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Surgical electrocautery and balloon atrial septostomy facilitated MitraClip in ring

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An 81-year-old patient, who had undergone mitral valve annuloplasty 1 year prior, was admitted with pulmonary edema, attributed to residual high-grade mitral valve regurgitation (MR) (Fig. 1A, B). Due to high surgical risk and hemodynamic instability the Heart Team decided on percutaneous repair ("Clip-in-Ring" treatment).

The MitraClip® G4 system was preferred but periprocedural difficulties were expected: mean valve gradient of 4 mmHg, short posterior leaflet of 7 mm and especially past history of double-layer pericardial patch implantation for atrial septal defect II closure (Synovis Peri-Gourd®).

After obtaining access to the right atrium, the Brockenbrough needle caused typical tenting at the level of the fossa ovalis, now covered by the pericardial patch. Successful puncture was possible only after connecting the needle to a surgical electrocautery. After placing a stiff wire in the left upper pulmonary vein (Fig. 1C) the MitraClip delivery system (25F) could not pass through the interatrial septum (IAS). An unconventional septostomy of the IAS was performed by angioplasty using conventional peripheral balloons (Fig. 1D) with incremental diameters up to 9.0 mm.

Upon system advancement, placement of a NTW Clip was finally possible (Fig. 1E). Transmitral mean gradient did not rise and adequate leaflet tissue grasping was confirmed. A significant reduction to mild MR was obtained (Fig. 1F) and merely a trivial left-to-right shunt of IAS was noticed. Extubation was performed in the cath lab and discharge occurred 3 days later.

This case highlights the need for thorough procedural planning of percutaneous MR repair. Electrocautery of IAS and septostomy are bail-out techniques that can be used to gain access to the left atrium (**Suppl. Video 1**).

Conflict of interest: None declared

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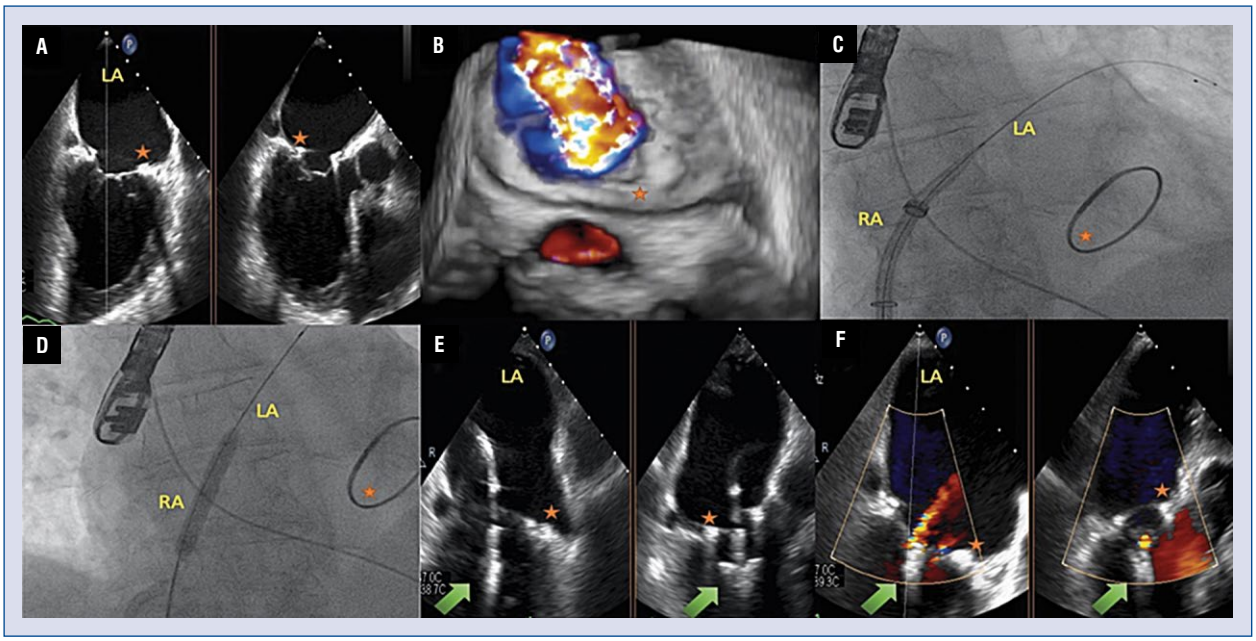

Figure 1. Electrocautery and septostomy facilitated MitraClip in ring; **A.** Baseline transesophageal echocardiography (TEE) bi-plane view depicting mitral valve (MV) ring position and leaflet tethering; **B.** Baseline three-dimensional TEE anatomical MV view demonstrating high-grade mitral regurgitation (MR); **C.** Fluoroscopy showing successful crossing of the fossa ovalis and positioning of a 0.035" wire in the left upper pulmonary vein; **D.** Balloon atrial septostomy facilitating advancement of the MitraClip delivery system; **E.** Positioning of the NTW Clip between P2/A2 scallops; **F.** Final result showing only trivial MR; LA — left atrium; RA — right atrium; Green arrow indicates the Clip; Orange star depicts MV ring position.