



In this issue

4 Driving after cardiac surgery: Mechanical and neurocognitive considerations



12 Is it time to determine EuroSCORE II risk category boundaries?

14 To lobectomy or not to lobectomy? That is the question...

30 Modified reverse aortoplasty versus extended end-to-end anastomosis

32 Impact of sarcopenia on elderly elective total arch replacement



36 Robot-assisted thymectomy in Myasthenia Gravis

42 Work-life balance makes us better doctors

46 Physiological growth potential of a tricuspid valve ECM

‘Neulich nachts in Houston’

Monday’s Presidential Address offered a chance for Friedrich-Wilhelm Mohr to share his perspectives as EACTS President, his professional journey, as well as a few of his personal insights gleaned over more than 40 years of dedication to the field.

He was introduced with kind words from EACTS Vice-President Miguel Sousa Uva, who gave a short biography detailing Professor Mohr’s professional and personal milestones in life – accolades, it seems, which are as far-ranging as they are impressive. Stepping up to the podium, Professor Mohr had one key message running throughout his speech: we owe a lot to those who support us – both personally and professionally – in all of our endeavours.

“ The title of my speech is: ‘Neulich nachts in Houston’. You may wonder what this means!
I stand here today, as the president of EACTS, at the end of a long, exciting, beautiful and fulfilling professional journey as a surgeon. I would like to share some parts of this journey with you.

Last fall, I was invited to participate in the AATS board meeting in Houston, by my close friend and AATS president, Joseph Coselli. When I arrived in Houston, after a long flight, late in the afternoon I was extremely tired and headed up to the bar to have a beer and a burger.

On the way back to my room, all of a sudden, I was approached by Professor Song Wan from Hong Kong in the elevator.

He asked me directly: ‘What will be your presidential address?’. My immediate response was: ‘I have no ideal’. This got me thinking and even dreaming all night, but I just could not find a suitable answer. I woke up in the middle of that night, and remember being in a similar hotel when I was a resident myself, and memories came flashing back to my mind, memories of more than 40 years.

So, the title of my presidential address ‘Neulich nachts in Houston’ represents a very special occasion or turning point in my professional life. ‘Neulich’, which is a German word, can mean the other night, recently, yesterday, the day before yesterday, or it can be a whole time frame. For me it represents a whole time frame, starting 40 years ago at a night in Houston, when I was 25 years old. I visited the Texas Heart Institute to watch Denton Cooley and Michael DeBakey perform surgery.

At that time, cardiac surgery in Germany was still in its early days. But the pioneering work in the field, the work



of Dr Cooley and Dr DeBakey, took place in Houston.

This was well emphasised by Hans Borst in his honoured guest lecture ‘Hands across the Ocean’ at the AATS in 1985. He referred to the period before the Second World War, when American surgeons used to visit Germany to learn thoracic surgery. It was particularly Professor Mikulicz in Breslau who trained many American surgeons. His famous OR from 1897 is still the same. I had the chance to visit it recently together with Marian Zembala. However, in the seventies and eighties, German surgeons visited the United States for advanced training in cardiac surgery – so did I.

Last fall, in 2015, exactly 40 years later, I visited Houston again – not as a resident, but as the president of the EACTS.

This made me realise that I somehow started my whole journey in cardiac surgery in Houston, in the presence of those great leaders and visionaries of that time, who got me further interested in surgery and curious on how to advance the field, how to make progress, how to move forward and on how

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Pathoanatomic findings and treatment in hypertrophic obstructive cardiomyopathy surgery: the role of mitral valve

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Hypertrophic obstructive cardiomyopathy (HOCM) is the most frequently inherited cardiovascular disease (prevalence in the general population of 1/500) which is characterised by significant left ventricular hypertrophy, especially in the inter-ventricular septum, combined with small-volume cardiac cavities. The transaortic surgical septal myectomy is the most commonly used technique to treat HOCM, and is associated with low operative morbidity and mortality and reduction of the outflow gradients. The 0.4% (17/3695 patients) composite operative mortality from five major high-volume centres in North America [Mayo and Cleveland clinic, Tufts medical Center (Boston), Toronto General (Ontario) and Mount Sinai-St.Luke's and Roosevelt (New York)] highlights the role of dedicated HOCM units. The involvement of the mitral valve in the pathophysiology of HOCM has been addressed as systolic anterior motion (SAM)-related left ventricle out flow tract (LVOT) obstruction. Hypertrophic cardiomyopathy mitral malformations include leaflets elongation and a wide array of malformations of the papillary muscles (PM) and chordae that can be detected by transthoracic and transoesophageal echocardiography and by cardiac magnetic resonance.

