Korean Circ J. 2022 Nov;52(11):851-852
https://doi.org/10.4070/kcj.2022.0196
pISSN 1738-5520·eISSN 1738-5555

kcj
Korean Circulation Journal

Images in Cardiovascular Medicine

Perioperative Detection of Paravalvular Leak After Sutureless Aortic Valve Replacement

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Received: Jul 20, 2022
Revised: Aug 9, 2022
Accepted: Aug 24, 2022
Published online: Oct 12, 2022

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Funding
The authors received no financial support for the research, authorship, and/or publication of this article.

Conflict of Interest
The authors have no financial conflicts of interest.

A 65-year-old woman presented to hospital with progressive exertional dyspnea. Transthoracic echocardiography (TTE) revealed severe aortic stenosis with estimated aortic valve area 0.85 cm^2 (aortic valve annulus diameter: 23 mm). Minimally invasive cardiac surgery with sutureless aortic valve (perceval valve size M) replacement (SU-AVR) via right mini-parasternotomy was performed. After replacement, transesophageal echocardiography (TEE) revealed paravalvular leak (PVL) near the right coronary cusp (**Figure 1A-C**). Then, stent

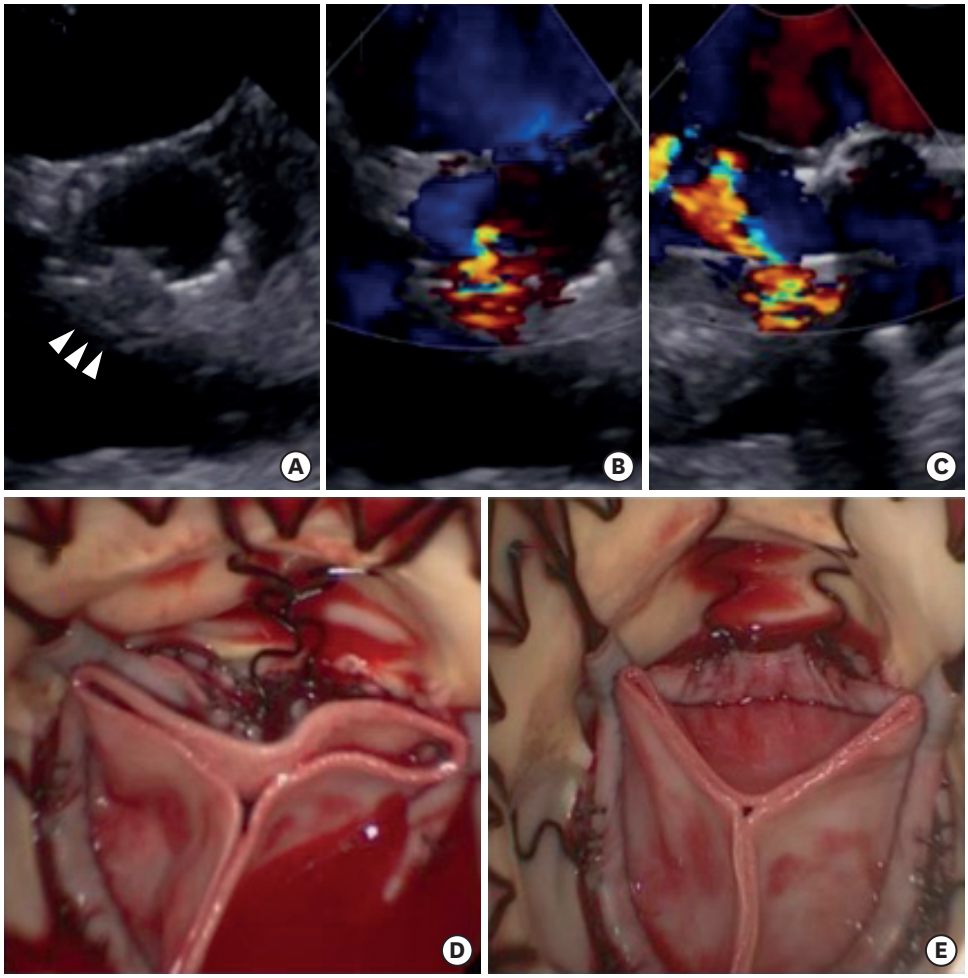

Figure 1. Arrow heads indicate distortion of a Perceval sutureless aortic valve stent (A). Aortic valve short axis view (B) and long axis view (C) showed PVL. Surgical images before revision (D) and after revision (E).
PVL = paravalvular leak.

Data Sharing Statement

The data generated in this study is available from the corresponding author upon reasonable request.

Author Contributions

Conceptualization: Chen YC, Lin TY, Lu CW; Supervision: Lin TY, Lu CW; Validation: Chen YC, Lu CW; Visualization: Chen YC, Lu CW; Writing - original draft: Chen YC; Writing - review & editing: Chen YC, Lu CW.

inversion was confirmed by surgeon (**Figure 1D**). After surgical revision by adjustment of the inverted stent (**Figure 1E**), no PVL was detected afterward. We had obtained informed consent from the patient.

SU-AVR is associated with improved hemodynamics when compared with conventional AVR.[1] Rarely, the PVL of SU-AVR results from stent distortion due to oversizing or malposition of the implanted valve.[2] TEE is a useful tool to confirm the diagnosis of PVL and multimodality imaging is essential to detect and quantify PVL.[3] Careful investigation of postoperative TEE and TTE helped physicians to detect the possibility of PVL or other cardiac abnormalities.

REFERENCES

1. Bilkhu R, Borger MA, Briffa NP, Jahangiri M. Sutureless aortic valve prostheses. *Heart* 2019;105:s16-20.
PUBMED | CROSSREF
2. Baert J, Astarci P, Noirhomme P, de Kerchove L. The risk of oversizing with sutureless bioprosthesis in small aortic annulus. *J Thorac Cardiovasc Surg* 2017;153:270-2.
PUBMED | CROSSREF
3. Bernard S, Yucel E. Paravalvular leaks-from diagnosis to management. *Curr Treat Options Cardiovasc Med* 2019;21:67.
PUBMED | CROSSREF

https://doi.org/10.4070/kcj.2022.0196