percent of all cases of DVT with incidence increasing due to higher frequency of intravenous catheter use. UEDVT is usually categorized into primary (effort thrombosis or Paget-Schroetter disease) and secondary UEDVT, which is mainly caused by an intravenous catheter or cancer. The distinction between primary and secondary UEDVT is important to guide treatment strategies. Effort thrombosis or Paget-Schroetter syndrome usually results from physical exercise in patients with an underlying thoracic outlet obstruction at the intersection of the clavicle and first rib. In contrast to the underlying cause of iliofemoral DVT (most notably May-Thurner compression), this anatomic anomaly should not be treated with stenting because of the high rate of fractures and reocclusions. Pharmacomechanical thrombectomy should always be followed by surgical decompression to increase long-term patency [2]. Secondary UEDVT is more likely to be treated solely by catheter-directed strategies.

Cross-sectional imaging may not be as valuable to identify and categorise UEDVT as it is in iliofemoral DVT. Indwelling catheters or pacemaker leads, bony compression, and mediastinal movement all pose challenges for accurate interpretation. Moreover, real-time imaging during abduction and adduction of the involved extremity may be helpful to identify a position-dependent obstruction. Although hampered by suboptimal vein compression, Doppler ultrasonography is probably still the primary imaging modality to confirm a clinical suspicion of UEDVT. Antegrade angiography is performed only if endovascular treatment is considered. In these cases, intravascular ultrasound (IVUS) is always recommended. IVUS is extremely accurate in identifying underlying compressions, intraluminal webs or trabeculations, and residual thrombosis. While most experience with endovascular thrombus removal has been gained in iliofemoral DVT, similar considerations are valid for UEDVT.

Treatment aims to prevent recurrent DVT, post-thrombotic syndrome (PTS), and pulmonary emboli. One of the main goals is maximum

thrombus removal, since residual thrombus is associated with recurrent DVT and PTS. Again, certain aspects of UEDVT challenge the endovascular approach, more so than in iliofemoral DVT. For example, strong curvatures at the level of the innominate vein make it difficult to physically reach and remove wall-adherent thrombus. Furthermore, the short length of the superior vena cava (SVC) makes stable filter placement virtually impossible. These aspects may help to determine which strategy and which clot-busting device to use. In general, thrombolytics should not be considered anymore for primary treatment. These are related to extended treatment duration and increased bleeding risks [3]. Modern (pharmaco-) mechanical devices use no or minimal thrombolytics which increases procedure safety.

Increasing procedure popularity and technical innovations have led to the introduction of multiple (pharmaco-) mechanical devices in the last decade. Many rely on an aspiration principle in which catheters up to 12 French macerate and remove thrombus fragments. With increasing catheter size and aspiration power, these systems bear the risk of increasing blood loss. Another disadvantage may be that old, more organised and wall-adherent clots are more difficult to remove by suction alone. In my experience, specifically with

the aforementioned challenges of UEDVT in mind, a wall-to-wall full lumen mechanical thrombectomy system is preferable. As shown in the figure below, successful thrombectomy of a 10-day-old UEDVT was achieved after 2 passes with the ClotTriever (Inari Medical, Irvine, CA) system through basilic vein access. IVUS demonstrated no residual thrombosis and no underlying stenosis, thus stenting could be avoided. In some special cases, short stents may be used to overcome chronic lesions not responsive to PTA alone. However, as mentioned before, stenting should not be used at the costoclavicular joint.

After interventional thrombectomy, patients are usually placed on anticoagulation with direct oral anticoagulants for 6 months. After successful thrombectomy, compression stockings are not routinely recommended.

As for iliofemoral DVT, the treatment of UEDVT nowadays is essentially endovascular with some cases requiring a hybrid approach. Dedicated imaging techniques and tailored endovascular management are essential to optimise long-term outcome after thrombectomy for UEDVT.

Disclosures:

Speaking fees/consulting: Bentley InnoMed GmbH, Philips, Inari

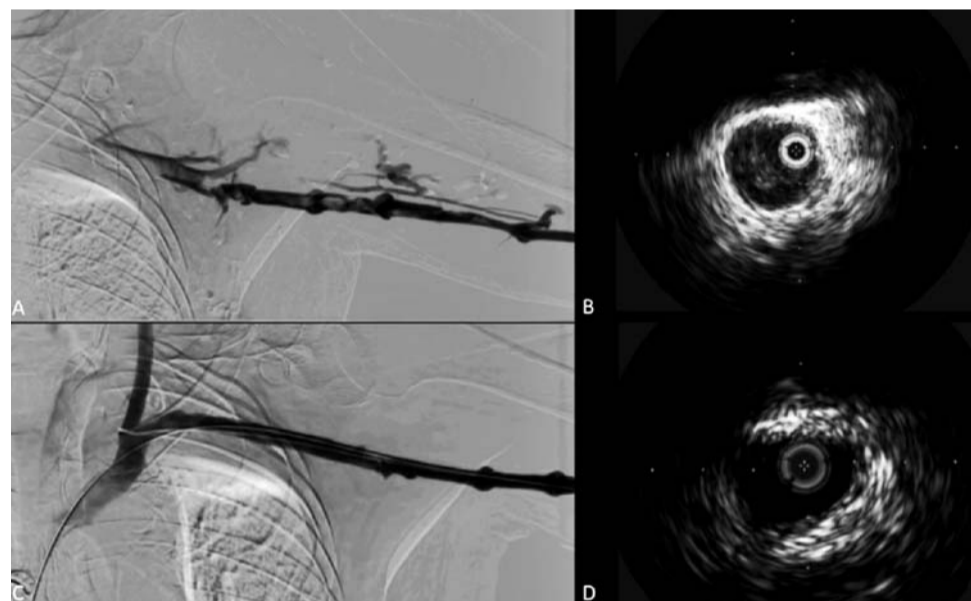


Figure 1: (A) UEDVT in a male patient with a swollen, painful left arm for 7 days (first signs were 3 days before). (B) IVUS showing a subclavian and innominate vein subacute thrombosis with limited wall thickening. (C) Angiography after two passes with the ClotTriever thrombectomy system shows brisk flow through the recanalized segments. (D) IVUS shows complete thrombus removal. Note the vein wall thickening, not to be confused with residual thrombosis.

Important travel notice: Possible delays tomorrow, Sept. 11

Please note that September 11 is Catalonia's national holiday. Due to celebrations in the street throughout the day, it may be more difficult than usual to get around the city. Traditional celebrations will take place throughout the morning in the area surrounding the Arc de Triomf. Additionally, a mass demonstration will take place in the afternoon between approximately 15:30-19:00 in the Plaça d'Espanya area, including Paral·lel,

Creu Coberta, Tarragona, M^a Cristina, Gran Via and Passeig de Gràcia. The flow of traffic and density of public transit in these areas and their surroundings will be significantly impacted. The city police recommend using the ring route to more easily get around during this time. Delegates should allow ample transport time if they plan to connect to the airport on September 11.



Central venous access

Elias Kehagias

The venous access workshop will cover all important aspects of central venous access regarding anatomy, indications, interventional technique, and complications.

Central venous access (CVA) is one of the most frequently performed procedures in interventional radiology and, therefore, the quality of medical care and service provided in these ostensibly easy procedures is projected onto the perception of interventional radiology as a whole by referring physicians, patients, and the public. To give an example of the enormous caseload: more than 400,000 ports are implanted per year in the USA alone. [1]

“Venous Access Devices” (VADs) include non-tunneled and tunneled central catheters (including peripherally inserted central catheters (PICC) and totally implantable (TI) VADs or “ports”. Arm VAD placement is a further valuable option for vascular access.

