**PERATRIAL DEVICE CLOSURE OF DIFFERENT LOCATIONS OF MITRAL PARAVALVULAR LEAKS USING A PROBE-ASSISTED DELIVERY SYSTEM**

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*Background*: The transcatheter closure of mitral paravalvular leak (MPVL) includes transseptal, transaortic and transapical approaches. Each of them is only suitable for some specific locations of the MPVLs. The challenges come from transseptal puncture, accessing the MPVL site, and the absence of dedicated delivery systems. We introduce a peratrial technique for device closure of different locations of MPVLs using a probe-assisted delivery system under three-dimensional transesophageal echocardiography (3D TEE). *Methods*: After general anesthesia, a 4.0 cm parasternal incision was made in the fourth right interspaces. A pursestring suture was placed on the right atrium. The interatrial septum was punctured and dilated, followed by a guidewire passing through the septum. A specially designed J-shaped bendable hollow probe was advanced over the wire into the left atrium. The steerable hollow probe was adjusted to cross the MPVL and introduced a stiff guidewire through the channel of the probe into the left ventricle (LV). An 8F short delivery sheath was advanced over the wire through the MPVL into the LV. A proper sized muscular septal occluder was then selected and deployed. In two patients with a crescent-shaped MPVL, two guidewires were sent to the LV. Two devices were positioned to close the MPVL and the residual regurgitation.

*Results*: TEE revealed complete occlusion of the MPVL in 5 of 6 patients, with no residual leak and a good function of the prosthetic valve after a follow-up of 3 months to 2 years. Mild residual paravalvular regurgitation occurred in an early patient with a crescent-shaped MPVL. All patients’ symptoms improved by at least 1 NYHA functional class. *Conclusions*: The probe-assisted delivery system can access and close MPVLs at different locations through a right minithoracotomy approach. This technique has the advantages of easy transseptal puncture, easy accessing the MPVL, and no exposure to radiation.