10° CONGRESSO NAZIONALE

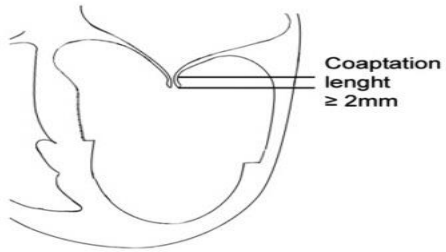
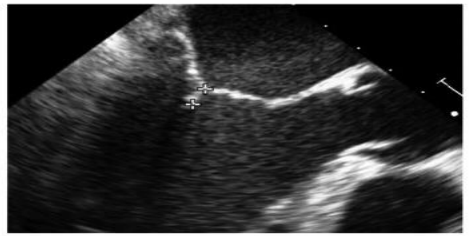
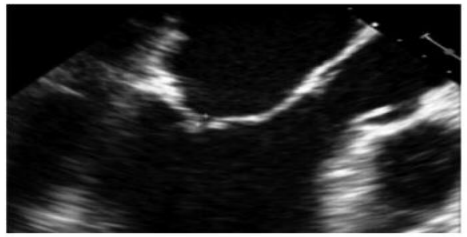
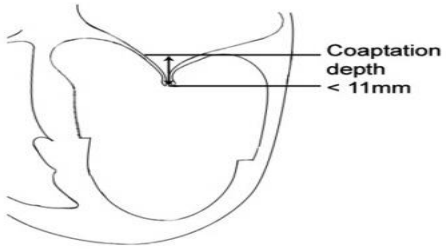
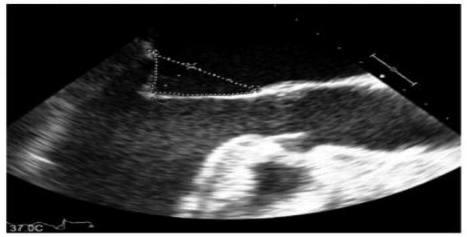
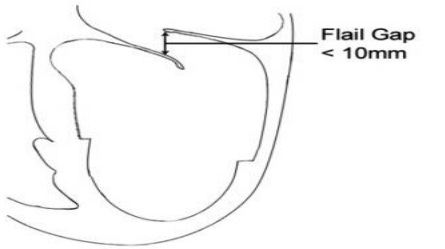
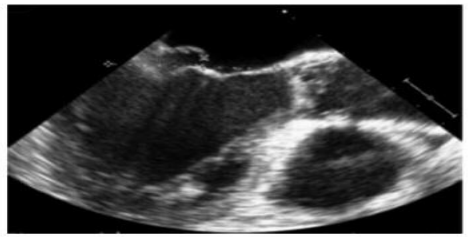
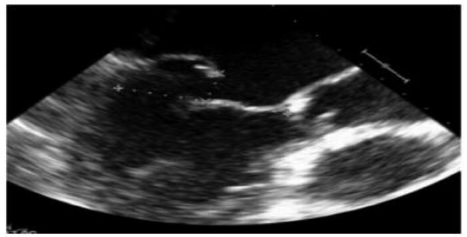
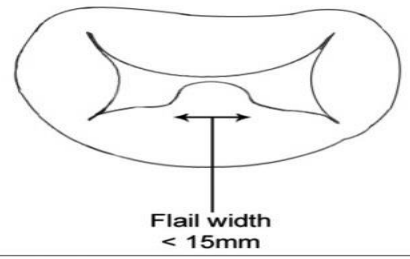
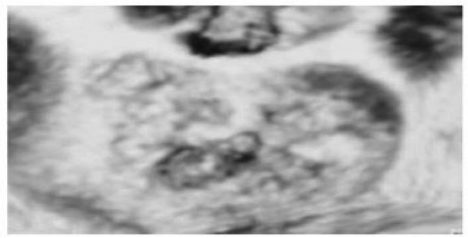
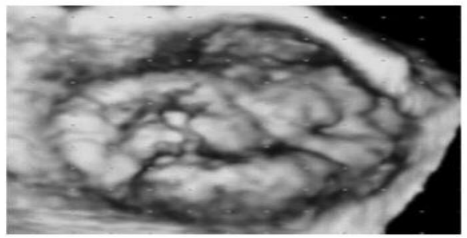
CAMPUS Cuore

Quello che le Linee Guida Non Dicono

Napoli
Hotel Excelsior
14-15 aprile 2023

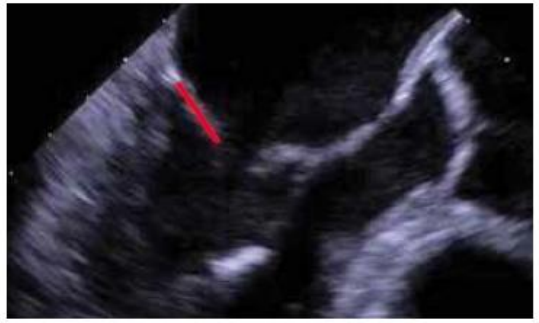
Ecocardiografia nella procedura di TEER

Dott Marco Malvezzi Caracciolo d'Aquino

Criteri Anatomici EVEREST	Anatomia favorevole	Anatomia non favorevole
		
		
		
		

ANATOMIC MEASUREMENTS

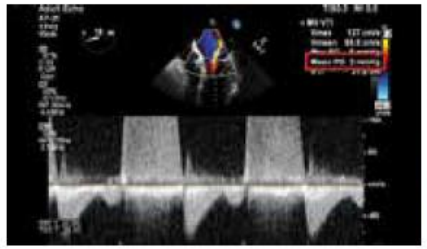
MEASUREMENTS FOR PROCEDURAL AND CLIP PLANNING

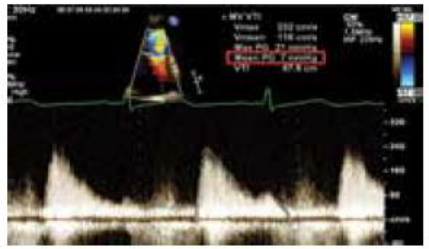


POSTERIOR LEAFLET LENGTH

The measurements should be taken in LVOT at grasping area.

