Saturday hosts the EACTS Techno-College Innovation Award

The 2017 recipients of the Award were selected during the ‘New techniques: the developers corner’ session on Saturday afternoon. Congratulations to this year’s winner, Roman Gottardi, and runners-up Jacques Sherman and Henrich Rotering. Read on to learn more about their Award-winning work.

R. Gottardi1, E. Mudge2, M. Czerny5, R. Seitelberger1, H. Schröfel3, J. Scherman2, D. Bezuidenhout2, P. Zilla2
1. Department of Cardiac Surgery, Paracelsus Medical University of Salzburg, Salzburg, Austria; 2. Chris Barnard Department of Cardio-Thoracic Surgery and Strait Access Technologies, University of Cape Town, Cape Town, South Africa; 3. Cardiovascular surgery, University Hospital Freiburg, Freiburg, Germany

Thoracic endovascular aortic repair (TEVAR) has become the therapy of choice in various thoracic aortic pathologies. One major downside of these procedures is endoleaks, namely type 1 and type 3 endoleaks. In the majority of cases endoleaks can be prevented or treated by conforming the stent-graft to the aortic wall to prevent or treat a type 1 endoleak, or by conforming two stent-grafts to each other to prevent or treat a type 3 endoleak. This moulding is usually done using a fully-occlusive compliant balloon catheter to even out any pleats or folds in the fabric of the stent-graft. A drawback of such balloons is that they block blood flow and therefore require a means to lower cardiac output to prevent displacement of the balloon or even worse – migration of the stent-graft. As stent-grafts are increasingly used within the thoracic aorta, the aortic arch and even in the ascending aorta, moulding these stent-grafts without occlusion and the risk of displacement is needed more than ever. There is one commercially available balloon...
A truly non-occlusive stent-graft moulding balloon for thoracic endovascular aortic repair (TEVAR)

Continued from page 1

that is not fully occlusive but due to its triangular shape, it does not provide circular moulding of the stent-graft. As a consequence, we came up with the idea of a circular, truly non-occlusive balloon catheter for the moulding of thoracic aortic stent-grafts.

Novel balloon design

The team that developed this novel, helical, fully non-occlusive TEVAR balloon catheter (Figure 1) is made up by two cardiac surgeons from the Paracelsus Medical University in Salzburg, two cardiac surgeons from the University Hospital Freiburg - Bad Krozingen, and an engineering team at Strait Access Technologies (SAT). SAT is a South African company with Lead Engineer of the project Teddy Mudge

Roman Gottardi (left) with Lead Engineer of the project Teddy Mudge

Figure 2. Comparison of radial force between the novel non-occlusive TEVAR balloon catheter and a standard fully-occlusive balloon catheter

Deep surgical wound infections are still a severe problem for all patients. They are associated with prolonged hospital stay and higher mortality, translating into higher hospital costs and OR-resources. The main problem and the challenge are the infection itself and the adherent biofilm on chronic implants. Due to lack of alternatives the first considerations were made for patients with infected assist devices formerly implanted as destination therapy. It could be shown that cold atmospheric plasma (CAP) respectively the induced reactive oxygen species are able to destroy different kinds of bacteria regardless to their resistance profile even when they are protected by a layer of biofilm. Furthermore, CAP promotes fibroblast migration in the tissue and stimulates different types of human cells which are important for the wound healing process like endothelial cells and cells of the immune system. Due to its gaseous condition CAP is – in comparison to a rinsing solution – able to penetrate deeper into the tissue.

To secure treatment success the wound is closed afterwards by a special wound dressing, using a foam – i.e. following the meaning of Negative Pressure Wound Therapy (NPWT) – with an underlay of carbon cloth. This carbon cloth material has been proven to bind macromolecules like the matrix metalloproteases (MMP-2, MMP-9) and is able to immobilise bacteria. Owing to a faster cleansing process, the changing intervals of the wound dressings could be reduced.

The first results for patients with infected LVAD-systems were very promising, so that the treatment concept with CAP was adopted as add-on therapy for deep sternal wound infections.

Cold Atmospheric Plasma (CAP) and advanced Negative Pressure Wound Therapy (NPWT) – An option for complicated wounds in cardiac surgery

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Cardiac | Techno College | New techniques: the developers corner

Cold Atmospheric Plasma (CAP) and advanced Negative Pressure Wound Therapy (NPWT) – An option for complicated wounds in cardiac surgery

Continued from page 2 could be shown that this concept offers a new option as a tissue and sternal saving approach. There was, up to now, no need for an omentum majus or muscle flap plastic.

Overall the combination therapy of cold plasma and advanced NPWT: A) underlay of carbon cloth; B) NPWT foam

References
4. Rebekh M. Advanced NPWT for infected wounds in long-term implants. Vivasan Solution 12/2015

Word - 1513 | Character - 2804 | Lines - 16

Jacques Scherman1, Braden van Breda2, Harish Appa1, Carel van Heerden1, Chima Ofoegbu1, Deon Bezuidenhout1,2 and Peter Zilla1,2

Cardiac valve with hollow-balloon for rheumatic aortic incompetence

The challenge

During the past decade, TAVI has revolutionised our approach to heart valve disease. Whilst calcific aortic valve disease remains the dominant underlying pathology for patients in need of a heart valve replacement in the first world, rheumatic heart disease (RHD) still accounts for the majority of patients in need of a heart valve intervention in developing countries and emerging economies. Tragically, the majority of these patients have limited or no access to cardiac surgery. Moreover, given the unique differences between calcific degenerative and rheumatic pathologies, positioning and placement of a TAVI device for RHD require several considerations, which include the absence of a fluoroscopic footprint for placement and the absence of calcium deposits for anchorage.

A solution

Taking this into consideration, we have developed a non-occlusive, self-homing TAVI system which can be inserted even in the absence of sophisticated imaging equipment (Figure 1). Its unique design features include self-locating retractable balloon trunks for easy positioning, a hollow balloon that obviates the need for rapid ventricular pacing as cardiac output is maintained throughout deployment – and a temporary balloon valve that prevents backflow through the hollow balloon during inflation. This allows for a slow and controlled implantation of the TAVI. A supra-annularly anchoring TAVI stent design (Figure 2) secures the valve in non-calciﬁed, compliant roots utilising the entire native leaflet body. The

Real time monitoring for early intervention in CBP

CDI® Blood Parameter Monitoring System 500 and Sensmart™ Model X-100 Universal Oximetry System

During Cardiopulmonary Bypass it is essential to maintain blood parameters and tissue perfusion as close as possible to normal physiological values. Blood parameters outside of the normal range increase complication rates, ventilation time and ICU and hospital length of stay 1).

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CDI System 500 measures or calculates 11 critical blood parameter values and helps to improve blood gas management during cardiopulmonary bypass. Continuous blood gas monitoring allows to react faster on changes in blood parameters compared to periodic laboratory blood gas analysis and helps to significantly improve blood gas management 2).

The Sensmart system delivers both pulse and regional oximetry data and can identify compromised oxygen saturation of the brain or other tissue or systemic oxygen delivery issues for early intervention.

The importance of both online blood gas parameter monitoring and regional oximetry has been recognized as important and is recommended by clinical practice guidelines, e.g. the American Society of Extracorporeal Technology Standards and Guidelines for Perfusion Practice 2013 and Recommendations for Standards of Monitoring and Safety during Cardiopulmonary Bypass Published by the Society of Clinical Perfusion Scientists of Great Britain and Ireland.

For further information, please visit us at the Terumo booth #141 in Hall X2 and regular for Terumo’s training village from October 8-10, 2017, Hall X1, Booth #14.

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References
issue of valve durability in these typically younger ‘rheumatic’ patients is addressed by the use of special heparinised polymer leaflets and alternatively by de-cellularised, triple-cross-linked pericardium.

Following successful proof of concept studies in an acute large-animal model, a preclinical chronic animal study has been commenced to evaluate valve performance and outcomes up to five-months following implantation. At this year’s EACTS Techno College we present a Live-in-a-Box implantation in a juvenile sheep model to demonstrate the ease of implantation of this novel non-occlusive, self-locating TAVI system.

Mid-term experience
The six-voice performance of the SAT TAVI valve has been extremely promising, having already achieved more than 600 million cycles in fatigue testing. This is further supported by eight-week sheep explants demonstrating pristine polymer leaflets, with further chronic animal implants ongoing. Previous attempts to polymer leaflets for heart valves were unsuccessful due to material degradation. Our accelerated in-vivo degeneration studies show impressive resistance of the polyurethane used in the SAT TAVI (Figure 3a). Calcification studies comparing our leaflet materials with conventional glutaraldehyde fixed pericardium show 40x lower calcification in our pericardial and total abolition of calcium in our polymer leaflets (Figure 3b).

Conclusion
Not only in the developing world, but also in emerging economies such as China and India, rheumatic heart disease still accounts for the major burden of disease in patients needing heart valve interventions. We have demonstrated that polymeric TAVI are feasible as an appealing, cost-effective solution. Furthermore, we demonstrated that compliant non-calcific aortic roots can be treated with TAVIs by using self-anchoring stent designs implanted with a non-occlusive self-locating delivery system. The timing of this award is particularly exciting for us. As we celebrate the 50th anniversary of the first heart transplant in Cape Town in a few weeks time – with the who’s who in cardiac surgery attending – it gives us a major boost to our spirits to see that 50 years on, the University of Cape Town is still part of the cutting-edge developments in our fast moving field.

Robotic totally endoscopic coronary bypass with distal connectors: Mid-term outcomes at a single academic institution with an experienced team

Husam H Balkhy, Sarah Nisivaco, Dorothy Krienbring, Mackenzie McCrory, Hiroto Kitahara Brooke Patel, Susan Arnsdorf University of Chicago Medicine, Chicago, IL, USA

Robotic assisted coronary bypass (CABG) is an evolving technique. It most commonly involves using the daVinci robotic technology to harvest the left internal mammary artery after which the anastomosis to the coronary target is completed using a traditional hand sutured approach via left mini-thoracotomy. Very few programmes perform totally endoscopic CABG with robotic assistance. Our technique, which we developed in 2007 involves a totally endoscopic robotic assisted, off-pump beating heart approach using an anastomotic connector (min-stapler); the Flex A device. This device has been available for use in the US since 2006 and has been vital to the development of our minimally invasive coronary practice. The use of the endovest stabiliser attached to the robotic arm facilitates the totally endoscopic approach and this allows the harvesting and use of both internal mammary arteries.

In this paper, which we are presenting at this year’s EACTS meeting, we review our experience with this technique after moving to a new academic institution with the same team. Between 1/2007 and 4/2017, 530 robotic totally endoscopic connector coronary bypass procedures were performed. Of these, the last 264 (from July 2013) were performed at the new academic institution. The same team (corone surgeon and patient-side assistant, and clinical nurse) made the transition with the aim of reproducing the same operative approach and results. Intra and post-operative outcomes as well as mid-term clinical outcomes were presented. Clinical follow-up of 98% of patients was conducted by telephone interview at a mean of 17 months. Angiographic patency data was available for 32% of patients (mostly those undergoing hybrid revascularisation) at a mean of 152 days.

The mean age was 65.4 years, and 73% of patients were male. Patients were not highly selected and the mean STS score was 2.05 (0.17-28.5). There were 105 (40%) single-vessel, 136 (51%) double-vessel, and 23 (9%) triple-vessel TECAB procedures; so 60% of procedures were multi-vessel TECABs. Bilateral IMAs were used in 139 (53%) patients. Conversion to sternotomy occurred in 1 patient (0.38%). The mean hospital length of stay was 3.11 ± 1.36 days and the mortality was 1.5%. Hybrid revascularisation was performed in 99 (37.5%) patients of which 57 were complex hybrids (ie, multivessel grafting in addition to PCI). The graft patency was evaluated for 85 patients (145 grafts) at a mean of 152 days. LIMA (90) and RIMA (52) graft patency was 96.6% and 96.2% respectively. At 17 month follow-up the cardiac mortality was 3.5% and freedom from MI or repeat coronary intervention was 94%. No patients underwent repeat coronary surgery, and 11 patients underwent repeat PCI of which only 6 (2.3%) were to a previously bypassed TECAB target.

We conclude that robotic beating heart TECAB with the Flex A distal anastomotic connector is safe and reproducible. It can be performed with excellent short and mid-term outcomes as long as careful attention to detail is undertaken by an experienced team.
Making the most out of life in cardiothoracic surgery

First to speak during the work-life balance session will be Miia Lehtinen, who works at the University of Helsinki, Finland, the Department of Surgery, Kymenlaakso Central Hospital, Kotka, Finland, and the Karolinska Institute, Stockholm, Sweden. She will be tackling an important question: is there life outside of cardiothoracic surgery?

Dr Lehtinen spoke to EACTS Daily News to give a glimpse of some of the main messages she will be sharing with the audience.

Why have you been asked to talk about work-life balance?
I’m currently undergoing the Finnish training program for cardiothoracic surgery. I am trying to bring in a resident’s point of view, how it feels to be a beginner in the field, and how the ‘ways’ can totally sweep you into this interesting medical field. I don’t cover family life in my presentation – surgeons have a lot of other things in their life that they need to balance.

Could you describe the work-life balance as a trainee?
An important part of the residency period is to learn how to deal with the equation of work ready – if you miss too many engagements. Perhaps you don’t know what’s happening in your family’s life any more. That should raise some red flags. Most importantly, there are danger signs if you don’t enjoy your work anymore.

What do you think makes this a particular problem amongst the cardiothoracic community?
Is there a certain type of person who does this job?
It’s an intense field of medicine, with the constant risk for life-threatening complications with immediate effect. The work is both physically and mentally demanding. As my professor, Karl Lemström at the University of Helsinki puts it: this is a lifestyle – and the best field of medicine.

Can you give an example of someone who’s got the work-life balance right?
I know a couple of colleagues who have small children at home (in other words, they cannot get much sleep and have a full ‘hullabaloo in their free time). Yet still they are very passionate about their job and perform their work extremely well with calmness and a smile on their faces.

Conversely, when can it go wrong?
In some countries, the field of cardiothoracic surgery is very “trendy” for some reason, because of television shows, perhaps or good marketing, maybe even some surgeons who are regularly in the media spotlight.

Cardiothoracic surgery attracts residents who have a very romantic image of the field – but it is actually very hard work. This field is not just heroic work. You work 50–60 hours per week. This field is not just heroic work. You work 50–60 hours per week. It’s an intense field of medicine, with the constant risk for life-threatening complications with immediate effect.

What are the dangers/warning signs that indicate work-life balance has gone a bit wrong?
Usually you hear it from your closest friends and family very plus leisure. As many residents jump directly from a relatively free and flexible university life – with a lot of extra-curricular activities – into the strict and quite rigid world of surgical departments, issues easily arise.

