

## 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.

*Natalia D. Gavriluk et al.: "Asymmetric Dimethylarginine in Patients with Ascending Aortic Aneurysms"*

Ascending thoracic aortic aneurysm is a disease in which patients develop a potentially life threatening dilatation of their body's main vessel, the aorta, in their chest right at its origin at the heart. There probably is a variety of causes for ascending aortic aneurysm, many of them unclear. *Natalia D. Gavriluk et al.* studied the level of a molecule called "Asymmetric dimethylarginine (ADMA)" in the blood of 86 patients with ascending aortic aneurysm and 18 healthy patients. ADMA might have impact on the function of the inner layer of the vessel wall. They concluded that ADMA was higher in patients with larger aortic diameters, in smokers, and was associated with kidney function. It is important to note that a statistical association does not mean that there is a causative relation between both facts. Since this small study was a pilot

study, further investigations are necessary to understand the role of ADMA in aortic aneurysms.

### Case Reports

*Aurélien Roumy et al.: "Spontaneous Regression of a Large Iatrogenic Dissection of the Ascending Aorta"*

*Roumy et al.* report a case of a patient who underwent a procedure to open up one of the vessels that supplies the heart muscle with blood. During this procedure, a wire was inserted into the heart. This wire caused a potentially life threatening disruption ("dissection") of the layers of the wall of the aorta, the body's main vessel. The patient was stable and had no symptoms. Because the tear was very small and it was suspected that it might seal spontaneously, it was decided not to perform surgery. After three days, an imaging study showed regression of the vessel disruption. There were no further complications during the following year. The authors therefore suggest that certain types of procedure-related aortic dissec-

tion can be treated medically without surgery.

*Derrick Y. Tam et al.: "Conservative Management of Extensive Iatrogenic Aortic Dissection"*

*Tam et al.* report a similar case to the case presented by *Roumy et al.* regarding the treatment of an aortic dissection, a disruption of the layers of the wall of the aorta, the body's main artery, which has been caused by a procedure to treat calcifications of the coronary arteries. The coronary arteries supply the heart muscle with blood and their occlusion can cause a heart attack. To open the occlusion, a small tubed stent graft can be inserted in the vessel with the help of a wire that is introduced through a vessel in the groin or wrist and advanced through the aorta. In rare cases, this procedure can damage the wall of the aorta. Usually, aortic dissection is treated surgically to prevent rupture or other complications. In the presented case, it was decided to refrain from surgery and imaging studies during follow-up showed resolution of the dissection. *Tam et al.* therefore suggest, similar



to Roumy *et al.*, that some procedure-related dissections can be treated without surgery.

*Taylor Thomas et al.: "Transient Aortic Intramural Hematoma Complicating Transaortic Valve Replacement"*

Thomas *et al.* report a case of a patient who underwent transaortic valve replacement, a technique in which a folded heart valve prosthesis is inserted through a puncture in a vessel in the groin and then expanded in the position of the aortic valve, which serves as the gate between the heart and the aorta. In this case, the patient developed a hematoma in his aortic wall (called "intramural hematoma") shortly after the procedure. An intramural hematoma is usually treated surgically with aortic replacement, but in this case the surgeons decided to wait. A follow-up imaging study showed resolution of the hematoma, and no further operation was necessary. While this patient did well, the appropriate treatment strategy in intramural hematoma as a complication of a procedure is still unclear. It has to be decided on an individual basis depending on the patient's stability, risk factors and the extent and location of the hematoma.

*Mohammad A. Zafar et al.: "Early Spontaneous Resolution of an Iatrogenic Acute Type A Dissection"*

Zafar *et al.* discuss a case similar to those reported by Tam *et al.* and Roumy *et al.* In the presented case, a patient developed an aortic dissection (a disruption of layers of the vessel wall of the body's main artery, the aorta) after a minimally invasive procedure aiming to reopen an occluded coronary vessel.

Coronary vessels supply the heart muscle with blood, and their occlusion can cause a heart attack. The entry point of the blood flow was inside the coronary vessel, which is why it was decided to occlude that tear with a small tubed stent prosthesis. The occlusion of the entry tear stopped further blood flow between the vessel layers and led to resolution of the aortic dissection on imaging after one month. This case similarly highlights the relevance of a non-surgical treatment of these patients, especially if they are high risk surgical candidates.

*John A. Elefteriades et al.: Editorial Comment "Iatrogenic Aortic Dissection: Review of the Literature"*

Since this issue contains four case reports on the treatment of "iatrogenic aortic dissections", this editorial comment provides an overview of the literature that has been published on this subject so far. An "iatrogenic aortic dissection" is an aortic dissection (a potentially life threatening disruption of the layers of the vessel wall of the aorta, the body's main artery), that has not occurred spontaneously but has been caused by another procedure performed on the patient. This can happen for example during cardiac surgery or during a procedure called "percutaneous coronary intervention (PCI)" which is a minimally invasive procedure to open up occluded coronary vessels in the heart to treat or prevent a heart attack. The majority of the studies and case reports suggest that these patients can often be treated without surgery. If the dissection is caused by an injury to a coronary vessel, it is important to

try and seal the injury with a small tubed stent graft prosthesis ("coronary stent") to stop blood flow to the dissection.

*Thierry Carrel et al.: "Simplified Approach to Repair Early Pseudoaneurysm of the Left Coronary Button Following Composite Graft Because of Acute Type A Dissection."*

Carrel *et al.* describe a case of a young patient who had undergone surgery for acute Type A dissection, a potentially life threatening disease in which the wall layers of the body's main artery, the aorta, disrupt. In this case, the dissection involved the origin of the aorta and the aortic valve, which constitutes the gate between the heart and the aorta. During the initial surgery, valve and aorta were replaced with a tubed graft prosthesis that is connected to a heart valve prosthesis. Since the coronary arteries, which supply the heart muscle with blood, arise from the aorta right after the aortic valve, they need to be connected to that tubed graft as well during surgery. In the presented case, the patient was found to have a leakage from one of the connections where a coronary artery was sewn into the graft two months after surgery. He had to undergo reoperation because the leakage could rupture or compress the coronary artery. This surgery is known to be very difficult. Carrel *et al.* report a technique in which they opened the prosthesis and repaired the leakage with stitches from the inside. The patient recovered well and developed no further leakage.

*John A. Elefteriades et al.: Editorial Comment "Minimalist Trans-Aneurysmal Approach to Coronary*

### *Button Pseudoaneurysm"*

This editorial comments on the case report by *Carrel et al.* *Carrel et al.* who reported a case of a patient who had developed a leakage at the site where a coronary vessel, one of the vessels who supply blood flow to the heart, had been attached to a graft prosthesis replacing a diseased aorta (the body's main vessel). This leakage can cause a pseudo-aneurysm, a blood-filled pocket, with poten-

tially dangerous complications, and therefore usually needs surgical repair. In the case described by *Carrel et al.*, the leakage concerned the left coronary button that is difficult to reach during surgery. They opened up the prosthesis and repaired the leakage with stitches from the inside. *Elefteriades et al.* describe and illustrate a technique for repair in case the leakage concerns the right coronary artery. The right coronary artery

suture line is easier exposed and can be reached and repaired from the outside by opening the pseudo-aneurysm.

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**Cite this article as:** Damberg A. Page for the General Public. AORTA (Stamford). 2016;4(6):251-253. DOI: <http://dx.doi.org/10.12945/j.aorta.2016.16.088>