Because they participate fundamentally in the predisposition to SAM, they have increasingly been repaired surgically. Twenty-seven

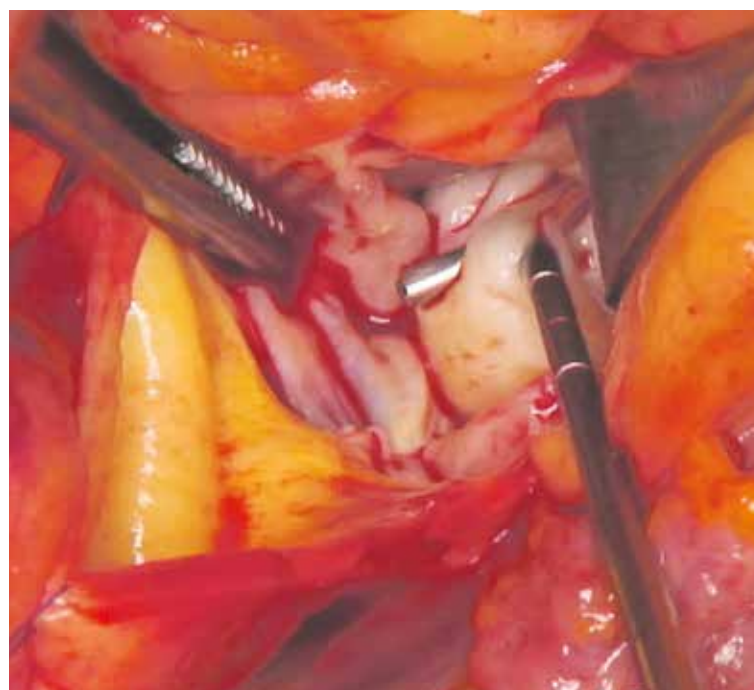


Figure 1. Secondary chordae thickened and retracted anchoring the anterior leaflet of the mitral valve to the septum were identified and resected.

consecutive patients who underwent HOCM surgery at IRCCS-ISMETT from 2007 to 2016 were retrospectively reviewed in order to assess the role of the mitral valve (leaflet, chordae and PM) in the LVOT obstruction and the results of the surgical treatment. Indications for operation included patients with severe symptoms unresponsive to or intolerant of optimal medical therapy with LVOT pressure gradients greater than or equal to 50 mmHg (measured with Doppler echocardiography either under resting conditions and/or with provocation, preferably

utilizing physiologic exercise). Secondary chordae tendineae tractioning the anterior mitral leaflet to the interventricular septum, and systolic anterior motion were detected in the majority of the patients. Anomalous, hypertrophied, and fused PM with muscularis trabeculae hypertrophy were also commonly observed. Four patients had posterior leaflet redundancy. Secondary chordae, PM, and muscularis trabeculae resection, and PM splitting and elongation were added variably to septal myectomy. Nine procedures on mitral valve leaflets were performed. Long-term follow up

was 4 ± 2.8 years. There was no hospital mortality, and NYHA classification, LVOT gradient, mitral valve regurgitation and septum thickness were significantly reduced after surgery.

The mitral valve substantially contributes to LVOT obstruction in patients with HOCM. Thus, surgical correction in addition to extended myectomy is recommended during surgery. Surgeons with expertise in mitral valve anatomy and extensive repair techniques, guided by a dedicated team for planning the proper operative strategy, can help guarantee the best operative results.