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Usefulness of super flexible 3D-printed heart model in the field of congenital heart surgery

Rafael Sádaba

I
ts part of the EACTS mission to advance education in the field of cardiac, thoracic and vascular interventions. EACTS is the leading educational organisation for cardiac and thoracic surgery in Europe, and among the best in the world. The EACTS Annual Meeting is the largest of its kind worldwide, and its educational value is undisputable. The EACTS Academy, launched in 2012, offers a high quality educational programme to suit a range of levels, from trainee through to experienced surgeon. As of January 2018, and because of the application of the MedTech Europe (MTE) code of conduct, industry will cease the direct support for healthcare professionals to attend scientific and educational events organised by third parties. Nevertheless, industry will continue to organise their own educational activities, and will be able to fully support attendance of health care professionals there. Events organised by industry are already strictly regulated, and will continue to be so under the new MTE code. That being said, these activities will arguably be designed to promote and market their own products, with the danger of conveying biased education. In this context, EACTS remains devoted to the continued provision of high-value education through its different educational initiatives, and in expansion of its educational portfolio.

The EACTS Francis Fontan Fund for Education has been created to support educational opportunities, foster professional development and promote lifelong learning in cardiac and thoracic surgery for its members. Our aim is to support these educational activities in a transparent and fair manner, and subject to strong governance procedures. In times of uncertainty about the future of postgraduate education, our vision is to make independent and high-quality education accessible to EACTS members. Once again, despite the MTE code of conduct, it is expected that major companies will remain committed to support medical education, and will continue working closely with scientific societies and professional congress organisers (PCO) to find optimal ways of doing so, while ensuring full compliance with this new code.

The Fund will seek and attract funding to support the educational portfolio of EACTS with the aim of financially supporting courses run by the Academy in Windsor and elsewhere, as well as a number of grants and fellowships organised by EACTS. The Fund will enable partnership with industry to promote independent education in cardiac and thoracic surgery.

The activities of the Fund are organised by the Francis Fontan Fund Steering Committee, which is primarily responsible for strategy and fundraising. A subgroup of the Steering Committee will form the ‘Executive Committee’, which deals with the ‘grant-giving’ activities. The Fund has already supported four grants. Two of them, in collaboration with the organisers of the Birmingham Review Course in Cardithoracic Surgery, are aimed at surgeons taking the EBCT examination. Another two grants have been supported for members from South America to attend the STS/EACTS Latin America Cardiovascular Surgery Fellowship Conference in Cartagena (Colombia). For 2018, and through an Educational Grant from AttiCare, the Fund will support an Atrial Fibrillation Surgery Fellowship in Cartagena. This two members will be advertised during this Annual Meeting.

More information on the EACTS Francis Fontan Fund for Education can be found at: http://www.eacts.org/the-association/francisfontanfund/
Hybrid transcatheter left ventricular reconstruction for treatment of ischaemic cardiomyopathy: Preliminary results

Patrick Klein1, Pierfrancesco Agostoni2, Wim-Jan van Boven3, Rob J. de Winter4, Martin J. Swaans4
1. Department of Cardiovascular Surgery, St Antonius Hospital, Nieuwegein, the Netherlands; 2. Department of Cardiology, St Antonius Hospital, Nieuwegein, the Netherlands; 3. Department of Cardiothoracic Surgery, Academic Medical Centre, Amsterdam, the Netherlands; 4. Department of Cardiology, Academic Medical Centre, Amsterdam, the Netherlands.

Empyema thoracis management

Empyema thoracis is the collection of purulent material within the pleural cavity, most commonly as a result of bacterial lobar pneumonia. Studies have shown that despite vaccinating children with the 7-valent pneumococcal vaccine (PCV-7) post-pneumonic empyema admissions have continued to rise (3.5 cases/100,000, 1996–1998 to 7.0 cases/100,000 in 1996–1998). This is due to the increasing use of the 7-valent pneumococcal vaccine shown that despite vaccinating children with the 7-valent pneumococcal vaccine, empyema can also result following cases/100,000 children in 2005–2007). Empyema thoracis is reconstructed by plication of the fibrous scar. Anchoring technology (Revivent TC™ System, Boston Scientific, Inc. San Ramon, CA, USA) is used to reconstruct the remodelled LV by plication and exclusion of the scar, and reduction of the excess volume, resulting in decreased wall stress and improved contractility. It was mandatory that patients had a dilated LV with the 7-valent pneumococcal vaccine. Inclusion criteria were considered eligible for the procedure when they presented with symptomatic heart failure (NYHA class ≥2 and ischaemic cardiomyopathy (EF>40%) after anteroseptal myocardial infarction. It was mandatory that patients that had a dilated LV with a scar in the anteroseptal wall and an EF of ≥50% transmurally. Between October 2016 and April 2017, nine patients (8 males, 1 female, mean age 60 ± 8 years) were operated on in two Dutch centres. The group of 26 anchor-pairs were used to reconstruct the LV. Comparing echocardiographic data pre- and postoperatively, LVESVI decreased from 28 ± 11 to 10 ± 5 mL/m² (change -60%, P < 0.001) and LVSVI increased from 53 ± 11 mL/m² to 11 ± 5 mL/m² (change -43%, P < 0.001) and LVEDVI 75 ± 23 mL/m² to 45 ± 6 mL/m² (change -40%, P < 0.001). In one patient, a RV perforation occurred which necessitated conversion to full sternotomy. One patient underwent a postoperative revision because of RV restriction. Hospital mortality was 0%.

Hybrid transcatheter LV reconstruction is a promising novel treatment option for patients with symptomatic heart failure and ischaemic cardiomyopathy after anteroseptal myocardial infarction. Early results demonstrate that the procedure is safe and results in significant improvement in EF and reduction in LV volumes.

Thoracic | Focus | Pleural empyema management

Management of empyema thoraxis in children

Empyema thoraxis is the coagulation of purulent material within the pleural cavity, most commonly as a result of bacterial lobar pneumonia. Studies have shown that despite vaccinating children with the 7-valent pneumococcal vaccine (PCV-7) post-pneumonic empyema admissions have continued to rise (3.5 cases/100,000, 1996–1998 to 7.0 cases/100,000 children in 2005–2007), while hospitalisations for pneumonia fell. Empyema can also result following penetrating injury, oesophageal rupture, secondary infection of contused lung and haemorrhagic, post-ligation, post-traumatic, or post-lung resection.

Inadequate management of empyema is the major cause of morbidity and mortality and leads to its progression into an organised state. Surgical drainage is either using video-assisted thorascoscopic (VATS) techniques or muscle sparing mini-thoracotomy by breaking all the loculation, debriding necrotic lung, and releasing the trapped lung under direct vision. This management has shown to be very effective with minimal morbidity resulting in full expansion of lung, and avoided lobectomy (Figure 2). Resection of the necrotic lung in presence of infection is difficult and fraught with significant post-operative mortality and even mortality. It is very difficult to distinguish recoverable lung parenchyma in a consolidated and collapsed lung from necrotic lung. We recommend subsequent resection of congenital lung lesion after managing acute empyema. Bilateral empyema requires bilateral thoracotomy, in addition to achieving debridement and releasing the trapped lung.

References


Cardiac | Abstract | LV restoration and hypertrophic cardiomyopathy surgery – Healing the LV

Figure 1. Internal and External Anchor (above), and drawing of final results (below)

Figure 2. Drawing of plicated anterolateral scar onto interventricular septum

Figure 1: Value of CT scan with IV contrast in empyema

Figure 2: Broncho-pleural fistula management and outcome with serratus anterior digitation pedicle flap.
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New Guidelines put greater emphasis on the Heart Team and TAVI

New 2017 EACTS/ESC Guidelines on Valvular Heart Disease have expanded the number of patients eligible for Transcatheter Aortic Valve Implantation (TAVI), but the decisions on which method to use must be taken by the Heart Team, says Helmut Baumgartner, Professor of Cardiology/Adult Congenital Heart Disease at the University of Muenster, Germany.

Professor Baumgartner is one of the lead authors of the EACTS/ESC Guidelines, as well as moderator for a dedicated session, held this afternoon, that will delve deeper into the meat of the new recommendations, and the rationale behind them. Indications for TAVI have been expanded in the new Guidelines, and the role of the Heart Team is given much greater emphasis. The Guidelines spell out that available data from randomised controlled trials, and large registries in elderly patients at increased risk of surgery, show that TAVI is superior in terms of mortality in extreme-risk patients, non-interior or superior to surgery in high-risk patients and non-interior (or even superior) to surgery when transfemoral access is possible in intermediate-risk patients.

Professor Baumgartner, an ESC chairperson, said the new recommendations on TAVI reflect the results of five recent randomised controlled trials. Speaking to EACTS Daily News, he said: “In 2012, the guidelines just recommended that TAVI was suitable for patients not suitable for surgery, but this has changed in line with recent TAVI results. New data from these trials has found there are a wide range of high and intermediate-risk patients who could benefit from TAVI, so the indications for it have been expanded.”

“The favourable results of TAVI have been reported in multiple large-scale randomised registries supporting the generalisation of outcomes observed in RCTs. This favours the use of TAVI over surgery in elderly patients at increased surgical risk who are suitable for transcatheter access.”

The guidelines also stress, though, that the TAVI evidence is based on trials in patients with a mean age of 80 years, and the recommendations cannot be applied to those below 70-75. Broadly speaking, younger patients have more tricuspid valve disease, which may have worse TAVI results than tricuspival valves, and there is no long-term data on the durability of TAVI.

“In younger patients there must still be a critical risk of surgery before considering TAVI,” explained Professor Baumgartner. However, he emphasised that the final decisions on whether to perform SAVR (Surgical Aortic Valve Replacement) or TAVI (including the choice of access route) should be made by the Heart Team after careful individual evaluation. This was another key recommendation in the Guidelines.

The Heart Team approach is particularly advisable in the management of high-risk patients, and is also important for other sub-sets, such as asymptomatic patients, the Guidelines state. “The choice of SAVR or TAVI is not simply based on a risk score or age. The Heart Team must weigh the risks and benefits of both procedures, particularly in the intermediate-risk situation,” continued Professor Baumgartner.

“Discussion should include age, co-morbidities, anatomical and technical aspects as well as other cardiac conditions that require consideration in making these decisions. These are complex decisions, and they should be made by the Heart Team, with inputs from cardiac surgeon, cardiologist, and anaesthesiologist at the core.”

Other health professionals — including GPs, geriatricians and heart failure, electrolysists or intensive care specialists — may also be consulted if needed, he said. “I am anticipating a lot of discussion about this recommendation as this is the surgeons’ congress, and in the surgical community it will mean a lot of change in the years to come.”

Professor Baumgartner said the guidelines place much greater emphasis on surgeons and cardiologists working together as members of Heart Teams, and this reflects the increasing range and complexity of valve-based surgical and interventional techniques.

The new recommendation says heart valve treatments should be performed in a Heart Valve Centre with expertise in VHD, staffed by multi-disciplinary teams with competences in valve replacement, aortic root surgery, mitral, tricuspid and aortic valve repair, as well as transcatheter, aortic and mitral valve techniques including re-operations and re-interventions. The Heart Team must meet on a regular basis and work with standard operating procedure. It must also have imaging services, including 3D and stress echo-cardiographic techniques, perioperative TOE, cardiac CT, MRI and positron emission tomography CT.

Regular consultation beyond non-invasive cardiologists, surgeons and interventional cardiologists is also recommended. Backup services including other cardiologists, cardiac surgeons, intensivists and other medical specialties are also required. Data should also be audited and results made available internally and externally.

Professor Baumgartner highlighted the fact that it is now recommended that TAVI procedures should only be performed in centres with both departments of cardiology and cardiac surgery on site. Even though the complication rate has markedly decreased, and the conversion rate to surgery has become less, it is required for safety reasons, particularly when considering that indicatication of TAVI have been expanded to lower risk patients.

Another reason why cardiology and cardiac surgery should be on site is that the learning process has become quite complicated and requires both specialties. Finally, outcome has been shown to be volume dependent and this is another reason to centralise the care of these patients.”

The guidelines state that a Heart Valve Centre should also have structured training programmes, that both surgeons and cardiologists performing any valve intervention should undergo focused training as part of their Heart Valve Centre, and that learning new techniques should take place through mentoring to minimise the effects of the “learning curve.”

Another key change in the Guidelines includes a recommendation that novel oral anticoagulants (NOACs) should be considered as an alternative to warfarin and even to patients with AF who also have aortic stenosis, aortic regurgitation and mitral regurgitation. NOACs are still contraindicated in patients with mechanical valves and in mitral stenosis.

Other new recommendations cover when to intervene in asymptomatic valve disease. The guidelines state that a Heart Valve Centre must be harmonious with a simultaneously published chapter on VHD in the ESB Textbook of Cardiovascular Medicine for more background information.

Role of Heart-Team discussion on treatment selection and outcome of patients with complex cardiac disease: a blind decision-making study

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The concept of the Heart Team was born more than 60 years ago, but only recently has it been increasingly adopted, now receiving a class IC recommendation from both European and North American guidelines for coronary artery and heart valve disease. However, while some studies have showed safety, efficacy and even possibly improved outcomes of Heart Team-based decisions, the evidence on the impact and a Heart Team approach on clinical decision making is still limited. The goal of our study was to investigate this aspect and in particular whether treatment choice for a variety of cardiac diseases made by the Heart Team is different of that made by a single cardiac surgeon or cardiologists prior to Heart Team discussion.

At our institution, Heart Team meetings are held daily for one hour before starting other clinical activity and is open to all members of the Cardiovascular Science Department (including clinical and invasive cardiologists, echocardiographers, cardiac and vascular surgeons, cardio-anesthesiologists). The Team meets in a large room with facilities for remote conferences and three large plasma screens for display of imaging, an ideal setting for this purpose. In this study we randomly select 100 patients in the period from September 2015 to June 2016 who were presented separately to a cardiac surgeon and a cardiologist the day before the Heart Team. The two physicians anonymously and independently expressed a choice for the patient’s treatment (surgical, percutaneous, hybrid or medical therapy) or indicated if additional investigations were necessary and the day later the case was discussed by the Heart Team.

The final treatment received by the patients, and in hospital patients’ outcomes were then recorded. Concordance on treatment recommendations between cardiac surgeon and cardiologist was found in 51% of cases, while the Heart Team recommended cardiac surgeon’s decision in 66% of cases and the cardiologist’s decision in 56% of cases. Concordance between cardiac surgeon, cardiologist and Heart Team was achieved in 43% of cases. General consensus was less for patients with prior cardiac surgery or with aortic valve disease. Heart Team decision was implemented in 95% of cases and all patients were discharged alive from hospital.