Learning objectives

1. What are the indications for CVA placement?
2. What are the different VAD subtypes?
3. What is the relevant anatomy?
4. Where should the tip of a central venous catheter lie?
5. Which access techniques are used?
6. What is the Rossi method of accessing the IJV, and why is it advantageous?
7. Which techniques are used for the implantation of each VAD type?
8. What are the most useful advanced techniques in tunnelling VADs?
9. What are the major complications and how are they managed?

This course corresponds to chapter 2.2.1.3.7 – Central Venous Access – of the European Curriculum and Syllabus for IR.

Indications

Central venous access can be necessary to prevent a local reaction by the venous wall of smaller peripheral veins to administered substances, the necessity of high venous flow for dilution of a substance or dialysis, and finally to monitor parameters such as central venous or pulmonary arterial pressure.

Catheter types

Central venous access can be achieved by use of non-tunneled or tunneled devices (these can be totally implanted or not totally implanted).

Catheter types

Non-tunneled catheters include central venous catheters, Swan-Ganz catheters (pulmonary artery catheter), acute dialysis catheters, and PICCs (peripherally inserted central catheter, usually inserted through the basilic or brachial veins). Tunneled catheters include Hickman or Broviac catheters and tunneled dialysis catheters. Ports are totally implanted tunneled devices; usually in the chest, but also in the arm and elsewhere. The use of ports for dialysis has been reported.

Catheter choice

The choice between the different VADs depends on many factors, the most important being the expected duration of the central venous access and flow rates, but also factors like availability in emergency situations, familiarity with the device and relevant disease or further planned therapies (e.g. thrombosis after PICC line can limit the surgical option for brachial AV-fistula creation).

As a rule of thumb, non-tunneled central venous catheters are indicated for a duration of up to two weeks and PICC lines are indicated for a duration of up to three months. Tunneled catheters should be considered if the expected duration exceeds one month, or a port if the duration exceeds three months. More than one lumen is necessary when substances administered simultaneously should not be mixed, for dialysis or continuous physiologic measurements.

Insertion technique basics

For VAD insertion, strict sterility conditions and ultrasound-guided access are imperative and considered standard. Basic surgical skills are also needed. For tip positioning, the most commonly used method is fluoroscopy, but ECG tip tracking techniques are also available.

Reported technical success rates for VAD placement by an interventional radiologist are very high, ranging from 95% for PICC to 98% and 99% respectively for tunneled catheters and ports. Acute complications are considered rare. Interventional radiological techniques allow the placement of a catheter through occluded vessels.

Complications

It is estimated that 3-10% of patients with a port at some point have a related infection, making this the most frequent indication for port removal.

Central venous catheters are a significant risk factor for central venous thrombosis. This is usually treated by therapeutic anticoagulation. If the catheter is functional, catheter removal is not absolutely necessary.

Don't miss it!

Venous access workshop

Saturday, September 10, 16:15-17:15
Room 114



Elias Kehagias
University of Crete
Heraklion/GR

Elias Kehagias, MD, PhD, EBIR, FCIRSE is an assistant professor of vascular and interventional radiology at the University of Crete, working in Heraklion University Hospital, Heraklion, Greece. His main areas of expertise are peripheral vascular interventions (diagnostic arterial and venous angiographies PTA and stenting, EVAR, emergency and elective embolization, central venous access), and non-vascular interventions (PTCD, ureteral stenting, image guided ablation, drainage and biopsies).

On the field of Vascular Access he has published two technique modifications, the “L-shaped tunnelling technique” for port placement in 2016, and the “Arm-to-Chest Tunneling technique” for arm placement of implantable ports or central catheters, in 2019.

LinkedIn: Follow Dr. Kehagias on LinkedIn!

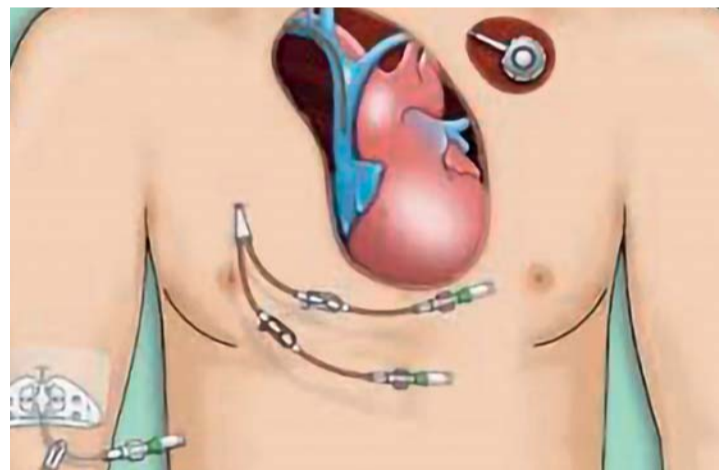


Figure 1: Schematic representation of various VADs



Figure 2: Photo of a three-lumen PICC



Figure 3: A female patient with a port implanted in the left chest, immediately after placement

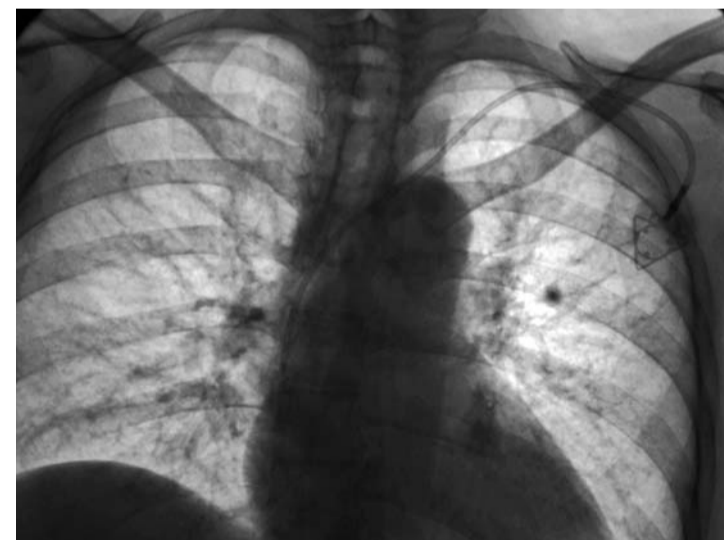


Figure 4: On-table fluoroscopic image of patient with a port in Fig. 3

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PAD SYMPOSIUM

Complex, calcified lesions in the SFA: how to treat with predictable outcomes

Monday, September 12
Auditorium 2
11:30-12:30 CET

Moderator: Dr Michael Dake, Sarver Heart Center, University of Arizona, United States

Presentations

DES vs bypass: 36-month update and health economic snapshot from ZILVERPASS

Dr Michel Bosiers, St. Franziskus-Hospital Münster, Germany

How I treat long TASC C&D lesions

Dr Koen Deloose, AZSint Blasius Hospital Dendermonde, Belgium

DES vs DCB+BMS: based on clinical evidence

Dr Sabine Steiner, University of Leipzig, Germany

How I treat long and calcified lesions

Dr Fabrizio Fanelli, "Careggi" University Hospital-University of Florence, Italy

How I treat long and calcified lesions

Dr Marco Manzi, Policlinico Abano Terme, Vicenza, Italy

Join us for this series of quick, 20-minute updates Sunday through Tuesday mornings at 08:00 CET.