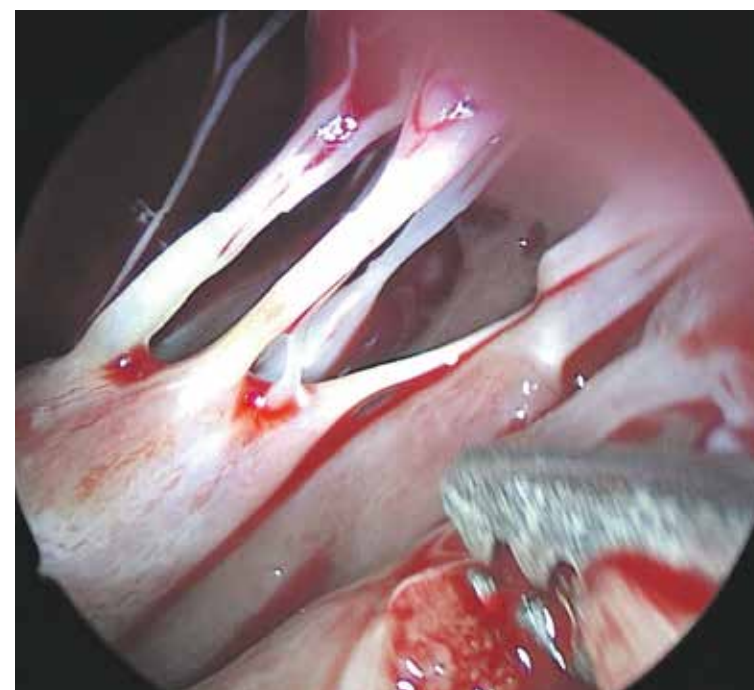


Figure 2. Hypertrophy of the papillary muscle and secondary chordae thickened.

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Congenital | Professional Challenge | Management of coarctation in newborn and infants

Modified reverse aortoplasty versus extended end-to-end anastomosis in surgery for coarctation of aorta: a prospective randomised study

Ilya Soynov, Igor Kornilov, Alexander Bogachev-Prokophiev and Alexander Karaskov Novosibirsk State Research Institute of Circulation Pathology, Siberia, Russia

Currently there are different approaches to surgery for coarctation of aorta with distal aortic arch hypoplasia. One of the most preferable procedures is the modified reverse aortoplasty technique. This approach excludes the use of foreign materials, preserves the possibility of native aorta growth, and potentially reduces the rate of late complications.

We made a prospective randomised study of 54 neonates and infants with a mean age of 65.5 days (IQR 12; 94), with coarctation of the aorta and distal aortic arch hypoplasia. Patients were divided in two groups by surgical approach: modified reverse aortoplasty with subclavian flap (n=27), and extended 'end-to-end' anastomosis technique (n=27) (Figure 1).

There were 2 hospital deaths, 1 from each group, caused by the development of necrotising enterocolitis in low-weight immature neonates both. The follow-up period was 25

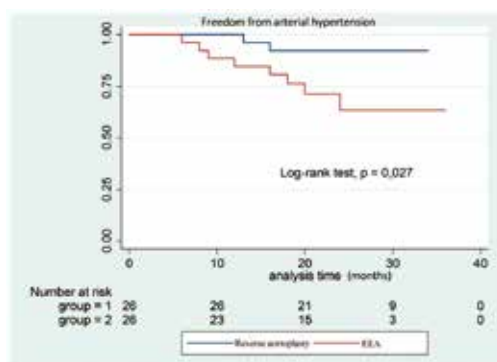
Figure 1. Surgical technique: A – modified reverse aortoplasty with subclavian flap. B – extended 'end-to-end' anastomosis.



The Paediatric Cardiac Surgery Department, Novosibirsk State Research Institute of Circulation Pathology, Siberia, Russia.

(21; 30) months. Recoarctation of the aorta developed in 1 (3.8%) case after modified reverse aortoplasty, and in 2 (7.7%) patients

Figure 2. Kaplan-Meier freedom from arterial hypertension (where EEA refers to extended 'end-to-end' anastomosis).



after extended anastomosis. The only risk of recoarctation evidenced was low weight (OR (95% CI) 0.016 (0.001-0.51), p=0.047). All cases of recoarctation were successfully treated by balloon angioplasty. The most common late

Figure 3. The aortic aneurysm after modified reverse aortoplasty with subclavian flap technique.



complication was residual arterial hypertension that was developed in 2 (7.7%) patients in the reverse aortoplasty group, and in 8 (30.8%) patients in the 'end-to-end' anastomosis group (p=0.03) (Figure 2). Risk factors for arterial hypertension included endocardial fibroelastosis (OR (95% CI) 211.8 (4.4; 10.13), p=0.007) and pre-coarctation aortic wall rigidity (OR (95% CI) 28.5 (2.3; 3.42), p=0.032). We identified 2 cases (7.7%) of distal aortic arch aneurysm in the modified reverse aortoplasty group (p=0.15); risk factors haven't been established, but aneurysm in these cases was probably due to a weakness of the subclavian flap arterial wall (Figure 3).