Our study demonstrates that a Heart-Team approach substantially influences clinical decision making. Further studies are warranted to test the effects of a strategy guided by the Heart-Team approach as compared to current practice on long-term outcome of complex cardiovascular patients.
The EACTS Course in Cardiovascular Innovation

The EACTS Course in Cardiovascular Innovation was established in the late 1990s under the leadership of Professor Friedrich Mohr at the Leipzig Heart Center, Germany. The course was originally entitled “Latest Techniques in Cardiac Surgery,” but its name was changed to the more well-known “Leipzig-Dallas Meeting.” While organizing these series of meetings, Professor Mohr and Dr Michael Mack teamed up to focus on two important aspects in the field of structural heart disease: innovation, and the Heart-Team concept.

As with previous incarnations of this meeting, the EACTS Course in Cardiovascular Innovation will focus on the newest and most promising techniques used to manage structural heart disease. This EACTS Academy course represents a unique opportunity to get insights into the latest developments in modern cardiac surgery and interventionality from leading experts in these fields. As in the years before, the programme is a mixture of live operations / procedures combined with didactic sessions. Up to 30 procedures have been planned and will be interspersed between lectures and debates from internationally-recognised experts in the field of structural heart disease.

The venue for this year’s meeting will be a historic hall that has been newly renovated, with walking distance of downtown Leipzig. The location enables meeting delegates to experience the dynamic and vibrant city of Leipzig during its ornate Christmas festivities. The city is also known as the hometown of Sebastian Bach and the original site of protestor demonstrations that led to the fall of the Berlin wall.

The EACTS Cardiovascular Innovation programme begins with successive sessions on atrioventricular valve disease, first focusing on innovative open surgical and transcatheter techniques to treat mitral valve disease and then on tricuspid valve disease management. The final session of the first day will focus on surgical and interventional procedures for ischaemic heart disease. The previous tradition of a lively social programme will be kept alive at this year’s meeting with a party and live music at the well-known Mortiztaste at the end of the first day of the programme.

The second day of the programme will start out with a session on the latest treatments of arrhythmias and heart failures. This will be followed by a session on aortic disease with live open surgical and endovascular procedures. The topic of the last session of the meeting will be aortic valve disease, focusing on recent advancements in conventional and transcatheter aortic valve procedures. A distinguished international faculty will be sure to make the EACTS Course in Cardiovascular Innovation a worthwhile learning experience for all delegates. Registrants will be encouraged to interact and connect with experts from all fields of structural heart disease.

The EACTS Academy is looking forward to welcoming you to the Leipzig Heart Center on December 10-11, 2017. Professor Michael Borger and his team will work hard to continue the unique spirit of previous Leipzig meetings and to make this course a truly valuable experience for all who attend.

EACTS Clinical Guidelines Committee Report 2016–2017

Miguel Sousa Uva
Chair of EACTS Guidelines Committee

Guidelines summarise the available studies in a systematic fashion, and provide a grading of the evidence and a set of recommendations. Guidelines have been criticised for a variety of reasons, including (its name but a few): a lack of evidence to support many of its recommendations, taskforce members’ relations with the industry, applicability only to a very selected population (the populations included in randomised trials, when they exist), applicability only to the healthcare systems of rich countries, and the failure to take into account patients’ needs.

In reality, guideline limitations reflect the shortcomings of the studies upon which they are based. We know that observational studies, meta-analyses and even randomised trials have limitations. Although we recognise some of these limitations, such as the low level of evidence supporting many recommendations in surgery, it should be stressed that guidelines or expert consensus documents are useful in primary decision making, helping busy physicians in their daily practice. In addition to the initial orientation, guidelines provide, when available, the references of the studies that support them, thus allowing doctors to analyse the original papers.

In the last years, we have witnessed an improvement in the number and the quality of guidelines in which EACTS has been involved. A major step forward was taken in 2015 when EACTS published its Methodology Manual, setting out the rules for guidelines development. Since last year’s Annual Meeting in Barcelona, several guidelines and expert consensus statements have been published. In November 2016, EACTS published an important clinical statement on Guidance for the Provision of Adult Cardiac Surgery.” The first guideline for the Management of Transposition of the Great Arteries was published in January 2017. An expert consensus statement on the prevention and Management of Mediastinitis was also published in early 2017.

In July 2017, the ESC-EACTS Standards defining a ‘Heart Valve Centre’ were published. In August 2017, two new guidelines were released during the ESC annual congress: the ESC/EACTS Guidelines for the Management of Valvular Heart Disease, and the 2017 ESC Focused update on Dual Antiplatelet Therapy in Coronary Artery Disease, developed in collaboration with EACTS.

In October, during the EACTS Annual Meeting in Vienna, two new EACTS Guidelines will be released: the 2017 EACTS Guidelines on Perioperative Medication in Adult Cardiac Surgery and the 2017 EACTS/EACTA Guidelines on Patient Blood Management. Following the EACTS Methodology Manual, we incorporated a research fellow with expertise in epidemiology for the assessment before cardiac interventions.

1. Adult Domain
- EACTS Expert Consensus Paper on Long-term Mechanical Circulatory Support
- EACTS/EESOP/EACTA Expert Consensus Paper on Safety and Standards of CPB in Europe

2. Thoracic Domain
- EBS/EACTS/ESTRO Guideline for the Management of Pleural Mesothelioma
- EBS/EACTS Expert Consensus Statement on the Management of Malignant Pleural Effusion

3. Vascular Domain
- EACTS/ESVS Expert Consensus Statement on the Treatment of Aortic Arch Pathologies

4. Congenital Domain
- Expert Consensus Paper on the Diagnosis and Management of Truncus Arteriosus

Several new projects are also in the pipeline:
- EACTS Expert Consensus Paper on ECMO for Acute Heart Failure and Cardiac Arrest
- EACTS Expert Consensus Paper on ECMO for post-cardiotomy failure
- EACTS Consensus Paper about frailty

References
5. Eur Heart J 2017; 38(9): 1237-1244
7. Eur Heart J 2017; doi.org/10.1093/eurheartj/ehx419
Risk assessment and imaging in valvular heart disease

Nicolas M Van Mieghem, a cardiologist at the Department of Interventional Cardiology, Thoraxcenter, Erasmus Medical Center, Rotterdam, the Netherlands, gives his insights on the role of imaging and risk assessment in valvular heart disease during today’s session on the 2017 EACTS Guidelines on Valvular Heart Disease.

Can you give us some background to your presentation? During the European Society of Cardiology meeting in Barcelona in August, new joint Guidelines were issued by the European Society of Cardiology and the European Association of Cardiothoracic Surgeons. Valvular heart disease is a dynamic space in cardiology and cardiac surgery. Updated Guidelines have been eagerly awaited because of the ongoing revolution of catheter-based valve therapies and progress in 3D imaging.

What are the key recommendations in the Guidelines on risk assessment and imaging? Inherent limitations of risk score models are put in perspective. The current Guidelines strongly advocate setting up local Heart Teams that include cardiologists, imaging specialists, cardiothoracic surgeons, but also anaesthesiologists and even nurses. The concept of Heart Valve Centres is new. The new Guidelines endorse these Heart Valve Centres as being institutions providing expert care encompassing the total spectrum of valvular heart disease. These Heart Valve Centres must also incorporate internal audit processes and monitor outcome data up to one year after the procedure. I believe the ESC/EACTS take a strong position in favour of centralised care. This dynamic space of valvular heart disease requires scrutiny to avoid uncontrolled adoption and inappropriate use.

I will discuss the importance of newer imaging modalities. There was a time that 2D-echocardiography was the only imaging tool at hand. Now 3D-echocardiography and multi-slice computed tomography have become essential for proper procedural planning in transcatheter aortic valve implantation.

Clearly, transcatheter aortic valve implantation has the intrinsic capacity to improve patient care in view of hospital stay, quality of life and patient satisfaction. And the new guidelines open up TAVI for patients at lower operative risk. That said, it is too early to just treat all patients with aortic stenosis with TAVI. Younger patients without significant comorbidities and a long life expectancy still need surgical aortic valve replacement.

On the other hand, elderly patients may be good candidates for TAVI. Randomised trials are underway to determine the value of TAVI and SAVR in patients at low risk. More specifically, these trials will follow up study participants up to 10 years including echocardiography assessments by an independent core laboratory to study bio-prosthesis durability. These trials are essential to move the field forward. But until these studies are finalized, surgery is the therapy of first choice for true low-risk patients.

Imaging is important because anatomical features may impact a patient’s operative risk, and help select the right treatment strategy. Also, 3D imaging modalities may improve procedural execution both in the catheterisation laboratory and in the surgical theatre.

Can you spell out what the latest advice is on using EuroSCORE I, EuroSCORE II and STS? EuroSCORE I has no more value in contemporary practice, but it can be helpful for research purposes to have a sense of comparison in terms of patient risk between contemporary studies and older studies. The Society of Thoracic Surgery (STS) risk model and the EuroSCORE I are more accurate models for clinical use, but should always be put into perspective by a Heart Team discussion. A multi-disciplinary Heart Team should have the final word in the decision-making process in combination with the patient’s perspective.

Will Heart Teams be able to bring a more holistic approach to risk assessment – moving away from using scoring in isolation and taking other factors into consideration such as quality of life/overall life expectancy?

The Heart Team is the only way to integrate all facets of a patient’s clinical picture. No risk model is all-inclusive. The Heart Team has an overview of the entire clinical profile, information from multi-modality imaging and insights into local experience and expertise. In my centre we have a daily Heart Team discussion, and a weekly focused discussion on valve patients by interventional cardiologists, interventional cardiologists, imaging specialists, anaesthesiologists and cardiac surgeons. This heart team structure has its own challenges, but once established, it will improve patient care. I am aware that the Heart Team culture is not yet the reality in many institutions. Yet, the current guidelines strengthen the Heart Team concept and I would strongly recommend that we adapt the guidelines in this regard.

Can you outline the importance of echocardiography and its uses? Echocardiography is still the core imaging modality for the diagnosis of any valvular heart disease. The data obtained from 2-dimensional echocardiography in terms of anatomical dimensions, Doppler echo for blood flow velocities and colour-flow imaging are embedded in the guidelines to help define severity of valvular heart disease. The advent of three-dimensional transthoracic and transoesophageal echocardiography has become a valuable albeit logistically more challenging alternative for patients with poor echocardiography. And multi-slice computed tomography might become more important in catheter-based technologies. Clearly, there is a lot of research ahead of us!

What other imaging techniques are useful, and how can they be used in risk assessment? Apart from standard transthoracic echocardiography and Doppler stress echocardiography may help solve conundrums such as low flow, low gradient, severe aortic stenosis or dynamic mitral regurgitation. Cardiac magnetic resonance imaging has become a valuable albeit logistically more challenging alternative for patients with poor echocardiography. And multi-slice computed tomography might become more important in catheter-based technologies. Clearly, there is a lot of research ahead of us!

What is your key take-home message? The dynamic space of valvular heart disease needs a multi-disciplinary approach to control and help canalise the diversity, and guarantee that every valve patient will get the best possible treatment – regardless of whether it is by knife or by catheter.
Launched in 2013, CONNECT is LivaNova’s innovative and intuitive electronic perfusion data management system. Now featuring improved interoperability, CONNECT is more than just an automated alternative to manual data recording during cardiopulmonary bypass (CPB); it is a robust combination of hardware and software tools that delivers valuable, time-saving support and assistance during and after cardiac surgery, helping clinicians gain maximum clinical efficacy.

The CONNECT system features improved interoperability. Our planned upgrade to HL7 functionality will enable bi-directional exchange of medical data with hospital information systems. This includes the ability to securely import, export and query patient data and export selective offline case data—all with an easy-to-use graphical user interface.

CONNECT’s advanced capabilities can help clinicians minimize transcription errors and bias and focus more on the patient and circuit. The CONNECT system also maximizes traceability, minimizes liability and improves clinical practice. Additionally, the advanced software functionality of its GDP Monitor fully empowers Goal-Directed Perfusion (GDP) guidelines, which allows for a trending of critical patient parameters aimed at reducing the occurrence of Acute Kidney Injury in patients undergoing cardiac procedures.

Through continued advancements in CONNECT, LivaNova is meeting the challenge of optimal monitoring during cardiac surgery, to achieve quality goals and increase the opportunity to improve patient care and procedural outcomes.


DAPT in CABG: which, when, and how long?

Anders Jeppsson

DAPT (dual antiplatelet therapy) in coronary artery bypass grafting (CABG) will be presented today by Anders Jeppsson (Department of Cardiothoracic Surgery, Sahlgrenska University Hospital, Gothenburg, Sweden), who explores the evidence and unanswered questions in this patient population. The 2017 European Society of Cardiology (ESC) focused update on DAPT in coronary artery disease (CAD) was published in August this year, developed by a task force comprising members of the European Society of Cardiology (ESC) and European Association of Cardio-Thoracic Surgery (EACTS).

The latest on dual antiplatelet therapy (DAPT) in coronary artery surgery focuses on CABG, and the need for treatment?

Anders Jeppsson

to 12 months is recommended. The task force also recommends that, in patients on P2Y12 inhibitors who need to undergo non-emergent cardiac surgery, postponing surgery for at least three days after discontinuation of ticagrelor, or at least five days after clopidogrel, and at least seven days after prasugrel should be considered. In CABG patients with prior MI who are at high risk of severe bleeding (e.g. PRECISE-DAPT score of 20), discontinuation of P2Y12 inhibitor therapy after six months should be considered.

In addition, decisions on timing of cardiac surgery in patients who have recently received P2Y12 inhibitors may be guided by platelet function testing. Patients at high ischaemic risk with prior MI and CABG, who have a key element in addressing these questions — expressing, understanding each patient’s needs and delivering personalised therapy — is the platelet function test. Indeed, the update acknowledges that to be considered, the timing of cardiac surgery and corresponding P2Y12 inhibitor cessation should be guided by the need for anticoagulant therapy, resumption of DAPT in ACS patients undergoing CABG but not requiring long-term oral anticoagulant therapy.

Anders Jeppsson

Some of these studies will never be done; some may be done, but it is difficult to plan a study where there are clear recommendations (i.e. Class 1 or 1A) in place in guidelines. We will have to live with some of these limited levels of evidence.

A key element in addressing these questions — expressing, understanding each patient’s needs and delivering personalised therapy — is the platelet function test.

Dr Jeppsson suggests that this is the next step. We are now pretty good at writing guidelines but we need to implement them on a local, regional, national and international level. One of the challenges now is how we should monitor that, and also how this influences long-term outcome.

Conceivably, implementation rates differ across Europe and beyond, with possible influence from external, non-clinical factors. “The ESCs have a key reason through their quality improvement programmes and their registry to actually investigate the implementation rates or the proportion of patients who are actually treated to current guidelines.”

References

INSIDE VIENNA
Where to go? What to do?

SIGHTS

STEPHANSDOM
The main cathedral of Vienna needs little introduction. Take a lift to the top of its tower, and remember your camera: the views are stunning!