Register for CIRSE here.

SUNDAY, SEPTEMBER 11
ROOM 112

TIPS intervention: the earlier the better?

Moderator: Dr Adriaan Moelker, Erasmus MC Rotterdam, Netherlands

Speaker: Dr Virginia Hernández-Gea, Hospital Clinic Barcelona, Spain

MONDAY, SEPTEMBER 12
ROOM 112

How interventionists can play a vital role in venous ulcer management

Speaker: Prof. Stephen Black, Guy's and St Thomas' NHS Foundation Trust, London, UK

TUESDAY, SEPTEMBER 13
ROOM 114

Haemorrhoid embolization

Speaker: Prof. Vincent Vidal, Timone Hospital Marseille, France

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Building the best IR team

Julien Garnon

Strasbourg, December 2004, beginning of my residency: Some ultrasound-guided biopsies are done in different ultrasound rooms across the hospital. There is an Angio suite for vascular emergencies and diagnostic angiograms. Percutaneous CT-guided interventions (biopsies, cementoplasty, ablations) are performed twice a week on two CT machines usually dedicated to diagnostic radiology. None of the consultant radiologists are dedicated 100% to IR. There is a long waiting list, no outpatient clinics, and a lot of last-minute cancellations.

Strasbourg, September 2021, beginning of my professorship: There are 13 consultants, including four with an academic position who are working in six rooms dedicated to all kinds of IR procedures five days a week (excluding neuro). Last-minute cancellations are now exceptional (excluding COVID-related ones) and the waiting time relative to image-guidance availability has dropped down to ten days maximum for a biopsy.

This sounds like a success story of the creation of an IR team. But what exactly happened during those 15 years?

The first step toward creating the best possible IR team was the establishment of a department dedicated to IR. Medical equipment was not shared anymore with diagnostic radiology, thereby streamlining the access to percutaneous interventions even when CT-guidance was needed. Parallel to that new IR organisation, the radiologists involved in interventions reduced their diagnostic workload to increase their full-time availability not only for scheduled and emergent procedures, but also for outpatient clinics and in-hospital

patient management. This did not mean giving up on diagnostic and disowning the roots of IR, but simply imaging a new organisation within the hospital. The new repartition also included technicians who became part of a dedicated IR service, thus allowing them to increase their knowledge in patient positioning, material selection and delivery, and manipulation of image-guidance modality. Same as for doctors, the mastery of diagnostic modalities remained (and still remains) in the technician's veins and served as the basis for their evolution.

But this change is not sufficient. The dedication to IR should also include all other healthcare professionals, from the cleaners to secretaries to nurses. This is the only way to optimise the workflow and create a real team. Growing as a department is not without issues; conflicts and divergence of opinions have and will continue to arise, like in any company. Therefore, this is where team spirit comes into play, and it should not just be a buzzword or a vague theory. Optimal management of a patient before, during and after the intervention should be the primary goal of an IR service. It requires the full commitment of the people involved in the process. The IR is the leading person in this task and should lead the others by being a great example to the team. The task can be challenging and mentally consuming, but this is how to create the best IR team possible. Strasbourg is proudly the second department accredited by the IASIOS process in Europe, a recognition that took more than 20 years of work.

Finally, setting up a complete IR service is the only way to attract the young generation of physicians, technicians and all other people involved in the field. The financial temptation of

diagnostic in private practice may be a threat, but it cannot compete against the fantastic potential of attraction of IR. Nowadays, it is possible to have a large and general formation as well as opportunities to develop new services (prostate embolisation or paediatric IR, for example). By having a general formation, the new IR generation will integrate the care permanency (team spirit) smoothly, and the EBIR certification may serve as a basis for that. Moreover, by continuously learning via online and on-site congresses and journals, there is great potential for sub-specialisation, which is crucial for professional achievement.

To summarise, interventional radiology is probably one of the fastest, if not the fastest, growing specialties in medicine. The available applications of various percutaneous treatments have changed from biopsies, drainages and peripheral arterial interventions to a great variety of diagnostic, symptomatic, palliative and curative treatments in almost all locations in the body. This has progressively increased the role of IR in treating patients. It is nowadays inconceivable to have a hospital without a minimum service of IR treatment, not only for emergency purposes but also for regularly scheduled practice. Many radiological departments are now seeking to develop IR as an independent specialty, in terms of interventional equipment (including dedicated Angio and CT suites) and the management of healthcare professionals. Building the best possible IR team is an exciting challenge which unfortunately will not happen with the snap of a finger. It is crucial to create an IR unit with the rationale of "patient first"! I have highlighted the Strasbourg experience here, but there are certainly different paths to achieving the same goal.

Don't miss it!

The IR team

Saturday, September 10, 10:00-11:00
Room 114



Julien Garnon
University Hospital of
Strasbourg
Strasbourg/FR

Prof. Julien Garnon is currently practicing at the University Hospital of Strasbourg in the Department of Interventional Radiology. In 2009, he completed his fellowship at the University of Strasbourg; the subject of his thesis focused on cryotherapy of musculoskeletal metastases. Prof. Garnon has presented numerous times at CIRSE congresses and is the ECIO advisor for the CIRSE social media subcommittee. He is the associate editor for CVIR's musculoskeletal section.

The most extensive FIRST@CIRSE sessions ever held, will feature original papers and brand-new, ground-breaking IR studies presented by the researchers themselves.



Saturday, September 10, 11:15-12:45, Room 117
Scientific Paper Session

SP 301 **FIRST@CIRSE** First data release from the global IR community

Moderators: S. Müller-Hülsbeck (Flensburg/DE), F. Wolf (Vienna/AT)

- 301.1 Long-term follow-up of subjects with aortoiliac occlusive disease treated with the VIABAHN VBX balloon expandable endoprosthesis
A. Holden (Auckland/NZ)
- 301.2 Long-term effectiveness and safety of femoropopliteal drug-coated balloon angioplasty – 5-years results of the randomized-controlled EffPacTrial
U. Teichgräber (Jena/DE)
- 301.3 Orbital atherectomy in CLTI patients: a value-based impact in Italy
M. Palena (Abano Terme/IT)
- 301.4 PRIZER study using Renzan™ stent for endovascular interventions in femoropopliteal area: primary safety endpoint at 30-days
K. Deloose (Dendermonde/BE)
- 301.5 FemoSeal CLOSE: prospective multicentre observational study with vascular closure device FemoSeal™ following lower-limb arterial endovascular procedures
Y. Gouëffic (Paris/FR)
- 301.6 Update on the DEEPER LIMUS trial: the temporary spur stent system in conjunction with a sirolimus-coated balloon
M. Brodmann (Graz/AT)
- 301.7 MOTIV BTK post market clinical trial – preliminary 12 month study results
T. Rand (Vienna/AT)
- 301.8 A novel high performance PCB for reliable and persistent inhibition of neointimal proliferation? Studies in pigs based on a clinical observation
G. Tepe (Rosenheim/DE)
- 301.9 SAVAL: primary results of the randomised trial of DES vs. PTA in infrapopliteal arteries
H. van Overhagen (The Hague/NL)

Don't miss it!**Women in IR: building a team**

Saturday, September 10, 11:30-12:30
Room 113



Niamh O'Halloran
Galway University Hospital
Galway/IR

Dr. Niamh O'Halloran is a radiology SpR at Galway University Hospital. Before joining the radiology department in Galway, she completed her core surgical training in cardiothoracic surgery and PhD in tissue engineering and regenerative medicine.