Modified reverse aortoplasty with left subclavian artery flap allows for a reduced rate of residual arterial hypertension at mid-term follow up; however, the potential risk of distal aortic arch aneurysm requires further study.

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Cardiac | Rapid Response | Beyond lines and clips

Epicardial clip occlusion of left atrial appendage during cardiac surgery provides optimal surgical results and long term stability

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Different techniques of surgical left atrial appendage (LAA) occlusion are routinely used during cardiac surgery procedures. The most common techniques are ligation, resection, suture closure, stapler resection, and epicardial clip occlusion. Criteria for complete LAA occlusion are usually lack of communication (flow) between the LAA and left atrium proper as well as no residual LAA stump greater than 1 cm. Besides the surgical methods of LAA occlusion, different types of catheter devices are available in clinical practice. The Watchman LAA occlusion device (Boston Scientific) is perhaps the most frequently implanted and clinically tested device of the percutaneous closure devices commercially available. Experience and trials (such as PROTECT-AF, PREVAIL) suggest that Watchman is not inferior to permanent anticoagulation in thromboembolic event prevention and is associated with less

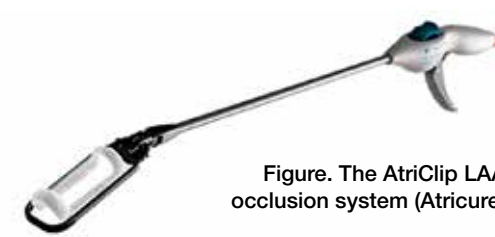


Figure. The AtriClip LAA occlusion system (Atricure)

frequent bleeding complications than permanent anticoagulation. However, percutaneous devices are associated with a clinically significant rate of serious periprocedural complications and are suitable for only a well-defined group of patients with suitable anatomy.

The purpose of our study was to evaluate long-term results of epicardial clip occlusion in patients undergoing a cardiac procedure. 101 patients (mean age 65±6 years, 47 females) undergoing cardiac surgery procedures with epicardial clip occlusion of the left atrial appendage were enrolled in the study. The clip was placed from sternotomy, thoracotomy or from a thoracoscopic approach. For LAA occlusion the AtriClip or the second generation of the clip – the AtriClip Pro (Atricure, USA) was utilised. The

implantable device is a self-closing external LAA occluder available in 4 sizes, from 35 mm to 50 mm. It consists of two nitinol springs joined with two titanium members covered with Dacron polyester fabric. The parallel compression planes symmetrically put pressure of 2–8 psi over the entire contact area. The clip is attached to a delivery system, from which it is released after transoesophageal echocardiography (TEE) confirmation of closure is complete.

Postoperative variables, such as thromboembolic events, clip stability, and endocardial leakage around the device were examined by TEE and/or computed tomography. Early mortality rate in this series was 8.9% due to non-device related reasons. Perioperative success of clip implantation was

Cardiac | Abstract session | Coronary artery bypass graft: Minimally invasive and hybrid revascularisation

Hospital and mid-term results of prospective randomised controlled trial MICSREVS - Minimally Invasive Cardiac Surgery REvascularization Strategy

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The invasiveness of coronary artery bypass grafting remains considerable and has not decreased in over 40 years. The development of new minimally invasive methods in coronary surgery builds on the aspiration to optimise the results of surgical treatment of patients with coronary heart disease, especially those with an increased risk of complications associated with extracorporeal circulation, sternotomy and aortic manipulations. Minimally invasive multi-vessel coronary

revascularisation methods are still being developed and established, which is why basic comparative

