Welcome to the 25th Annual Meeting in Lisbon

Welcome to the 25th Annual Meeting in Lisbon. The purpose of this event is to facilitate the exchange of knowledge and information for researchers and clinicians. As you will see from the programme, we attempt to cover many different aspects of cardio-thoracic surgery, emphasizing areas that are important in our daily clinical work.

We aim for an interactive meeting and exchange of experience. With a wide range of educational formats presenting the latest and the best information on new technologies and techniques in cardiothoracic surgery the Association celebrates its 25th Anniversary. Techno-college, Postgraduate course, Abstract based sessions, Great Debate, Presidential address, Honorary guest lecture, Focus sessions, Learning from experience, Nurse and Nurse practitioner session and the new type of session ‘Professional Challenge’ offer a wide variety of formats that enable you to interact with the lecturers in many different ways.

On the Tuesday evening we celebrate the 25th Anniversary. There is not the traditional gala dinner but a marvellous party with different kinds of music, food and acts. Our EACTS House Band, made up of our own group of surgeons, will also perform and will make sure that dancing will be part of the festivity. The dress code for this evening is informal, casual. We hope to welcome as many people as possible. Please come and encourage you to visit the exhibition area. New devices will be introduced at the 25th EACTS meeting, the largest cardio-thoracic meeting in the world, and we thank our industry partners for their support of the meeting.

If you appreciate what the EACTS presents during this event and you want to support the work of the Association I encourage you to visit the EACTS booth and become a member. Membership fee is low and you will receive the European Journal of Cardio-Thoracic Surgery and the Interactive Cardiovascular and Thoracic Surgery Journal as well as a reduced rate for the Annual Meeting. This application can be done through the Web site of the EACTS (www.eacts.org) or at the EACTS booth in the exhibition area.

At the booth you will also find information on our new courses that we are going to organise throughout 2012. From January on we will have a new office in Windsor with a beautiful lecture room that contains the latest audio-visual equipment and a superb environment for courses on a variety of topics. The courses for residents that were formerly held in Bergamo will now also take place in this new environment.

It is with great pleasure to welcome you in Lisbon and we are honored and delighted with your presence at this conference, we hope the information and techniques presented to you here will be of great interest. Lisbon offers a cosmopolitan feel in a town with atmosphere, wonderful shopping facilities, museums, specialty shops, and restaurants. I am sure it will be a wonderful opportunity to experience and exchange the latest knowledge in cardio-thoracic surgery and the Anniversary party on the Tuesday evening will enable you to meet and make friends in a joyous atmosphere. I hope to be able to raise a glass with you on what has been achieved in 25 years of the European Association for Cardio-Thoracic Surgery.

Techno College 2011

Volkmar Falk

Techno College Award Nominee

New and innovative devices for this year’s award include the Jetstream, CardioGard and new off-pump transradial and catheter-based MV replacement.

Invasive staging of lung cancer

Ramesh Ramani-Porta outlines the importance of surgical staging for lung cancer.

Off-pump perventricular closure of VSDs

Zhao Xingyi discusses the advantages of a new off-pump procedure for the perventricular closure of muscular but also perimembranous VSDs.

Checkmate: hart transseptal approach

The congenital track will focus on closure of interventricular holes and foetal advances.

The main topics of the thoracic track are new techniques for treat-
Aortic Surgery Auditorium 1 08:00

Entry site and morphology in type B dissection – A tailored approach

Martin Czerny
University of Bern, Bern, Switzerland

Aortic Surgery Auditorium 1 Monday 12:00

Leonardo Da Vinci Award for Training Excellence

A good teacher is easy to recognize and hard to forget – a fact that made us aware that a new award will be presented. The Leonardo Da Vinci Award for Training Excellence. This award has been created by the Training and Career Committee (TCC) of the EACTS to acknowledge the best cardiothoracic trainer in Europe. According to the TMC, teaching skills have never been formally recognized, they are assumed to be the same at all levels of training, while in fact they are usually eclipsed by clinical skills and procedures that have to become more efficient and, at the same time, high quality and effective. Not the last of the surgeons of tomorrow are well equipped. The TMC is fully aware of the current approach to the formal recognition introduced by the European Working Time Directive.

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All centres were required to provide complete data sets on consecutive pa- tients; the strict criteria for inclusion in the registries. At EuroPCR 2011, the complete 1-year data from 2,307 patients in both co- horts were presented. The primary aim was to generate scientifically robust and comprehensive data on pa- tient results as well as to identify predictors of out- come. Early publication of 30-day data showed sur- vival of 92.5% in patients who underwent TAVI compared to a transfemoral (TF) approach and 89.1% in those who underwent TAVI via the transapical (TA) approach. Patients selected for ei- ther the TF or TA approach were followed up to continue to be at high risk for conventional AVR. While the European learn- ing curve has had some im- pact on the range of patients’ logistic Euro-SCOREs, the overall Euro- SCOREs remain high. Com- pared with the TF route, patients undergoing TAVI via the TA approach still have a higher incidence of complications, particularly extra-cardiac, such as pul- monary, peripheral vascular and cardiac artery dis- ease. This explains their 74.2% survival at 1 year compared with 80.1% for the TF approach. One-year mortality was significantly higher in patients with vas- cular access complications.

Not unexpectedly, causes of death were mainly non- cardiac related. Interestingly, there was no significant improvement in terms of 3-year mortality between Cohorts 1 and 2. It will therefore be interest- ing to see what impact the new generation Edwards SAPIEN X valves and delivery devices will have on patient outcomes.

An interesting sub-anal- ysis of The SOURCE Regis- try data focused on patients who subsequently under- went TAVI after they previ- ously received coronary by- pass surgery (CABG). Early results from the North America in the highly se- lected group of patients in the PARTNER US trial dem- onstrated inferior outcome of TAVI in patients with pre- vious CABG or percutaneous related to conventional AVR.

The SOURCE Registry, how- ever, was not shown to be a risk fac- tor for TAVI 1-year mortality. Interestingly, there was no significant difference in mortality between the TF and TA approach, al- though the incidence of complications in the TA group was again higher. One contributing factor to these outstanding results may be the elimination of apical complications in the TA group which again demonstrates that reliable closure techniques for the left ventricular apex after TA-TAVI are key for its success.

The SOURCE Registry

The SOURCE Registry began in 2007 to monitor procedural results with the commercially Edwards SAPIEN transcatheter heart valve (THV). The registry has two Cohorts: Cohort 1, consist- ing of consecutive pa- tients enrolled at 32 centres across Europe from November 2007 to January 2009, and Cohort 2, consisting of consecutive patients at 37 European centres followed from February 2009 to De- cember 2009.

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Edwards
SAPIEN XT
Transcatheter Heart Valve

The New Benchmark in Transcatheter Valve Technology

- Balloon-expandable Design for Predictable and Precise Valve Deployment
- Frame Designed to Restore Optimal Hemodynamics while Respecting the Cardiac Anatomy
- Unmatched Tissue Durability

NEW SIZE!

23 mm  26 mm  29 mm

Treat more patients with the Edwards SAPIEN XT transcatheter aortic valve now available in three sizes to address the broadest annulus range


For professional use. See instructions for use for full prescribing information, including indications, contraindications, warnings, precautions, and adverse events.

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Transcatheter auotologous implantation of minimally invasive delivery systems (22–26 French), apical delivery system i.e. adding a nose cone, will certainly facilitate the device delivery. With device modification, it is possible that TAo can be used to deliver the device using a retrograde approach. TAo is also well known that late pseudoaneurysm formation is less common in patients undergoing AVR with a mechanical prosthesis and is to be considered for these patients.

Weber B, Scherman J, Emmert MY, Gruenenfelder J, Mariani C, Puolakka A, Rissanen M, Deichmann T, Odermatt & The following TA approach, the TA approach has three main drawbacks, which may contribute to the increased morbidity and mortality in these patients: Access site problems: apical rupture/perforation and delayed pseudoaneurysm formation. Interference with postoperative respiratory dynamics due to thoracotomy. Effects on left ventricular function. Apical tear or rupture is associated with higher mortality and lower one-year survival rate. Despite increasing experience and availability of smaller delivery systems (22–26 French), apical rupture remains a dreaded complication. This is mainly due to the quality of the tissue where the purse-string suture is placed. Similarly, intra-operative or immediate postoperative left ventricular apical rupture is not uncommon and is associated with poorer outcome. It is also well known that late pseudoaneurysm can develop from apical puncture as such ventricular perforation and following TA approach. A TAo approach can potentially overcome these issues as it entails purse-string suture on the aorta instead of left ventricle. Aortic cannulation is performed on nearly every open heart procedure and has been proven to be safe. The Ascendra delivery system is shorter in length when compared to TF delivery systems and hence easier to control. It however lacks a nose cone, and a simplification of existing Ascendra system i.e. adding a nose cone, will certainly facilitate the device delivery. With device modification, it is possible that TAo can be used to deliver the device in a retrograde manner and hence easier to control. It however lacks a nose cone, and a simplification of existing Ascendra system i.e. adding a nose cone, will certainly facilitate the device delivery. With device modification, it is possible that TAo can be used to deliver the device in a retrograde manner and hence easier to control. It however lacks a nose cone, and a simplification of existing Ascendra system i.e. adding a nose cone, will certainly facilitate the device delivery. With device modification, it is possible that TAo can be used to deliver the device in a retrograde manner and hence easier to control. It however lacks a nose cone, and a simplification of existing Ascendra system i.e. adding a nose cone, will certainly facilitate the device delivery. With device modification, it is possible that TAo can be used to deliver the device in a retrograde manner and hence easier to control. It however lacks a nose cone, and a simplification of existing Ascendra system i.e. adding a nose cone, will certainly facilitate the device delivery.
Sorin Group is the ONLY company in the world to design and produce TOTALLY supra-annular seating mechanical heart valves. TOTALLY supra-annular seating is suitable for all kinds of patient annulus anatomies and always guarantees 100% orifice-to-annulus ratio to maximize hemodynamics and reduce PPM related events.

