

Role of TEE in Mitral Valve Repair with the MitraClip System

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TEE is critical for MitraClip treatment in patient with mitral regurgitation (MR). Functional and degenerative MR can be treated with the MitraClip if the jet is central and appropriate exclusion criteria are considered: no excessive flail leaflet gap, leaflet calcification, and MV area. The 7 echocardiographic steps of MitraClip procedure are:

- 1) Guidance of the transeptal puncture.
- 2) Introduction of the Steerable Guide catheter.
- 3) TEE visualization of the insertion of the MitraClip into the LA.
- 4) Opening of the MitraClip above the mitral valve (MV).
- 5) Advancing the MitraClip in the LV. MitraClip orientation is adjusted under TEE guidance to ensure that the clip is still at the origin of the MR jet and perpendicular to the line of MV leaflet coaptation.
- 6) The MV leaflets are grasped by slowly retracting the catheter with the opened MitraClip towards the LA. After the leaflets are grasped, the clip arms are closed and adequate insertion of both anterior and posterior mitral leaflet is confirmed by TEE in multiple views. The diastolic MV gradient is measured to exclude mitral stenosis and pulmonary veins are re-assessed to document improved hemodynamics.
- 7) MitraClip deployment.

The mitral valve, MitraClip position, MR and Doppler hemodynamics are reassessed after deployment to confirm the adequacy of MR reduction. There are advantages of live 3D TEE and 3D X plane TEE during the MV clip procedure which includes better echocardiographic visualization of the catheters, the MitraClip and its position during the procedure, as well as greater ease and faster acquisition of echo images that are important for procedural success. Of the 71 cases in the continued access registry at our center, > 96% of patients had $\geq 2+$ MR and >70% had $\geq 1+$ MR after the MitraClip procedure. Effective communication between echocardiologists and interventionalists is critically important to the success of this procedure; this communication may be enhanced by the use of live 3D TEE.