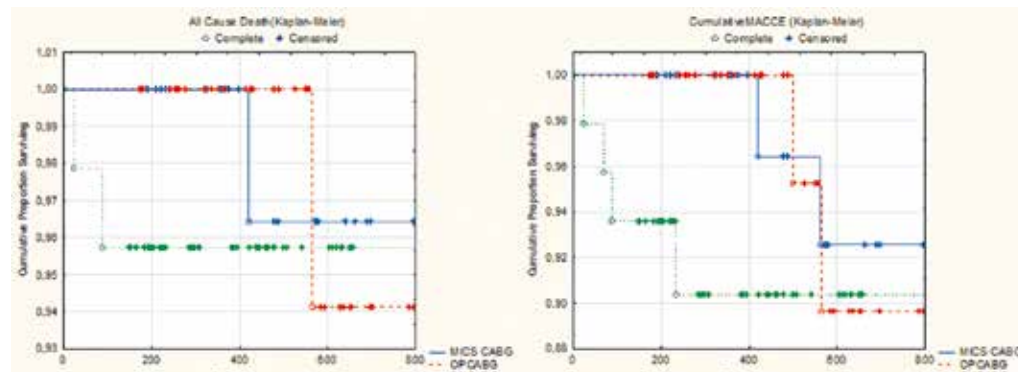


Figure. Comparison of mid-term outcomes in terms of all cause death and MACCE

studies of immediate and, even more so, long-term results are a matter of present and future research.

We evaluated hospital and mid-term results of the prospective randomised controlled trial (RCT) MICSREVS (Minimally Invasive Cardiac Surgery REvascularization Strategy), which compared the effectiveness of multivessel small thoracotomy coronary artery bypass grafting (MVST-CABG) versus off-pump (OPCABG) and on-pump coronary artery bypass grafting (ONCABG).

The RCT MICSREVS was started in January 2014. In accordance with the trial design, 150 patients were included, divided into 3 groups of 50 people. In group I, the MVST-CABG strategy was directed to perform multivessel arterial revascularisation via a left minithoracotomy on the beating heart, using the aortic no-touch technique. In control groups II (OPCABG) and III (ONCABG), conventional surgery was performed via median sternotomy. Inclusion criteria were comprised the following: multivessel coronary artery disease; II-IV Canadian Cardiovascular Society functional class of angina; patients at 1 month after acute myocardial infarction. Exclusion criteria comprised: previous CABG, single-vessel disease, need for emergency revascularisation. Randomisation was carried out by the blind method ('envelopes'). Primary outcome measures were accepted death from any cause and major adverse cardiac and cerebrovascular events (MACCE). During the hospitalisation period, as well as 12 and 36 months following primary myocardial revascularisation, were planned as the control points.

Patients' clinical characteristics did not differ significantly between treatment groups. Intraoperative blood loss in the MVST-CABG group was less than that in the OPCABG group and ONCABG group ($p < 0.001$) (Table). The mean blood loss within the first day was lower in the MVST-CABG group compared with OPCABG ($p = 0.003$) and ONCABG groups ($p = 0.007$). The number of blood transfusions was lower in the MVST-CABG group compared with group II ($p = 0.015$) and group III ($p < 0.001$). The postoperative ventilation time was lower in the MVST-CABG group compared with ONCABG group ($p = 0.007$). On average, patients with MVST-CABG demonstrated an associative trend toward shorter intensive care unit stay ($p = 0.053$), new onset atrial fibrillation ($p = 0.081$) versus ONCABG patients, and fewer deep wound infections versus OPCABG patients ($p = 0.079$).

The postoperative length of hospital stay (surgical department) was shorter in the MVST-CABG group [6.5 (5.0; 8.5) days] versus OPCABG group [8.5 (8.0; 10.0) days] ($p = .5$) days versus OPCABG group [8.5 (8.0; 10.0) days] ($p = .5$) days versus OPCABG group [8.5 (8.0; 10.0) days] ($p = 0.003$), and versus ONCABG group [8.5 (8.0; 10.5) days] ($p = 0.008$). Median time to return to full physical activity was markedly shorter in the MVST-CABG group [14 (7; 21) days] than in the OPCABG group [56 (42; 77) days] and ONCABG group [56 (44; 79) days] ($p < 0.001$). No significant differences were observed in rates of severe in-hospital events ($p > 0.05$), cumulative midterm survival, and freedom from MACCE ($p > 0.05$) (Figure).

In conclusion, the aortic no-touch technique in full arterial MVST-CABG was as safe as OPCABG and ONCABG, showing good results comparable with results of conventional surgery at in-hospital point of RCT MICSREVS. MVST-CABG is associated with fewer wound infections, less perioperative blood loss, shorter postoperative ventilation time and hospital length of stay, shorter time to return to full physical activity, and greater improvement in the physical health component of quality of life. MVST-CABG can be applied to the majority of multi-vessel patients saving the effectiveness during mid-term follow up.

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