Sorin Group, over 40 years of manufacturing expertise and over 20 years of exemplary clinical use.

VISIT OUR BOOTH #2.22

SORINGROUP
AT THE HEART OF MEDICAL TECHNOLOGY
Come and join the party!

Tuesday 4 October at the Convento do Beato, 19:30–24:00

We shall be celebrating our 25th Anniversary at one of Lisbon’s most remarkable and historical buildings – the Convento do Beato. Within the various wings of this 15th Century convent, recognized over the years for its magnificent construction, we will provide you with a unique blend of culinary and musical delights!

In the main Cloister Hall we will celebrate the decade in which the Association was founded – the ’80’s – by showcasing some of the most famous stage musicals from that period. Our performers will sing and dance their way through internationally renowned hit stage musicals such as Les Misérables and Cats. The programme on the main stage will culminate in a performance by our EACTS House® band, made up of our own group of surgeons. The band will perform some well known cover songs, enticing everyone onto the dance floor.

In the more tranquil setting of the Library, our soloists will perform a range of classical music and operatic arias written by European composers, and in the Upper Foyer area we will celebrate the best traditional and folk music and dance that Europe has to offer.

For those of you seeking even more excitement, we plan to run an EACTS casino where you will have the opportunity to join your colleagues for a flutter on the gaming tables.

Finally, if you just want to sit and take in the beautiful surroundings of this wonderful building, we will provide an area where you can relax and enjoy a quiet drink and a bite to eat in the company of friends and colleagues.

Autologous Fibrin Sealant with superior physical properties

Vivostat® is the world’s only system for on-site preparation of autologous Fibrin Sealant or Platelet Rich Fibrin (PRF). It provides a range of safe, versatile and easy to use products applied in a great number of clinical applications.

The fully automated Vivostat® system prepares 5-6ml of autologous fibrin sealant from only 120 ml of the patient’s own blood in just 23 minutes. Compared to conventional sealants, Vivostat® Fibrin Sealant offers a multitude of benefits to both the patient and the surgeon:

Excellent safety profile and high biocompatibility: Vivostat® Fibrin Sealant is derived from the patient’s own blood and as such it demonstrates excellent biocompatibility. Unlike conventional products, which are most often based on single donors, Vivostat® contains the patient’s own blood in its entirety.

Unique and versatile application devices: The wide selection of application devices provides the surgeon with unparalleled freedom in the use of fibrin sealant throughout surgery. The application devices can be used intermittently during the entire surgical procedure without experiencing the blockage that is common in conventional systems. Furthermore, Vivostat® Fibrin Sealant can be applied at very close range allowing for pinpoint application, and rapid polymerisation ensures that the fibrin remains where it is applied.

Superior physical properties: Clinical studies and comparative testing have demonstrated that Vivostat® Fibrin Sealant is superior to conventional fibrin sealants on important parameters such as time to haemostasis, adhesion to tissue, impact on tissue and elasticity. Elasticity is especially important in thoracic procedures as the sealant is often applied when the lung is deflated. Therefore, the fibrin sealant must be very flexible to move with the tissue. Comparative tests have shown Vivostat® Fibrin Sealant to be extremely flexible, almost four times as flexible as conventional products while maintaining sufficient strength.

For more information about the Vivostat® product line, please visit www.vivostat.com or stop by our booth (2.12) at EACTS for an introduction to the Vivostat® system.

Reference
(2) The Vivostat® application system: A comparison with conventional fibrin sealant application systems: David H, Cowland J R et al. Technology and Health Care 2003; 12, 451–457

Vivostat®

The Vivostat® Spraypen

Sealing of suture lines during LVAD procedure
Simplicity for a complex world

ACURATE TA™

Simplicity Engineered,
Confidence Delivered.

In the highly complex field of TAVI, discover an innovative solution that takes simplicity and ease of use to a new level. Designed by physicians, for physicians, ACURATE TA™ is the next generation Transcatheter Aortic Valve Implantation System.

Engineered to facilitate simple valve positioning and deployment, its distinctive design and unique technology delivers superior operator control and confidence for consistently successful TAVI, combined with a low risk of paravalvular leak for improved patient outcomes.

- Outstanding ease of use
- Simple valve positioning and deployment
- Operator control and confidence
- Low incidence of paravalvular leak
Transcatheter aortic valve implantation using the JenaValve prosthesis

Ardawan Rastan
Department of Cardiac Surgery, Heart Center, University of Leipzig, Germany

The JenaValve™ aortic valve replacement (AVR) System is composed of a porcine xenograft aortic valve attached to a self-expandable Nitinol stent (see Figure 1). It is allowed preclinical anaesthetic deployment by three positioning feelers. The stent frame also anchors with the native leaflets by a unique clipping mechanism. The sub-coronary position and the possibility of retrieving the prosthesis before final release provide other potential advantages compared to 1st generation TAVI systems. All procedures of the single-center first-in-man study were performed under general anaesthesia guided by TEE and fluoroscopic imaging in a fully equipped hybrid operating room. To identify an optimal C-arm angulation a Dyna-CT was performed. Using the CT4 aortic root image, a cranial left-anterior-oblique angulation was chosen that provided the best perpendicular view to the aortic annulus and all three aortic sinuses.

After apical puncture, advancing a super-stiff guidewire in the descending aorta and standard apical aortic valvuloplasty was performed under rapid ventricular pacing using a standard 60 mm balloon of annular size. After loading of the valve into the delivery catheter, the device was inserted into the left ventricle and advanced under fluoroscopic guidance into a supra-annular position. The valve is released in a three-step manner without rapid ventricular pacing (see Figure, right side). First, the three-positioning feelers are released by clockwise turning of the white proximal wheel, which advanced the valve sleeve distally. Care has to be taken to place each arm in a corresponding aortic sinus. The correct position is confirmed by root angiography. In a second step the base of the prosthesis is partially released at the ventricular part by removing the red safety lock and pulling the distal second step actuator. This also fixes the native leaflets between the stent struts. This is immediately followed by pushing the 3rd step actuator which fully unseathed the prosthesis. After retrieval of the delivery system, TEE and root angiography are performed to visualize the valve position and function. In case of significant paravalvular leak post-implantation, dilatation with a valvuloplasty balloon of the same size used previously is possible. Finally TEE and root angiography are performed to confirm definitive valve function and prove anatomical correct position of the prosthesis as well as to assess valve gradients.

Between 07/09 and 04/2010 12 patients were enrolled in the first-in-man study. Mean age was 85.8±3.8 years, all patients were female, logEuroSCORE was 24.7±10.5% and STS score was 10.3±4.3. Native annulus size was 25±1.2mm. Procedural success was 75%. The procedure was aborted once due to acute type-A-dissection and twice because the positioning could not be completely released. This was addressed by redesigning the catheter tip. Nine patients underwent an uneventful procedure and reached the primary 30 day endpoint. Mean procedure time was 101±21 min, contrast dye exposition was 135±73ml and post-dilatation was necessary in 3 patients. Mean and max valve gradients were 15.6±5.0 and 7.4±1.5mmHg after one year, respectively. None of the patients had more than trivial paravalvular leak or required a pacemaker implantation. After follow-up of 389±195 days, three patients died on non-valve-related causes.

After redesign of the delivery system, 73 patients were enrolled in a multi-center CE-study examining the JenaValve AVR System. The results will be presented separately during the meeting.

ACURATE TA Transcatheter Aortic Bioprosthesis and Delivery System

Jörg Kempert
Kardiol Stiftung Heart Center, Bad Nauheim, Germany

Syetis TA, a Swiss company developing innovative transcatheter aortic valve implantation (TAVI) systems, has treated 90 patients in two clinical trials of its ACURATE TA™ Transcatheter Aortic Bioprosthesis and Delivery System – the largest number of patients ever treated with a second Generation TAVI device. Combined 30 day survival is 92.2%. CE Mark filing has been completed and EU market approval of the device is expected in Q4 2011.

