



## Bioptome Perforation at Superior Vena Cava Anastomosis Site in Transplanted Heart

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A 42-year-old male successfully underwent orthotopic heart transplantation with a bicaval technique. During routine surveillance endomyocardial biopsy (EMB) before discharge, some resistance to passage of the biptome (7Fr, Johnson and Johnson Medical, NV, USA) was noted. However, several attempts with gentle maneuvers helped the biptome pass through the superior vena cava (SVC). On fluoroscopy, the biptome (arrow) course was unusual and a right ventricular (RV) approach was not achieved. Transthoracic echocardiography revealed the biptome to be in the pericardial space at the RV anterior side with newly developed pericardial effusion (Fig. 1A, asterisk: pericardial effusion, left ventricle [LV], RV). After removal of the biptome, an agitated-saline bubble test was performed, but leakage into the pericardial space was not noted suggesting pressure equalization with the venous system (Fig 1B, Supplementary video 1 in the online-only Data Supplement). Cardiac computed tomography (CT) showed stricture of the SVC anastomosis site (Fig. 2A, arrow: pericardial effusion, dotted arrow: internal jugular venous sheath, SVC [R]: recipient part of SVC, SVC [D]: donor part of SVC). Three-dimensional (3D) reconstruction further demonstrated invagination (Fig. 2B, C, indicators and abbreviations are same as Fig. 2A). The stricture and pouch-like invagination could have impeded biptome advance, which penetrated to the pericardial space through the SVC anastomosis site. After the procedure, vital signs were stable and follow-up transthoracic echocardiography revealed no increase in pericardial effusion. The patient was discharged uneventfully 2 days later.

Patients undergoing EMB are at risk of complications.<sup>1,2)</sup> The previously reported cardiac perforation incidence after EMB was 0.05–0.08%.<sup>1,3)</sup>

Perforation through the SVC has been reported more rarely.<sup>4)</sup> With the help of 3D-CT, we visualized the exact SVC anastomosis site anatomy which was the perforation focus. Future EMB might be performed more safely with a biptome approach through the medial side.

### Supplementary Material

The online-only Data Supplement is available with article at <https://doi.org/10.4070/kcj.2017.0015>.

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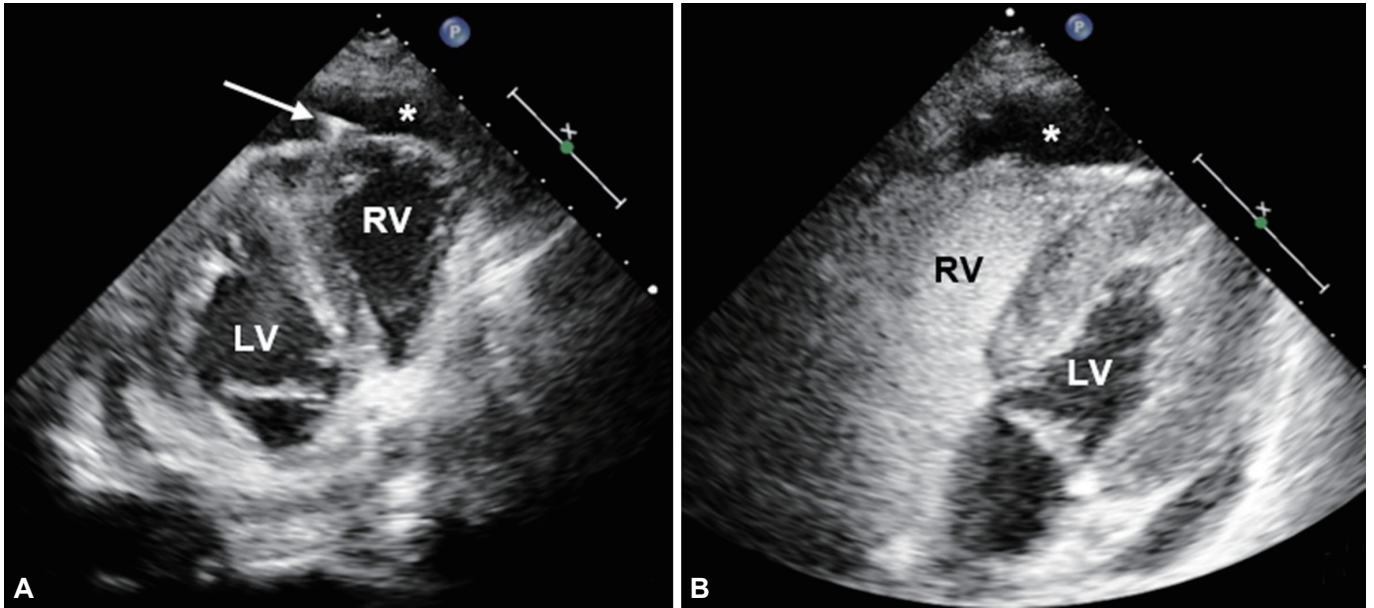


Fig. 1.

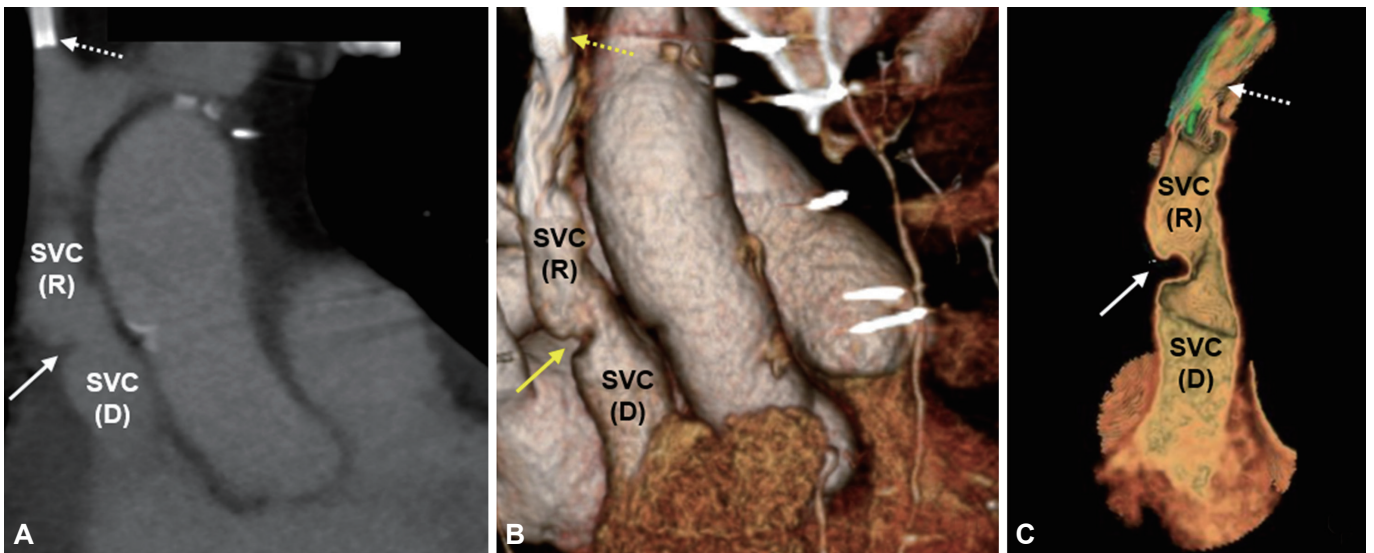


Fig. 2.