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1. West, Michael A., and Joanne Lyubovnikova. "Illusions of team working in health care." *Journal of health organization and management* (2013).
2. Wah, Tze Min, and Anna Maria Belli. "The interventional radiology (IR) gender gap: a prospective online survey by the Cardiovascular and Interventional Radiological Society of Europe (CIRSE)." *Cardiovascular and Interventional Radiology* 41.8 (2018): 1241-1253.
3. Marx, M. Victoria, Loren Niklason, and Elizabeth A. Mauger. "Occupational radiation exposure to interventional radiologists: a prospective study." *Journal of Vascular and Interventional Radiology* 3.4 (1992): 597-606.
4. Dauer, Lawrence T., et al. "Occupational radiation protection of pregnant or potentially pregnant workers in IR: a joint guideline of the Society of Interventional Radiology and the Cardiovascular and Interventional Radiological Society of Europe." *Journal of Vascular and Interventional Radiology* 26.2 (2015): 171-181.

Starting out: what I'm looking for in a team?

Niamh O'Halloran

A team is defined as "a group of people who perform interdependent tasks to work toward accomplishing a common mission or specific objective." Specifically, in the case of healthcare, a team is made up of multidisciplinary healthcare professionals working together with the goal of improving outcomes for the patient.

There is increasing research evidence that effective teamwork in healthcare is associated with reduced medical errors, increased patient safety, as well as improved worker outcomes such as reduced stress, intent to stay at work and job satisfaction. Other factors that have been shown to be linked to effective clinical teamwork are reduced patient mortality in hospitals, more streamlined and cost-effective patient care, reduced physician visits and hospitalisation rates, lower staff absenteeism, more effective use of resources and greater patient satisfaction [1].

Currently, more than 50% of medical graduates are female. Recent research has shown that organisations and teams with greater gender diversity have better organisation, increased financial revenue and are better able to retain talent. This improvement extends to healthcare, where reports suggest better clinical outcomes by female physicians. Unfortunately, despite the increasing number of women graduating from medical school, the proportion of women in interventional radiology remains low at 10% [2]. Some of the reasons cited for this, in a 2018 survey of female CIRSE members, were on call working

pattern, radiation related concerns, pregnancy related concerns, a workload hard to combine with family and male-dominated work.

These findings suggest some directions for improving the attractiveness of interventional radiology for female trainees. In a male dominated work environment, it can be challenging for female trainees to relate their training or life experience to their senior colleagues. This can hinder the development of a mentor/mentee relationship between female trainees and their consultants, often despite the well-intended, best efforts of dedicated male consultant trainers. Therefore, the importance of organisations such as CIRSE, and specific forums such as the "Women in IR" session, where there is access for female trainees to female consultants, to whom they can relate and engage with, cannot be understated.

As IR training tends to coincide with a time of life where women are often starting their families, pregnancy related concerns are an important consideration for female trainees. Published evidence shows that an IR's average annual radiation dose is 1.6mSv [3,4]. There is an apparent lack of awareness of the generally low risk posed to pregnant IRs, even among radiologists. Therefore, the advice given to pregnant women in IR may be misguided and inaccurate. Greater education on this topic for both male and female radiologists will allow for more support for pregnant trainees; hence, it is an essential consideration in building the IR team.

Flexible training options are challenging in a practical skills profession such as IR, where skills are developed through practice and repetition with a component of on call learning. However, there is the opportunity for further investigation of what constitutes adequate practice for training and what constitutes service provision by trainees to maximize the flexible training options available to IRs to attract more women into the field. As such, engagement with training bodies and health services will be required to bring about gender parity in IR.

In order for there to be equal female representation within the IR profession, there needs to be a five-fold increase in the number of female IRs. In this regard, there needs to be a visible, meaningful effort from those who have already become consultants to encourage and engage with their female trainees and medical students to entice them to stay the course.

To advance the field of IR, honest discourse regarding the challenges that female IRs face and advice on how to overcome these challenges are needed. Furthermore, efforts to reduce these obstacles need to be implemented. Rather than a passive presence to aspire to, female consultant IRs need to be active participants in the progress of more female IRs, enhancing the specialty as a whole and improving patient outcomes, as the research suggests that there is the potential to achieve.

Interview with outgoing EBIR Examination Council Chairperson Dr. Raman Uberoi

Raman Uberoi
EBIR Examination Council
Chairperson

Can you tell us a little bit about the work of the EBIR Committee over the past three years?

Uberoi: The work of the EBIR Committee is crucial to the running of the examination. It is one of the busiest committees, if not the busiest within the CIRSE organisation. With the support of dedicated CIRSE office staff, the committee are involved at every stage of the EBIR examination process and develop the entire content of the exam. This starts with the 'blueprinting', where we decide which areas of the curriculum and syllabus will be the main foci in the set of examinations for the next two years, for both the A- and F-type questions (multiple choice and cases) on a rolling programme, so that over time, the entire curriculum and syllabus is covered.

Some procedures and techniques are repeated more frequently if they are commonly performed, while others are only covered infrequently or rarely if they are deemed to be too specialised by the committee. The questions then have to be generated for each of the examinations based on this blueprint and each new question goes through a rigorous process of creation from the item writers' initial draft, review by the A- or F-type chairperson and then second review by the deputy chairperson, followed by myself as head of the board. At every stage, the questions may need to be revised, discarded or sent back to the item writers. At the

very end, if these questions are considered to be of good quality, they are selected for one sitting and are scored by members of the council using the Angoff method to ensure they are of the highest quality.

During the examination, a team has to be available to deal with any issues that may arise. This is usually myself and Colin Nice, my deputy chairperson. Following the examination, there is a detailed process of review of how the questions performed in the examination and revision of poorly performing questions, providing feedback to candidates if required.

After that, we start the whole process again. We try to keep ahead, which means the process of question creation and expansion of the examination question bank is continuous throughout the year. As you can see, this requires a huge amount of work by all members of the team and consequently the workload is intense with tight deadlines. This has become slightly easier now that we have changed to a completely virtual examination; there are only two annual examinations instead of three and an enlarging examination bank.

What were the biggest challenges you faced when adapting to the pandemic?

Uberoi: Amongst the many challenges we had to face was delivering the examination virtually. Fortunately, we had already embarked on a programme to change to a fully electronic examination, in particular, change the viva component to more nuanced complex F- type and A-type questions. The challenges of achieving this can't be underestimated and the office staff were brilliant in sourcing providers who were able to produce a reliable online platform which could ensure the examination was safe from cheating using remote invigilation. We tested the system to destruction on ourselves

before finally releasing this new examination format. All the work for this had to be done online, which in my experience is always less efficient and required excellent organisation by the office team. It meant many more meetings in addition to our regular online meetings in order to continue to produce the examination content.

In parallel, we had to convince examiners and candidates alike that the change in format was absolutely necessary and that the changes would enhance the examination by not only retaining the high quality we had achieved for it, but actually making it even better. With the help of our educationalist team, we demonstrated that the change in examination indeed improved the validity and reproducibility of the EBIR examination. It also has had the benefit of no longer limiting us to 30 candidates for each examination sitting, and the EBIR can now also be taken from anywhere in the world reducing the stress, costs, and travel for candidates and examiners.

What do you consider the committee's biggest achievements over the past three years and your previous commitment to EBIR?

