

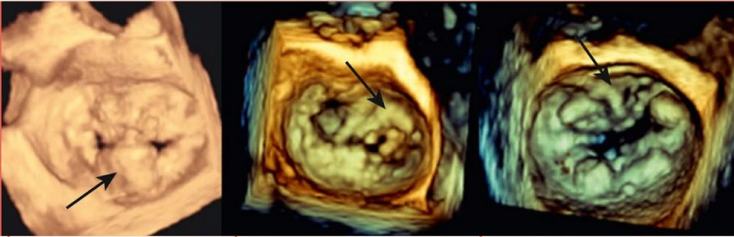
Screening TEE Prior to Transcatheter Mitral Edge-to-Edge Repair (TMVr, e.g. MitraClip)

- Specific goals for *Screening TEE Prior to Edge-to-Edge Repair (TMVr)*:
 - Assess anatomic suitability for TMVr
 - Exclude intra-cardiac thrombus
 - Evaluate the atrial septum prior to transseptal puncture
 - Assess/confirm the severity of mitral regurgitation (frequently determined on TTE)
 - Assess feasibility of peri-procedural imaging (adequate windows for grasping/guidance)
- **Required images (*in addition to standard TEE*):**
 - 3D full volume or 3D zoom of the mitral valve *with and without color Doppler*
 - Should include the *entire mitral annulus* and a portion of the aortic valve
 - CW Doppler of the mitral valve inflow for mean diastolic gradient
 - Pulmonary vein spectral Doppler of *all pulmonary veins*

Measurements/Impressions to Report (see pages 2-4 for examples)

- Mechanism of mitral regurgitation (primary, secondary, mixed)
- Location of the regurgitant jet(s) (A1-P1, A2-P2, A3-P3)
- Severity of regurgitation (frequently established by TTE)
- The presence and location of mitral annular or leaflet calcification
 - Calcification at the grasping site can prohibit clip/device closure and is a contraindication
 - Mitral annular calcification, *particularly when leaflet infiltration is present*, is associated with increased post-procedure mean gradient
- Mitral valve orifice area (preferably by 3D-guided planimetry)
 - A baseline mitral valve area <4.0 cm² is associated with high risk of mitral stenosis post-clip
- Mitral valve mean diastolic gradient
 - Baseline mean diastolic gradient ≥4mmHg is associated with elevated gradient post-clip
- Presence/absence of mitral valve clefts or perforations should be noted
 - A mitral valve perforation is a contraindication to edge-to-edge repair
 - Baseline *functional clefts* are likely a relative contraindication
- Anterior and posterior mitral leaflet length: ideally 10 mm or more
- Specific measurements for patients with flail leaflet:
 - Flail GAP (i.e. the max distance between the anterior and posterior leaflet, ideally <10mm)
 - Flail WIDTH (i.e. the *width of the flail segment* along the affected leaflet, ideally <15mm)
- Statement on the atrial septum and suitability of transseptal puncture

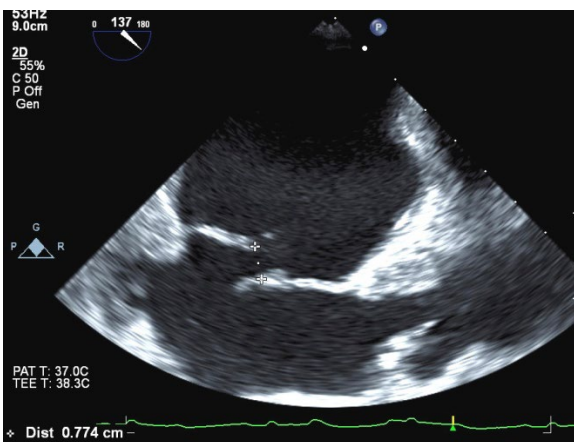
Anatomic Suitability for Edge-to-Edge TMVr (MitraClip)

	Feasible		Unlikely
Transcatheter Mitral Valve Repair			
Segment	2	1 or 3	Severe Barlow
Calcification	None	Annular- sparing grasping zone	Grasping zone involved
MVA and MV Gradient	>4 cm ² and <4 mm Hg	3.5-4 cm ²	<3.5 cm ² and >5 mm Hg
Flail width	<15 mm	>15 mm	
Flail gap	<10 mm	>10 mm	
PL length	>10 mm		

Adapted from El Sabbagh *et al JACC* 2018.