For treatment of severe aortic stenosis (AS) in elderly, high-risk patients and those not eligible for surgery due to multiple comorbidities or other conditions not appropriate for open surgical valve replacement, transcatheter repair is now the standard of care for treating these patients. A new transcatheter device was used to treat 90 elderly, high-risk patients with severe AS in clinical trials. The ACURATE TA is composed of a surgical-quality porcine biologic valve mounted on self-expandable nitinol stent. It is available in three sizes (S, M, L) to treat native annulus between 21 and 27 mm. The ACURATE TA Delivery System has a flexible isodiametric shaft and ergonomic design allowing for a controlled, sheathless,atraumatic and swift two-step implantation.

Prior to insertion of the device for TAVI, the aortic site is prepared for transcatheter procedure and a balloon valvuloplasty is performed. In the case of ACURATE TA its Delivery System is advanced over a 0.035” super-stiff guidewire un-til positioned across the native valve. Proper alignment is verified using two radio-opaque markers. The device may be re-orientated orientation for alignment with the native commissures using the commissural posts.

Once positioned, partial release of the ACURATE TA begins with a turn of the release knob exposing first the stabi-
zation arches and then the upper crown. The stabilization arches ultimately allow self-alignment of the valve by pivoting against the ascending aorta. The upper crown should reside above the leaflets and calcification. A safety button on the Delivery System prevents further opening past the upper crown. The operator will “feel” the place-ment at the native annulus by gently pulling the ACURATE TA down toward the annulus. This tactile feedback and imaging, indicates proper placement and signals the operator to begin final release.

Final release starts with removal of the safety button and verification of proper alignment using the two radio-opaque markers. While gently pulling down toward the native an-nulus and rotating the release knob further, the ACURATE TA automatically detaches from the Delivery System leaving the lower crown fully expanded. The waist of the device captures the native leaflets providing integrity of shape and conforming to the patient’s anatomy. Additionally, the outer PET-iris provides a “fail” reducing the risk of paravalvular leak.

With its outstanding ease of use, enhanced operator control and confidence, and low incidence of leak, the ACU-RATE TA is at the forefront of innovation in transcatheter aortic valve replacement.

Enrollment in a pivotal TA study in Europe and the start of a FM study of the transfemoral system is to be expected by end of 2011.
A WHOLE NEW PARADIGM
IN COUNTERPULSATION THERAPY

...COMING SOON

MAQUET
GETINGE GROUP
MitraClip – A surgeons’ guide for indications

Mitraclip (Abbott Vascular, Menlo Park, CA, USA) is the only transcatheter device available in the market to treat mitral regurgitation. The EVEREST trial suggested the procedure is a safe alternative to surgery in selected patients, although efficacy of surgery remains superior. However, EVEREST data are mainly derived from surgical candidates with degenerative MR. In Europe, most procedures are performed in functional MR patients who are denied cardiac surgery. The ACCESS registry is collecting data from real world application of the therapy: most patients are high risk surgical candidates, with functional mitral regurgitation and depressed left ventricular function.

Similar to TAVI, MitraClip patient selection develops over three steps: confirmation of severity of MR, evaluation of indication (particularly for FMR), patient selection of severity of MR, evaluation of durability of the procedure under these circumstances is still unknown. Another important factor to guide patient selection is the presence and relevance of concomitant cardiac conditions, including coronary artery disease, atrial fibrillation, tricuspid regurgitation, aortic stenosis and dysrythmies. While surgery offers the opportunity of treating all the concomitant conditions at one time, the MitraClip opens the perspective of a staged approach. As an example, in patients with severe MR and large QRS with dysrythmies, CRT is performed first, and MitraClip is selectively performed at a later stage in non responders (with good results as indicated by the PERMIT-CARE study). As experience is growing, patient selection for transcatheter mitral interventions will be supported by evidence. In the meanwhile, there is need for individualizing the therapeutic approach. The heart team should compare risk and probability of success of both surgery and MitraClip and choose the best option for the individual patient.

Mitral Valve – Auditorium 1 15:00

Transcatheter mitral valve implantation

Significant mitral regurgitation is one of the most common forms of valvular heart disease, its incidence increases sharply with age. Open surgical repair or replacement of the mitral valve is often challenging and associated with high operative morbidity and increased mortality. Particularly multi-morbid patients are at high risk. Multiple percutaneous repair techniques are being developed to offer patients less invasive alternatives to surgical repair of mitral valve regurgitation. The principal limitation of these techniques is the lack of true approximation to surgical approaches and the lack of efficacy to fully correct most of the mitral valve pathologies. To date, transcatheter valve stent implantation is limited to the replacement of pulmonary and aortic valves. Mitral valve in valve implantation has shown successful results, but is only applicable for patients who underwent open heart surgery at an earlier point in time.

Transcatheter implantation of a valve stent is another approach to minimally invasively treat mitral valve regurgitation worldwide. Multiple research teams are working on the development of a valve stent for application into the mitral position using an off pump technique. For example, CardiaQ is using a transaortic transfemoral and antegrade approach for implantation of their bioprostheses. Endovascular makes successful function of their investigational valve of up to 30 minutes in four consecutive sheep using a transarial angioplasty approach.

Challenges to the development of valve stents for implantation in the mitral position are the complex anatomy of the anti-ventricular valve and its exposition to the high pressure blood flow in the left heart. An adequate fixation system has to be developed that does not influence the functionality of the heart and furthermore withstands the high forces within the high pressure system of the left heart. Our research team at the University Hospital Kiel (Germany) developed a novel mitral valve stent that was successfully implanted in acute and short-term studies. The self-expanding nitinol stent is composed of three segments: an atrial fixation system, an annular body and an atrial membrane to minimize the risk of paravalvular leakage. Recently, a mid-term study (n=6 pigs) with an observation period of up to eight weeks after implantation was accomplished. Hemodynamic stability and valve function were assessed before and immediately after implantation (n=6) up to an observation period of eight weeks (n=1) using transesophageal echocardiography, ventriculography and cardiac computed tomography. Reliable stent stability, minimal gradients across the new valves and the LVOT and no stent emboli were observed throughout the studies with a high degree of reproducibility.

Our prospective focus will pertain to stent design, aiming at a more reliable deployment and enhanced durability of the stent. Moreover, effects of anchoring to native heart tissue will be investigated in more detail, to improve long term results and make important progress towards the clinical study phase.

New rings and things on the tricuspid valve

Tricuspid Regurgitation (TR) is a relevant clinical problem following left sided heart valve surgery. Hemodynamically important TR develops at late follow-up in a significant proportion of patients with mild–moderate uncorrected TR. In these patients both long term survival and event-free survival are remarkably reduced. In spite of the fact that a more aggressive approach in regard to TR is nowadays advocated during surgery for left sided heart valves and the threshold for annuloplasty is low, late recurrent TR is still a relatively common problem, leading to fluid retention and frequent hospitalizations. Clearly, current results with tricuspid annuloplasty for TR are sub-optimal, particularly when annuloplasty is combined with severe tethering of the leaflets. Reoperation for severe TR is associated with high hospital mortality and poor long-term outcome.

On the basis of all the above, the intent of numerous investigators has been recently attracted by the tricuspid valve and innovative solutions have been developed. New rings have been proposed with special designs to better comply with the pathophysiology of functional TR. The objective is to enhance the coaptation of the leaflets for a more effective annuloplasty. The durability of the repair over time is expected to increase. A device to replicate the De Vega annuloplasty for tricuspid regurgitation has been designed and used in the animal lab. The procedure seems to be simple and reproducible.

Furthermore, rings to be applied percutaneously using the “microguide” approach represent an interesting alternative solution to reduce annular dilatation. Finally, as for the mitral valve, percutaneous implantation of a biologic prosthesis to replace the native tricuspid valve is currently the object of intense efforts.

MitraValve – Auditorium 1 15:00

Ottavo Alfieri, S. Raffaele University Hospital, Milan, Italy

Tricuspid Regurgitation (TR) is a relevant clinical problem following left sided heart valve surgery. Hemodynamically important TR develops at late follow-up in a significant proportion of patients with mild–moderate uncorrected TR. In these patients both long term survival and event-free survival are remarkably reduced. In spite of the fact that a more aggressive approach in regard to TR is nowadays advocated during surgery for left sided heart valves and the threshold for annuloplasty is low, late recurrent TR is still a relatively common problem, leading to fluid retention and frequent hospitalizations. Clearly, current results with tricuspid annuloplasty for TR are sub-optimal, particularly when annuloplasty is combined with severe tethering of the leaflets. Reoperation for severe TR is associated with high hospital mortality and poor long-term outcome.

On the basis of all the above, the intent of numerous investigators has been recently attracted by the tricuspid valve and innovative solutions have been developed. New rings have been proposed with special designs to better comply with the pathophysiology of functional TR. The objective is to enhance the coaptation of the leaflets for a more effective annuloplasty. The durability of the repair over time is expected to increase. A device to replicate the De Vega annuloplasty for tricuspid regurgitation has been designed and used in the animal lab. The procedure seems to be simple and reproducible.

