

Images in Cardiovascular Medicine



Early Transcatheter Aortic Valve Failure Accompanied with Leaflet Perforation

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A 69-year-old woman presented with aggravated dyspnea classified as New York Heart Association class IV. She had undergone transcatheter aortic valve replacement (TAVR) with a 26-mm CoreValve (Evolute-R™, Medtronic, NY, USA) 17 months prior to presentation. Two months previously, she had been admitted for acute pyelonephritis. Blood cultures during this period of hospitalization revealed methicillin-susceptible *Staphylococcus epidermidis*. One month previously, she had been admitted again for septic arthritis and had received arthroscopic debridement for the right knee. Transthoracic echocardiography revealed severe transvalvular regurgitation (regurgitation volume >51 mL, effective regurgitant orifice area=0.4 cm²) without any vegetation (**Figure 1** and **Supplementary Video 1**). Transesophageal echocardiography (TEE) also revealed eccentric transvalvular regurgitation without abnormal leaflet thickening (**Figure 1** and **Supplementary Video 2**). A contrast filling defect, in the region where the regurgitation flow was observed using TEE, was observed in computed tomography (**Figure 1**). Based on the echocardiographic findings, the patient was diagnosed with transcatheter heart valve failure.¹⁾ We decided to perform surgery not only for the correction of transvalvular regurgitation, but also for the benefit of cankerous tissue

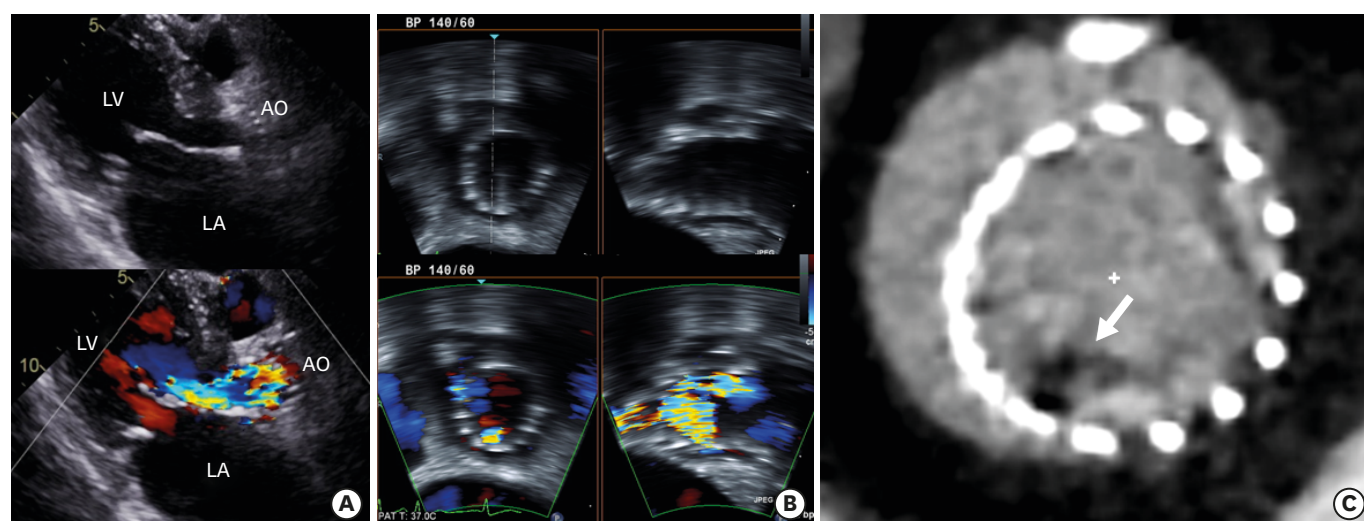


Figure 1. Pre-operative images. (A) Transthoracic echocardiography showed eccentric severe aortic regurgitation with a highly turbulent jet. (B) Transesophageal echocardiography showed eccentric severe aortic regurgitation without vegetation and abnormal leaflet thickening. (C) Computed tomography showing contrast filling defect (white arrow) within a CoreValve-prosthesis in axial view.

