

## 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.

*Sotiris C. Stamou et al.: "Axillary Versus Femoral Arterial Cannulation During Repair of Type A Dissection? An Old Problem Seeking New Solutions."*

Patients who undergo surgery for acute type A aortic dissection, a potentially life threatening disruption of the wall layers of the body's main artery, need to be put on cardiopulmonary bypass while the surgeon operates on the heart. During cardiopulmonary bypass, the patient's circulation is supported by a heart-lung machine, allowing to stop the heart for the procedure. To lead the blood from the heart-lung machine into the body, a large cannula (or tube) has to be inserted into one of the major vessels of the body. In acute type A dissection, the most commonly used vessels are the femoral artery in the groin and the axillary artery close to the axilla. There is an ongoing debate which of these vessels should be preferred, and a variety of previous studies have

shown opposing results. *Sotiris C. Stamou et al.* conducted a study on 305 patients that were operated on for acute type A dissection. They concluded that the choice of vessels does not influence survival of the patient neither in the first days after surgery nor at long-term. The more relevant factors that influenced survival in their study were instability of the patient before surgery, length of the procedure, age and postoperative complications such as stroke. The authors therefore conclude that the vessel for cardiopulmonary bypass should be chosen on an individual basis, depending on surgeon preference, vessel calcifications and other risk factors. As every study, the study has certain limitations. Therefore, further research is necessary to reach a valid answer to the question.

*Alexander E. Curtis et al.: "The Mystery of the Z-Score"*

*"The mystery of the Z-Score"* by *Curtis et al.* is a state of the art review on a measuring method called Z-score, which can be calculated and applied to a variety of measurements. It shows how

much a certain measurement deviates from the average of a normal reference population. Z-scores are an alternative to standard diameter measurement e.g. when evaluating the size of the aorta, the body's main artery. Since the body surface area can be included in the calculation, it is especially useful when evaluating the aorta of children. Children grow quickly, and growth of their aorta needs to be put in relation to their body size. However, the Z-score has limitations as well, including measurement errors, different body surface area formulas and uncertainties regarding the correct normal reference values and their changes with age. Ethnical and geographical differences need to be taken into account as well. Therefore, Z-scores need to be applied with caution to these limitations. Future studies are needed to investigate the abovementioned limitations, especially focusing on the natural history of the Z-score in normal and pathological states to improve its reliability in clinical decision making.



## Case Reports

*Taufiek Konrad Rajab et al.: "Rapidly Expanding Infectious Aortic Aneurysm Caused by Perforated Colon Cancer"*

Taufiek Konrad Rajab et al. describe a case of a patient with colon cancer, whose cancer had caused rupture of the bowel wall, causing infectious stool to spill into the abdomen and cause infection. The cancerous lesion and the ruptured bowel were surgically removed and the infection was treated with broad spectrum antibiotics. Within two weeks of surgery, the patient developed a dilatation of the abdominal aorta, the part of the body's main artery that runs through the abdomen. The dilatation (or aneurysm) showed signs of infection and had to be rapidly removed to prevent rupture. Since the surgery discontinued the aorta, blood flow to the legs was restored with a bypass from the axillary artery which usually only provides blood flow to the arm. The patient recovered without further complications. The described case shows how rapidly an infectious aneurysm can evolve, warranting expeditious surgery.

*Kaspar Kisis et al.: "Chimney technique with Nellix EndoVascular Aneurysm Sealing System in a Patient with Single Kidney and Juxtarenal Abdominal Aortic Aneurysm."*

Kaspar Kisis et al. describe a case of a patient with an aneurysm (dilation) of his abdominal aorta, the part of the body's main artery that runs through the abdomen. The aneurysm was very close to a vessel branch that supplied the patient's only kidney. Since it was

extremely important not to put the patient's only kidney at risk, a special technique was employed to treat the aneurysm. The device used is called *Nellix EndoVascular Aneurysm Sealing System* and consists of two tubed prostheses that are inserted into the aorta via a vessel in the groin. The aneurysm sac around these prostheses is obliterated by a special polymer that is filled into a bag surrounding the prostheses. The branch supplying the kidney was stabilized by a "chimney technique", which consist of another tubed prosthesis inserted alongside the other prostheses into the branch to keep blood flow into the branch open. The patient recovered without. This technique is of interest because a chimney prostheses often causes blood to leak along the prosthesis into the aneurysm sac. The system employed in this case obliterates the aneurysm sac and therefore reduces the risk of leakage.

*Davide Carino et al.: "Early Coronary Thrombosis without ST-Segment Elevation Following Repair of Acute Aortic Dissection."*

Davide Carino et al. describe a case of a patient who underwent surgery for acute type A dissection, a potentially life threatening disruption of the wall layers of the body's main artery. Three days after surgery, her clinical state deteriorated and she was found to have an obstruction of one of the coronary vessels that supply the heart muscle with blood and oxygen. A coronary angiography was performed, a technique in which a contrast medium is injected into the coronary vessels in order to

find a potential obstruction. An occlusion was found and treated with a coronary stent, a little tube prosthesis that keeps open the occluded vessel. The complication significantly prolonged the patient's hospital stay, but she was discharged home in good condition after one month. This case report underlines that an occlusion of a coronary vessel after surgery for acute type A aortic dissection is a serious complication that needs early recognition and expeditious treatment.

*Angela Pucci et al.: "Intimal Sarcoma of the Descending Aorta Mimicking Aortitis"*

Angela Pucci et al. describe a case of a patient who was thought to have aortitis, a local infection of the aorta, the body's main artery. His clinical presentation, laboratory test and imaging suggested an infection of the aorta which was surgically removed. However, surgery revealed that he was suffering of a very rare tumor called intimal sarcoma, which originates from cells of the inner layer of the aortic wall. After surgery, the patient was treated with chemotherapy. Initially, he did well, but a few months later the tumor relapsed and was found to have spread to his lungs. Intimal sarcomas are rare and difficult to diagnose. Even though several imaging techniques and special laboratory tests exist, the diagnosis is often made only after surgical resection. Several treatment options including surgery and chemotherapy exists, but usually, survival of patients with intimal sarcoma is limited.

*Khaled E. Al-Ebrahim et al.: "Long-Term Survival After Composite Me-*

*chanical Aortic Root Replacement"*

In the category "Images in Cardiac Surgery", *Al-Ebrahim et al.* report a case of a patient with a giant ascending aortic aneurysm. An ascending aortic aneurysm is a dilatation of the body's main artery directly at its origin at the heart. In this patient, it led to a leakage of the aortic valve, the gate between the heart and the aorta, and had already weakened the heart muscle. The aorta was replaced with

a "mechanical composite graft", which consists of a tube prosthesis attached to a mechanical valve prosthesis. The patient recovered without complications and did very well during the following ten years. The authors show computed tomography images (a method to produce 3D X-Ray images of the body) of the patient's aorta before surgery and after 10 years. This example shows that a mechanical composite graft can be a long-last-

ing surgical solution in cases of ascending aortic aneurysms.

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