Furthermore, rings to be applied percutaneously using the “microguide” approach represent an interesting alternative solution to reduce annular dilatation. Finally, as for the mitral valve, percutaneous implantation of a biologic prosthesis to replace the native tricuspid valve is currently the object of intense efforts.
Transcatheter sutureless adjustable mitral band – the next frontier

Mitrail valve regurgitation is a very common disease and numbers have been estimated to even increase over the next decades. It thus represents a vast and even growing field of clinical unmet need, especially for asymptomatic and high risk patients.

Current standard of care for MR is surgical MV repair. Mitral valve (MV) repair following Carpentiers principles aims to establish normal leaflet motion, the largest possible surface of coaptation and reinforcement of the annulus. Therefore annuloplasty represents an inevitable procedure to achieve a successful and durable repair result. Catheter based MV repair techniques are of increasing interest to facilitate treatment of mitral valve regurgitation without any incision and without the use of cardiopulmonary bypass. Amongst the currently followed principles of the edge-to-edge technique, transapical chordal replacement and catheter based MV replacement the Cardioband (Valtech Cardio, Israel) approach represents a new and innovative technique. It enables a direct access transcatheter mitral annuloplasty with a suture less and adjustable device.

The Cardioband is implanted using a steerable delivery system through the femoral vessels. Acute and chronic animal studies have been successfully conducted and a clinical trial is planned for the near future. Future developments of the Cardioband will even enable a complete catheter based platform through the femoral vessels.

Mitral Valve Repair

Figure 1: The Cardioband transatrial kit including the Implant Delivery System (A), the left atrial Introducer (B) and the Adjustment Tool (C).

Figure 2: The suture-less and adjustable Cardioband after implantation on the MV in an acute animal model.

Aortic Valve 1

Next Generation Transcatheter Aortic Valve Replacement: the Portico™ system

Gregory P Fontana Cedars Sinai Medical Center, Los Angeles, CA, Principal Investigator for Portico IDE study

Transcatheter aortic valve replacement (TAVR) devices have evolved over the past few years. However, there are limitations with these current generation valves, such as: the inability to reposition or retrieve the valve, paravalvular regurgitation and conduction abnormalities that may require a permanent pacemaker post TAVR implantation.

A new TAVR technology, the Portico transcatheter valve, is designed to address these limitations. The Portico valve consists of a bovine pericardial tri-leaflet valve in a self-expanding stent that is designed to be fully resheathed until it’s released from the delivery system. The ability to fully reshear the valve allows the operator to reposition or retrieve the valve, if necessary.

The Portico valve incorporates a tissue cuff that aids in minimizing paravalvular regurgitation. In addition, the leaflets and cuff at low in the stent frame, minimizing the protrusion of the device into the LVOT helping to reduce the occurrence of conduction abnormalities.

Dr John Webb performed the first human study with the Portico valve earlier this year. The device was delivered to the native annulus and after Portico was partially deployed, the valve moved slightly above the annulus. Because the valve had not been fully released from the delivery system, it was completely re-sheathed at the implant site, repositioned within the native annulus, and fully deployed. The patient remained stable throughout the procedure. The field of Transcatheter valve therapy is rapidly evolving, providing treatment options to high-risk, inoperable AS patients. While current generation TAVR devices have limitations, the Portico valve is a promising technology that is designed to address these limitations.

Portico valve

Aortic Valve 1 Auditorium 1 10:00

Gregory Fontana
**Trans-cervical approach in thoracic surgery**

Dr Zheng Fangwei
Chief
Cancer Center Surgeon, Department of Cardiac Surgery, People’s Hospital, Beijing, China

**Vertebral septal defect (VSD)** is one of the most common congenital heart defects. Both, open heart surgery using cardiology bypass and interventional transcatheter occlusion have drawbacks and limitations. Recent Chinese publications report on larger series of patients being treated via off-pump percutaneous device closures of muscular but also perimembranous VSDs. This approach has gained huge acceptance in the past few years in China. Also our institution has embraced this approach in selected patients. All operations were performed under general endotracheal anesthesia. A 2-4-mm subxiphoid mini-sternotomy incision is usually made. Under transesophageal echocardiography (TEE) guidance, the preferred location for right ventricular puncture is chosen. The free wall of the right ventricle is punctured and the valve wire is introduced into the left ventricle through the defect. A delivery sheath is then advanced to the left ventricle. The device (Shanghai Shape Memory Alloys Co. Ltd., Shanghai) is subsequently deployed.

A complete TEE should be performed to exclude i.e. residual shunt, tricuspid valve impingement, or aortic valve regurgitation. The early and mid-term results are very encouraging. This approach offers several advantages. These include smaller incision, cosmetic aspect, no cardiopulmonary bypass, very short hospital stay, no radiation (as opposed to interventional closure), direct entrance route to VSD and avoidance of need for significant overriding of device (and possibly therefore reduction of complications), and no age limit. We believe that this technique is simple, safe and allows in most of the cases effective closure of VSDs. However, long-term follow-up is needed to evaluate the safety and effectiveness of this technique.

**New vs. old ways to close interventricular holes**

Dr Zheng Fangwei
Chief
Cancer Center Surgeon, Department of Cardiac Surgery, People’s Hospital, Beijing, China

Off-pump percutaneous closure of VSDs

1. **Safety data base**. In the last three years, the EACTS–Techno College has incorporated the Congenital field as one of its priorities. This year with the choice of topics Close Intraventricular Holes and Fistal Advances, we will try to invite and understand new global management with future options and innovations in both interventional and conventional subsets.

**Welcome and Introduction**

J. V. Comas, Madrid, C. Schneele, Munich

**Discussion**

Z. Fangwei, Liyang

**Off-pump percutaneous closure of VSDs**

Z. Fangwei, Liyang

**International closure of VSDs – limitations and results**

J. V. Comas, Madrid

**Is surgery the “gold standard” for VSD closure?**

F. Yang, Concorde

**Obstructive management and indications**

S. K. Mahesh, Malmö

**Results and follow-up**

M. Nivvalsky, Moscow

**Surgical options**

Z. Fangwei, Liyang

**Can we really improve outcomes for heart transplantation? A perspective on clinical practice**

G. Barzilai, Concorde

**Discussion**

Saturday 1 October 2011

**Thoracic**

14:00 Techno College

Address 10

Opportunities: Thoracic Ossering Group

**Trans-cervical approach in thoracic surgery**

Dr Zheng Fangwei
Chief
Cancer Center Surgeon, Department of Cardiac Surgery, People’s Hospital, Beijing, China

Surgical explorations provide high sensitivities of tumor extent in clinical staging. In the absence of distant metastasis, nodal spread is the most adverse anatomic prognostic factor, and its identification is important to plan treatment and assess prognosis. According to the guidelines of the European Society of Thoracic Surgeons (ESTS), the time-honoured mediastinoscopy has specific indications based on computed tomography (CT) and position ammography (PET) scan. If properly followed, the present guidelines for preoperative mediastinal staging can reach a predictive value for mediastinal nodal disease of 0.94. Tissue confirmation of CT and PET scan abnormalities is recommended by the evidence-based guidelines of the American College of Chest Physicians (ACCP). In left-sided lung cancer, especially those of the upper lobe, nodal spread may affect the subaortic and para-aortic lymph nodes. In these cases, if mediastinoscopy is negative, an additional procedure such as left parasternal mediastinoscopy, extended cervical mediastinoscopy or video-assisted thoracoscopic surgery, is needed to reach and biopsy these lymph nodes for a complete staging. Invasive staging is indicated, too, when the mediastinum is normal on CT and PET scan, in cases of central tumours, when there is suspicion of N1 disease, in tumours with low standardized uptake value, and when the lymph nodes are larger than 1.6-cm on CT. In these circumstances, mediastinoscopy also is indicated. However, there are now more thorough procedures that aim not at biopsying the mediastinal lymph nodes but at removing them completely. These are video-assisted mediastinoscopic lymphadenectomy (VAML®) and transversal extended mediastinal lymphadenectomy (TELMA®). These procedures can reach sensitivities and negative predictive values of 1, at least, in the hands of those who developed them. These techniques should be progressively incorporated into clinical practice by other groups and thus increase the accuracy of clinical staging. Invasive staging also is important at thoracotomy for tumour removal. The surgeon has to evaluate the highest primary tumour extension and perform an adequate lymph node assessment to establish whether the most advanced nodal spread are sufficient to metastasise to the lungs. Although a biopsy of a single lymph node may be enough to certify N1, N2 or N3 disease, to certify its absence requires systematic nodal dissection, consisting on the en bloc removal of the mediastinal fatty tissue and lymph nodes of the upper and lower mediastinum on the side of the operation. A less rigorous nodal assessment, such as lobe-specific systematic nodal dissection or systematic sampling, is reasonable for peripheral T(N)M0 squamous cell carcinomas or for multicentric studies, when one foresees that the fulfilment of the requirements of systematic nodal dissection will be unlikely to be achieved by all participants.