Uberoi: It has been my honour and great pleasure to have been involved with the EBIR examination for 11 years and to work with some excellent IR colleagues and office staff. I am proud to say that the EBIR committee can trumpet many achievements during this time and I will name just a few of the most important. We successfully navigated the evolution of the EBIR from a fledgling new and unrecognised examination to a highly professional, very sought after and the only internationally accredited and recognised IR examination in the world. In order to do this, we had to create a brand-new curriculum and syllabus from scratch, the first of its kind in the world dedicated to IR which is now on its third revision cycle.

Also, as highlighted earlier, in order to deal with the high demand and the pandemic, the committee successfully developed a highly trusted and reliable online examination platform, which allows participants to take the exam in other languages as well – German and Spanish for now – with other language formats on the horizon. Finally, before the end of my final year on the EBIR council, we will have achieved more than a thousand EBIR holders with hundreds more young IRs wanting to take the examination every year, which will be a fantastic achievement.

What is your long-term vision for the EBIR? What do you hope to see your successors achieve?

Uberoi: The EBIR goes from strength to strength, but we must not sit on our laurels. There are great opportunities for the EBIR to support IR practice and to galvanise IR training and specialisation around the world.

The EBIR can be a catalyst for change and improvement in IR practice worldwide and in the progress of IR towards becoming a specialty. Rather than each country having to create their own examination, which can be a lot of hard work and very expensive to produce, we should continue to engage with national societies and colleges demonstrating how the EBIR has the potential to become the 'go to' examination for IRs internationally, in multiple languages with strict quality control using the excellent online platform we have developed. In Germany, Austria, Switzerland, and Spain the EBIR is already becoming part of their assessment process for IRs and there is no reason this could not be achieved in other countries.

Find out more about the EBIR and when you can take it!



The scope of venous intervention

Adriaan Moelker

The involvement of interventional radiology in venous interventions ranges from simple procedures to very complex ones. The scope of this topic is increasing mainly due to the introduction of central venous (PICC) lines and more complex procedures such as stenting in chronic deep venous thrombosis [1]. Reading the recent 2022 ESVS guidelines is encouraged for starting a venous practice [2]. They recommend a multidisciplinary team approach involving interventional radiology, vascular surgery, and haematology at the least for all patients. Interventional radiology is required not only for the treatment itself but also for venous imaging with MRI, CT, and IVUS. It is likely that patient numbers will grow due to the increasing awareness of chronic and acute deep venous disease along with better advanced endovascular techniques and dedicated devices (Figure 1).

Knowledge of and techniques for treating arterial obstruction cannot simply be translated into the venous system. The anatomical and hemodynamic differences between the arterial and venous vessels and their walls determine the way we should think about how to treat chronic and acute venous disease.

The wall of arteries and veins have the same three distinct tissue layers, called tunics. The innermost layer, the tunica intima, is made of elastic fiber and collagen and is covered with endothelium. The tunica media is composed of elastic fibers and smooth muscle cells, and is thickest in the arteries. It is relevant for pressure-guided vasoconstriction and dilation. This middle tunic is small in veins. The outer tunica adventitia is also composed of collagen and elastic fibers. In veins, this layer is the thickest and allows for substantial stretching. It is of note that the layers of larger and small veins are quite similar in relative dimensions.

The arterial system is pressure-guided and flow is the result of heart pressure and arterial vessel wall tonus (vascular resistance). The thicker medial layer and high pressure give the arteries a round appearance. The venous walls are considerably thinner and their lumens are almost twice in diameter and oval in shape. Blood flows slowly and without any resistance, i.e. with low pressure, back to the heart. The driving forces

are external calf muscle compressions and a negative thoracic pressure combined with valves. In case of arterial obstruction, peripheral vasodilation reduces the vascular resistance to maintain sufficient flow. Severe obstruction becomes compensated with collateral vessels with arterial pressure. In venous obstruction, the vascular resistance is increased (venous hypertension) and can only be compensated by the development of large low resistance collateral vessels. These are generally insufficient and venous hypertension develops with the destruction of valves and venous insufficiency. The venous vessel wall itself is initially not diseased but becomes diseased due to thrombosis. In most cases of venous thrombosis, slow flow with stasis is the precipitating factor, followed by hypercoagulable status and vascular damage or a combination thereof (Virchow's triad).

Venography remains an important tool to investigate venous disease, although its sensitivity to detect stenosis is limited [3, 4]. There are, however, no agreed criteria to measure the degree of stenosis in venous disease. A cutoff at 50% in venography, MRV, or CTV is common, but may not be practical due to synechiae and trabeculae rather than focal stenosis (Figure 2).

Today, intravascular IVUS is required to assess veins before and after treatment, as it better detects significant disease. With IVUS intravascular trabeculae, inflow, (Figure 3, arrow), stent-deployment, apposition (Figure 3), etc. can be assessed. A cut-off at 54% may be better for IVUS [4].

In arterial disease, the goal of treatment is to improve patency to maintain distal arterial pressure, and a 30% residual stenosis is accepted. In venous stenting, a 50% lumen improvement is generally accepted. However, in clinical practice, this may still result in high resistance with sluggish flow and increased risk of thrombosis (Virchow's triad). The persistence of collaterals after treatment is very suggestive of insufficient inflow, transit, and/or outflow of blood, which should be carefully assessed with IVUS. It is of note that propofol sedation may exaggerate breathing-related flow disturbances simulating venous resistance.

The concept of kissing stents in the aortic bifurcation was abandoned long ago. However, kissing stents, also in double barrel configuration [5], or even a fenestration of stents at the confluents level are common in venous stenting [6] (Figure 4).

Similarly, stenting into the common femoral artery is contra-indicated. Although routine use of infrainguinal venous stent placement is controversial, crossing the ligament may be done in severe post-thrombotic venous disease to guarantee sufficient venous inflow with low resistance (Figure 5).

The diameter of veins is almost twice that of the accompanying artery and this is reflected in the sizes of pre- and post-angioplasty balloons ranging from 14 mm at the common femoral level to 18 mm in the common iliac vein. Similarly, stents are of large diameters. IVUS aids in determining the optimal size. While in the early days only Wallstents of sufficient diameter were available, the market nowadays offers a wide range of dedicated venous stents. It is likely that the technical outcome and patency rates are better with these next-generation stents.

The risk of complications in venous stenting is about 3%, including access site haematoma, stent migration or fracture, iliac vein rupture, stent thrombosis, and contralateral DVT [7]. Intra-procedural complications such as bleeding are rare, but are generally easily manageable and should not hamper technical success of the procedure.

The most frequent long-term concern in both arterial and venous disease is re-stenosis or (re-) thrombosis. In arterial disease due to intimal hyperplasia as an ongoing atherosclerotic process, in venous disease due to thrombosis which in turn may be caused by inadequate inflow or outflow, or related to hematologic disorders and suboptimal anticoagulation. The re-intervention rate in venous disease is remarkably quick in the first 12 months and then stabilises. This is in contrast to arterial disease which generally gives a much more linear decrease in patency over time.

Don't miss it!