JOSEFSTADT / OLD GENERAL HOSPITAL
Baroque architecture abounds in Vienna’s eighth district, and you can get lost in its charm just strolling around the small cafes, bars, galleries and independent shops. But an unmissable sight is the old general hospital (Allgemeines Krankenhaus der Stadt Wien), a collection of buildings first founded in the 17th century. These include the Narrenturm – built in 1784 – the first building in continental Europe dedicated to the accommodation of patients with mental illness.

VISIT SOME QUIRKY HOUSING
One look at the Hundertwasserhaus apartment complex and you will see why its creator, whacky Austrian artist Friedensreich Hundertwasser (along with architect Joseph Krawina) apparently once said that “A right angle is a crime!”.

ACTIVITIES

THIRD MAN FILM TOURS
The Third Man is a 1949 post-World-War-II film noir, filmed in the ruins of Vienna, starring Orson Welles. An iconic part of the film is final scene is a chase through the Vienna sewers – and 3. Mann Tour (www.drittemanntour.at) offer a fascinating trip down into the ‘underworld’ of the sewers, including famous parts used in the film.

VISIT SOME FAMOUS ALUMNI

VIENNA CENTRAL CEMETERY
Burial grounds are not on the usual checklist for a city break, but the massive Central Cemetery serves as the final resting place for an ensemble of some of the most famous composers of all time. Beethoven, Schubert and Strauss all are located here.

However, because the Cemetery was so vast, and so far out of the centre when it opened in outer Simmering in 1874, it was quite unpopular, and thus it was decided that some notable names – including Beethoven – would be relocated to the site as Ehrengräber, honorary graves to bring in the punters!

ST MARX CEMETERY
Wolfgang Amadeus Mozart, although born in Salzburg, is undoubtedly the most famous resident of this Vienna burial site. Unfortunately, the exact location of his remains is unknown, but a fitting memorial stands prominently in his memory.
Surgical AF ablation: Time for a paradigm shift

In the field of atrial fibrillation (AF), making the right choices about who to treat, and how to treat them with surgical ablation, is the focus of AtriCure’s symposium this year, entitled, ‘Surgical ablation: Why, when and how in the face of an epidemic?’

The programme for the symposium was compiled by Timo Weimar, MD, a cardio-surgeon at Sana Cardiac Surgery, Stuttgart, Germany with a specialist interest in heart rhythm surgery. He told EACTS Daily News that the subject matter highlighted both the growing number of AF cases in the increasingly ageing population, and the increasing appetite to find the best evidence-based solution for any particular patient’s AF needs. “In this symposium, we want to address how to implement the evidence that patients with AF do better when ablated surgically during concomitant cases. But importantly, we also need to know how to do this in clinical practice, being as effective and as safe as possible,” he pointed out. “AF is still often considered a minor co-morbidity. Since its efficacious treatment will pay off in a mid-term time frame but surgery is usually measure in a 30-day outcome, there is still a way to go to change the mind-set that AF in many patients should be considered as important as other structural heart disease we treat.”

Commenting on the subject matter covered by the symposium, Dr Weimar explained that the programme focuses on increasing awareness of the increasing uptake of surgical AF ablation. “Despite the evidence that led to a class I recommendation, there is still under-treatment of AF during cardiac surgery. When and why we should do it, and understanding the decision-making process, are central to maximising patient benefits.” This will also be the topic of his talk at the symposium, including strategies to implement a successful AF ablation programme and a good rationale for efficacious decision-making.

The lunchtime symposium features leading experts in the field of surgical AF ablation, Manuel Castellà, MD, a cardio-surgeon at Sana Cardiac Surgery, Barcelona, Spain, who was part of the ESC/EACTS guidelines committee, will discuss the evidence behind surgical AF ablation with: ‘It is not a lack of evidence: the rationale to treat AF.’

Referring to Dr Castellà’s talk, Dr Weimar said that, “surgeons still easily find an excuse not to treat AF. Many may fear to add complexity and risk to their procedures, or question the potential benefit. Both the evidence and for this reason concomitant surgical AF ablation has become a standard in my institution for patients with AF.”

Guidelines support greater penetration of surgical AF ablation use

Stressing the greater consideration needs to be given to longer-term outcomes in this patient population, Dr Weimar pointed out that with surgical AF ablation, patients have improved quality of life and also potentially impart stroke risk, but we need to increase confidence among surgeons to perform this procedure.” Supporting his plea for greater uptake of AF ablation is the Society of Thoracic Surgeons 2017 Clinical Practice Guidelines for the Surgical Treatment of Atrial Fibrillation, published in early 2017. “These Class I recommendations should actually trigger the abandonment of questioning proof that the benefit exceeds the risk, by any potential risk we might add by an ablation,” he would even take it a step further: Recent reports from the STS-Database even suggest that not performing an ablation in AF-patients with double or triple valve procedures is a predictor for perioperative mortality. It seems that we repeat history when we think of the early days when we decided to either fix the valve or perform CABG, because doing both was considered too complex. Until we found out that mortality was actually decreased by doing it simultaneously.”

When and how to perform surgical AF ablation?

From the surgical perspective, there are different lesion sets that can be applied depending on the underlying pathology responsible for the AF. The lesion set chosen also depends on the primary procedure being performed. Discussing his upcoming talk, Dr Weimar said that he aims to give the audience an idea of the optimal approach in terms of the best possible success rate for a particular patient in the light of the primary procedure being carried out. “How is the decision made? What kind of lesions are applied, and what rate of success can be expected?” he remarked, reflecting on the questions he would be answering during his talk.

Concomitant surgical AF ablation

AF is present in approximately 35% of patients presenting for mitral valve surgery, and in 1% to 6% of adult patients undergoing other forms of cardiac surgery. If the AF is left untreated, the patient is subject to increased morbidity and mortality, and for this reason concomitant management of the arrhythmia is indicated in most patients undergoing cardiac surgery with pre-existing AF. For example, in patients with preoperative AF undergoing CABG, 10-year survival was reduced by 24% compared with patients without AF.” On the other hand, if we add an ablation to CABG patients with AF, survival at one year is significantly higher.

“This becomes also relevant in our mitral patients as well. The valve pathology might lead to anatomical- and electrophysiological remodelling of the atria, and this can lead to atrial fibrillation,” explained Dr Weimar. “Since we also fix the valve which is a substrate for AF in addition to the ablation we can achieve exceptional results.”

Surgical treatment of lone AF

Finally, Mark La Mei, MD, from the Academic Hospital Maastricht, the Netherlands, will discuss the ‘AF heart team approach to optimise the treatment of AF patients.’ Dr La Mei, an expert in the field of AF surgery, switches gears to the stand-alone AF patient and will discuss how to move to a Heart Team approach, and treat patients simultaneously with surgical and electrophysiological techniques. “The combination of both techniques, surgical and catheter ablation, should give sufficient to treat patients with lone AF a very good option while keeping the procedure’s invasiveness to a minimum,” he pointed out. Besides insights in modern ways to treat lone AF, he will show a video where he ablates epicardially, while the electrophysiologist simultaneously checks the lines and adds ablations endocardially if necessary.

What is it all about?

Prior to the EACTS lunch symposium, Dr Weimar concludes “It is time to break with dogma, balance the evidence out there and consider all our possibilities to give the best possible outcome to our patients. It is our own responsibility as surgeons to gain the knowledge and training that it takes to achieve this goal. With a considerable prevalence in our cardiac surgery patient population this is also true for the treatment of AF.”

The AtriCure lunch symposium will be held on Monday 9 October, 2017, at 12:45-14:00 in Room O.31/03.22.

References
32nd EACTS Annual Meeting
Milan, Italy
18-20 October 2018
Deadline for Abstracts - 30 April 2018
To find out more or to register for the event visit:
www.eacts.org

Raising Standards Through Education and Training
Is the trip to the O.R. becoming a trip to the Cath Lab for ACS patients?

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Recent studies have confirmed that surgical revascularisation is the gold standard treatment in multivessel coronary patients. However, very often the perception that PCI is a much less invasive procedure tips the balance in favour of the percutaneous choice. In our high volume OPCAB centre our effort has always been to reduce the invasiveness of surgery, objectively and subjectively. In order to compete with PCI invasiveness we adopted a composite surgical strategy which we called the MORE approach: Minimvasive OPCAB + Rapid SICU exit + Extubation in operating room (O.R.)

We present the results of the MORE revascularisation protocol in acute coronary syndrome (ACS) patients. From November 2016 to March 2017, 120 patients underwent OPCAB procedure for recent ACS. Criteria for enrolment into the MORE study were haemodynamic stability, no high-risk of bleeding and EF ≥ 45%. Criteria for OR extubation were: normothermia, good cardiac output and no evidence of bleeding. In 75 ACS patients (62%) the MORE protocol was attempted. Mean age was 64.4 years, 70% were male and mean EF was 52.6%.

The MORE approach involved: a lower partial or a full sternotomy through a 10 cm skin Minimcision; complete Off-pump revascularisation (preferable arterial and anarctic); Rapid mobilisation: immediate patient/relatives interaction at arrival in the Surgical Intensive Care Unit (SICU), seated edge after two hours, out of bed after four hours and same-day transfer to the Coronary Intensive Care Unit (CICU); Extubation in the O.R.

Five patients failed OR extubation and 10 patients needed incision extension for poor coronary vessel exposure. The remaining 65 (86%) entered the MORE approach study. We did not register any operative mortality, perioperative MI or CV events. Mean graft/patient ratio was 2.8. At SICU arrival all patients were able to interact with their relatives. Early mobilisation allowed 60 (92%) patients to be seated edge of bed after two hours and 28 (43%) patients to be out of bed after four hours. In the afternoon, 55 patients returned to the CICU. This rapid SICU exit allowed an overutilisation of our present logistic facilities. Moreover, the cardiologists favourably accepted to retake care/control of their ACS patients the same day of surgery.

Finally, the MORE protocol reducing objectively and subjectively the invasiveness of the coronary surgery may be considered a quite competitive option versus PCI.

We conclude that the MORE protocol allowed selected ACS OPCAB patients to be O.R. extubated, early mobilised and same-day discharged from the SICU. The minimcision, avoiding excessive rib traction, reduced the postoperative pain and was a very well-accepted cosmetic bonus. The rapid SICU best turnover allowed an overutilisation of our present logistic facilities. Moreover, the cardiologists favourably accepted to retake care/control of their ACS patients the same day of surgery.

Finally, the MORE protocol reducing objectively and subjectively the invasiveness of the coronary surgery may be considered a quite competitive option versus PCI.

However, the MORE approach is technically demanding and is advisable only in centres with high coronary surgery volumes and OPCAB expertise.
The 5th EACTS and PACT Regeneration Meeting in Vienna: Taking the Science to the Patient

H Jan Ankersmit1, Ralph Schmid2
1 Medical University of Vienna, Austria; 2 Insel Spital, Berne, Switzerland

For almost two decades, cell-based therapies have been tested in modern regenerative medicine to either replace or regenerate human cells, tissues, or organs. Especially in the field of acute myocardial ischemia (AMI), advanced therapeutic avenues have been advocated as novel therapy for the treatment of acute AMI in order to prevent cardiomyopathy. Recent meta-analysis has identified this assumption as fact. Despite this disconcerting publication, the field is thriving. Double blind, placebo-controlled clinical trials are currently under way to prove society efficacy in stroke, AAA, and multiple sclerosis – as such, the intravenous application of allogenic mesenchymal stem cells was recently approved for the treatment of graft-versus-host disease in Japan. The concept of allogenic ‘off the shelf’ ATMPs have found wide regulatory approval, and currently multiple human ‘proof of concept studies’ (PcOs) are performed worldwide. Of particular relevance to regulatory bodies is the fact that ‘safety issues’ and the ‘reproductibility of production’ of ATMPs are paramount to local and supranational regulatory bodies. After these issues were resolved by scientists’ companies, no objections were voiced against monitored clinical trials by the agencies. Another surprise to the basic researcher was the fact that regulatory bodies accepted the scientific findings that cell-based therapies have multiple mechanisms of action (MoA). Thence, the ATMP industry has set the foundation for a drug compound with multiple MoA, defined a toxicological pathway for these cell-based therapies, and initiated a constructive discourse with regulatory bodies in defining the safe path to clinical trials with patients of unmet need.

The exciting field of cell-based therapies is rapidly moving ahead. Currently we see that the ‘cell-centric vision’ is vanishing. Since 2005 it is accepted that the secretome or paracrine factors, rather than the cellular component, does foster mechanisms of tissue repair. From 2011 onwards, the experimental work is heading towards the sole application of paracrine factors derived from mesenchymal stem cells (MSCs) or peripheral mononuclear cells (PBMCs). In those experiments, it has been shown that concentrated or lyophilised culture medium had similar capacities as cell based therapies in multiple preclinical disease models. Under the direction of Professor Schmid, the EACTS has spearheaded a regeneration focus. This year we have prepared the 5th Regeneration Meeting in Vienna together with the Platform Of Advanced Therapy Austria (PACT Austria; www.pact.at), with the title “Taking the Science to the Patient”. Clinicians, basic researchers, service providers, toxicologists and regulatory affairs will share their knowledge to the interested public. We welcome everybody who is interested in this exiting field.

The 5th EACTS and PACT Regeneration Meeting will take place from November 30 to December 1, 2017 in Vienna.

References

Acute and six-month results of the Symetis ACURATE neo transcatheter aortic valve implantation

Lenard Conradi1
University Heart Center Hamburg, Department of Cardiovascular Surgery, Germany

The success story of transcatheter aortic valve implantation (TAVI) continues with ever increasing procedural volumes and the accumulation of promising mid-term outcomes in inoperable or high-risk patients with symptomatic, severe aortic stenosis. In the current focused update of the 2014 North American ACC / AHA Guidelines on valvular heart disease, TAVI may now also be considered in patients at intermediate risk for surgical aortic valve replacement. Mutual consent of an interdisciplinary heart team of cardiologists and interventional cardiologists is still an indispensable prerequisite for the indication for TAVI.