Invasive staging should be thoughtfully integrated with the emerging ultrasound-guided bronchoscopy and endobronchial ultrasonography with fine needle biopsy of mediastinal lymph nodes and fine needle biopsy procedures for lymph nodes of the upper and lower mediastinum (and for chest scans) as an option to decide whether a node is sufficiently large to be involved (N1 disease) or not (N0 disease). In N0 disease, it is logical to consider the removal of the node (N0 disease) or not (N0 disease) and to verify the clinical stage. In N1 disease, the lymph node is removed. The surgeon has to remove the lymph node, to access the hilar structures and to perform a systematic lymph node assessment. In the absence of anatomical landmarks, systematic lymph node dissection will be unnecessary. The surgical exploration of mediastinal lymph nodes is currently performed for the following reasons: detection of extrathoracic disease (American Thoracic Society guidelines 2003; 21: 1469-86), adjuvant or neoadjuvant therapy (European Society of Thoracic Surgeons guidelines 2007; 2: 228-36), routine nodal evaluation of patients with stage IIA/IIB disease (ESMO guidelines 2006; 21: 197-208), systematic nodal staging of tumours of the upper and lower lobes with clinical stage (T1 or T2, N0, M0) when this is not known or the mediastinum is not accessible.

Following these indications, a significantly higher rate of detectable mediastinal disease was found among patients undergoing extended median sternotomy+ versus those patients undergoing video-assisted thoracoscopic surgery with mediastinoscopy (18.8% vs. 6.1%; p<0.01). However, a significantly higher rate of complications was found in the video-assisted thoracoscopic surgery group (27.1% vs. 0.0%; p<0.01).

**Discussion**

Saturday 1 October 2011

**Congenital**

14:00 Techno College

Address 2

**Activity data base**

In the last three years, the EACTS–Techno College has incorporated the Congenital field as one of its priorities. This year with the choice of topics Close Intraventricular Holes and Fistal Advances, we will try to invoke and understand new global management with future options and innovations in both interventional and conventional subsets.

**Welcome and Introduction**

J. V. Comas, Madrid, C. Schneele, Munich

**Session 1: New vs. old ways to close interventricular holes**

14:05 Z. Fangwei, Liyang

**Off-pump percutaneous closure of VSDs**

Z. Fangwei, Liyang

**International closure of VSDs – limitations and results**

J. V. Comas, Madrid

**Is surgery the “gold standard” for VSD closure?**

F. Yang, Concorde

**Discussion**

15:35 Coffee

16:00 Session 2: Fistal advances

J. V. Comas, Madrid

**Obstructive management and indications**

S. K. Mahesh, Malmö

**Results and follow-up**

M. Nivvalsky, Moscow

**Surgical options**

Z. Fangwei, Liyang

**Can we really improve outcomes for heart transplantation? A perspective on clinical practice**

G. Barzilai, Concorde

**Discussion**

**Techno College Award Nominee 2011**

One year’s experience with the Jetstream™ Pathway device for femoro-popliteal disease

Imran Javed, Vekatesh Ramaih, David Terry, Julio Rodriguez, Matt Hammy

Azorean Heart Institute, Phoenix, Arizona, U.S.A.

**Objectives**

To report safety and efficacy of Jetstream™ Pathway rotational atherectomy system device for the treatment of femo-popliteal arterial lesions with special emphasis on rate of re-intervention and intervention free period.

**Materials & Methods**

Duration of study is from March 2008 to November 2009 (2 Months). Total numbers of patients is 86. Males are 55 (64%) and females are 31 (36%). Age range is 36 to 87 years. All patients underwent Pathway Atherectomy during this time period regardless of their previous status were included. Re-intervention in the same limb after atherectomy was the endpoint of the study.

**Results**

TLR (Target Lesion Revascularization) was 15% in patients during follow up period. Re-intervention was more common in first three months after first intervention. Re-intervention was more common in TASC II type B lesions and mostly managed by Ballon Angioplasty.

**Conclusion**

The Jetstream™ Pathway device with thrombectomy and aspiration capacities has added advantages to femoro-popliteal atherectomy. Adjunctive stenting remains very low in this difficult segment. Long-term follow-up will definitely be needed for durability and patency.

**New vs. old ways to close interventricular holes**

14:05 Off-pump percutaneous closure of VSDs

Dr Zheng Fangwei
Chief
Cancer Center Surgeon, Department of Cardiac Surgery, People’s Hospital, Beijing, China

A complete TEE should be performed to exclude i.e. residual shunt, tricuspid valve impingement, or aortic valve regurgitation. The early and mid-term results are very encouraging. This approach offers several advantages. These include smaller incision, cosmetic aspect, no cardiopulmonary bypass, very short hospital stay, no radiation (as opposed to interventional closure), direct entrance route to VSD and avoidance of need for significant overriding of device (and possibly therefore reduction of complications), and no age limit. We believe that this technique is simple, safe and allows in most of the cases effective closure of VSDs. However, long-term follow-up is needed to evaluate the safety and effectiveness of this technique.
The Physio II was introduced into the UK in March 2009. The ring incorporates a number of developments on the original Physio concept1 designed to both help the surgeon and beneﬁt the patient. In this article I have reviewed my own experience with the Physio II ring and assessed whether or not the device has achieved its aims.

Briefly, the new features of the ring are:
- An improved sewing cuff to aid suture placement and a more surgeon-friendly holder.
- Both the anterior and posterior components of the ring are saddle-shaped. Saddle-shaped rings have been shown to mimic the natural physiology more closely, improve coaptation geometry,2,3
- The anterior part of the ring is less ﬂexible than the posterior part mimicking the ﬁbrous and muscular parts of the mitral annulus to aid remodelling.
- It is well recognized that the larger anterior leaflet requires a larger annuloplasty ring.4 The geometry of the Physio II ring has been modiﬁed to better accommodate the spectrum of mitral valve pathologies; speciﬁcally the larger ring sizes have a greater ratio of the anterior-posterior to transverse diameters, i.e., more circular for valves with generalized excess tissue and more “D-shaped” for valves with no excess tissue; thus the Physio II can be used to treat “Barlow” valves, valves with localized excess of tissue or ﬁbro-elastic deﬁciency and “normal” leaflets or diffuse excess of tissue as part of my strategy to avoid SAM post-repair. However, since then I have not found the need to use the Cosgrove ring – the geometry of the Physio II accommodates the larger anterior leaflet and I have had no cases of SAM.
- We have however had to explant a ring in one patient 12 months postoperatively for progressively severe MR; the pathology appeared to be retraction of the posterior leaflet. However at surgery it was clear that this was an effect of having used too large a ring – I replaced it with a ring one size smaller and the valve was perfectly competent with normal appearances of the posterior leaflet. When implanting the original Physio ring, if in doubt over sizing (is it size 36 or size 38, for example) I used to implant the larger ring, but with the design changes in the Physio II, I now choose the smaller.

The developments incorporated into the Physio II have produced a ring which is easy to implant. The problem of suture abrasion against the central core of the ring which was occasionally seen with the original ring has been abolished with the changes to the sewing cuff in the Physio II. The evidence to date, from both my personal experience and that of the European Registry Study, is that the Physio II ring enables surgeons to produce excellent results across the spectrum of degenerative mitral valve pathologies.

References
CardioGard novel emboli protection system

Benny Dilmoney, CEO, CardioGard, Israel

The CardioGard Emboli Protection Cannula is a novel cardiac device which removes some of the solid and gaseous emboli released during cardiac surgery. An embolism is considered as the main reason for neurological injury, associated with increased mortality, morbidity and hospital costs. The CardioGard Cannula emboli removal management may reduce the potential for postoperative neurological injury. The CardioGard Emboli Protection Cannula is a 24 French double lumen aortic cannula. The main lumen is a standard forward flow tube, directing blood into the aorta from the cardiopulmonary bypass (CPB) machine, like a conventional cannula. The second lumen uses a novel suction feature to direct blood mixed with embolic material back to the CPB machine (Figure 1).

An innovative thoracic retractor to eliminate post-operative pain follow- ing thoracotomy is commonly used in thoracic surgery. Carrol described in tricotral sutures and later the use of nondivided intercostal muscle flaps to reduce but not eliminate post-operative pain.

