

## Case Report

# Bentall Surgery in a Patient after Aortic Valve Replacement Due to Takayasu Arteritis

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## Case

A 57-years old woman underwent an aortic valve replacement (ATS 23-mm mechanical valve, Medtronic ATS Medical, Minneapolis, USA) for the treatment of aortic regurgitation. She was diagnosed with Takayasu arteritis post-operative pathology and prescribed 5 mg prednisolone per day after surgery. At 61 years of age, she required implantation of a ventricular pacemaker device for the treatment of an atrio ventricular block. At 64 years of age, she started experiencing dyspnea on effort. Echocardiography and contrast radiography revealed severe aortic regurgitation due to a flailed mechanical valve (Figure 1) with aortic root ectasia (annulus, 30 mm; Valsalva sinus, 62 mm; and ascending aorta, 43 mm). She underwent Bentall surgery via reopening of the mid-sternotomy.

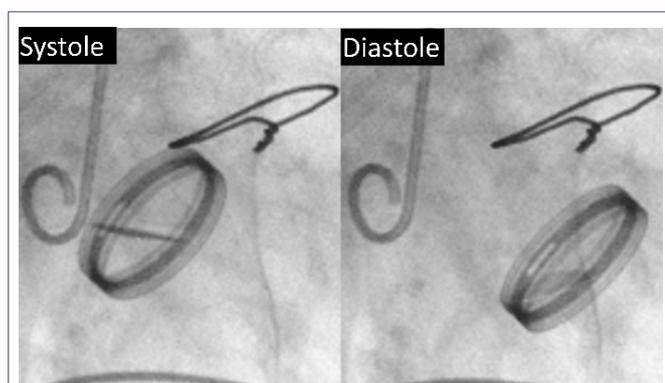
## Surgical findings

On opening the aortic root, we found that the replaced mechanical valve had flailed and dropped inside the left ventricle. The valve was removed and the new mechanical valve (ATS 29-mm) with a composite graft of woven Dacron (Hemashield 32-mm; Hemashield Technology, Japan) was placed. To create the composite

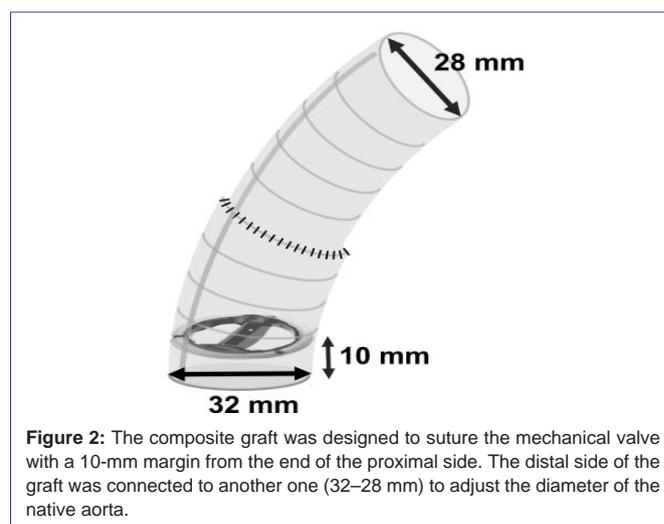
graft, the mechanical valve was sewn with a 10-mm margin from its proximal end (Figure 2). A coronary button was reconstructed by using the Carrel patch method. For the distal side, another 28-mm Dacron graft was connected and the ascending aorta was replaced right before the brachiocephalic artery. Teflon felt was wrapped around the anastomosis between the graft and native vessel. After the aorta was declamped, mitral regurgitation was observed through transesophageal echocardiography, so a mitral valve replacement (ATS 25-mm) was also performed. The total cross-clamping time was 307 minutes, pump time was 347 minutes, and duration of circulatory arrest was 23 minutes. Postoperatively, she was prescribed 20 mg of prednisolone from the day of the surgery that was reduced to 15 mg upon hospital discharge. The steroid therapy has been continuously managed in collaboration with our hospital's Division of Rheumatology. The patient is now in her fifth year after the second surgery, and no signs of complications have been seen to date.

## Discussion

In Takayasu arteritis, which is more common in Asian people, inflammation spreads widely to the aorta and its branches, although they appear to be normal. With long-term steroid administration, in addition to increased inflammation induced by surgical stress, postsurgical valve failure or aneurysm formation has been of concern [1,2]. In this case, the flailing occurred 7 years after the first aortic valve replacement. Since the tissue was assumed to be fragile due to inflammation, we attempted to remove as much of the diseased aortic tissue around the anastomosis by using the skirt implantation technique [3]. Anastomosis of the proximal site was performed inside the left ventricle with interrupted suturing. This might cause intra operative mitral regurgitation; however, a sturdy anastomosis should be preferred to prevent recurrent surgery. Importantly, anti-inflammation therapy, including steroid administration, should be



**Figure 1:** Preoperative radiographic images of the valve during systole (left) and diastole (right) showing that the replaced valve had significantly moved, indicating detachment-induced valve failure.



**Figure 2:** The composite graft was designed to suture the mechanical valve with a 10-mm margin from the end of the proximal side. The distal side of the graft was connected to another one (32–28 mm) to adjust the diameter of the native aorta.

treated in collaboration with an expert in autoimmune diseases in the perioperative period to control the inflammation which is reportedly another key factor for preventing disease progression [4].

## References

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