

Page for the General Public

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(on behalf of the Editorial Office)

The following pages summarize and review this issue's articles for an audience without a background in medicine or research.

Frank A. Lederle: Distinguished Lecture given at the opening of the 5th International Meeting on Aortic Disease, Liège, Belgium (September 15, 2016)

In his lecture, *Frank Lederle* begins by telling the story how he became a researcher in aortic aneurysm disease (diseases of the aorta, the body's main vessel) even though he is not a surgeon. His interest was sparked by the fact that aortic aneurysm disease was one of the top 15 causes of death in the USA. He started his research with an aneurysm screening project and later lead investigations on surgery on patients with small aneurysms. They showed that the benefit of surgery in patients with aneurysms of the aorta in their abdomen does not outweigh its risks in patients with aneurysms of diameters of below 5.5cm.

He continues by sharing what he learned on conducting successful research in his career as a scientist. His first advice is to choose

a relevant, but easily explained question. A good choice is to question unproven facts that are nevertheless accepted in the research community. He furthermore recommends to keep a close eye on the study to make sure everything goes according to plan. Once the study is done, actually writing the article and submitting it to a journal is important. Whatever is written should be defensible by data, and as an investigator, one should stand to his results even if they do not agree with one's opinion. He especially warns of close financial relationships with the industry to avoid being financially forced to support a certain theory. The purpose of research should be in discovery, not proving a preexisting theory. Finally, the speaker underlines the importance of mentoring young investigators and to remember one's own mentors.

Nketi I. Forbang et al.: "Lower Aorto-iliac Bifurcation Position and Incident Cardiovascular Disease: The Multi Ethnic Study of Atherosclerosis (MESA)"

The aorta, the body's main artery, descends from the heart in

the chest downwards through the abdomen where it splits in two vessels supplying the legs with blood. This furcation is called "aorto-iliac bifurcation". With age, it moves downward relative to the spinal column. The distance from a given location in the spine to the furcation (AIBD) increases thus with age. The AIBD has been associated with risk factors for cardiovascular disease. In their study, *Forbang et al.* investigated a possible association of AIBD and actual cardiovascular events such as heart attack or stroke and overall death. The investigators measured the AIBD in 1511 participants and observed if the abovementioned events occurred during the following years. They came to the conclusion that the AIBD is associated with risk factors for cardiovascular disease, but is not itself a risk factor for cardiovascular events or death of any cause.

Case Reports

Murat Ugurlucan et al.: "Treatment of Dacron Graft Dilatation with Endovascular Stent Grafting"



Dacron grafts are used in a variety of procedures as a prosthesis to replace or stabilize a vessel. Complications such as infection or thrombosis are well known. Graft dilatation however is rare. *Murat Ugurlucan et al.* present a case of a patient who had a significant dilatation of the graft four years after it was used for a bypass creating a bridge from the aorta to both arteries in the groins. The dilatation occurred in the abdominal part of the prosthesis. Furthermore, the femoral artery in his left groin was dilated. To cover the dilated graft, another tubed stent graft prosthesis was inserted through the vessel in the left leg and positioned in the dilated prosthesis. The dilated vessel in the left groin was surgically removed and replaced by a second prosthesis. The patient recovered without complications. Dilatation of Dacron prostheses is very rare and usually caused by graft failure. Minimally invasive treatment strategies are often an appropriate solution.

Altung Tuncer et al.: "Frozen Elephant Trunk and Antegrade Visceral Debranching in the Surgical Treatment of Type B Aortic Dissection: an Alternative Method"

In aortic dissection, the patient develops a disruption of the layers of the vessel wall of the aorta, the body's main vessel. In Type B dissection, the disruption involves the descending part of the aorta that runs downwards from the chest through the abdomen. In a best-case scenario, no intervention is necessary. If complications such as rupture or impaired blood flow to the spinal cord or inner organs arise, surgery or a

minimally invasive (interventional) procedure in which a stent graft prosthesis is inserted in the aorta might be necessary. *Altung Tuncer et al.* report a case of a patient with complicated type B dissection whom they treated with a combined surgical and interventional approach. The aorta was partly replaced with a tubed graft prosthesis and partly stabilized from the inside with a stent graft prosthesis. Furthermore, a "debranching" was performed, in which two arteries that provide blood flow to abdominal organs were connected to the healthy aorta with another tubed prosthesis to provide them with blood flow. The patient's recovery was prolonged but he was discharged home in good condition. This case report describes a surgical technique that avoids some potential complications of the common treatment methods, and allows both repair of parts of the dissected aorta as well as a separate connection of abdominal vessels to the healthy aorta. However, the presented technique consists of a major open surgical procedure and therefore carries significant risks as well.

Paolo Bosco et al.: "Iatrogenic Supravalvular Aortic Stenosis"

Bosco et al. report a rare case of a patient who had undergone surgical repair for acute type A aortic dissection, a life-threatening disease in which the patient develops a disruption of the layers of the vessel wall of the aorta, the body's main vessel. To reinforce the aortic wall during surgery, a felt strip was used. After surgery, this felt strip inverted and caused a narrowing of the vessel. The narrowing led to

turbulences in blood flow which damaged the patient's red blood cells. The patient had to undergo reoperation to repair the narrowing and recovered without further complications.

Yuanjia Zhu et al.: "Combined Transapical Transcatheter Aortic Valve Replacement and Thoracic Endovascular Aortic Repair for Severe Aortic Stenosis and Arch Aneurysm"

Zhu et al. report a case of a patient who had a severe calcification and narrowing of his aortic valve, which constitutes the gate between the heart and the aorta, the body's main vessel. Furthermore, his aorta had a dilation (aneurysm) in its transverse part before descending to the abdomen. Because the patient was too sick for open surgery, a minimally invasive approach was chosen. In a first step, the vessel providing blood flow to the left arm was bypassed. On the subsequent day, the main procedure was performed. A small incision was made in his chest above the tip of the heart. A folded aortic valve prosthesis was inserted through the tip of the heart and expanded in the position of the aortic valve. Through the same incision, a tubed graft prosthesis was inserted in the aorta to cover the aneurysm. The vessel supplying the brain that leads along the left side of the throat was stabilized with a stent graft prosthesis as well. The patient recovered without major complications. Imaging studies after surgery showed a stable aorta and adequate valve function. This case shows that combined minimally invasive valve and endovascular procedures can be an alternative to surgery in high

risk patients with aortic valve disease and disease of the initial part of the aorta.

Katherine Hebler et al.: "David-V Procedure in a Patient with Aortic Dilation and Competent Quadricuspid Aortic Valve: Are Genetics to Blame?"

A quadricuspid aortic valve is a rare anomaly of the aortic valve, which is the gate between the heart and the aorta, the body's main vessel. Usually, the aortic valve has three valvular cusps. The quadricuspid variant has four valvular cusps and has been associated with aortic dilatation (aneurysm). However, it is still a matter

of debate if the dilatation is caused by genetics or by blood flow abnormalities. *Hebler et al.* describe a case of a patient with a quadricuspid aortic valve and a family history of aortic disease who had a dilatation of his aorta while the valve itself was functioning well. The dilated aorta was replaced in a procedure called "David V" in which the native aortic valve is sutured into a graft prosthesis that replaces the aorta. The diseased aortic wall was examined and showed signs of a specific type of aortic wall degeneration. The authors therefore suspect that patients with a quadricuspid aortic

valve might have a genetic predisposition for aortic aneurysm even if the valve is functioning well. They therefore recommend regular screening for aortic dilatation in this patient group.

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