

Surgical treatment of aortic pseudoaneurysm after endovascular repair

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SOUHRN

Pseudoaneurysma hrudní aorty je raritní komplikace kardiokirurgické operace nebo výkonů na hrudní aortě. Prezentujeme případ pacienta, u kterého vznikla falešná výduť v distální anastomóze jeden rok po operaci podle Bentalla z indikace disekce aorty. Endovaskulární výkon s implantací okluderu byl úspěšně proveden. Nicméně za tři roky se objevila nová falešná výduť z levé koronární tepny, u níž byla indikována chirurgická resekce.

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ABSTRACT

Keywords:

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Thoracic aortic false aneurysm (TAFE) is a rare complication after cardiac surgery or after procedures on the thoracic aorta. We present a case report of a patient after Bentall's procedure for aortic dissection who developed an aortic pseudoaneurysm in distal anastomosis one year after surgery. Endovascular repair with occluder implantation was successfully performed. Three years later another false aneurysm from the left coronary artery occurred which had to be resected in open surgery.

Introduction

Thoracic aortic false aneurysm (TAFE) is a dilation of the aorta that originates due to the disruption of all wall layers. It is contained by the periaortic connective tissue and surrounding mediastinal structures.¹ It typically occurs as a rare complication of cardiac surgery² or after traumatic³, inflammatory, or infectious⁴ event. Patients are often asymptomatic. Their progression is unpredictable, they usually expand rapidly and can cause compression or invasion of the surrounding structures.^{1,5,6}

Case report

A 57-year-old Caucasian male with a history of Bentall's procedure for aortic dissection before twelve years, with a history of ischemic coronary artery disease, and hypertension, was undergoing regular follow-up for asymptomatic aortic pseudoaneurysm at the Institute for Clinical and Experimental Medicine in Prague. Bentall's procedure with mechanical valve conduit predispo-

sed the patient to anticoagulation therapy with warfarin. A Gelatine-Resorcine-Formaline (GRF) biological glue was used twice during surgery in the aortic root area and on the distal anastomosis.

Aortic false aneurysm in distal anastomosis was first described on the computer tomography (CT) scan one year after Bentall's surgery on the patient's first CT scan postoperatively. The measurements of the leak were 23 × 18 millimeters. The patient did not come to regular follow-up later, the next CT scan was performed after seven years. It progressed to a size of 90 × 80 × 55 millimeters. The finding was suitable for endovascular therapy and the patient underwent a septal occluder implantation in total anesthesia. A transesophageal echocardiogram was performed throughout the procedure for assistance. Arterial access was obtained through the right femoral artery. A 5-French pigtail diagnostic catheter was advanced to the ascending aorta for aortic angiography and displayed the pseudoaneurysm's neck width of 5 millimeters. The deployment was successfully performed. A final aortogram confirmed the location of the septal occluder device with only a small residual leak towards the TAFE cavity.

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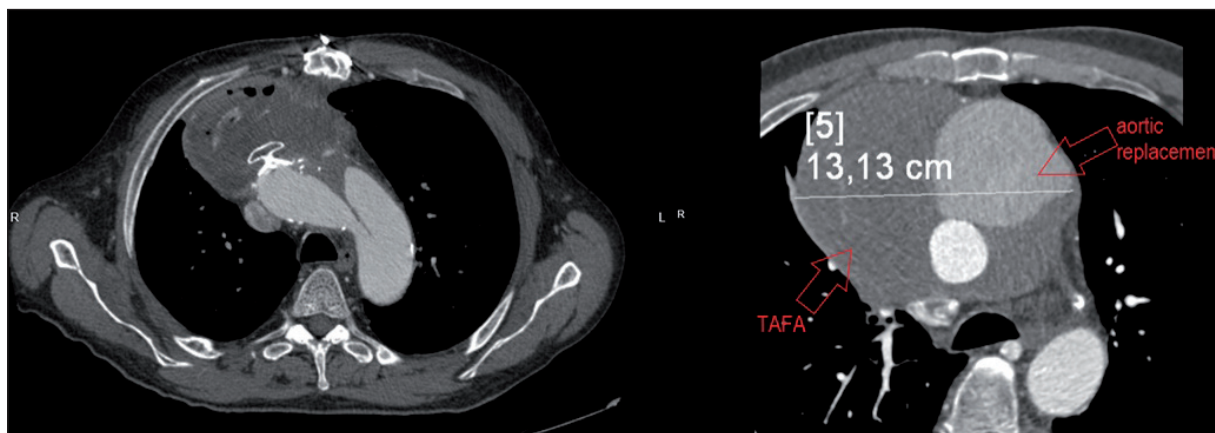


Fig. 1 – CT scan.

During the follow-up, a CT scan performed three years after occluder implantation showed a new false aneurysm from left coronary artery reimplantation with measurements of 110 × 130 × 120 millimeters making an impression of the right pulmonary artery (Fig. 1). The false aneurysm cavity was filled by two-thirds with a thrombus. The patient was therefore indicated for surgical reoperation and aortic pseudoaneurysm closure.