This is a new concept thoracotomy retractor that avoids compression of intercostal nerves on opening and closing thoracotomy incision. The retractors opening forces are transmitted to the ribs by gripping anterior/posterior rib surfaces between pairs of vice-like jaws. Holes drilled in the ribs using drill guides permit the placement of temporary dowel pins that add security and stability on opening and also allow sutures if it be passed through rib holes, on opening and also allow sutures to be tied (20). As shown in Figure 4 the sutures (21) do not encircle the ribs and thus do not impinge on the intercostal nerves (16). Thisatraumatic retractor should significantly reduce patients’ post-operative pain and could potentially impact the practice of thoracic surgery by also reducing surgeons’ workload (according to Cerfolio et al. (4)), thoracic surgeons spend much time in managing patients’ (postoperative) pain. Pain reduction could lead to shorter hospital stay, reduced drug costs and faster patient recovery. Two US Provisional Patents have been filed:

1. No. 61/500,697 “An improved thoracic retractor”

References
(3) John Wright Figure 1
(5) Genesee News

Peculiarities are described in the intercostal muscles and later the use of nondivided intercostal muscle flaps to reduce but not eliminate post-operative pain. This is a new concept thoracotomy retractor that avoids compression of intercostal nerves on opening and closing the incision. The retractors’ opening forces are transmitted to the ribs by gripping anterior/posterior rib surfaces between pairs of vice-like jaws. Holes drilled in the ribs using drill guides permit the placement of temporary dowel pins that add security and stability on opening and also allow sutures if it be passed through rib holes, on opening and also allow sutures to be tied (20). As shown in Figure 4 the sutures (21) do not encircle the ribs and thus do not impinge on the intercostal nerves (16). Thisatraumatic retractor should significantly reduce patients’ post-operative pain and could potentially impact the practice of thoracic surgery by also reducing surgeons’ workload (according to Cerfolio et al. (4)), thoracic surgeons spend much time in managing patients’ (postoperative) pain. Pain reduction could lead to shorter hospital stay, reduced drug costs and faster patient recovery. Two US Provisional Patents have been filed:

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CARDIOHELP: Innovative portable heart-lung support system

MAQUET Cardiopulmonary

Cardiovascular disease is the leading cause of death worldwide, with an estimated 17.5 million deaths each year, representing 30 percent of all deaths around the world. Many of these individuals experience cardiogenic shock, a frequent consequence of a heart attack, because vital organs are not adequately supplied with oxygen. Other conditions that can lead to failure of the heart and/or lungs include acute respiratory distress syndrome (ARDS), severe influenza (e.g., H1N1), septic shock and pulmonary embolism. Patients with serious cardiac or pulmonary compromise require immediate stabilization and transportation. With the rapidly deployable CARDIOHELP System by quickly connecting these patients to a hand-held mechanical life support system.

CARDIOHELP is the world’s smallest portable heart-lung support system providing mechanical extracorporeal assist to replace or support a patient’s circulation and respiration. It is the first portable, lightweight device of its kind worldwide and also the first support system that can be used for both land and air transportation. With the rapidly deployable CARDIOHELP System, patients can now receive seamless heart-lung support in any area of the hospital, allowing clinicians to gain valuable time by quickly connecting patients to a hand-held mechanical life support system right at the bedside or in the field.

CARDIOHELP works by creating a magnetic field, which drives a blood pump, integrated with a diffused membrane oxygenator. The one-of-a-kind oxygenator and pump combination (HLS Module Advanced) can provide complete or partial heart and lung support in the operating room, cardiac cath laboratory, emergency department and in other critical care areas. The individual operating modes and disposables of the CARDIOHELP System offer several applications to support patients who require veno-venous or veno-arterial life support; it can also be used during open-heart surgery and for extracorporeal carbon dioxide (CO2) removal. In addition to its portability, CARDIOHELP also offers the advantage of having all safety features integrated and which include inside one compact and rapidly deployable unit, allowing a patient to be connected to the support they need, anywhere and anytime, immediately and emergently, to begin recovery or stabilization. The system comes with an intuitive control unit, which – combined with the HLS Module Advanced – can monitor important blood parameters, including venous oxygen saturation, hematocrit, hemoglobin, hematocrit and arterial and venous blood temperature. A non-invasive sensor system is integrated into the HLS disposable that can sense control pump speeds, preventing unnecessary blood trauma. This innovative plug-and-play principle means that CARDIOHELP is ready for use on short notice.

At this year’s EACTS, MAQUET introduces the new ventricular assist device ROTASSIST. Powered by CARDIOHELP, the smart-system centrifugal pump allows for precise pressure measurements of both preload and afterload and will aid in a transition to decision or recovery. The device has been developed for patients who require cardiac support in the critical care setting. The ROTASSIST Set with integrated sensor technology will not only provide circulatory support, but will also assist in measuring all essential blood parameters such as oxygen saturation, hematocrit, haemoglobin, and temperature via an integrated venous probe.

The CARDIOHELP System has been available for purchase in many European countries since 2009 and in many US hospitals since 2011. The CARDIOHELP System has been available to prove the quality of life for those in need, by developing high quality products with a passion for problem solving, partnering with the healthcare community, empathizing with patients, and delivering outstanding service.

A blunt chest wall injury is a major source of morbidity and mortality. Rib fractures are painful and can lead to disability if left untreated. Possible benefits of chest wall stabilization are:

- Wean the patient off the ventilator sooner, reducing risk of ventilator associated pneumonia.
- Reduce chest wall instability, leading to increasing lung function.
- Reduce risk of chronic pain associated with non-unions.
- Improve the quality of life for those in need.
- Provide innovative thoracic solutions that improve the quality of life for those in need, by developing high quality products with a passion for problem solving, partnering with the healthcare community, empathizing with patients, and delivering outstanding service.

See more at www.maquet.com

Smaller Incision Sizes:
The plates in the RibLoc system are 4.6 cm, 6.1 cm and 7.6 cm in length and require four to six screws for fixation. This reduces the necessary incision size, and speeds up the procedure (about 5 minutes per plate). In contrast, anterior plates require much larger incision and at least 3 screws on each side of the fracture.

Straightforward, Repeatable Technique:
The plates are available in four widths to match the anterior/posterior thickness of the rib. Color coding of the plates, screws and instrumentation ensures that the correct length of screw is used for the rib while the innovative targeting guides aid the surgeon installing the plates in a straightforward, precise and repeatable manner. All of these features were carefully developed to decrease installation time.
New expandable external support system to improve saphenous vein grafts patency after CABG

Yaniv Ben-Gal, Tel Aviv Medical Center, Tel Aviv, Israel; Vascular Graft Solutions – VGS

E ial vein graft failure occurs in as many as 20% of the cases within the first year post CABG. Late vein graft failure, due to 10 years after surgery, occurs in more than 40% of vein grafts, while only 50% of the patent vein grafts are free of stenotic lesions. Exposure of the vein graft to high arterial radial pressures along with the diameter mismatch between the saphenous vein and the coronary artery are the primary causes associated with arterial hyperplasia (vascular wall concentric thickening), and as a result, accelerated arteriosclerosis and graft failure. It has been shown that vein graft failure significantly increases patients’ risk of death, myocardial infarction or MACE, and may result in cardiac reintervention such as percutaneous coronary revascularization (PCI) and redo CABG operations.

The positioning of external support to vascular grafts has been previously studied and findings from animal experiments demonstrated inhibition of neointimal formation, reduction of atherosclerotic plaques and overall graft thickening reduction as compared to grafts without external support but due to various reasons mainly associated with technical aspects of the device and the preclinical study design, this concept of external support never reached the daily clinical practice. The VGS – FLUENT expandable external support system developed for vein grafts used for myocardial revascularization. It is an expandable, thin and fully adjustable system aimed to prevent reintervention to the normal course or the time span of the procedure. This unique friendly device is designed to provide the vein graft with arterial-like external support, to reduce its wall tension, and increase the inner shear forces and consequently reduce its non-uniform dilation, kink, distortion and to mitigate intimal hyperplasia. The device is inserted into the axillary vein but has plasticity features in radial and axial directions. With this feature the surgeon can manipulate and determine the desired course of the graft from aortic origin to the coronary anastomosis orifice. After performing the distal anastomosis the device is inserted in a compressed manner over the vein graft lye free in its proximal sock. This course of action is repeated for all the vein grafts deployed on other coronary targets. After performing the proximal anastomosis all the stents are stretched open manually (Figure 2). And once the proximal anastomosis is completed the device via the orifice of the device over the vein grafts are performed and the procedure is terminated in a routine manner. In the FLUENT preclinical stage, ten adult sheep underwent off-pump revascularization using vein grafts for each; one to the LAD and the other to the largest anterobasal branch. One graft was supported with the device while the other served as a control. The target vessel was arterialized in every case. The animals underwent immediate and late (12 weeks) angiography and then were sent for histopathologic evaluation. All animals survived the follow-up period. Three sheep groups were set and one was totally occluded, all in the control group (n=0.06). In quantitative angiographic evaluation, there was no difference between groups in the immediate postoperative level of grafts uniformity (co-efficient of variance (CV) of control grafts was 7.39 vs. 5.07 in the supported grafts, p=0.08). At 12 weeks there was a significant non-uniformity in the control grafts versus the supported grafts (CV = 12.12 vs. 3.01, p=0.002 respectively).