The most commonly used access is the retrograde transendural (TF) route. Today, the majority of patients are eligible for TF TAVI, which can be performed in conscious sedation with a relevant share of patients treated by TAVI for Operative Risk Evaluation (logEuroSCORE I) pronounced risk for surgery who were ineligible for TF TAVI. The majority of patients is elderly, comorbid patient population – present with peripheral artery disease precluding them from a TF approach. For this subset, comprising approximately 20% of cases in Germany, the antegrade transapical (TA) approach is most commonly chosen. At present, only two device types are available for TA TAVI: the balloon-expandable Sapio valves (Edwards Lifesciences, Irvine, CA, USA) and the self-expanding ACURATE valves (Boston Scientific, MA, USA). The Boston Scientific TAVI system has recently been reerrated to include a novel 22 F outer diameter, low-profile, sheathless TA catheter compatible with the self-expanding, supra-annular ACURATE neo transcatheter heart valve (THV) which has been commercially available with a TF delivery system since 2014 and which allows implantation in an annulus range of 21–27 mm. Acute and 6-month results of the ACURATE neo TA prospective multicentre study will be presented for the first time at the 2017 EACTS Annual meeting. The study was conducted at 7 German centres and included a total of 60 patients with a 6.3±2.3 mmHg at six months. This study demonstrated the safety and efficacy of TA TAVI using the novel low-profile ACURATE neo TA delivery system and the ACURATE neo THV. Favorable rates of device success and excellent haemodynamic results were accompanied by ease of implantability and a superior procedural safety profile. This TAVI system complements the current armamentarium for the treatment of high- or intermediate-risk patients with severe aortic stenosis. Results will be confirmed in the post-market CHANGE neo TA registry.

Figure 1. The Boston Scientific ACURATE neo transcatheter heart valve consists of a self-expanding nitinol frame and a trileaflet porcine pericardial valve. The novel, sheathless transapical delivery catheter has an outer diameter of 22F. (Images courtesy of Boston Scientific)
EACTS 2017 Agenda

Saturday 7 October

08:00 Translational and Basic Science Course – Theory and reality of university-based enquiry 0.31/ Academy 0.32
08:00 Surgery at the crossroads Hall A Techno College
09:00 Update on the Thymus Hall K1 Techno College
10:00 Translational and Basic Science Course – Cardiac Alpha Gal and Bio valve immunology 0.31/ Academy 0.32
10:00 Imaging and 3D techniques Hall A Techno College
12:00 Translational and Basic Science Course – Thoracic: The issue is the issue: Building translational... 0.31/ Academy 0.32
12:30 1st International EACTS Ventricular Assisitant Device (VAD) Co-ordinations Symposium and... 0.11/ Academy 0.12
13:30 New techniques: the developers corner Hall A Techno College
14:00 Translational and Basic Science Course – Cardiac: Repair medicine and Application: from exper... 0.31/ Academy 0.32
14:00 Hands-on arterial switch operation – Congenital drylab Hall K2 Advanced Techniques
16:00 Translational and Basic Science Course – Regulatory aspects of Innovation: What do we have to know as innovative surgeons 0.31/ Academy 0.32
16:00 Transcatheater techniques and atrioventricular valves Hall A Techno College

Sunday 8 October

08:30 Getting to the root 0.11/ Abstract 0.12
08:30 Translational and basic science course – when regulatory where overcomes: Human trials
08:30 Challenges in patients with connective tissue disorders Hall E1 Focus Session
08:30 Controversies on perioperative management of intubation, undergoing procedure Hall F2 Focus Session
08:30 Making vein grafts great again Hall G1 Focus Session
08:30 Optimal antithrombotic management in patients undergoing coronary artery bypass grafting... 0.31/ Academy 0.32
08:30 Pleural empyema management Hall K1 Focus Session
08:30 Will mini aortic valve replacement become the gold standard? Hall K2 Focus Session
08:30 Perfusion session 1: Heater cooler induced infections 0.14 Focus Session
08:30 Research in medicine: getting acquainted with a scientific meeting as a starting researcher
08:30 Young Investigator Award – Semi Final 1 Hall E2 Rapid Response
08:30 Coronary artery bypass grafting – a bit of science Hall F1 Rapid Response
08:30 Atrial revascularisation after the ART trial Hall D Professional Challenge
08:45 Allied Health Professionals – Prevention and management of infections 2.32/ Focus Session 2.33
10:15 Translational and basic science course – Discussion and outcomes 0.31/ Academy 0.32
10:15 Innovative techniques for mitral valve therapy Hall Abstract G1

10:15 Left ventricular restoration and hypertrophic cardiomyopathy surgery – Healing the left ventricle Hall K2 Abstract
10:15 Facing complications during and after emergent surgery for aortic dissection Hall E1 Focus Session
10:15 Transplantation and basic science course – Thoracic: The issue is the issue: Building translational... 0.31/ Academy 0.32
10:15 Current and future options in the treatment of aortic valve stenosis Hall G2 Focus Session
10:15 End-stage emphysema management Hall K1 Focus Session
10:15 Percusion session 2: Improving perfusion 0.14 Focus Session
10:15 Allied Health Professionals – Quality improvement initiatives 2.32/ Focus Session 2.33
10:15 Research in medicine: your manuscript as the next scientific breakthrough 2.31 Focus Session
10:15 Young Investigator Award – Semi Final 2 Hall E1 Rapid Response
10:15 Jeopardy Hall F1 Rapid Response

Cash lunch available
12:00 Minimally invasive aortic bypass grafting Hall F1 Focus Session
12:00 Complications after endovascular aortic repair: new challenge for open surgery Hall E1 Focus Session
12:00 Transplantation and basic science course – Thoracic: The issue is the issue: Building translational... 0.31/ Academy 0.32
12:00 Grown-up congenital heart 2 Hall F2 Abstract
12:00 Hot topics in transcatheter aortic valve implantation Hall G1 Focus Session
12:00 Mitral Repair – Decision making in mitral surgery: trying to fill the gaps in evidence! Hall G2 Focus Session
12:00 Health care design, opportunities and challenges for the future Hall K2 Focus Session
12:00 Perfusion session 3: Mechanical circulatory support – state of the art 0.14 Focus Session
12:00 Interdisciplinary competency training: standardisation, assessment and risk reduction in the... 0.11/ Focus Session 0.12
12:00 Allied Health Professionals – Abstracts 2.32/ Focus Session 2.33
12:00 C. Walton Lillehei Young Investigator Award / EACTS/ LivioNova Cardiac Surgery Innovation A... Hall E1 Rapid Response
12:00 The icing on the cake Hall F1 Focus Session
12:00 How to set up thoracic surgery research trials Hall K1 Focus Session
14:00 Surgical Videos Hall F2 Abstract
14:00 Short-term mechanical support 0.14 Abstract
14:00 Heart transplantation is still the best long-term option 0.31/ Abstract 0.32
14:00 An old battlefield with casualties: infection of the aorta Hall E1 Focus Session
14:00 What is new in left main disease Hall G1 Focus Session
14:00 Work-life balance in cardio-thoracic surgeons Hall G2 Focus Session
14:00 Update on chest trauma Hall K1 Focus Session
14:00 Personalised external aortic root support Hall K2 Focus Session
14:00 Evolucion in bioprosthetic valve design 0.11/ Focus Session 0.12
14:00 Allied Health Professionals – Hands on session 2.32/ Focus Session 2.33
14:00 Research in medicine: the ultimate currency for every academic career? Hall F1 Focus Session

Monday 9 October

08:15 Risk score 0.14 Abstract
08:15 Coronary artery bypass grafting: Factors effecting outcomes 0.31/ Abstract 0.32
08:15 Late breaking clinical trial & evidence 0.49/ Abstract
08:15 Robotic surgery in general thoracic surgery 2.32/ Abstract 2.33
08:15 Coronary problems Hall F2 Focus Session
08:15 Endocarditis surgery Hall G1 Focus Session
08:15 Work in progress Hall G2 Focus Session
08:15 Anatomical segmentectomies Hall K1 Focus Session
08:15 Ethical and surgical issues in organ transplantation Hall K2 Focus Session
08:15 Research in medicine: increasing the impact of your study 0.11/ Focus Session 0.12
08:15 EACTS/PASCATS – Controversies in Rheumatic Heart Valve Surgery: Valve Selection 0.94/ Focus Session 0.95
08:15 Rhythm issues Hall E2 Rapid Response
08:15 Aortic valve repair Hall F1 Rapid Response
08:15 A snapshot on transcatheter aortic valve implantation Long 6 Postgraduate Education
08:15 Minimally invasive mitral and tricuspid valve surgery – standard of care? Hall D Professional Challenge
08:15 Challenges in the management of aortic arch diseases Hall E1 Professional Challenge

Break, Exhibition Halls

10:15 Valves Hall F2 Abstract
10:15 Lung cancer – controversies Hall K1 Focus Session
10:15 Conduction disturbances after aortic valve interventions 0.14 Abstract
10:15 Cardiac tumours 0.31/ Abstract 0.32
10:15 Lung transplant advanced evidence 2.32/ Abstract 2.33
10:15 The poor right ventricles in combination with tricuspid regurgitation Hall G1 Focus Session
10:15 Rarities in cardio-thoracic surgery Hall G2 Focus Session
10:15 Atrial fibrillation surgery in 2017 Hall K2 Focus Session
10:15 Statistics in medicine: ‘learning the basics’ for clinicians 0.11/ Focus Session 0.12
10:15 Rapid deployment valves: New evidence & clinical cases discussion 0.49/ Focus Session 0.50
10:15 SBCOV – Clinical, social and economic impact of the new valve technologies in southern hemisp... 0.94/ Focus Session 0.95

EACTS 2017 Daily News

Wednesday 5 October

16:00 Transcatheter techniques and endovascular aortic repair: aortic valve interventions – standard of care? Hall G2 Focus Session
16:00 Ethical and surgical issues in organ transplantation Hall K2 Focus Session
16:00 Research in medicine: increasing the impact of your study 0.11/ Focus Session 0.12
16:00 EACTS/PASCATS – Controversies in Rheumatic Heart Valve Surgery: Valve Selection 0.94/ Focus Session 0.95
16:00 Rhythm issues Hall E2 Rapid Response
16:00 Aortic valve repair Hall F1 Rapid Response
16:00 A snapshot on transcatheter aortic valve implantation Long 6 Postgraduate Education
16:00 Minimally invasive mitral and tricuspid valve surgery – standard of care? Hall D Professional Challenge
16:00 Challenges in the management of aortic arch diseases Hall E1 Professional Challenge
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oday's series of Allied Health Professionals sessions is focused on key topics in the field. Speaking to EACTS Daily News, Richard Van Valen, a nurse practitioner at the Erasmus University Medical Center in Rotterdam, the Netherlands, gave a glimpse into the programme, its design and core aims.

What was the driving force in the development of the Allied Health Professionals programme? How important is it to foster exposure of Allied Health topics?

EACTS has recognised the role of allied health professionals in cardiac and thoracic surgery for many years. The group was established with help of former Secretary General Peter Kappetein. We have the goal to become the main platform for the exchange of science and networking in the field of cardiothoracic surgery. Our motto has always been: “Great cardiothoracic surgery deserves great nursing”.

The group is, however, vulnerable. The amount of scientific output from this group is growing, but opportunities to share this knowledge and networking with their peers and others are scarce, especially on an international level. Efforts need to be done to help allied health by offering a programme and platform for this group. The annual meeting has been lowered to accommodate those with limited budgets. What's more, the chairs of the sessions have been briefed to get discussions started and to encourage delegates to participate.

There are three main lecture sessions (management of wounds, quality improvement, abstracts): can you offer a snapshot of each one?

Each year we have an abstract session. During this session scientific work is presented by the authors. The work has been assessed on originality and importance for allied health professionals. The best presentation is given with an award, presented by Professor Pomar, together with an unrestricted educational grant (made possible by Getinge). Quality improvement is a session we have every year. We all strive to improve surgical interventions. For example, we have a Dutch physician assistant (Rianne Rijpda) who will present on her training to perform endoscopic vein harvesting. Together with her department, she managed to perform 100 procedures in 100 days. Another important topic is the changing view on the importance of treating atrial fibrillation. There are new guidelines, so what are the consequences for allied health professionals? The same goes for CABG surgery. The talk will not emphasise surgical techniques but rather the important topics for allied health. The wound session gives an overview on current guidelines, and options to reduce surgical site infections. Despite many efforts, the problem of wound infection remains. Patients often present with comorbidities that make the occurrence of an infection more likely. During this session, a surgeon will talk on her role, and the opportunities to reduce the number of infections. Dr. Klessar from Canada, an infection specialist will talk on the choices that can be made to reduce the number of infections, for example which disinfectant should be used, and the importance of programmes instead of single interventions.

You will be talking about ‘Negative Pressure Wound Therapy on closed surgical wounds’. Can you give us a glimpse of the key talking points there?

My talk will look into the potential of negative pressure wound therapy as a preventative measure in high-risk patients. I will look at the current literature to ask the question whether this intervention on a closed surgical incision can help to prevent wound dehiscence and wound infections. It is clear that the use of these kinds of therapies results in significantly higher costs compared to conventional coverage of surgical wounds.

What can we expect from the fourth, ‘hands-on’ session? Are there particular topics hoped to be focused on particularly?

The hands-on session has been introduced to show delegates new treatment modalities in small groups, and to give them time to ask questions. The allied health group comprises many disciplines – from ward nurses to surgical care practitioners. Many of them have heard of new techniques but have no or very limited exposure to them particular topics hoped to be focused on particularly? What can we expect from the fourth, ‘hands-on’ session? Are there particular topics hoped to be focused on particularly?

Richard Van Valen

“Without great allied health professionals, the great work of surgeons could not be performed, and pre- and postoperative management of patients would not be possible.”

Cardiac valves. How are they created, how do they look? Delegates will be able to gain knowledge in small groups guided by specialists.

What should attendees take away from these sessions, broadly speaking? Is there an overall goal in mind?

We want delegates to end the day with a feeling of pride that they belong to this important group. Without great allied health professionals, the great work of surgeons could not be performed, and pre- and postoperative management of patients would not be possible. Nurses and others involved should take away that doing research and looking into evidence-based practice can and should be done by allied health professionals. We hope that they will see that offering their work to a European platform is possible, and leads to exposure for the individual, but also the whole group. We hope that they will encourage others to attend and talk to management and surgeons on the importance of attending these kinds of meetings. The costs are often a problem for allied health professionals to attend. We, however, strongly believe attending these kinds of meetings leads to inspiration of healthcare professionals, and in turn will lead to improved patient care.
Afib affects more than 33 million people and counting. It’s not an inconvenience. It’s a crisis.
What should be the approach to subclinical leaflet thrombosis in aortic valves?

Gregory Fontana explained. What his group also now knows is that certain subgroups have a predisposition towards this phenomenon. “Those are patients with low cardiac output and low gradient, valves that seem to not be fully expanded and those treated with TAVI in SAVR. They have an increased risk of it happening,” he explained.

What isn’t known, however, are the long-term consequences. “We are not seeing a high number of patients coming in with very obstructed valves and in shock. Is one of the long-term consequences, perhaps, that patients develop an earlier degeneration of the valve?” said Dr Fontana. “We see that in the surgical valves. We see patients present within the first three years with thrombosis or within the first five years with degeneration. Is this some sort of harbinger of early failure? We don’t know.”