Introduction to venous intervention

Saturday, September 10, 8:30-9:30

Room 113



Adriaan Moelker
Erasmus Medical Center
Rotterdam
Rotterdam/NL

Dr. Adriaan Moelker is an interventional radiologist and has headed the Interventional Radiology Department at the Erasmus University Medical Center since 2011. It is one of the largest interventional radiology practices in the Netherlands, with 10 staff members and 3 residents. He is dedicated to a wide range of vascular and non-vascular interventions. Together with Marianne de Maeseneer, author of the recent ESVS guideline on venous disease, he has set up a practice on endovascular diagnosis and treatment of chronic and acute deep iliofemoral thrombosis. His research focuses on "Image Guidance in Interventions and Therapy". In collaboration with the Biomedical Imaging Group Rotterdam he is working on the integration of pre-operative image information in the interventional situation for vascular and soft tissue applications. Dr. Moelker is the principal investigator of the CoBaGI trial (Covered versus BAre metal stent in chronic atherosclerotic Gastrointestinal Ischemia) which is expected to release its results in 2022. A sham controlled randomised clinical study on the endovascular treatment of patients with osteoarthritis (Neovascularization Embolization in Osteoarthritis, NEO-trial) has closed patient inclusion in March this year and is waiting for the initial results. Adriaan is a member of the Netherlands Society of Interventional Radiology and the chairman of the organizing committee of next year's silver jubilee of the Dutch Vascular Days.



For this article's references, please scan the QR code on the right.

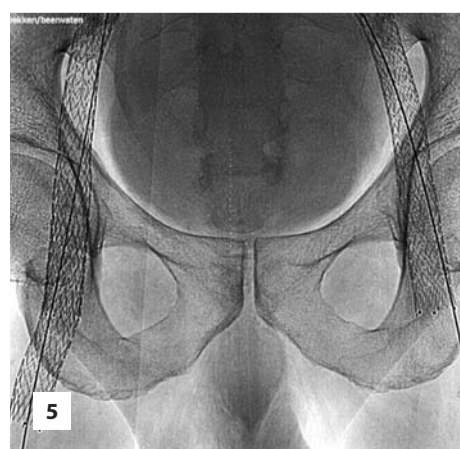
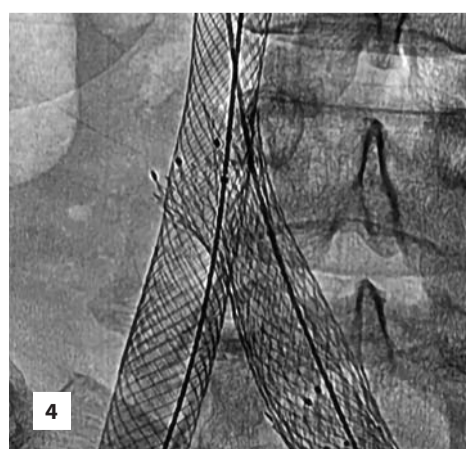
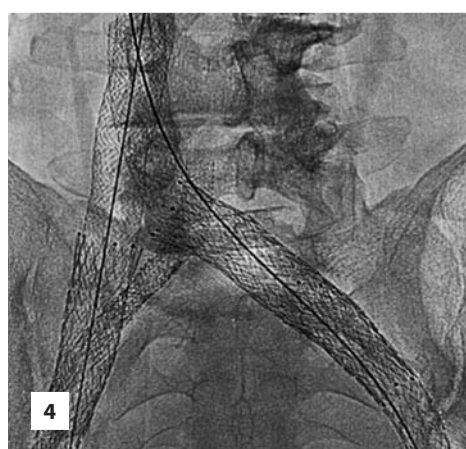
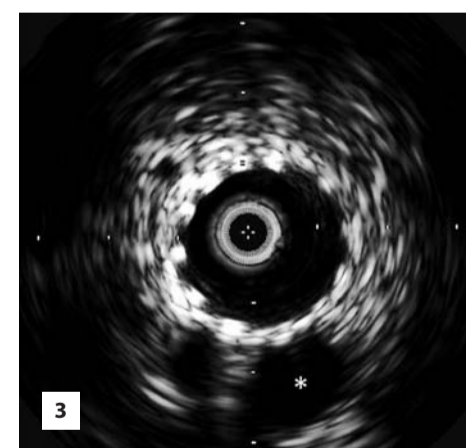
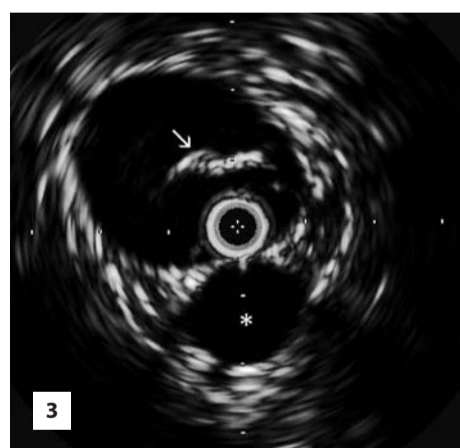
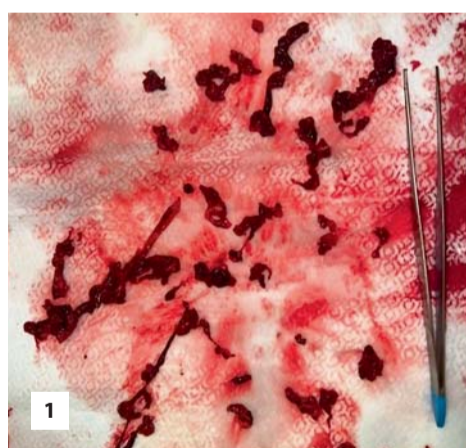


Figure 1: Fresh thrombus removed with the ClotTrievers system (Inari Medical)

Figure 2: DSA showing post-thrombotic changes at MT-point

Figure 3: IVUS. Left: Post-thrombotic changes. Right: after stenting

Figure 4: Double barrel configuration (left) and fenestrated stents (right)

Figure 5: Stents across the ligament

Don't miss it!**CVIR and CVIR Endovascular Awards Ceremony and Reception**

Saturday, September 10, 13:30-14:30
Foyer Rambla

CVIR and CVIR Endovascular Awards Ceremony and Reception

If you are a CVIR or CVIR Endovascular reviewer, author, reader or editorial board member, come to the awards ceremony and reception to give a round of applause for the 2022 winners and to celebrate with us!

Saturday, September 10, 13:30-14:30
at Foyer Rambla.

CVIR Awards

Continuing a long-standing tradition, CVIR is happy to honour the best performing articles and reviewers of the past year for their outstanding service to the journal.

The 2022 winners are:**Editor's Medal 2022****Mark Little**

Genicular artery embolization in patients with osteoarthritis of the knee (GENESIS) Using Permanent Microspheres: Interim Analysis
Mark W. Little, Matthew Gibson, James Briggs, Archie Speirs, Philip Yoong, Timothy Ariyanayagam, Nev Davies, Edward Tayton, Shawn Tavares, Sarah MacGill, Cameron McLaren & Richard Harrison

**Most cited article: Clinical Investigation****Niels de Jong**

Clinical Application of Trans-Arterial Radioembolization in Hepatic Malignancies in Europe: First Results from the Prospective Multicentre Observational Study CIRSE Registry for SIR-Spheres Therapy (CIRT)
Thomas Helmberger, Rita Golfieri, Maciej Pech, Thomas Pfammatter, Dirk Arnold, Roberto Cianni, Geert Maleux, Graham Munneke, Olivier Pellerin, Bora Peynircioglu, Bruno Sangro, Niklaus Schaefer, Niels de Jong & José Ignacio Bilbao & On behalf of the CIRT Steering Committee & On behalf of the CIRT Principal Investigators

Which was cited 20 times by July 2022.

CVIR crossword contest

Solve our crossword puzzle for a chance to win! Participants will get a chance to win a ticket for the CIRSE 2022 Farewell Party and Springer vouchers!

Solve the CVIR crossword puzzle and send the 10-letter solution to info@cvironline.org by the end of September 12.