AO = aorta; LA = left atrium; LV = left ventricle.

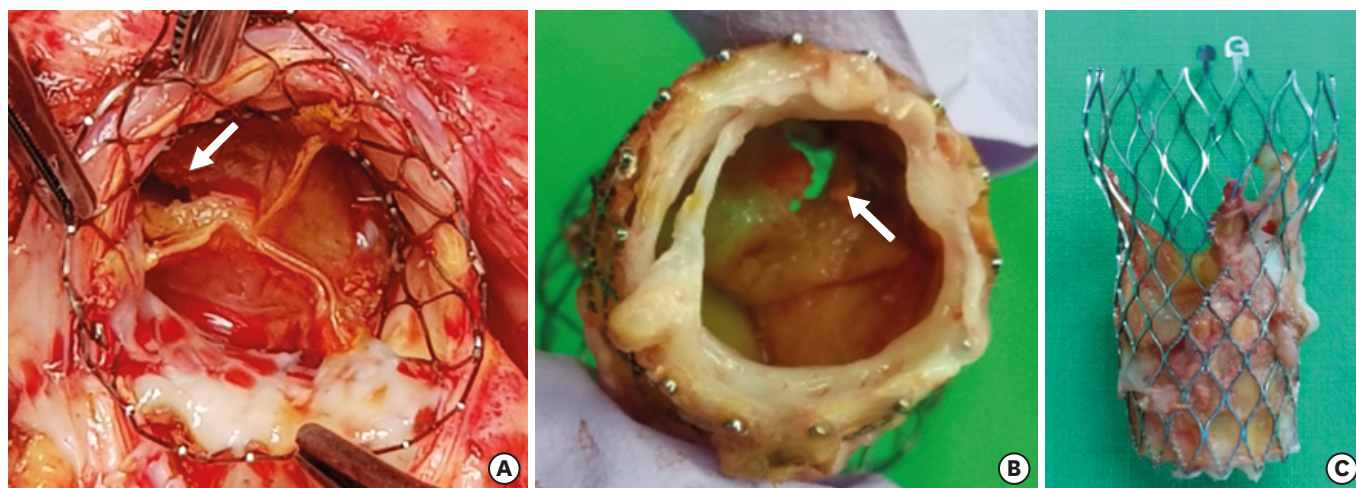






Figure 2. Intraoperative view. (A) The intraoperative view shows right coronary cusp perforation (white arrow) without vegetation and incomplete endothelialization. (B) Cusp perforation can be seen from the other side. (C) Incomplete endothelialization of the metallic portion of a CoreValve-prosthesis.

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Conflict of Interest

The authors have no financial conflicts of interest.

Author Contributions

Conceptualization: Lee JH, Park JS; Data curation: Lee JH; Formal analysis: Lee JH; Investigation: Lee JH; Methodology: Lee JH; Writing - original draft: Lee JH; Writing - review & editing: Lee JH, Nam JH, Park JS, Lee DH.

removal. The intraoperative view showed definite right coronary cusp perforation (**Figure 2**). Histopathological analysis revealed structural valve deterioration, as well as inflammatory cell infiltration with evidence of endocarditis.

The patient's condition could be categorized as possible prosthetic valve endocarditis after TAVR according to the modified Duke criteria.¹⁾ Infective endocarditis after TAVR is reportedly accompanied with vegetation, abscess formation, leaflet thickening, or periannular complications.²⁾ However, the patient discussed in this report presented with early cusp perforation with severe transvalvular regurgitation, which might have been the mechanism for early valve failure after TAVR.

SUPPLEMENTARY MATERIALS

Supplementary Video 1

Transthoracic echocardiography.

[Click here to view](#)

Supplementary Video 2

Transesophageal echocardiography.

[Click here to view](#)

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