A CASE OF MULTI-PLUGGING FOR MITRAL MECHANICAL PARAVALVULAR LEAKAGE USING ECHO-NAVIGATOR

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HISTORY AND PHYSICAL

A 75-year-old woman with a history of diabetes, hypertension, atrial fibrillation and mitral valve replacement in 1988 presented with dyspnea (NYHA III) and syncope. The initial lab data showed anemia (10g/dl) and increased pro BNP (4084pg/ml). Baseline rhythm was atrial fibrillation with a ventricular response of 100/min. On chest x-ray, mild cardiomegaly and pulmonary edema were observed.

IMAGING

On Pre-procedure TEE, at the 40 degree view, peri-valvular mitral regurgitation was observed. The origin of the paravalvular regurgitation jet was localized at approximately 1 o'clock at the anterior annulus side (Figure 1). The paravalvular leak's (PVL's) cross-sectional area(CSA) measurement was based on real time 3-dimensional TEE. Oversizing to at least 130% of the PVL's CSA was targeted.

INDICATION FOR INTERVENTION

Paravalvular regurgitation may cause symptoms of severe heart failure or hemolysis requiring re-operation. Based on prior prospective studies, surgical closure offers better long-term survival. Recently, percutaneous closure of PVL has been proposed as a less invasive alternative to a surgical closure and has been found to alleviate the relapse rate and symptoms of PVLs in high-risk patients.

INTERVENTION

We planned to perform PVL plugging treatment with bidirectional approach by transseptal or via the retrograde transfemoral access in case of the failure of transseptal route. 8F left femoral artery access was obtained and a 6Fr pigtail catheter introduced to left ventricle(LV) for an LV gram. Then, right femoral venous access was obtained (8F). Transseptal puncture was performed. However, the PVL could not be crossed with a wire via transseptal access. Intead, an attempt was made retrogradely via femoral arterial access using the echo navigator (figure 2). A telescoped coronary guide catheter (6-F multipurpose) was used for stiff wire (0.035-in.) delivery across the PVL. After crossing of the PVL, a long delivery sheath (shuttle sheath 5Fr) was advanced through the PVL. An 8mm Amplatzer Vascular Plug was successfully deployed and released at the site of paraprosthetic defect. However, after the

first plug, the PVL remained with little improvement on color Doppler view of TEE. Hence, we placed another 10mm Amplatzer Vascular Plug sequentially in the same way. The device was released after demonstration of significant reduction in the regurgitation, absence of prosthesis interference, and confirmation of stability of the occluder (Figure 3).

LEARNING POINTS OF THE PROCEDURE

The echo navigator facilitated location and negotiation of the PVL with a wire allowing safe performance of PVL closure. The fusion imaging may lead to a reduction of radiation dose, faster and safer interventions, and higher interventional success rates.

Fig. 1. Pre-procedure TEE: Paravalvular leakage at anterior annulus site

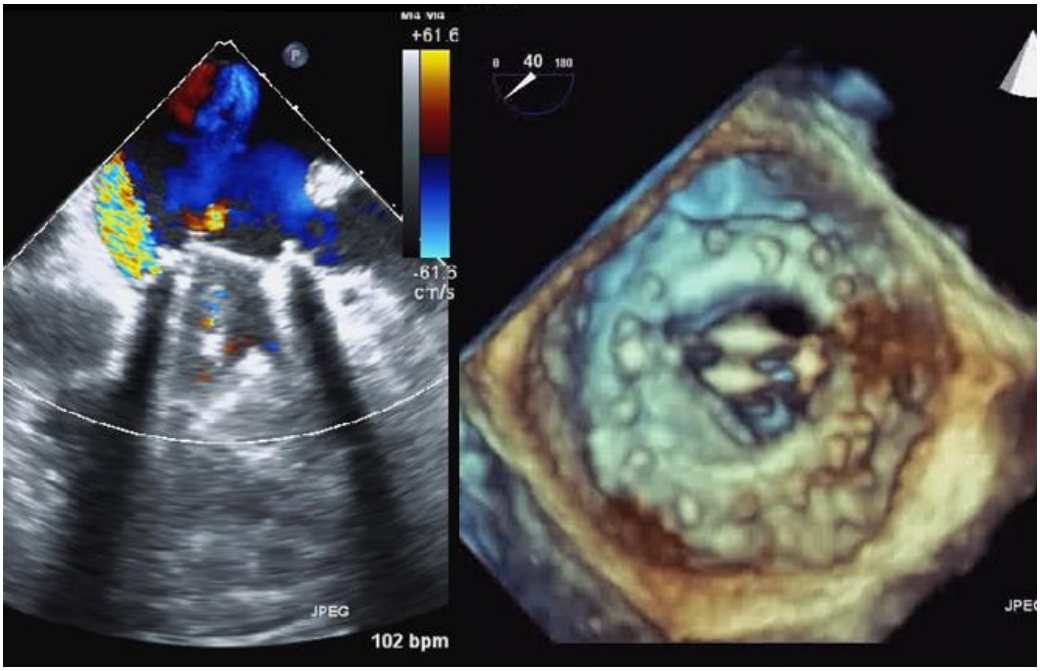

Fig. 2. (A) Echo navigator guided retrograde transfemoral approach (B) Multiplugging for the paravalvular leakage of prosthetic mitral valve.