The incidence varies between 4% and 30% in various valves. So, what’s clear now we need to try to determine cause. The group has a number of theories, said Dr Fontana, such as whether it is some form of an immune system-stimulated thrombosis or is it flow related. “These are very important questions going forward,” he added.

What is also interesting are the studies carried out on surgical valve registries in Denmark and the US. “It’s quite relevant to EACTS,” he said.

“...if these valves are going to thrombose early and fail early, we want to figure out a way to postpone or pre-empt it.”
Gregory Fontana

“Looking at surgical tissue valves in the aortic position, both studies – of many thousands of patients – indicated that if you anti-coagulated patients for the first six months or year after you put in their tissue valve, they had a better survival.”

This may have profound consequences for anticoagulation. “That’s because although the makers of surgical valves recommend anticoagulation for at least six months, this is not consistent practice amongst most target patients, said Dr Fontana. “We haven’t been doing that for the last 10 to 15 years because we’ve been operating on older and older patients and nobody wants to thin their blood when they are 80 or 90 years old and walk with a cane. That clinical practice has fallen by the wayside.”

There’s a lot of interesting indications that this is a relevant phenomenon. “We don’t have the full understanding yet.”

More information will hopefully mean new guidelines on anticoagulation, Dr Fontana underlined, but there are other guidelines that need to be updated too, he added. “There’s a lot of passion and emotion around this topic but not much science, and not much agreement,” he said. “Right now, the recommendations from the corporate, professional societies, and regulatory bodies is dual antiplatelet therapy for TAVI valves. But trials, so far, suggest aspirin and another anti-platelet agents are neither preventative nor therapeutic. So, the current guidelines are inconsistent with our findings.”

“Now with intermediate-risk and even low-risk patients receiving TAVI valves, doctors may be less concerned about starting patients on anticoagulation, so maybe we should use anticoagulation more liberally in these lower risk patients?” said Dr Fontana.

That’s why it’s now important to discover any clinical effects of the thrombosis. “There wasn’t any meaningful increase in stroke and TIA in a small high-risk group. But it’s vital to understand whether larger or younger populations might experience a statistically meaningful increase. “As we move into people who are living longer, intermediate-risk patients or low-risk patients – who may have a longer life expectancy – there is a real driver now to understand this, because if these valves are going to thrombose early and fail early, we want to figure out a way to postpone or pre-empt it.”

So far there are two valves approved for intermediate risk, and some trials ongoing for low risk too. The anticoagulation approach to these groups must be determined, said Dr Fontana. “This is where people start to be a little bit more concerned around the anticoagulation strategy. What do we do with a frail person who is 85 or 90 years old versus the 65-year-old who is still working – a man or woman who has decades ahead of them?” he said. “You’ve got a risk-benefit balance in anticoagulation that is different in these two populations. It’s a very, very important topic.”

And there are consequences for industry too, especially if it is established that one valve is more or less likely than another. “If one turns out to have higher incidence than the competition, that’s a multi-billion-dollar industry,” concluded Dr Fontana.

References

Cardiac | Focus | Hot topics in transcatheter aortic valve implantation

Carolyne Fink and Mertcan Demircan
MMCTS: Stay tuned for Techno-College and a new Editorial Board

The Multimedia Manual of Cardio-Thoracic Surgery (MMCTS), under the direction of the European Association for Cardio-Thoracic Surgery (EACTS), will be publishing Techno-College Live-in-a-Box video cases as online tutorials following this year’s 31st EACTS Annual Meeting in Vienna.

In the past, Live-in-a-Box videos would appear only within the EACTS Media Library, and would be available only to those who attended the Techno-College sessions. This is changing. EACTS understands that it can be challenging for attendees to find time to make it to all of the presentations they want to see, so this year, MMCTS will make these cases freely available online to users worldwide.

In addition to publishing Techno-College tutorials, MMCTS is working systematically to commission new tutorials from other expert surgeons and create a comprehensive library of high-quality, narrated, and beautifully illustrated video tutorials, across all its domain sections: Core Skills, Cardiac, Congenital, Thoracic, and Vascular.

New Editorial Board
MMCTS’s Editors-in-Chief Drs Roberto Lorusso and René Prêtre have appointed a new Editorial Board of international experts in thoracic and cardiovascular surgery who will help to define the Manual’s future direction and lead the drive to commission new tutorials across all cardio-thoracic surgery subject areas:

- Bartosz Rylski from Herzzentrum in Freiburg will lead Core Skills.
- Piotr Suwalski (Central Clinical Hospital, Warsaw) is taking on Cardiac.
- Lorenzo Galletti (Papa Giovanni XXIII Hospital, Bergamo) will run Congenital.
- Lucille Houyel (Hôpital Marie-Lannelongue) will head Anatomy.
- Tunc Lacin (Marmara University Hospital, Istanbul) will run Thoracic.
- Thomas Schachner, of Innsbruck Medical University, has agreed to head Vascular.

Drs Lorusso and Prêtre are delighted to be able to welcome the new Board, and look forward to working with them.

Interactive Media Award: Best in Class – Medicine
A final piece of good news for 2017: Less than two months after launch, MMCTS and its production agency, Ashfield Healthcare, won an international award for excellence in design, functionality, professionalism, and standards compliance. The Interactive Media Awards were established in 2006 by the New York-based Interactive Media Council, and MMCTS’s Best in Class award recognises an almost perfect score [487 out of a possible 500 points] in all judging categories.

Are you interested in having your work published in the Multimedia Manual of Cardio-Thoracic Surgery? Please visit ‘Contributing to MMCTS’ at MMCTS.org to learn more.
A masterclass in how to tackle AR

"I want to focus on the problems you come across when you prepare for the patient with aortic regurgitation, the pitfalls, and which devices you can use."

Gry Dahle

"It may be the best for the young patient to have a repair instead of bioprosthetic replacement. The patients should, if they do have to have a repair, have a mechanical prostheses."

Gry Dahle

Intra- and postoperative outcomes following rapid deployment aortic valve replacement compared with conventional surgery via standard and mini sternotomy

Darja Kremel, Anthony J Chambers, Renzo Pessotto

Cardiothoracic Surgery, Royal Infirmary of Edinburgh, Edinburgh, United Kingdom

Rapid deployment aortic valves are surgically implanted valve devices which use novel fixation techniques with minimal or no annular sutures. They have been developed to facilitate faster aortic valve replacement while allowing for the opportunity to continue concomitant procedures in an increasingly elderly population with multiple comorbidities. This is a topical issue, as patients over 80 undergoing cardiothoracic surgery has doubled in the past 20 years, while there has been a fivefold increase in the number of patients requiring concomitant CABG. While previous studies have found rapid deployment valves to be safe and efficacious in the clinical trial setting, few real-world data exist on their use. Moreover, the benefits of a minimally invasive approach to valve replacement via mini sternotomy remain controversial.

We carried out a retrospective observational study of all consecutive patients undergoing elective aortic valve replacement at a single centre in the UK between November 2014 and March 2017 (N = 550). Those undergoing emergency surgery or concomitant procedures were not eligible for inclusion.

Our aim was to compare patient characteristics and perioperative factors across the two groups of patients. Those undergoing standard aortic valve replacement via a full median sternotomy (FS-AVR) (n = 380), those undergoing standard aortic valve replacement with via a mini sternotomy (MINI-AVR) (n = 105) and those patients undergoing aortic valve replacement with a rapid deployment valve or concomitant procedures were not eligible for inclusion.

In the RD-AVR group were carried out via mini sternotomy. Looking at patient characteristics, patients in the RD-AVR group were with a mean age of 77.6 years – significantly older than patients in the other two groups. RD-AVR patients had a mean Logistic EuroSCORE of 9.3, which was significantly higher (p < 0.01) compared with MINI-AVR but not compared with FS-AVR. Intraoperative mean aortic cross clamp time (50 ± 22 minutes for RD-AVR) and cardiopulmonary bypass time (68 ± 29 minutes for RD-AVR) were significantly shorter when compared with the other groups.

In summary, our study demonstrates that the use of rapid deployment aortic valves facilitates efficacious surgical management of older and higher risk patients with aortic stenosis, withequivocal morbidity and mortality compared with standard aortic valve prostheses. The current American College of Cardiology/American Heart Association guidelines recommend transcatheter aortic valve replacement for patients with surgical risk greater than defined by the Society of Thoracic Surgery operative mortality prediction tool. It would be interesting to see whether surgical replacement with a rapid deployment valve could be considered as an alternative in the future.

Aortic cross clamp and cardiopulmonary bypass times in the RD-AVR group were significantly shorter, with three-quarters of operations in this group carried out via mini sternotomy. While previous studies have consistently reported longer operating times with the mini sternotomy approach, our study suggests that the use of rapid deployment valves may facilitate replacement via this minimally invasive approach. Our study adds to existing literature by strengthening the external validity of previous findings through replication in a real-world setting. However, due to the relatively recent development of rapid deployment valves and their preferential use in the older patient population, it will be crucial to obtain data on their long-term performance in the future.
The regulations for ensuring the safety of prosthetic heart valves are changing in Europe in response to the introduction of the new EU Medical Devices Regulation (MDR). The MDR, which will come into force over a phased transition period in the forthcoming years, represents a general tightening up of the EU approval process of medical devices - including prosthetic heart valves.

“It is important for surgeons to have a basic understanding of regulatory processes,” says Andras Durko, PhD fellow from Erasmus Medical Center, Rotterdam, The Netherlands, who will give an overview of the regulatory process of prosthetic heart valves here in Vienna. “For instance, with new heart valves appearing on the market, for which we don’t have long-term data yet, it’s good for surgeons to think about what they can and can’t say about this when patients ask about their expected durability and safety.”

There are over 500,000 types of medical devices and in-vitro diagnostic medical devices on the EU market. “With the increasing incidence of valvular heart disease due to an ageing population, it is predicted that 800,000 heart valve replacement operations will be performed per year globally by 2020.” Therefore the safety and durability of heart valve implants is more important than ever.

“The whole regulatory process of medical devices is becoming more stringent within the EU,” explained Dr Durko.

One of the major differences between the US approval system and that of the EU is that, in the US, manufacturers have to apply to the FDA for registration, while in the EU, CE mark applications are assessed and approved by Notified Bodies – independent, third-party organisations – appointed by competent authorities in each Member State.

“One of the main changes will be that Notified Bodies will be more strictly regulated and overseen by the EU,” said Dr Durko.

Although we don’t have a single, FDA-like central body controlling the medical device market in the EU, the new regulation introduces more central governance and oversight and moves more towards this direction. However, Dr Durko said although MDR is legally binding and sets strict goals in terms of safety and efficacy for medical devices, harmonised standards also play a key role in how these goals can be met in real life in relation to specific devices, for instance prosthetic heart valves. “Harmonised standards help to fill in the gaps regarding technical issues that are not possible to be directly regulated by the MDR,” Dr Durko said that one of the challenges for the future might be the regulation of bio-engineered valves. These valves are meant to be absorbed and replaced by the body’s own tissue after implantation.

“With these type of prostheses, for instance it might not be that straightforward to assess durability or safety in the “classical sense”, as the implanted prostheses is expected to disappear from the body over a period of time as a part of the normal process” he said.

References
Does any saphenous vein graft lead to worse late survival after coronary bypass surgery: A cohort study of 51,113 patients?

Alistair Royse1,2, Zulfayandi Pawanis1,2, David Eccleston1, Andrew Ajani1, Christopher Reid2, Rinaldo Bellomo6, Colin Royse1,8, Ou-Young1, David Eccleston5, Andrew Ajani5, Christopher Reid3, Verhoye

1. Department of Surgery, The University of Melbourne, Melbourne, Australia; 2. Department of cardiothoracic surgery, The Royal Melbourne Hospital, Melbourne, Australia; 5. Intensive care unit, Austin Health, Melbourne, Australia; 8. Department of Anesthesia and Pain Management, The Royal Melbourne Hospital, Melbourne, Australia

The use of saphenous vein grafts (SVG) remains the mainstay of coronary surgery (CABG) despite numerous reports indicating better long-term patency and improved survival with the use of more arterial conduits. However, a recent study raised doubt as to whether a second internal mammary artery improves survival. Yet we know that the long-term durability of SVG is relatively poor, and predictably so. One logical argument approach would be to not use any SVG, focusing on exclusive use of arterial conduits, total arterial revascularisation (TAR). In the USA it is estimated that only 5% use SVG and in the UK only 10% of CABB patients receive SVG. Since most patients require ≥3 grafts, the crucial hurdle seems to be the need to rely on alternative arterial conduits like the radial artery (RA) to achieve sufficient replacement of SVG. And a common view is that RA is perhaps no better or even worse than SVG. This study analyses all arterial conduits as being equal, including a lack of differentiation as to the target vessel grafted or the reconstruction method used. The two groups were: TAR (150 patients), single graft, irrespective of the number of arterial grafts. The logic is that if SVG is the reconstructive conduit that fails over time, then this is the most important factor in determining survival. Further, greater use of SVG should lead to incrementally reduced survival.

In an Australian registry, 51,113 patients were included. Main early and late causes of mortality were cardiovascular (32%), non-cardiovascular (17%), respiratory (15%), grievous bodily injury (0.2%). Actuarial survival was 83% at 1 year, 62.5% and 25% at 2, 5 and 10 years respectively. Apart from older age, main late causes of death were cardiovascular (20.5%), neurological (10.2%) and cancer (10.2%). Actuarial survival was 83%, 62.5% and 25% at 2, 5 and 10 years respectively. This survival compares favourably with a French matched population (Figure 2). Above all, 90% of late survivors reported a patent functional valve, identified risk factors of late death as male gender, associated comorbidity, renal failure, advanced cardiac disease, atrial fibrillation and impaired ventricular function. Coronary lesions, associated cardiac surgery and small diameter prostheses (19 or 21 mm) did not impair long-term survival.

Cardiovascular Disease 2016;375:2540-9.

References

Figure 1. Survival according to number of saphenous vein grafts used. Per patient analysis of survival; TAR, total arterial revascularisation; SVG, number of saphenous vein graft anastomoses; KM, Kaplan-Meier.

Figure 2. Survival determined by linkage to the Australian Institute of Health and Welfare, national death registry. The first half of the data was dominated by contributing hospitals in Melbourne, which are known to have low rates of aortic conduit use relative to world rates. The second half of the study period saw additional centres contribute from centres elsewhere in Australia where there was less use of arterial conduits. Overall, about half of the grafts in the TAR group were performed with RA; whereas a quarter of the arterial grafts and one tenth of all grafts in any of the SVG group were constructed using RA.

Survival was worse if any SVG was used; P < 0.001 and mortality hazard ratio (HR) = 1.24, Figure 1. A propensity score matched cohort using 24 variables and caliper of 0.05 (n = 28,710) found a higher hazard for mortality with any SVG use of 1.22 (95% CI 1.15 – 1.29), P < 0.001. When patients with SVG were divided into 1, 2 or ≥ 3 SVG, there was a significant and incrementally worse survival compared to TAR, P < 0.001, Figure 2. Any use of saphenous vein graft was associated with worse survival.

