

Case Report

Aortic Sutureless Bioprosthesis Distortion by Suction of Aortic Vent

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Introduction

In the last three years, the aortic valve replacement by sutureless aortic bioprosthesis is becoming increasingly common like alternative surgical treatment in high - risk patients with severe aortic valve stenosis especially in minimally invasive approach [1,2]. A Sorin Perceval sutureless aortic bioprosthetic valve has valid properties for deployment, reproducibility of the procedures, and hemodynamic results. In literature, many cases of sutureless aortic bioprosthesis dislocation or migration have been described [3,4]. We instead report the first case of distortion of Sorin Perceval sutureless aortic bioprosthesis by the suction of the aortic vent.

Safeguards and Pitfalls

A 69 years old woman was admitted to our Hospital with a diagnosis of symptomatic severe aortic valve stenosis. Preoperative transthoracic echocardiographic findings were: aortic valve area: 0.7 cm², left ventricular outflow tract 2 cm, maximum pressure gradient 68 mmHg, mean pressure gradient 46 mmHg, ejection fraction 70%. Her body surface area was 1.73 cm² and the Euro SCORE II was 0.90 %. Preoperative electrocardiogram evidenced ventricular hypertrophy and signs of overload. Preoperative coronary angiogram, chest X ray, and laboratory findings were normal. After ministernotomy access, setting of Cardiopulmonary Bypass (CPB) by aorto-atrial cannulation and venting in ascending aorta and pulmonary artery, transverse aortotomy was executed. Aortic wall was thin and not calcified. Aortic valve, which had three calcific leaflets, was exposed and removed. A Sorin Perceval M (size 23 mm) was implanted according to the technical recommendations of the manufacturer [5]. After declamping and normal

recovery of left ventricular function, intraoperative Transesophageal Echocardiogram (TEE) showed a massive perivalvular leak at level of non-coronary Valsalva sinus and a severe jet of insufficiency of the prosthesis (Figure 1).



Figure 1: Massive perivalvular leak at level of non-coronary sinus of Valsalva.

Restored the CPB and reopened the aortorrafia, a distortion of the prosthesis has been found. We suspected it was probably caused by aortic vent aspiration (despite it was 2 cm far from the aortotomy), but we were not sure. The aortic prosthesis was deformed but not damaged, so it was necessary to re-prepare it and it was re-deployed. In time of aortic closure, we observed a flashy distortion of the ascending aorta coinciding with the aortic vent suction and, at second intraoperative TEE control, massive perival-

ular leak and prosthetic insufficiency were still present (Figure 2).



Figure 2: Severe jet of insufficiency of the prosthesis due to Perceval prosthetic valve distortion.

After the resetting of CPB and the reopening of the aortorrafia, the same distortion deformation of the prosthesis, certainly caused by suction of aortic vent, has been found. The Sorin Perceval prosthesis was re-prepared and, for the third time, it successfully implanted. The de-airing of left ventricle, under echo control, was performed filling the heart without aortic vent, letting out the air bubbles from the last space of the aortorrafia double running suture before knotting the suture. After removing the aortic vent, the third intraoperative ETT control demonstrated that prosthetic valve was performing properly. During the operation Custodiol HTK Solution® was used for cardioplegia. Total time of CPB was 178 minutes, total time of cross clamping was 132 minutes. Aortic

vent (diameter 9.5 mm) was set to 30 rotations per minute obtaining an aspiration of 780 ml of blood per minute.

Comments

Given this our experience, we suggest to place the aortic vent as far as possible from the area of aortotomia. We also recommend to stop aortic venting when Perceval sutureless bioprosthesis has been placed and not using it for de-airing of left ventricle towards the end of aortorrafia or after the completing of the aortic running suture in order to avoid the distortion of the aortic sutureless prosthesis.

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