

Cardiac Imaging

Multiple Aortic Pseudoaneurysms Due to Detachment of the Composite Graft After Bentall Operation

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A 57-year-old woman with a medical history of hypertension and a Bentall operation 4 years previously, for aortic dilatation and severe aortic regurgitation, was admitted with deteriorating dyspnoea. There were no clinical or haematological signs of infection. The echocardiographic examination revealed a dilated and volume overloaded left ventricle (LV) and free inward and outward blood flow along the posterior aspect of the aortic root due to detachment of the composite aortic graft (Figure 1). Urgent computed tomography (CT) angiography confirmed this diagnosis and demonstrated two aortic pseudoaneurysms, a huge one (8 × 11 × 5.5 cm) originating anteriorly, and a smaller one originating posteriorly (5 × 3 × 3 cm) (Figures 2-4). Coronary angiography demonstrated a pseudoaneurysm that was pulsating during systole and normal coronary anatomy. The patient underwent emergency surgery but unfortunately died during the operation.

Pseudoaneurysm of the ascending aorta is a relatively rare and life threatening complication after a Bentall operation.¹⁻⁴ It may originate from proximal or distal anastomosis sites of the graft or from the implantation sites of coronary arteries. Risk factors include suture line tension,

persistent periprosthetic postoperative haematomas, infection, and underlying arterial wall disease.^{1,2} The clinical presentation is variable, with dyspnoea and chest pain being the most common symptoms. Our patient developed gradually deteriorating dyspnoea due to the volume overload of the LV from the backward blood flow (from the pseudoaneurysms' cavities) into the LV during diastole.

The time interval between initial operation and the formation of a pseudoaneurysm ranges from a few months to many years.⁴ Close long-term follow up is required, with an annual CT scan or magnetic resonance imaging,² in order to detect this condition early, since it requires immediate surgical intervention.

References

1. Kouchoukos NT, Wareing TH, Murphy SF, Perrillo JB. Sixteen-year experience with aortic root replacement. Results of 172 operations. *Ann Surg.* 1991; 214: 308-318.
2. Mohammadi S, Bonnet N, Leprince P, et al. Reoperation for false aneurysm of the ascending aorta after its prosthetic replacement: surgical strategy. *Ann Thorac Surg.* 2005; 79: 147-152.
3. Almeida R, Pinho T, Oliveira NP, et al. A case of acute heart failure due to giant aortic pseudoaneurysm with fistulization to the right ven-

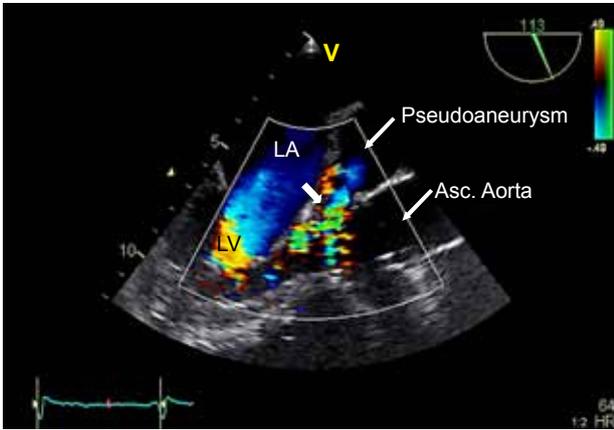


Figure 1. Transoesophageal mid-oesophageal view obtained at 113°, showing the regurgitant flow during diastole from the posteriorly located pseudoaneurysm to the left ventricle. The thick white arrow indicates the detachment point. LV – left ventricle; LA – left atrium; Asc. Aorta – ascending aorta.



Figure 2. Thin-slab multiplanar reconstruction in the coronal plane after contrast administration during multidetector row computed tomography, showing the prosthetic aortic valve (AV) and the contrast-filled space surrounding the detached graft (black arrows).



Figure 3. Oblique axial multiplanar reconstruction, showing the anterior and posterior entry sites (black arrows) of the large anterior and smaller posterior pseudoaneurysm (large and small white arrows, respectively).

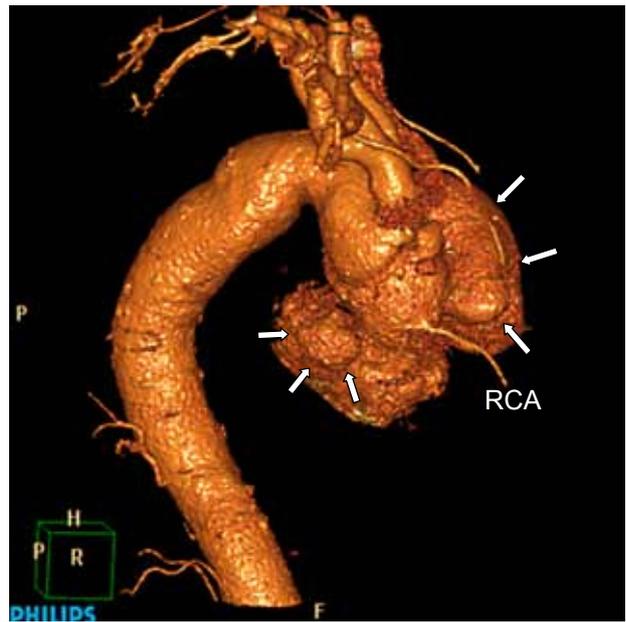


Figure 4. Volume rendering reconstruction of the thoracic aorta as seen from the right side, showing the anterior and posterior pseudoaneurysm (large and small white arrows, respectively). RCA – right coronary artery.

tricle after a modified Bentall operation. *Eur J Echocardiogr.* 2008; 9: 716-719.

4. Dawson D, Clarke NR, Banning AP. Management of the ascending aortic pseudo-aneurysms--a single centre experience. *Int J Cardiol.* 2008; 130: 92-95.