Isolated aortic root dilatation following sinotubular junction reduction using prosthetic rings

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Abstract

‘Comprehensive Aortic Root and Valve Reconstruction’ technique, which was first introduced in 2005 involves aortic root reduction using prosthetic rings in order to preserve the native aortic sinuses in patients having aortic regurgitation associated with aortic root dilatation. We report a case of isolated aortic sinus aneurysm in a Marfan syndrome patient following the aortic root preserving surgery in the presence of ascending aorta aneurysm and annuloaortic ectasia. Re-operation consisted of aortic sinus resection and replacement with an artificial graft, and coronary reimplantation using a button technique. Close follow-up is essential for patients who underwent aortic root preserving surgery to appropriately manage this kind of complication.

Keywords: Aortic root • Aortic valve repair • Aortic aneurysm • Re-operation

CASE REPORT

A 27-year old, Marfan syndrome male patient presented with marked aortic sinus dilatation. Six years before he underwent replacement of the ascending aorta and hemiarch (Vascutek graft, 24 mm, Renfrewshire, Scotland, UK), sinotubular junction reduction using prosthetic rings (ScienCity Co., Seoul, Korea) and mechanical aortic valve replacement (Edwards MIRA, 25 mm, Edwards Lifesciences, Irvine, CA, USA) for the treatment of annuloaortic ectasia, ascending aorta aneurysm and severe aortic insufficiency (Fig. 1). During the prior operation, reduction in enlarged aortic root was attempted by inserting two prosthetic rings, inner ring (28 mm) and outer ring (38 mm) (ScienCity Co., Seoul, Korea), which were attached to the inner and outer surface of the aortic root, proximal to the coronary ostium. Another 26-mm sized ring was attached to the intima of the sinotubular junction, distal to the coronary ostium. Five years after initial surgery, he underwent thoracoabdominal aorta replacement (from proximal descending aorta to the supra-celiac level) for the treatment of dissecting aneurysm of thoracoabdominal aorta without postoperative complications.

At the current evaluation, the follow-up computed tomography (CT) images revealed an aortic sinus aneurysmal dilatation up to 60 mm in diameter at the level of the aortic sinus between the mechanical aortic valve (Fig. 2) and the prosthetic rings, and hence an elective operation was planned. Intraoperatively, the proximal part of the aortic sinus was severely dilated, leaving only the prosthetic rings attachment site relatively intact in its size. The prosthetic rings were partially detached. Aortic sinus replacement was performed using a 26-mm Hemashield (Boston Scientific, Boston, MA, USA) tube graft. The proximal anastomosis was made at sawing ring of the previously implanted mechanical valve with horizontal mattress sutures. Coronary artery was reimplanted with the coronary button technique. Cardiopulmonary weaning was successfully done. The patient’s condition was complicated with acute renal failure, which was managed with temporary (21 days) haemodialysis. The follow-up CT findings were unremarkable, showing patent sinus graft and reimplanted coronary arteries without flow disturbances. The urine output progressively increased to finally recover normal renal function. The patient was discharged on 38th postoperative day, without complications.

Figure 1: Enhanced computed tomography findings prior to initial surgery. There is a marked dilatation of the aortic root (up to 90 mm).
has been reported so far. In the present case, the reason for the formation of late root aneurysm following the CARV AR procedure has been suggested as the contributing factor of sinus function preservation. In their reports, the rationale to preserve aortic sinus portion with the CARV AR technique in this population is obviously malpractice, and therefore, should not be performed in patients with aortic root dilatation.

A more serious problem lies in that according to previous reports on the CAV AR technique, a significant number of patients who had undergone CARV AR surgery, and aortic re-operation should be done timely according to standard indications.

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REFERENCES