If you prefer your crossword puzzles old-school and on paper, you can find it in tomorrow's congress newspaper.

The online version of the puzzle is available on the CVIR social media channels, the CVIR website cvironline.org, or via this QR code.

**Visit us at our booth!**

Whenever you get a chance between sessions, make sure to visit the CVIR booth next to the News on Stage area and grab a free CVIR August print copy!

The CVIR editorial office team will be at the booth on Sunday, September 11 at 13:30 and on Monday, September 12 at 11:30 to answer any questions related to submitting a paper or becoming a reviewer for the journal.

CVIR

Continuing a long-standing tradition, CVIR is happy to honour the best performing articles and reviewers of the past year for their outstanding service to the journal.

The 2022 winners are:**Most cited article: Laboratory Investigation****Ming Li**

Comparison of Smartphone Augmented Reality, Smartglasses Augmented Reality, and 3D CBCT-guided Fluoroscopy Navigation for Percutaneous Needle Insertion: A Phantom Study
Dilara J. Long, Ming Li, Quirina M. B. De Ruiter, Rachel Hecht, Xiaobai Li, Nicole Varble, Maxime Blain, Michael T. Kassir, Karun V. Sharma, Shawn Sarin, Venkatesh P. Krishnasamy, William F. Pritchard, John W. Karanian, Bradford J. Wood & Sheng Xu

Which was cited 8 times by July 2022.

**Most cited article: Technical Note****Riad Salem**

Percutaneous Ultrasound-Guided Superior and Inferior Mesenteric Vein Access for Portal Vein Recanalization-Transjugular Intrahepatic Portosystemic Shunt: A Case Series
Pouya Entezari, Ahsun Riaz, Bartley Thornburg & Riad Salem

Which was cited 11 times by July 2022.

**Most cited article: Review Article****Riad Salem**

Systematic Review and Meta-analysis Comparing Prostatic Artery Embolization to Gold-Standard Transurethral Resection of the Prostate for Benign Prostatic Hyperplasia
Gabriel M. Knight, Abhinav Talwar, Riad Salem & Samdeep Mouli

Which was cited 17 times by July 2022.

**Most cited article: Standards of Practice****Andreas Mahnken**

CIRSE Clinical Practice Manual
Andreas H. Mahnken, Esther Boulosa Seoane, Alessandro Cannavale, Michiel W. de Haan, Rok Dezman, Roman Kloeckner, Gerard O'Sullivan, Anthony Ryan & Georgia Tsoumakidou

Which was cited 9 times by July 2022.

**Most downloaded article in 2021****Pengfei Yang**

Endovascular Treatment for Acute Basilar Artery Occlusion: A Comparison of Arteriosclerotic, Embolic and Tandem Lesions
Wenjin Yang, Lei Zhang, Zifu Li, Yongxin Zhang, He Li, Weilong Hua, Jianan Li, Hongjian Zhang, Hongjian Shen, Pengfei Xing, Yongwei Zhang, Bo Hong, Jianmin Liu & Pengfei Yang

Which was downloaded 8,656 times by July 2022.

**Article with the best media performance in 2021****James Gilbert**

First Clinical Results of the Merit WRAPSODY™ Cell-Impermeable Endoprosthesis for Treatment of Access Circuit Stenosis in Haemodialysis Patients
James Gilbert, Jason Rai, David Kingsmore, John Skousen & Nikolaos Ptohis

Which had received an altmetric score of 92 by July 2022.

Outstanding service to the journal for the most reviews carried out in 2021**Kyung Cho**
(University of Michigan/US)

for completing 19 reviews

**Hyeon Yu**
(University of North Carolina/US)

for completing 15 reviews

**Sean Kennedy**
(University of Toronto /CA)

for completing 14 reviews

Congratulations to the award winners!

The CVIR and CVIR Endovascular Awards Ceremony and Reception will take place on Saturday, September 10, from 13:30 to 14:30 at Foyer Rambla.

Join us for this celebration!

Scan the code below to read all winning articles free of charge!



CVIR Endovascular activities at CIRSE 2022

Awards Ceremony

Today, we will honour the CVIR Endovascular Award winners at the CVIR and CVIR Endovascular Awards Reception. We would like to thank all our authors and reviewers for their contributions to the journal and to congratulate the award winners!

The CVIR and CVIR Endovascular Awards Ceremony and Reception will be held from 13:30-14:30 in the Foyer Rambla.

CVIR Endovascular Early Career Researchers Colloquium

Editor-in-Chief Prof. Jim Reekers will host two sessions to support early researchers; one session will address peer-reviewing and the other will hone in on scientific writing.

This is a unique chance for early career researchers to learn from Prof. Reekers' many years of experience in the field as an author and researcher as well as editor and editor-in-chief.

Session 1: Peer-Reviewing
Saturday, September 10, 2022
15:00-15:30
Room 121

Session 2: Scientific Writing
Sunday, September 11, 2022
15:00-15:30
Room 121

Social media competition

Participate in the CVIR Endovascular social media competition and get a chance to win a ticket for the CIRSE 2022 Farewell Party! You don't want to miss out on this prize – this year's party will take place at Can Travi Nou, offering an exciting local experience (in addition to free drinks).

How it works:

- Go to the CVIR Endovascular booth
- Scan the QR code to get the trivia question
- Bonus social media point each day

Don't miss it!

CVIR Endovascular Awards Ceremony and Reception

Saturday, September 10, 13:30-14:30
Foyer Rambla

CVIR Endovascular booth

Stop by our booth to have a chat with us at one of the Meet the Editorial Office sessions or just stop by in between sessions to read some of the journal's articles! The booth will also have the daily social media competition updates, so we'll see you there!

Meet the Editorial Office:
Sunday, September 11 at 13:30
Monday, September 12 at 11:30

CVIR ENDOASCULAR

For more information on all CVIR Endovascular activities at CIRSE 2022, scan the QR code on the right!



CVIR Endovascular Reviewer Forum

The Reviewer Forum is a 3-year programme for highly-qualified candidates to earn a seat on the editorial board by supporting the journal with quality reviews. In the last application period, more than 120 interested doctors reached out to us and we are happy to announce more than 40 new members to the forum.

Reviewer Forum Members:

Mohammed Abusedera, Dammam/SA
Ajay Alex, Trivandrum/IN
Alberto Alonso-Burgos, Navarra/ES
Jens Altenbernd, Witten/DE
Flavio Andresciani, Bari/IT
Kevin Anton, Philadelphia, PA/US
Zain Badar, Mississauga/CA
Farah Cadour, Trans-en-Provence/FR
Anurag Chahal, St. Louis, MO/US
Fabio Corvino, Naples/IT
Felice D'Antuono, Milan/IT
Sanne de Boer, Maastricht/NL
Andrea Discalzi, Turin/IT
Murat Dökdök, Gebze/TR
Mario D'Oria, Trieste/IT
Sebastian Ebel, Leipzig/DE
Rym El-Khoury, San Francisco, CA/US
Mohamed Fouad, Frankfurt/DE
Kin Fen Kevin Fung, Hong Kong, HK
Kunal Gala, Mumbai/IN
Nikolaos Galanakis, Heraklion/GR
Tushar Garg, Baltimore, MD/US
Alessandro Gasparetto, Toronto/CA
Marcell Gyánó, Budapest/HU
Hossam Hassaan, Cairo/EG