Thierry Langanay, Simon Rouzé, Jacques Tomasi, Marie Aymami, Amedeo Cunselmi, Hervé Corbeyre, Erwan Fléchier, Yves Logeais, Alain Leguerrier, Jean-Philippe Verhoeye

Department of Cardio-Vascular and Thoracic Surgery, Pennes University Hospital, Rennes, France

Aortic stenosis is the most frequent valvularopathy in industrialised countries. Its incidence increases with age and nowadays represents a major health concern in populations where life expectancy has increased regularly along the 20th century. Aortic valve replacement provides excellent long-term survival with functional improvement at a reasonable operative risk in the vast majority of patients. Consequently increasing numbers of elderly patients are referred for aortic valve surgery (Figure 1). Transcatheter aortic valve implantation (TAVI) has been developed in the last decade and offers an alternative to open-heart surgery with good mid-term results in non-operative or high-risk patients. This recent and rapid development raises new concerns about the management of aortic stenosis in the elderly. Should everyone benefit from an aggressive therapy? How to decide between both strategies in fragile patients: conventional surgical replacement or a transcatheter approach? In order to answer these questions we reviewed our experience of aortic valve replacement in octogenarians since our first replacement in 1978.

2,005 patients, > 80 years old, underwent AVR for aortic stenosis in our institution between 1978 and 2011. 1,009 patients (62%) had an associated extracardiac comorbidity and 650 (32%) coronary lesions. Valve replacement was the sole procedure in 1515 patients (76%), 396 (19%) had concomitant coronary bypass grafting. All data were prospectively collected at the time of surgery in our database, regularly updated by mailed questionnaire and phone contact.

Hospital mortality in the entire cohort is 8.6% but has decreased over the years from 6.2% in 1990 to 1.3% in 2016 for isolated AVR. Significant risk factors are COPD, chronic renal failure, advanced cardiac disease, left or right ventricular failure, NYHA IV, atrial fibrillation and coronary disease. Long-term follow-up was 99.5% complete, (9 patients lost to follow-up), totaling 8,449 patient-years. 901 patients died at late follow-up with a median survival of 6.5 years, seven patients becoming centenarian. Apart from older age, main late causes of death were cardiovascular (20.5%), neurological (10.2%) and cancer (10.2%). Actuarial survival was 83%, 62.5% and 25% at 2, 5 and 10 years respectively. This survival compares favourably with a French matched population (Figure 2). Above all, 90% of late survivors reported a patent functional valve, identified risk factors of late death as male gender, associated comorbidity, renal failure, advanced cardiac disease, atrial fibrillation and impaired ventricular function. Coronary lesions, associated cardiac surgery and small diameter prostheses (19 or 21 mm) did not impair long-term survival.
Carbomedics: Thirty Years of Tailored Reliability

For more than 30 years, the Carbomedics family of mechanical heart valves has offered cardiac surgeons and patients a complete set of mechanical prosthesis solutions to reliably treat even the most challenging cases.

Cardiac surgeon A.G. Hensens of the Hospital Medisch Spectrum Twente in Enschede, Netherlands, has been implanting Carbomedics valves since 1988. He has implanted more than 1,500 valves during his career.

“Carbomedics valves are easy to implant and position due to a sewing cuff that permits easy placement of the sutures and pivots that are located within the valve housing. The Top Hat aortic prosthesis can be placed in a totally supra-annular position, which improves hemodynamics and provides an added advantage when a valve is also present in the mitral position. In my nearly 30 years as a surgeon, I have never experienced structural failure of any Carbomedics implanted valve. They have shown good haemodynamics, both postoperatively and long-term, and multiple studies have confirmed my individual experience. I consider the Carbomedics mechanical valve a highly ranked, safe and reliable heart valve.”

With no reported post-operative structural failures in more than 900,000 implants over 30 years, and proven, excellent clinical results in more than 20 years of published follow up, Carbomedics mechanical heart valves represent an utmost reliable solution for cardiac surgeons and patients.
ART: a statistician’s perspective

In a session that looks at arterial revascularisation after the ART trial, Nick Freemantle (Comprehensive Clinical Trials Unit, University College London, UK) considers the strengths and limitations of existing data on the topic, as well as examining what the likelihood of a positive ART trial result is at 10 years – and how, therefore, this might influence clinical decision-making.

Describing his background, Professor Freemantle began: “My comments are that of a statistician and clinical trialist, who has little understanding of the specific clinical context of this question, but expertise in the undertaking, appraisal and interpretation of observational and clinical research. So I am answering the question, ‘what does the research evidence tell me’ where ‘me’ refers to an experienced and skilled methodologist.”

The ART trial commenced in 2004 with the aim of comparing 10-year survival rates associated with bilateral and single internal thoracic artery (BITA and SITA) grafting. The multicentre randomised trial enrolled 3,102 patients who were randomly assigned to either BITA or SITA groups. Interim 5-year results indicate no significant difference in survival between these groups.1 The UK consortium of the British Heart Foundation, the Medical Research Council and the National Institute of Health Research supported the ART trial in view of the fact that observational studies are not sufficient to provide evidence for new technologies.

The use of single ITA (SITA) grafts is better established than BITA, with evidence demonstrating superior SITA patency relative to vein grafts. While the use of BITA grafts is supported by propensity-matched analyses, as well as the intuitive notion of it providing greater volume of patent circulation in the coronary system, its broad adoption has been hampered by a lack of randomised data, its greater procedural complexity, and the associated greater risk of sternal wound complications. As such, BITA grafting is not widely accepted.

“We should not be surprised, and we have seen this before.”

Nick Freemantle

More recently, Buttar et al. assessed the short- and long-term outcomes associated with the use of BITA relative to SITA. In addition to long-term survival, they examined a number of short-term secondary outcomes such as in-hospital mortality, deep sternal wound infection, re-exploration for bleeding, cerebrovascular accident, myocardial infarction (MI), and revascularisation, as well as long-term outcomes including cardiac event-free survival, MI-free survival, and angina-free survival. Twenty-nine observational studies were included with a total of 89,399 patients. BITA was found to be associated with improved long-term outcomes, and reduced hospital mortality, cerebrovascular accidents, and repeat revascularisation; and BITA, however, associated with increased incidence of deep sternal wound infection.2

Commenting on these data, Professor Freemantle noted that observational data only accounts for known biases, while omitting the complexity of perceptive factors that also go into clinical judgement. “The faith in BITA seems to follow the clinical enthusiasm and the observational studies, which were very optimistic about BITA. The observational studies seem consistently to show that patients do well. But there is a selection bias which is quite predictable (and referred to by Yi et al.), in which patients more likely to do well are selected for BITA. The difference between the results of ART and the observational studies is striking. But we should not be surprised, and we have seen this before. The observational studies are open to substantial bias, and by design, well conducted randomised trials are not subject to bias.”

Propensity score adjustments play a very important role in reducing bias.
in observational data. Yet a condition of their proper application, explains Professor Freemantle, is that they make the exposure to treatment strongly ignorable as a source of information on risk – that is, having accounted for the propensity score, BITA patients are otherwise very similar to SITA patients. If exposing the truth of this can be tricky. In 2013 Freemantle et al. explored the strengths and limitations of propensity-matched data, citing cases where propensity-matching had both succeeded and failed (such conclusions made possible by comparisons with robust randomised trials). The failed study was a propensity-matched analysis following the RALES trial, which found a mortality benefit of spironolactone in severe heart failure: the aim of the propensity-matched analysis was to replicate the RALES results using data from general practice records, so that reliable data relating to spironolactone and severe heart failure could be generated from real-world populations. While survival was found to be similar between the propensity-matched and the RALES cohorts, within the propensity-matched cohort spironolactone was associated with an increased mortality risk. A comparison of hazard ratios (HR) between PALES and the propensity-matched data in RALES (95% CI 0.60, 0.82), p < 0.0001, n = 1,163, events = 677; HR 1.32 (95% CI 1.18, 1.47), p < 0.0001, n = 4,412, events = 1,285 demonstrated their departure. Such failure is however an instructive reminder that propensity scoring accounts only for known confounders, and as such is at risk of including unknown bias in particular confounding by indication.4 Turning to the ART trial, Professor Freemantle addressed the importance of closely examining whether or not such unknown biases could be at play: “First, ART trumps the observational studies. It is a well conducted randomised trial based on quite large numbers of subjects. Second, trials which give ‘the wrong answer’ are often put to one side in favour of evidence that supports the favoured intervention. It is to the credit of EACTS that they are having a debate on this topic at the meeting in order to develop a useful debate about the strength of evidence and appropriate clinical action.”

Asked whether power could be an issue for ART, particularly with regards to its unexpectedly high crossover rate, he continued: “These are issues in any trial of a surgical procedure. A large proportion in both groups received the randomised procedure – presumably those who did not were deemed inappropriate at the time of the intervention. Actually, there appears to be no power ‘spent’ on the interim analysis. So the results we see are quite nominal. “The power of a study is best described by its primary outcome, and the confidence intervals are quite wide so there is some uncertainty. But the best argument (the point estimate) is not in favour of BITA so any claim that the trial supported that intervention would be ‘special pleading’. “Five years into the ART trial, 134 deaths (8.7%) had occurred in the BITA group and 130 (8.4%) in the SITA group (HR, 1.04; 95% CI 0.81 to 1.32; p = 0.77). Ten years ought to draw in 164% more deaths, noted Professor Freemantle. Based on findings so far, he added, the likelihood of non-significance persisting at 10 years is 87.7%, with any statistical significance being more likely to favour the SITA group.”

So how should the prospective patient handle this information? “Trials like ART are ‘confirmatory’ – they intend to confirm the expected result,” said Professor Freemantle. “In this case, from the power calculation for ART it was expected that the 10-year mortality would be 10% lower for BITA than SITA. The results at five years are not in line with those plans (i.e. ‘futility’ for the future results). This is not the expected result and should lead to some further thought about what happened, how we can interpret it and what to do next.” He concluded: “The [session] at EACTS is part of that debate. But for the comparison in ART, the results at five years need no support for a change in practice from SITA to BITA.”

Not so state of the ART: interim analysis “wake-up call” to surgical community

**Professor Freemantle speaks in detail on the topic of propensity-matched and randomised data in arterial revascularisation during the session ‘Arterial revascularisation after the ART trial’ taking place in Hall D at 8:30 this morning.**

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**References**


6. Wood J, Freemantle N, King M, Nason J. The trap of trends of statistical significance: how likely is it really that a near significant P value becomes more significant with relevant data? BMJ. 2014;349:g6215.
Cardiac | Professional Challenge | Arterial revascularisation after the ART trial

Not so state of the ART: interim analysis “wake-up call” to surgical community

“...the ART trial is a very healthy reminder of how we as scientists and surgeons cannot take things for granted.”

Mario Gaudino

Taking a closer look at EXCEL

Joseph F Sabik Jr is Chair of the Department of Surgery as well as Surgeon-in-Chief and Vice President for Surgical Operations at University Hospitals Cleveland Medical Center. He oversees about 10 divisions of surgery – from colorectal to trauma and general surgery – in fact he oversees all surgery for an 18-hospital system in north-east Ohio, USA.

In a focus session on ‘Why not left main disease’, Dr Sabik talked about his work on an important trial, the Evaluation of Xience versus Coronary Artery Bypass Surgery for Effectiveness of Left Main Revascularisation (EXCEL) trial that reported last year. EXCEL was a randomised trial for selected patients with left main coronary disease. Some were given percutaneous coronary intervention (PCI) with drug-eluting stents and others received the contemporary coronary artery bypass grafting (CABG).

Indeed, a previous trial, the Synergy between PCI with Taxus and Cardiac Surgery (SYNTAX) trial established precisely which kind of patients should be randomised for such a trial. Syntax divided patients into three groups depending on their coronary complexity; low complexity, intermediate or high. “In the EXCEL trial we only enrolled cases with coronary artery disease of low or intermediate anatomical complexity. The reason for that is that it was very clear from Syntax that if somebody has complex coronary disease, they do better with surgery,” said Dr Sabik.

So far, Dr Sabik’s group has presented the three-year outcome of EXCEL and reported some interesting results. “At three years there was no difference in the primary endpoint which was the combined risk of mortality or non-fatal myocardial infarction. For patients, at three years there is no difference,” he said.

The reason this is particularly interesting is that a parallel trial, called NOBLE – also to be presented during the session – did not see much of a difference between PCI and CABG at 30 days, but found a benefit of surgery over PCI for patients with left main disease at five years.

The discrepancy between the two findings has caused some debate across the community. But, said Dr Sabik, the jury still out on the ultimate findings of the EXCEL trial, which will be following its patients through to five years. Certainly, if the results are analysed carefully, the signs are there: “I don’t think the story ends there,” said Dr Sabik. “If you look at the graph very carefully, at 30 days PCI actually did better than surgery, and the reason for that is that there were more myocardial infarctions in the CABG patients in EXCEL.”

“The curves cross at a little over two years and it seems like the event rates continue to be higher in PCI than in surgery which would suggest that with time surgery would be better. Or do the curves parallel? We just need to learn more, the surgery research hospital at Case Western Reserve University.

And of course, there will be undergoing discussions as to the benefits of both procedures; there may be some who may begin to argue that surgery is better, and others may start to argue that PCI is better. “We need to look at these procedures as complimentary,” said Dr Sabik, “We have different ways of treating a patient depending on their anatomy and characteristics, and we will be able to decide in future which one is better for them.”

Joseph Sabik

References
Does coronary artery bypass grafting alone correct moderate mitral regurgitation?

MA Deja | Medical University of Silesia, Katowice, Poland

Indications for mitral repair in patients with moderate ischemic mitral regurgitation remain controversial. While previous (2012) ESC/EACTS guidelines on the management of valvular heart disease gave it class IIa recommendation, it disappeared altogether from 2017 ESC/EACTS guidelines. The indication remained in the ACC/AHA guideline after the 2017 Focused Update, however the quantitative criteria to recognize severe IMR have been increased back to ERO > 0.4 cm² and regurgitant volume > 60 ml/beat "to prevent unnecessary operation".

The above changes followed the results of the CTSN randomised trial of moderate ischemic mitral regurgitation, which failed to confirm improved negative left ventricular remodelling after mitral valve repair concomitant with coronary artery by-pass grafting in comparison with coronary bypass surgery alone. At the same time, the guidelines seem to ignore the improved LV remodelling, and patients’ functional capacity after mitral repair – visible in the RIME trial – or improved survival after mitral valve repair observed in STICH trial patients.

