



A new device for paravalvular leak closure

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Abstract

Percutaneous closure of a prosthetic paravalvular leak (PVL) is a challenging procedure. Operators must use devices constructed for other applications. We present the use of a device which is specifically designed for PVL closure. To the best of our knowledge, there is no publication in MEDLINE reporting the use of the device.

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1 Case report

A frail, diabetic septuagenarian presented with dyspnea and hemolytic anemia (Lactate dehydrogenase: 2866 U/L; hemoglobin: 8.3 g/dL) due to severe mitral PVL. Two-dimensional transesophageal echocardiographic (2DTEE) documented two different PVLs. Posteromedially PVL was haemodynamically significant (Figure 1, Video 1). Left

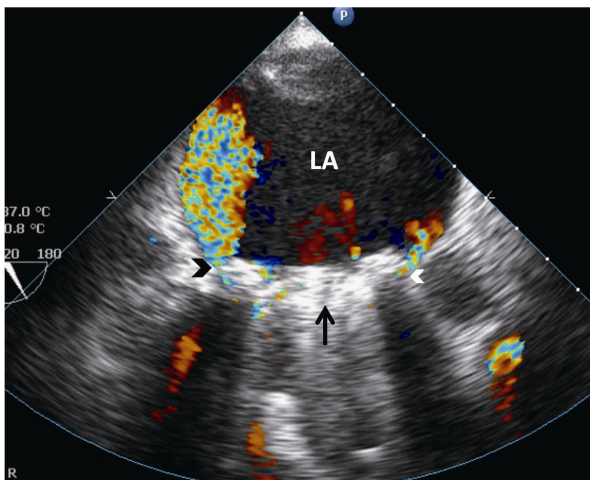


Figure 1. Transesophageal echocardiography demonstrating a bileaflet mechanical prosthesis in mitral position (black arrow), large paravalvular leak (black arrowhead), and trivial leak (white arrowhead). LA: left atrium.

atrium was gained by trans-septal access through the right femoral vein. The 13 French steerable sheath (FlexCath, Medtronic Inc., USA) was used to help position a multi-purpose catheter. A 0.89 mm 260 cm stiff Terumo Radio focus Guidewire and then a 6F multipurpose catheter were advanced across the leak (Figure 2). Arteriovenous wire loop was established with an Amplatz Goose Neck Snare introduced through the left femoral artery. A 6F shuttle introducer sheath was advanced in the LV and rectangular shaped paravalvular leak device (PLD) (Occlutech Paravalvular Leak Device, Occlutech GmbH., Jena, Germany) was placed across the PVL. After confirmation of non-interference of the PLD with prosthetic valve disc and device

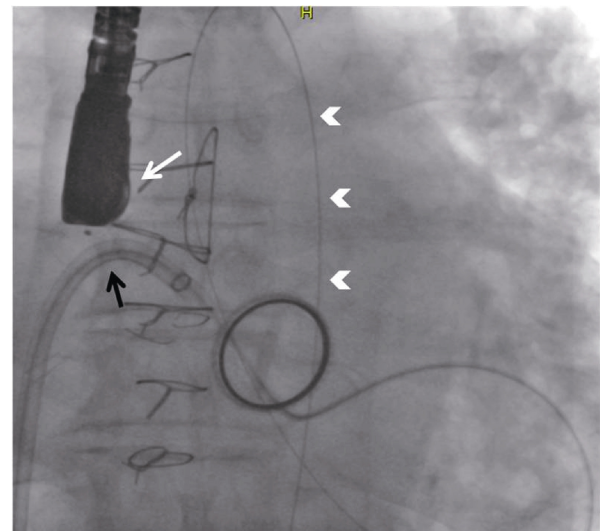


Figure 2. Fluoroscopic view of transseptal steerable sheath (black arrow) and guide wire which advanced to descending aorta (white arrowheads). White arrow designates the transesophageal echocardiography probe.

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stability, the PLD was released. The PLD occluded the leakage nearly completely and downgraded PVL from severe to negligible (Figure 3, Video 2). The PLD had two rectangular discs (disc diameters were 17 and 15 mm) and an elliptic waist composed of a self-expanding nitinol wire mesh. (Figure 4) At discharge, 2DTTE revealed a normally functioning mitral prosthesis with just a very minor (or meager) PVL.

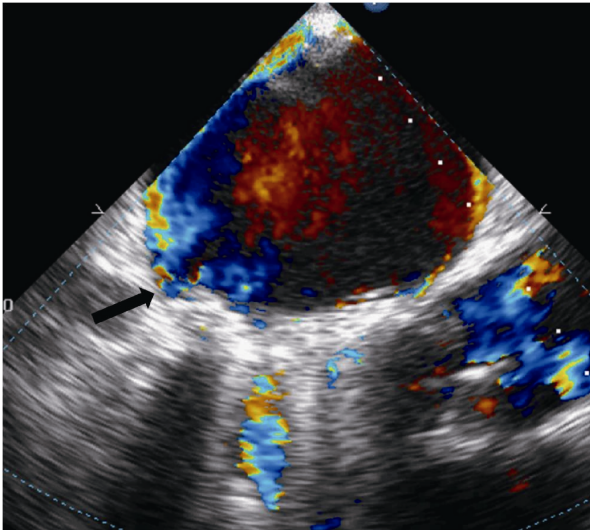


Figure 3. Postoperative transesophageal echocardiography demonstrating small residual leak (black arrow).

2 Discussion

PVLs are variable in size and shape with many being

crescentic, not cylindrical.^[1-3] Devices are circular in shape may be unadaptable for crescentic defects. Successful closure with them may require large devices. Rectangular shaped devices may conform better to the shape of crescentic PVL.

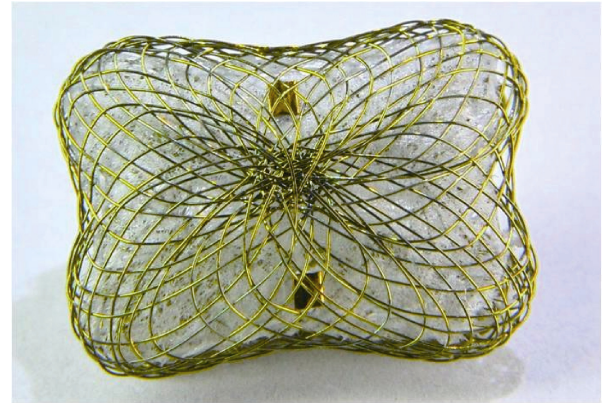


Figure 4. A rectangular occlutech paravalvular leak device.

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