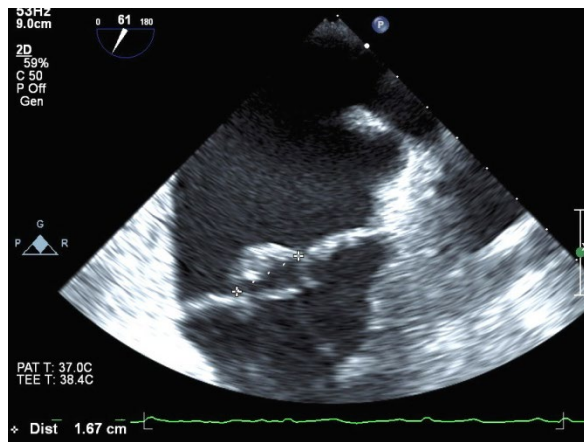
Flail Gap and Flail Width

Flail Gap



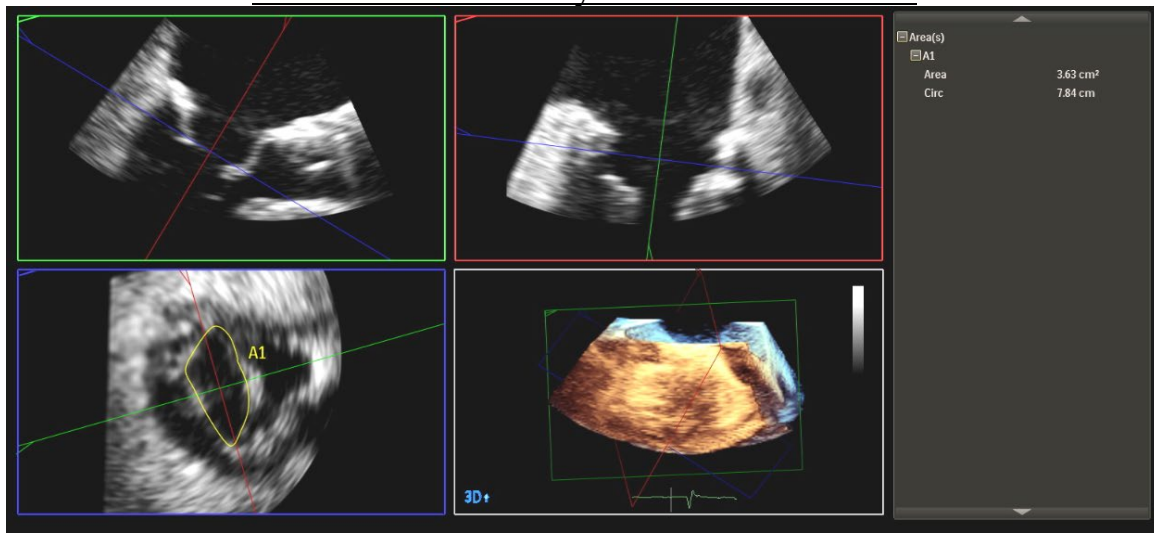
Maximum distance between the anterior and posterior leaflet in any view.

Flail Width



Maximum width of the flail segment, typically measured in the midesophageal commissural view (shown above) or transgastric short axis view.

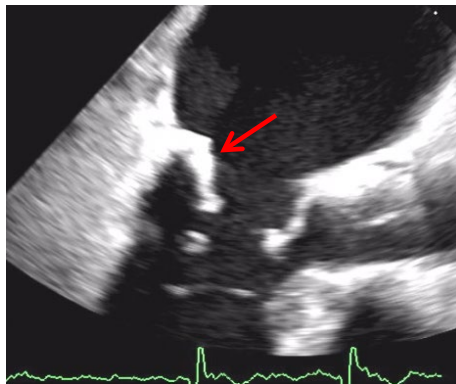
3D-Guided Planimetry of Mitral Valve Area



Keys:

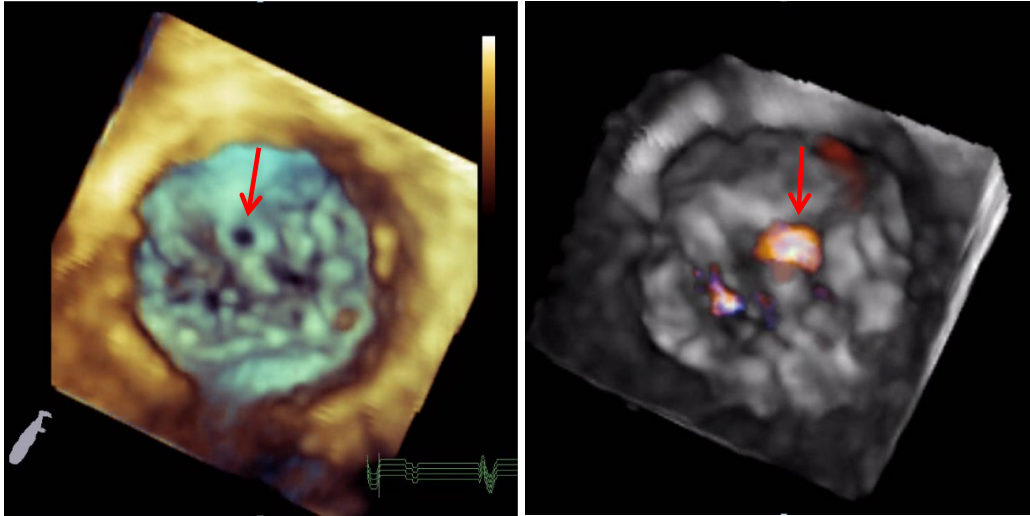
- Pause in a diastolic frame at the time of maximal mitral valve opening
- Align one view in a typical long axis view (upper left panel)
- Align on view in a typical commissural view (upper right panel)
- Align the blue lines with the tip of the mitral leaflets for short axis view of the mitral valve (lower left panel)
- Trace the mitral valve orifice area in the short axis view (lower left panel)

Mitral Leaflet and Annular Calcification



MAC, particularly with mitral leaflet infiltration (arrow) increases the risk of mitral stenosis post-clip. Mitral leaflet calcification at the grasping site may also inhibit clip/device closure.

Mitral Leaflet Perforation



A 3D TEE left ventricular view of the mitral valve shows perforation of the anterior mitral leaflet by 3D (left, arrow) and confirmed by 3D color Doppler (right, arrow). Leaflet perforation is a contraindication to TMVr.