Mitral annuloplasty cured mitral regurgitation in 90% of patients in the CTSN trial, and 96% of RIME trial patients as assessed by echocardiography 12-months postoperatively. Simultaneously CABG alone cured mitral regurgitation in up to 70% of the CTSN trial patients and in only 50% of the RIME trial cohort. The difference stems most probably from the different left ventricular volumes of the patients included in both trials, with end systolic volume indices being over 30% bigger in the RIME trial when compared to the CTSN (figure 1).

Similarly, the LV end systolic volumes of patients included in STICH trial, in whom the survival benefit of adding mitral repair to CABG was visible, were even bigger than in those included in RIME trial, with additionally lower EF. It appears therefore likely that CABG might cure ischemic mitral regurgitation in less remodelled ventricles, while adding mitral surgery might be necessary when the disease (ventricular in its nature) is more advanced. There are few reports concentrated on patient characteristics allowing selection of those in whom CABG alone might significantly improve IMR. In their report, Penicka et al. indicated that the presence of a large extent of viable myocardium as assessed by SPECT, and less dyssynchrony between papillary muscles on echocardiography, predicts improvement of moderate IMR by isolated coronary artery bypass grafting. Similar results were visible in the report of Kang et al. in which improvement of LV function and associated improvement of mitral regurgitation was best predicted by SPECT results.

A more recent paper by Sun et al. found ejection fraction, postero-inferior LV remodelling and a short time between myocardial infarction and operation to predict improvement of IMR. Mitral regurgitation was more likely to decrease after OPCAB in patients with EF > 37% operated within three months of MI. All the above-mentioned reports are contrary to the current ESC/EACTS guidelines which recommend mitral repair for patients with higher (>30%) ejection fraction and support repair in low EF only in the presence of viability. Meanwhile I suggest, based on available data, that patients with lower EF, more remodelled ventricles and less viability are less likely to be cured by CABG alone, and therefore require more aggressive surgery.

Figure 1. Left ventricular end systolic volume index before and 12 months after coronary artery by-pass grafting with and without mitral valve repair observed in CTSN trial and in RIME trial.

References
Obesity Paradox and CABG

Thomas A Schwann1, Paul S Ramia1, Milo C Engoren1, Mark R Bonnell1, Matthew Goodwin1, Ian Monroe1, and Robert H Habib5

Abstract
Cardiac Coronary artery bypass grafting: Factors effecting outcomes

PH: Proportional Hazzard. Boldened fileds: Significant at 0.05 p-value

Table 1: Overall and time-segmented risk-adjusted hazard ratios for all-cause and cause-specific mortality across body habitus (BMI) groups.

<table>
<thead>
<tr>
<th>PH Regression</th>
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<td>Overall (0-15 years)</td>
<td>Early (0-1 year)</td>
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<tr>
<td>N (ref)</td>
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<tr>
<td>CV</td>
<td>0.88 (0.79–0.98)</td>
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<td>Ob-I</td>
<td>0.88 (0.79–0.99)</td>
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<td>Ob-II</td>
<td>1.13 (0.97–1.33)</td>
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<tr>
<td>Ob-III</td>
<td>1.28 (1.06–1.55)</td>
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</table>

CV Deaths

| N (ref) | 1 | 1 | 1 | 1 |
| CV | 0.83 (0.71–1.00) | 0.76 (0.53–1.09) | 0.61 (0.46–0.81) | 0.71 (0.57–0.90) |
| Ob-I | 0.70 (0.53–1.10) | 0.87 (0.51–1.44) | 0.73 (0.53–1.00) | 0.73 (0.57–1.06) |
| Ob-II | 1.11 (0.85–1.45) | 0.99 (0.66–1.56) | 0.95 (0.64–1.42) | 1.04 (0.90–1.27) |
| Ob-III | 1.47 (1.08–2.00) | 2.31 (1.31–4.07) | 1.20 (1.97–3.16) | 1.20 (0.64–2.24) |

Non-CV Deaths

| N (ref) | 1 | 1 | 1 | 1 |
| CV | 0.86 (0.74–1.00) | 0.57 (0.31–1.07) | 0.65 (0.69–1.04) | 0.82 (0.64–1.04) |
| Ob-I | 0.89 (0.72–1.15) | 0.60 (0.30–1.23) | 0.77 (0.61–0.98) | 0.91 (0.69–1.19) |
| Ob-II | 1.02 (0.81–1.28) | 0.92 (0.55–1.56) | 1.02 (0.91–1.14) | 0.90 (0.62–1.30) |
| Ob-III | 0.88 (0.66–1.18) | 1.31 (0.34–3.04) | 1.07 (0.72–1.58) | 0.74 (0.45–1.22) |

Our analysis revealed that obese patients were younger and had more comorbidities (18.5–24.99), Overweight (25–29.99), Obese I (30–34.99), Obese II (35–39.99) and Obese III (≥40). Mortality hazard ratios [HR (95%CI)] were derived via comprehensive multivariate competing risk Cox regression, accounting for BMI categories, for the overall (0-15 years), early (0-1 years), intermediate (1-8 years) and late (8-15 years) follow-up intervals, to relax the proportional hazards assumption. The regression analysis was repeated using BMI as a continuous variable. Mortality was classified into: any, cardiovascular (CV), and non-cardiovascular (Non-CV). Our analysis revealed that obese patients were younger and had more co-morbidities (62.6% were diabetic, 90.5% had hypertension in the Obese II group). 15-year survival was improved in the Overweight and Obese I (p < 0.001) groups compared to Normal. Compared to Normal BMI patients, risk-adjusted 15-year mortality was significantly lower in the Overweight (HR = 0.88 [0.79–0.98]) and Obese I (HR = 0.88 [0.80–0.99]) and was attributable to improved CV and Non-CV survival. Obese III patients showed worse survival (HR = 1.28 [1.06–1.55]) compared to Normal BMI patients and was associated with diminished CV survival (HR = 1.47 [1.08–2.03]). The noted 15-year survival benefit among the Overweight and the Obese I was principally realised in the early and intermediate post-operative periods with no trend or significance in the late period (Table 1). Using BMI as a continuous variable, a BMI of 28kg/m² was associated with optimal long-term survival (Figure 1).

We conclude that our analysis identified a protective “obesity paradox” in the early and intermediate post-operative periods among Overweight and mildly obese (Obese I) patients which is driven by improved CV and Non-CV survival. Mortality obese (Obese III) patients had a higher 15-year mortality which was attributable to elevated CV mortality in the early follow-up interval.
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<td>Endoscopic Port-Access Mitral Valve Repair Drylab Training</td>
<td>22-23 February</td>
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<td>Introduction to Aortic Surgery</td>
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<td>Thoracic Surgery: Part I</td>
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<td>Minimally Invasive Techniques in Adult Cardiac Surgery (MITACS)</td>
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<td>Endoscopic Port-Access Mitral Valve Repair Drylab Training</td>
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All courses to take place at EACTS House in Windsor, UK, unless stated otherwise.
Vascular | Abstract | Light and shades of the arch

Aortic elongation in aortic aneurysm and dissection: the Tübinger Aortic Pathoanatomy (TAIPAN) project.

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The ascending aortic diameter is still the only established morphological risk factor for Stanford Type A aortic dissection (TAD). Last year in Barcelona we showed that dissected aortas – and more importantly: aortas shortly before dissection (preTAD) – are significantly elongated compared to control aortas, and we hypothesised that aortic elongation being another risk factor for TAD. In addition, we presented a score involving ascending aorta diameter and length (aortic valve, AV, to the brachiocephalic trunk, BCT) which was able to identify preTAD aortas better than diameter alone1.

Currently, we studied ascending aorta elongation in patients with aneurysm (diameter ≤55 mm) and ectasia (diameter 45-54 mm) with the intention to further refine a high-risk morphology for TAD. We analysed aortic dimensions using contemporary three-dimensional imaging (curved multiplanar reformats). Rf values were compared in 259 healthy controls, 102 ectasia (45-54 mm), 38 aneurysm (≤55 mm), 17 preTAD (CT during two years before TAD) and 166 TAD patients.

The median ascending diameter was 35 mm in the control group and it was larger (p < 0.001) in the preTAD (43 mm) and TAD (56 mm) groups. At the function 9.8% of the preTAD and 32.5% of the TAD aortas met the 55 mm diameter threshold. This underlines that a diameter based prophylaxis must remain ineffective. The median ascending aorta central line length from the AV to the BCT was 92 mm in the control group, 113 mm in the ectasia group, 120 mm in the aneurysm group and 111 mm and 118 mm in the preTAD and TAD groups (all p < 0.001 compared to the control group). A length of 120 mm was exceeded in 2% of the controls, 31% of the ectasia, 50% of the aneurysm, 24% of the preTAD group and 48% of the TAD group. The correlation between ascending aorta diameter and length was r = 0.752; therefore, both parameters must be examined separately.

The morphological features of our preTAD aortas were much more comparable with those of our ectasia then with our aneurysm group putting the ectasia patients in the focus of interest.

Certainly, patients with ascending aortic aneurysms are at a high risk of dissection, however, the prevalence of ascending aorta ectasia in the population is much higher, and that is why most dissections happen in ectatic aortas. This raises the question of which morphological parameters define a high-risk subpopulation within the ectasia cohort. Significant aortic elongation can be observed in aortas before and after dissection and in ectatic and aneurysmatic aortas. This and the pathophysiological plausibility of the concept are strong arguments that ascending aortic elongation is a risk factor for dissection. Our score considering both parameters, ascending diameter and length identified 23.5% of preTAD patients, significantly more than the diameter alone, and 31.4% of ectasia aortas were elongated. This renders the subpopulation of patients with ectatic (45-54 mm) and elongated (≥120 mm) ascending aortas a high-risk cohort for whom prophylactic surgery should be discussed.

References

Vascular | Rapid Response | The icing on the cake

An ignored truth – Erectile dysfunction in aortic dissection patients.

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In modern day medicine evolves, follow-up care is gaining importance. After successful life-saving procedures, surgeons are frequently faced with questions regarding quality of life.

Follow-up care usually includes rehabilitation, medication, check-ups, and preparation for returning to the workplace or recreational activities. General well-being and sexual health are important topics poorly examined during follow-up in our cardiovascular surgery postoperative populations. However, when asked about it, many patients admit having difficulties with their sexual activities, as compared to their previous abilities, and express a wish to improve their situation. It is known that medications such as beta-blockers, that are routinely prescribed, impair sexual function. In addition, there could be many other factors related to the aortic dissection and surgical approach that influence erectile function.

To be able to offer a more complete care that covers all aspects of a patients health affected by their cardiovascular disease, there is a need to broaden the knowledge about their problems.

To assess the extent to which our patients are affected by erectile dysfunction we selected a study population that was asked to fill out questionnaires regarding quality of life and sexual function.

Our results show that age, function, and sexual health are significantly impaired in the majority of these patients. Patients feel uncomfortable reporting sexual dysfunction or talking about mental health. Thus, it may be necessary to incorporate such evaluations in our routine follow-up assessment to provide available resources.

There are specific treatment options available for patients who are unable to take certain medication (i.e. PDE5 inhibitors) or have other complex problems regarding their cardiovascular system. Some knowledge about different approaches to treat sexual dysfunction would help patients in achieving a better quality of life after surgery, a goal that is necessary but achievable.

Cardiac | Focus Session | The poor right ventricle in combination with tricuspid regurgitation

Rüdiger Lange, Melchior Buth

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In 2004, the Cone technique for Ebstein’s repair was introduced by Jose Da Silva. Since then, numerous patients have been treated in several institutions in the world with very good results. The operation is technically challenging and implies a respective learning curve. We adopted the Cone operation in 2010. Following the operation we found an increase of the left ventricular stroke volume and oxygenation (ECMO) was initiated. However, when asked too late however, the right ventricle is dilated and the operative risk is markedly increased.

Surgery for Ebstein disease with poor right ventricle – lessons learned from congenital cardiac surgery


References
Aortic valve replacement (AVR) through a median sternotomy approach has been largely demonstrated to be a safe and long-term effective treatment for aortic valve diseases. However, aortic valve surgery has undergone continuous development over the last years, involving less invasive techniques and the use of new technologies to reduce the traumatic impact of the surgical procedure, the patient’s global haemodynamics, advanced cardiopulmonary bypass circuits effective in minimising inflammatory response, and anaesthetic protocols with rapid postoperative recovery. We believe the concept of minimally invasive AVR (MIAVR) should be broader than simply reducing the length of the surgical incision. In fact, by increasing the technological content of the surgical procedures, the patient’s global trauma may be further decreased by adding the use of more sophisticated valve prostheses capable of reducing operative times and providing excellent haemodynamics, advanced cardiopulmonary bypass, and anaesthetic protocols with rapid postoperative recovery.

To reach this target, we have established a multidisciplinary minimally invasive program involving all health professionals embodied in the perioperative management of the patient: surgeons, anesthesiologists, perfusionists, nurses, and physiotherapists. Our ultra-fast track multistep approach includes: 1) reduced chest incision (through an upper J ministernotomy) aiming to reduce the traumatic impact of surgical procedure, to decrease blood loss, postoperative pain, wound complications and to improve cosmesis; 2) rapid deployment aortic valve replacement (RD-AVR) using Edwards Intuity Elite™ valve (Edwards Lifesciences, Irvine, Calif., USA), to reduce operative times, to facilitate minimal invasive approach and to improve haemodynamic outcomes; 3) minimal invasive extracorporeal circulation (MiECC) system (ROCSafe™ Hybrid Perfusion System, Terumo, Ann Arbor, Michigan, USA) to improve haemodynamic outcomes and to promote fast track anaesthetic management and 4) ultra-fast track anaesthesia to assure better comfort and outcomes for patient, to promote early recovery and to decrease the rate of postoperative complications.

We advocate that the synergistic effects of minimally invasive RD-AVR and MiECC, coupled with a fast track anaesthetic management, focused on reducing the overall surgical stress, may finally provide superior clinical outcomes and increased patient comfort compared to conventional AVR.
Join the discussion during our lunch symposium on Monday October 9th, 12:45-14:00
Room 0.31/0.32

**SURGICAL ABLATION: WHY, WHEN AND HOW IN THE FACE OF AN EPIDEMIC**

- It is not a lack of evidence: the rationale to treat AF
  - Manuel Castellà, MD

- Concomitant AF ablation strategies: a matter of decision making?
  - Timo Weimar, MD

- Lessons learned: how to implement technology to improve patients’ outcome.
  - Nicolas Doll, MD

- The AF heart team approach to optimize the treatment of AF patients
  - Mark La Meir, MD

Contact us at AFGConnect@AtriCure.com to reserve your spot or learn more about upcoming training opportunities.
Learn about LSI’s automated instrumentation for minimally invasive aortic and mitral valve replacement at LSI Booth 57 and experience hands-on training in our LSI Innovation Boutique located in the EACTS Training Village.