Claire Kaufman, Salt Lake City, UT/US
Ezio Lanza, Milan/IT
Matthew Lukies, Singapore/SG
David McGreevy, Örebro/SE
Alexandre Ménard, Kingston/CA
Adriaan Moelker, Rotterdam/NL
Heather Moriarty, Melbourne/AU
Nariman Nezami, Atlanta, GA/US
Nguyen Ngoc Cuong, Hanoi/VN
Santosh Patil, Mumbai/IN
Federico Pedersoli, Aachen/DE
Dusan Petrovic, Belgrade/RS
Rengarajan Rajagopal, Jodhpur/IN
Muthusubramian Rajasekaran, Viluppuram/IN
Tauquir Rana, Riad/SA
Tomas Reyes del Castillo, Mexico City, MX
Raghav Seth, Delhi/IN
Mohammed Shamseldin, Erfurt/DE
Thomas Sullivan, Winston-Salem, NC/US
Jay Vasani, Jackson, MS/US
Mansi Verma, New Delhi/IN
Karsten Wolter, Brühl/DE
Yu-Dong Xiao, Changsha/CN
Mohamed Zaitoun, Zagazig/EG

CVIR Endovascular Blog

"Speaking of Vascular Interventions" is CVIR Endovascular's blog. It was introduced in March of this year in order to offer a space for communication outside of the confines of academic articles, for stimulating conversation about current issues in IR, to report on how the field is progressing in different regions around the globe, and to highlight other key issues of interest.

Latest blog posts:

IR training in Africa: the Tanzanian experience

There is currently a severe shortage of IRs in sub-Saharan Africa, leaving one billion people without access to many essential and life-saving procedures. A new training model is addressing this urgent need by training IR physicians, nurses, and technologists in Tanzania with monthly visiting teams. Find out how to get involved and help make IR available to more patients around the world.



CIRSE SOP documents – what are they and why should we read them?

As IR continues to expand in its scope and complexity of procedures, it is important to improve and maintain high quality patient care. CIRSE Standards of Practice documents can assist its members by providing contemporaneous and evidence-based reference on topics relevant to a wide-range of IR practice.



Read all blog posts here: www.cvirendovascular.org/blog

Don't miss this lecture!**Introducing IR**

Saturday, September 10, 08:30-09:30
Room 116

STUDENT CORNER**Be inspired – the CIRSE Student programme**

Since its first edition in 2010, the CIRSE student programme has been an important initiative to help interventional radiology recruit the some of the brightest new medical talents by introducing undergraduate medical students to the innovative field that is IR.

Since 2010, CIRSE has supported more than 2,200 students who are considering interventional radiology as their future career.

The student programme offers dedicated sessions and social events to undergraduate students, including curated lectures,

recommended hands-on device sessions, simulation trainings, and various social events specially designed for the next generation. In addition, participants can attend all other scientific and educational events of the CIRSE programme. Programme highlights will include an Introduction to IR lecture, a mentoring event, a students on stage session, a Student Quiz, and other interesting activities.

The student programme will be entertaining, educational, sometimes challenging, and most importantly – inspiRing!

**Recommended lectures and workshops of the day****Upper limb DVT**

(Focus Session)
10:00-11:00, Auditorium 2

Update on uterine fibroid management

(Fundamental Course)
11:30-12:30, Room 116

Thoracic venous occlusive disease

(Focus Session)
11:30-12:30, Auditorium 2

CVIR Endovascular: Early Career Researchers Colloquium – Writing Academic Papers

15:00-15:30, Room 121

Haemorrhage in trauma

(Fundamental Course)
16:15-17:15, Room 112

Venous access

(Workshop)
16:15-17:15, Room 114

Recommended hands-on device and simulation trainings of the day**TIS-EMEA/Terumo: Lower Limb Treatment – How to decide on your strategy?**

14:00-15:00, TIS-EMEA Learning Centre

Basic principles of mechanical thrombectomy in ischaemic stroke

17:00-18:00, Simulator Gallery

ETF Short Talks**ETF Short Talks: IR Trainee national committees**

17:30-18:30, News on Stage

**The ETF in the spotlight****R. L. Cazzato – Welcome remarks, future of IR**

Roberto Luigi Cazzato
ETF Chairperson

Dear Students,

It is with pleasure that we warmly welcome you in Barcelona at the CIRSE annual meeting 2022. During the congress, you will have the privilege to see how much interventional radiology (IR) has achieved in the last few decades, and how attractive and fascinating the future will be for this relatively new discipline. In fact, IR has gone deeply clinical in the last few years with direct implication in patients' management in many centres. Moreover, as almost

every organ of our body can be subject of at least one IR intervention, you will be surely fascinated by the versatility of this amazing discipline. Lastly, in line with the very well-known innovative tradition of IR, you will see that interventionalists are still deeply engaged in developing new high-tech devices and tools, robotics and artificial intelligence, in order to facilitate minimally invasive interventions and improve their outcomes.

Since you are our special guests, we have prepared a special series of events for you during the congress within the "Be inspiRed" program, which will allow you to take part in lectures, hands-on device and simulation training sessions, and to participate in various social events in a warm and relaxed atmosphere.

Hope you will enjoy our congress... let IR inspiRe you!

CIRSE WEBINARS FOR STUDENTS

CIRSE regularly conducts webinars with basic or semi-advanced content exploring different IR topics. These webinars are designed to help medical students and IRs at the beginning of their careers get familiar with various fields of interventional radiology and explain the treatments interventional radiologists can perform.

All webinars are broadcast free of charge and available to watch on demand in the CIRSE Library.

Make sure to join the upcoming instalments live to ask your burning questions!

October 27, 18:00 (CEST): **IR in liver tumours**

November 24, 18:00 (CET): **Aortic interventions**

**Useful info about Barcelona**

Welcome to Barcelona, one of the best cities in the world to live and work. Barcelona is a beautiful, splendid city that glitters in the sun. Enjoy the city's vibrant cultural and culinary scene and try out the delicious fresh food from city's markets.

Here we will point out some of the keys to getting the most out of our city, identifying the services and resources at your disposal, and enjoying your free time after congress hours. We encourage you to visit Barcelona International Welcome website to find out more about what the city has to offer.

Admire

Contemplate Gaudí's marvels and the city's Gothic architecture, drop by its beaches or explore the Collserola nature park

Getting about

Tour the city on foot or on bicycle. Barcelona has almost 1,000 km of bicycle paths and lanes. (Bicing service – bicing.cat)

Get in shape

Go out on a run or stroll by the sea, take a hiking tour or visit the nearest municipal sports centre barcelona.cat/esports

Explore

Visit art galleries, concerts, theatres, and dance shows. Check out the Punts d'Interès de la Ciutat for information on must-see sites and City Council's web page for cultural activities in the city.

Learn

Find out more about original ideas and unforgettable experiences in Barcelona region in the "Barcelona is much more" travel notebook at barcelonaismuchmore.com

be inspIRed...

Students events at CIRSE 2022

Introducing IR

Saturday, September 10
08:30-09:30
Room 116

Mentoring Breakfast

Sunday, September 11
08:30-09:30
Foyer Diagonal

Students' Evening

Saturday, September 10
20:00-22:00
Slow Barcelona Bar
www.slowbarcelona.es/en

Students on Stage

Monday, September 12
15:30-16:30
News on Stage area

Students' Quiz

Tuesday, September 13
12:30-14:00
Foyer Diagonal



DAILY APP QUIZ

Be sure to check the students section in the CIRSE app to take the daily quiz, test your knowledge, and win tickets for the Farewell Party!

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