Moreover, in histopathologic evaluation the mean neointimal area of the control grafts was significantly larger than in the supported grafts (23.1 mm² vs. 11.1 mm², p=0.02, respectively). There were no differences in the level of inflammation or intimal in- cidential growth in the groups. We believe that the FLUENT expandable external support system may have the potential to considerably improve vein grafts patency rates after surgical myocardial revascularization. The clinical trial is scheduled to take place in the UK in the beginning of fall 2011 under the guidance of Professor David P Taggart. The making of a new heart using living autologous pericardium

The research team (from left): Filippo Naso, Gino Gerosa, Alessandro Gandaglia, Michele Spina – Department of Cardiac, Thoracic and Vascular Sciences at the University of Padova, Italy

X erogenic tissues are currently em- ployed in clinical practice in order to replace heart valve substitutes (bioprothetic heart valves) and for the repair of various damaged tissues (pericardium, gat- tic-mucosa, nerves, cartilage, etc.). Many studies have shown that xenogenic tissues express superficial epitopes such as alpha-Gal (1,4)GlcNAc which is a component of most all mammalian species and is considered a non-self antigen. The lack of a test able to assess the presence and the amount of specific alpha-Gal xenoantigen in tissues utilized for HVB pro- duction, triggered the recent development of a modified ELISA test able to provide such quantitative information. For the first time it is now possible to extend the alpha-Gal assay from investigation limited to iso- lated cells to a whole soft tissue, even if gl- uteraldehyde treated.

In order to expose all the alpha-Gal con- tent, native and decellularized bovine peri- cardiac tissues are subjected to a partial an- draemic digestion using the enzyme papain that preserves tissues' carbohydrate composition and ability to react with the specific alpha-Gal monoclonal an- tibody MR1. The unbound primary antibod- ies are revealed by a secondary HRP-con- jugate. The amount of alpha-Gal is then determined by comparison with a standard- ized course of antigen represented by rab- bit erythrocytes. Decellularization of the tis- sues is obtained by a procedure combining non-ionic and ionic detergents, followed by enzymatic digestion of nucleic acids. Com- mercially available bioprosthetic heart valves were processed with a defatification pro- tocol (under patient) prior to testing of the whole undigested tissue, in order to evalu- ate only the superficial reactive alpha-Gal residues, either in the manufacturing in gluta- raldehyde non-specific epitopes. Native bo- vine pericardium contains 1.14 ± 2.2*10¹² alpha-Gal epitopes while tested bioprosthe- ses featured different amount. The investi- gated HBVs exhibited a non-negligible ex- pression of reactive epitopes, which was comparable among valves, accounting to 19.8 % ± 2.7 of those exposed by native pericardium.

For the first time it was possible to as- sess the amount of alpha-Gal xenoan- tagens following chemical shielding of the epitope as well as in decellularized tissues for the manufacture of heart valve prosthesis, by assessing the efficiency of xenogene- ic cell removal.

Further studies will be carried out applying this ELISA assay as a quality control test to all commercially available heart valve bioprothe- stheses. The new method to determine the presence of alpha-Gal residue on heart valve xenografts

Gino Gerosa – Professor of Cardiac Surgery, University of Padova Medical School, Chief Cardiac Surgery Unit and Director Transplant Program, Padova, Italy

A recent study by Cheung4 concluded that living untreated pericardium implanted in descending aorta will become retracted and fibrinous, thus support the earlier observation that it is not suitable to make heart valve. However, cardiac surgeons had used living pericardium for dec- ades, especially in congenital heart surgery. Therefore, we believed that it is possible to use live pericardium to make a better heart valve.

In our research, we used fresh liv- ing (untreated) autologous sheep peri- cardium tissue as a base for our biopro- thetic heart valve. The use of heart valve con- struction allows fresh pericardium mounted onto the valve frame with removable central core piece, thus allow for rapid construction of the heart valve. We tested our new heart valves in saline solution for competency. The valves were im- planted into the same sheep using the standard open heart surgery technique. We had successfully implanted our heart valve in 10 sheep - with several designs. Four sheep had completed one year study and the valves were explanted. Our findings suggested that we can make the valve com- petent, the pericardium will not be- come retracted. The histology of the explanted valves demonstrated a living collagen tissue. We believed that it is the pressure effect on compi-
For the past 30 years, Thoratec has been leading the development and innovation of mechanical circulatory support, offering proven device-based therapies that provide a new beginning for patients and their families. As part of our continuing commitment to deliver superior therapies to a broader population of heart failure patients, Thoratec recently acquired the medical business of Levitronix LLC, including the CentriMag® Acute Circulatory Support System, and the PediVAS®, which is designed specifically for acute pediatric support. This acquisition follows a successful strategic partnership between the two companies that began in 2006 and solidifies the company’s position as the leading full-line provider of mechanical circulatory support (MCS) technologies for both acute and chronic patient needs.

We are very excited about the potential for future enhancement of CentriMag and PediVAS as Thoratec brings its wealth of mechanical circulatory support experience to the Levitronix product line. Levitronix and Thoratec have collaborated on the development of the fully magnetically levitated motor technology employed in the groundbreaking HeartMate® III left ventricular assist device (LVAD), which is currently in preclinical testing. Additionally, we intend to expand the use of magnetically levitated bearingless technology to other circulatory support applications, enhancing our ability to provide you with the broadest range of circulatory support technologies to treat your patients. Thoratec remains committed to developing advanced medical technologies to improve patient survival and quality of life. We are aggressively pursuing continued advancements in MCS technology and look forward to working with you to deliver lifesaving therapies for your advanced-stage heart failure patients.

*CAUTION: Investigational device. Limited by United States law to investigational use.

**HeartMate III is in development and not approved for use.

References

One of the valve designs

HeartMate III LVAD

PedIVAS and CentriMag pumps

Advancing the state of the art in mechanical circulatory support

Gary Burbach
President and CEO, Thoratec Corporation, Pleasanton, California

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Pavilion 1 Booth #1.16
Pavilion 2 Booth #2.25

*References published data from separate studies which may involve different patient populations treated in centers. See the label and PI for specific information about conditions, contraindications, adverse events, warnings, and precautions. New studies demonstrate increased survival. David J. Farrar; PhD.
EACTS to partner with Oxford University Press

A new publisher

The EACTS have signed a new publishing agreement with Oxford University Press (OUP). From January 2012, OUP will be publishing the Association’s three journal titles: European Journal of Cardio-Thoracic Surgery (EJCTS), Interactive Cardio-Thoracic Surgery (ICVTS), and Multimedia Manual of Cardio-Thoracic Surgery (MMCTS).

The move to OUP will bring the three titles under the same roof. This will allow for a more coordinated and effective publishing programme and allow the journals to be further developed for the benefits of the EACTS members and the wider cardio-thoracic surgery community worldwide.

Oxford University Press, as a department of Oxford University, shares the same goals as learned societies and publishers with over 110 learned societies from across the globe including the European Society of Cardiology, British Society for Rheumatology, and the Infectious Diseases Society of America. OUP understands the requirements of organisations such as the EACTS, in particular the need to not only publish the latest research, but also to meet the needs of society members.

This new partnership will allow us to develop the titles to be further developed for the benefit of the EACTS members and the wider cardio-thoracic surgery community worldwide.

A new chapter

“We are all very excited about this new partnership,” the Editor-in-Chief of EJCTS and ICVTS, Professor Friedhelm Beyersdorf explained: “The move to Oxford Journals marks a new exciting chapter for the three titles of the European Association for Cardio-Thoracic Surgery. In working with Oxford University Press we have a strong partner on our side with a long tradition of publishing excellence. This partnership will help to further strengthen our publications for the benefit of our authors, society members, and readers.”

A new look

To mark this new era, a new modernised look for the journals is being unveiled. As pictured here, there will be new covers for both EJCTS and ICVTS from 2012, while the MMCTS will have a new logo to define its brand.

The same excellent member benefit for you

As EACTS members, you will continue to receive your journals in the post as usual, and will also have online access through the CTNet portal as you currently have.

The European Perfusion Registry: A work in progress

The importance of clinical registries as a tool for observing clinical practice has been well documented and registries are one of the most important methods in collecting meaningful ‘real world’ data. Cardiac surgery has been at the forefront of establishing databases and utilizing data for patient risk stratification purposes, as well as benchmarking outcomes. Although there are numerous European cardiac registries, currently, there is no established European-wide perfusion registry.

“Different European countries are in different stages of establishing some kind of national registry. Some countries like Spain, the Scandinavian countries, Belgium and probably others, already have an extended form of a registry, but so far, no reports or publications have been produced from these databases,” said Luc Puis, Belgium, co-founder of the European Perfusion Registry (EPR). “Other European countries are on the verge of setting up a registry, or have no data collection at all, or it should be on a centralised level. To avoid that all European national organisations should need to go through the time-consuming process that is inherent with the set-up of such a registry, and to enable uniform data collection with the possibility of pre-operative risk-stratification and postoperative outcome measurement, the idea of an EPR was born.”

Dataset

He explained that the data currently being collected is heterogeneous between the different countries and consists mostly of procedural, descriptive data, which only allows for enumeration of procedures, materials and techniques. No risk-stratification or outcome can be measured. The aim of the EPR is to collect meaningful data that can be utilized to facilitate risk stratification of the patient data, as well as benchmark outcomes against international standards.

Eduards ThoruPort systems is proud to offer the broadest range of products designed specifically for small incisions. With peripheral cannulation, intra-aortic occlusion, specialized techniques for myocardial protection, and long-shafted instruments, ThruPort systems provide you with all necessary devices for minimal incision valve surgery.

