



Images in Cardiovascular Disease



Spontaneous Prosthesis Leaflet Detachment and Loss During Aortic Valve Implantation

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Conflict of Interest

The authors have no financial conflicts of
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Author Contributions

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M; Investigation: Papadakis E, Kanakis M;
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A 68-year-old patient with severe aortic valve stenosis underwent valve replacement. Intraoperatively, a 19 mm St. Jude Regent (St. Jude Medical, Minneapolis, MN, USA) mechanical valve was lowered at the aortic annulus following pledgeted stitches. Before the surgeon tied the knots of each stitch and during examination of proper positioning of the valve while gently lifting the leaflets with the tester, one leaflet detached from the pivoting system and was lost through the aortic root (**Figure 1A**).

Since leaflet retrieval through aortotomy was not effective, the cardiopulmonary bypass circuit was converted from single- to double-venous cannulation, and the left atrium was opened at the Sondergaard's groove to investigate the left ventricular cavities of the heart. Transesophageal echocardiography (TOE) was unable to detect the missing leaflet because the heart was arrested. A thorough search revealed the disc stack at the orifice of the right inferior pulmonary vein, adjacent to the left ventricular vent that passed through the right superior pulmonary vein.

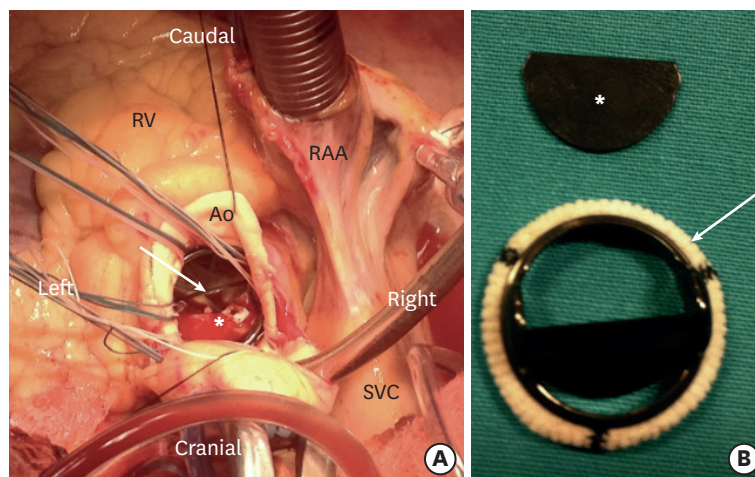


Figure 1. (A) Surgeon's view with the mechanical valve in place, lacking one leaflet (white asterisk). Orientation annotated in image (cranial, caudal, left, right). White arrow marks the one attached leaflet. (B) Explanted mechanical valve with retrieved leaflet (asterisk). Arrow points at the suture ring of the mechanical valve. RV: right ventricle, RAA: right atrial appendage, Ao: aorta, SVC: superior vena cava.

The surgical procedure was accomplished after implantation of a new 19 mm mechanical valve (same type). TOE confirmed a good surgical result. The patient had an uneventful postoperative course.

Meticulous inspection of the explanted prosthesis and leaflet did not reveal fracture of the strut or pivoting system, and no problem was identified regarding the hinge space in the housing of the valve (**Figure 1B**). The dysfunctional prosthesis was sent back to the manufacturer, who provided oral confirmation that they could not find a manufacturing default or proof of potential misuse.

Spontaneous leaflet loss or fracture of a mechanical valve prosthesis is uncommon.¹⁾²⁾ In most reports, a fracture of a leaflet was observed after extraction.³⁻⁵⁾ Overall, outcomes of mechanical aortic valve replacement are excellent.⁶⁾ Although extremely rare, leaflet detachment should be considered, and prompt action is mandatory. No manufacturing default or proof of potential misuse was found in this case.

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