Redo aortic valve replacement due to bileaflet tear of a deteriorated bioprosthesis

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A 76-year-old woman underwent redo aortic valve surgery because of failure of a stented porcine aortic valve bioprosthesis (Conforma, HeartLine Medical, United Kingdom; diameter 23 mm) that had been implanted 10 years earlier.

Full-volume three-dimensional transesophageal echocardiography (Video 1) revealed severe transprosthetic regurgitation due to noncalcific structural valve deterioration with tears in two leaflets (Figure 1, black arrows) of the aortic valve bioprosthesis in the mid esophageal aortic valve short-axis view. In diastole, the cusps prolapsed into the left ventricle outflow tract, causing a large leakage in the prosthesis' orifice (Figure 1, white star), corresponding to severe aortic regurgitation. A prosthetic cusp without a tear, closed in diastole, was also identifiable (Figure 1, white arrow).

Intraoperatively, the deteriorated bioprosthesis was replaced (Carpentier-Edwards PERIMOUNT Magna, Edwards Lifesciences LLC, USA; diameter 23 mm) using standard cardiopulmonary bypass at mild hypothermia. The recovery was uncomplicated and the patient was discharged home on the 12th postoperative day.

Structural valve deterioration is the most important adverse event of bioprosthetic valves and the major complication requiring reoperation. Cusp tears without calcification are related to direct mechanical damage to the collagen structure during functional opening and closure of the cusps. Because mortality for reoperative surgery for structural valve failure is high, various authors recommend periodic clinical and echocardiographic surveillance of the patients to avoid emergency surgery due to advanced ventricular and functional disease.

Figure 1

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