Minimal incision valve surgery (MIVS) approaches provide excellent outcomes, comparable to traditional sternotomy, as well as significant surgeon and patient benefits. With fewer products in the incision site, providing surgeons with excellent visualization and a virtually bloodless, unobstructed operative field, Edwards ThoruPort systems are redefining MIVS.

Through peripheral cannulation, Edwards Lifesciences MIVS approach, enabled by ThruPort systems, offers excellent visualization of cardiac structures through a virtually bloodless, unobstructed operative field so you can repair or replace the valve through the smallest incision possible.

With this approach, you can consider all isolated valve patients—including reoperations and those contraindicated for traditional sternotomy—because it provides safe and reproducible options for cardiopulmonary bypass, global myocardial protection and intra-aortic occlusion.

Patient satisfaction is improved and outcomes are enhanced when the least invasive approach possible is used in heart valve surgery. Patient benefits of MIVS include:

- Shorter hospital stays
- Less time in the ICU and on a ventilator
- Faster return to work or routine activities
- Less discomfort and pain
- Reduced blood loss
- Less surgical trauma and risk of complications
- Improved cosmesis

For surgeons who understand the value of utilizing the smallest, least invasive incisions, Edwards Lifesciences is the leading partner that aligns surgeons’ desires with their expertise by providing the broadest range of customizable solutions for structurally heart disease.

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Europe, USA, Japan, Singapore, Brazil, China, Switzerland, and France.
The existing dataset has been developed by a few perfusionists (see below) who looked at existing databases including the International Consortium for Evidence-based Perfusion (ICEBP) and existing national datasets. The idea is to create a body within the organization that would act as a scientific advisory board that would consist of perfusionists, cardiac surgeons and anaesthetists.

**Surgical involvement**

Puis said that a parallel perfusion database embedded in the existing adult database of EACTS would be a ‘win-win’ situation for both groups of clinical practitioners. For the surgeons, the additional collection of perfusion data to the existing surgical data will certainly add value and broaden the scope of parameters that will increase the quality of the database. From a perfusionists’ perspective, advantage could be taken from the fact that much data is already being collected, thereby avoiding unnecessary double data collection. “This is a unique chance to bring together two disciplines of care practitioners that work so closely together and we would welcome establishing such collaboration with the surgical community,” he added.

The incentive of creating a European registry is that the numerous national societies and associations would not have to go through the cumbersome process of setting up a database. “Ideally, we would like to have a registry contact for each country to encourage participation and the national associations can play a crucial role in providing a link between the registry and the centers.”

The aim of the European Perfusion Registry (EPR) is the collection of data from extracorporeal circulation procedures of patients undergoing cardiac surgery. Collection and analysis of this data will allow comparison of techniques, conduct of perfusion and outcomes from different cardiopulmonary bypass procedures. The data will enable risk stratification and support us in finding the optimal strategies to perform cardiopulmonary bypass in general, and also in specific subgroups of patients who are increasingly exposed to higher morbidity and mortality.

“Over time, we hope with the involvement of the surgical community, we can improve the quality of care, by benchmarking existing practice against evidence-based guidelines and recommendations, and thus defining the optimal treatment that is needed for patients on cardiopulmonary bypass,” concluded Puis.

Currently, next to Puis, three perfusionists and one cardiac surgeon are involved in the EPR: Pia Sprogoe from Denmark, Else Nygreen from Norway, and Ian Johnson and Tim Jones, both from the UK.

A website with more information will be available soon.

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At HeartWare, we’re passionate about what we do, because we believe our transformative technology is raising the bar in design and clinical outcomes, and therefore, enhancing standards in the field of mechanical circulatory support therapies for heart failure. We take pride in the expanding global acceptance of our technology, with more than 1,300 HeartWare® Ventricular Assist System implants in more than 20 countries around the world.

HeartWare is committed to delivering the exceptional, allowing heart failure clinicians to offer innovative, high-performing and safe therapies to their patients, who in turn are able to realize their lives’ full potential.

We hope you enjoy the 25th Annual EACTS Meeting, in beautiful Lisbon, Portugal. To learn more about HeartWare, please visit us at booth 1.34.
Floor plan

Stand | Company Name
--- | ---
2.02 | A&M Medical Corporation
1.04 | AATS – American Association for Thoracic Surgery
2.45 | Abbott Laboratories
1.45 | Acute Innovations LLC
1.72 | Andoor NV
1.11 | Asapans Medizintechnik GmbH
2.23 | AstraZeneca R&D Material
1.62 | Atricure Inc
1.60 | Atrium Europe BV
2.42 | B Braun Surgical SA
1.63 | Baxter Healthcare SA
2.38 | Berlin Heart GmbH
1.51 | Biomet Microlaparoscopy
2.46 | BracePlus/Slimstones BV
2.37 | California Medical Laboratories Inc
2.14 | Cardia Innovation AB
1.37 | CardioMed BV
1.07 | Chase Medical
1.27 | Circus Inc
2.04 & 2.05 | Cook Medical
1.53 & 1.59 | CorMatrix Cardiovascular Inc
2.11 | Coronado Inc
2.03 | Cordiven Deutschland GmbH
2.20 & 2.26 | Cryolife Europa Ltd
1.03 | CTNet
1.01 | Derthia Clinical Systems
2.09 | Doctors Research Group Inc

Main Foyer
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St Jude Medical: Dedication to Education

St. Jude Medical is dedicated to developing medical technologies and services that put more control into physicians’ hands while reducing the risks inherent in medical device procedures. To this end, St. Jude Medical has increased its focus on physician education, providing more opportunities for health care providers to gain advanced experience with St. Jude Medical technologies outside of the patient-care setting.

The St. Jude Medical Advanced Technology Centers demonstrate the company’s commitment to physicians as they seek to improve patient outcomes and lower risks. With practical, hands-on curricula on advanced topics in heart valve replacement and repair, vascular closure and electrophysiology, the St. Jude Medical Advanced Technology Center provides a place where physicians and fellows can come together to share and learn from each other.

The first St. Jude Medical Advanced Technology Center opened in 2008 in Brussels, Belgium and has since trained more than 3000 physicians with the help of thought leaders, physician faculty and under the supervision of course directors who are able to share best practices in an open, welcoming environment. Soon after, a second center opened in Austin, Texas USA and a center has been opened this spring in Beijing, China to be followed by one in Tokyo, Japan before the end of 2011.

“The St. Jude Medical Advanced Technology Centers provide an excellent forum for physicians to learn through hands-on experiences and by sharing their clinical experience in a small group setting,” said Denis Gestion, president of the St. Jude Medical International Division. “This allows physicians to gain valuable insight for improved patient care and helps to reduce the learning curve that might be involved with such procedures.”

The programs are designed so that physicians in each stage of their career can learn topics from a fundamental understanding of a particular therapy to the use of advanced, game-changing technologies. The course content is the responsibility of the independent course director. This person is a medical specialist and such has an in-depth understanding of the steps necessary to mastering the use or application of a specific therapy.

For Cardiac Surgeons, The St. Jude Medical Advanced Technology Center in Brussels offers the following programs:

Cardiac Surgeon Curriculum: A three module curriculum covering an Aortic, Mitral and Advanced and Future Technologies module, under the course direction of Prof. Dr. Thorsten Wahleen, Germany, Prof. Dr Anna Dziepek-Ler, Germany and Prof Ruggero De Paulis, Italy.

European Valve Repair Group workshops: These workshops, featuring live case transmissions, are organized a.o. In Milan, Lyon, Brussels, London and Homburg Saar, under faculty supervision of the EVRG group and cover different levels of education in Valve Repair.

During the EACTS 2011 the St. Jude Medical Advanced Technology Center will exhibit several education opportunities.

Monday, October 3rd: At the Training village physicians will have opportunity to work on porcine hearts and focus on advanced mitral repair techniques in collabora- tion with the European Valve Repair Group.

Registrations can be done at the SIM Training Village, Room 3-4.

Tuesday, October 4th: On Tuesday the wetlab sessions are organized to enhance the valve implantation technique on small aortic root.

Registrations can be done at the SIM Training Village, Room 3-4.

Wednesday morning October 5th: A St. Jude Medical industry sponsored wet lab session, inviting junior surgeons on surgical sugges- tions for small aortic roots and basic mitral valve repair techniques.

Room 1.07: Registrations can be done through the EACTS Registration desk.
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The St. Jude Medical Training Village

Monday 3 October, 08:45–17:30  
Tuesday 4 October, 08:45–17:30  
Rooms 0.03–0.04–0.05
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- Respect rather than resect  
  Prof. Volkmar Falk | Zurich, Switzerland

- V-Chordial – Sutureless adjustable neochordae implantation  
  Dr. Francesco Maisano | Milan, Italy

- The NeoChord Procedure - beating heart implantation of neochordae  
  Dr. Joerg Seeburger | Leipzig, Germany

- The future of minimally invasive and transcatheter leaflet repair, the role of the neochordae  
  Dr. Michael Mack | Dallas, TX, USA

- Panel discussion

Make sure you don’t miss this interesting Lunch Symposium  
Auditorium 6 | Monday, October 3rd 12:45-2:00 pm