The extramediastinal cardiopulmonary bypass with cannulation of an axillary artery and femoral vein followed by deep hypothermic circulatory arrest to 18 °C was initiated before re sternotomy. After releasing adhesions (Fig. 2) the aortic pseudoaneurysm was opened in circulatory arrest and the thrombotic mass was evacuated (Fig. 3). The leak in the distal anastomosis and the left coronary artery reimplantation was stabilized with PTFE – pledget (Fig. 4). The procedure was uneventful.

The patient was discharged 7 days after the procedure. Clinical follow-up confirmed aortic pseudoaneurysm resolution. Sixteen months after the surgery, the patient is in a good health state with no further complications.

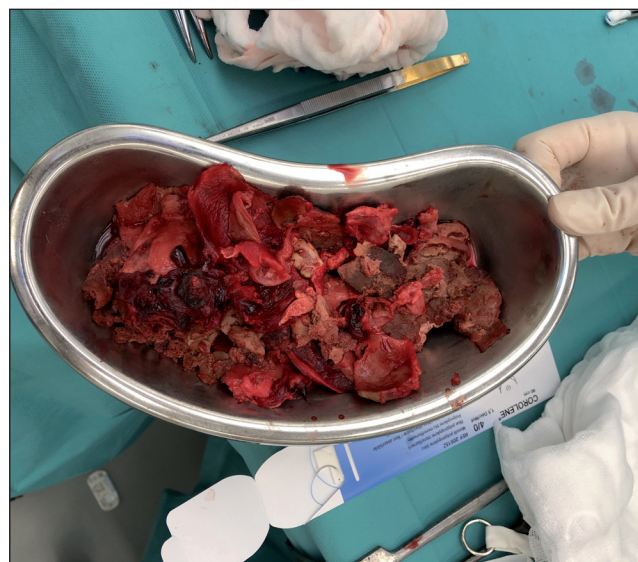


Fig. 3 – Evacuated thrombotic mass.

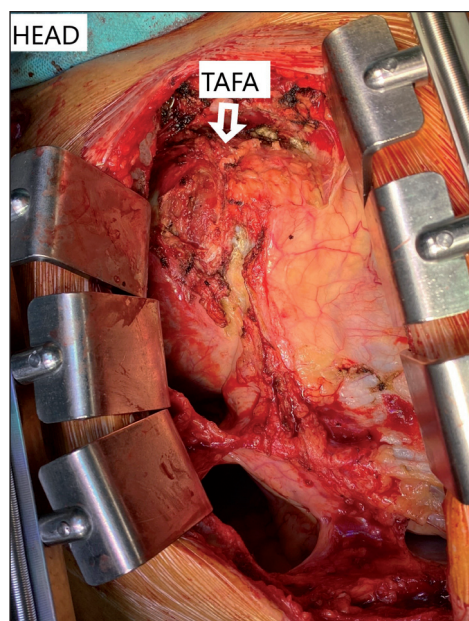


Fig. 2 – Perioperative picture of TAFE.

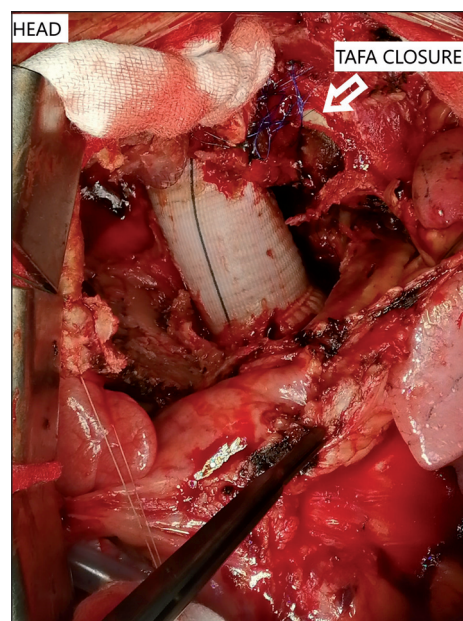


Fig. 4 – Perioperative picture of TAFE closure.

Discussion

All types of aortic false aneurysm treatment are possible including surgical treatment or endovascular repair. The surgical treatment remains the golden standard. Conservative treatment is established in patients with small, stable TAFA or patients unacceptable for reoperation and endovascular repair. The opportunity to avoid open surgery is appealing especially with the recent advance in the field of vascular interventional radiology. Endovascular treatment is preferred as the first choice of treatment if technically and anatomically possible. Complications associated with reoperation are avoided and it presents a smaller burden for the patient.⁷

Redo surgery presents a greater burden on the patient but fortunately, strategies to lower possible risks have been designed.⁸ Therefore, a cardiopulmonary bypass was initiated before re sternotomy, we considered it to be a safe possibility how to avoid profuse hemorrhage. Local repair of suture dehiscence was performed as it poses a smaller risk than radical aortic prosthesis replacement.

Early detection of TAFA during long-term postoperative follow-up, an individually tailored approach of a multidisciplinary team is necessary for favorable treatment outcomes.⁹

Conflict of interest

None.

Funding

None.

Ethical statement

The case report was conducted in accordance with the principles embodied in the Declaration of Helsinki and in accordance with our local statutory requirements.

Informed consent

The patient gave a written informed consent to participate in the study.

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