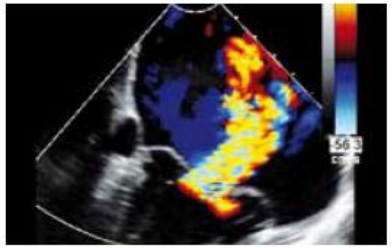
NOTE: G4 NT and G4 NTW need ≥ 6 mm of leaflet insertion.
G4 XT and G4 XTW need ≥ 9 mm of leaflet insertion.





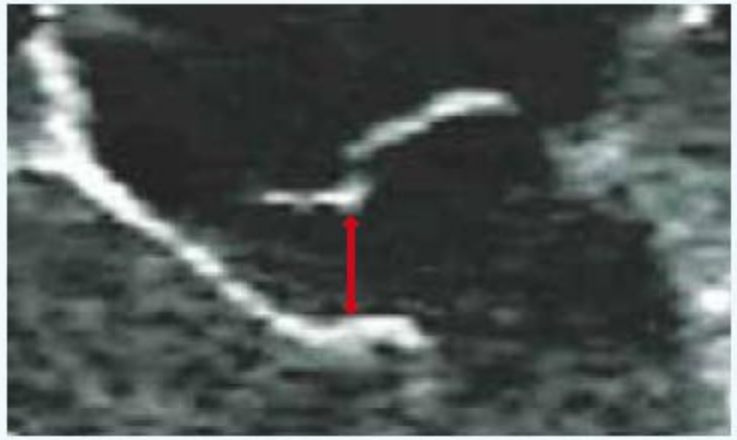
- Measure baseline mean MV gradient using CW Doppler.
- For every subsequent clip, assess the forward flow area during diastole and risk of mitral stenosis (pressure gradient > 5-10mm Hg, diastolic pressure half-time > 150ms).

- Measure MV area by PHT, 3D planimetry and/or 2D transgastric SAX (area ideally ≥ 4cm²).



- Assess the primary jet width at the MR origin (short axis on 3D color, biplane or on a transgastric short axis view) optimizing aliasing velocity settings (50-60 cm/s).

PRIMARY MITRAL REGURGITATION (PMR)

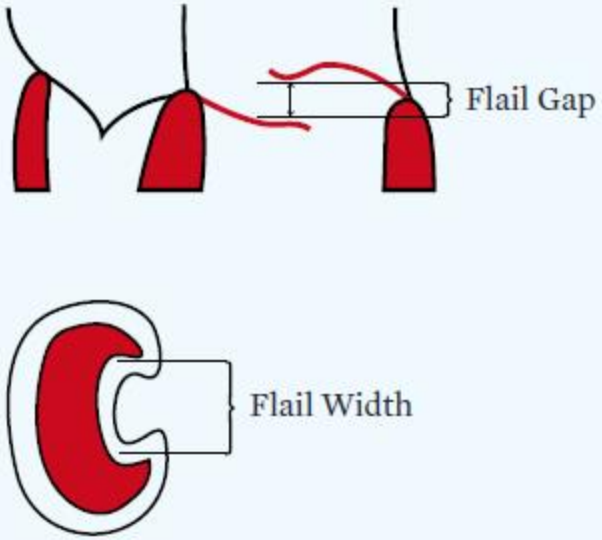


PMR FLAIL GAP

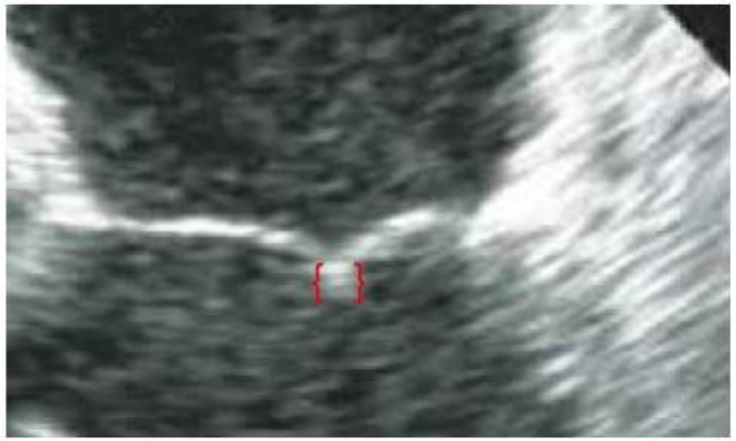
This should be taken in the view (LVOT or 4 chamber) where the flail gap is largest.

PMR FLAIL WIDTH

This measurement should be taken in the transgastric short axis view where the flail width is largest.

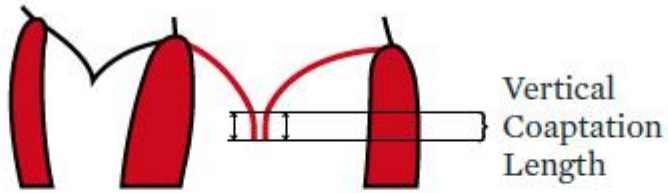


SECONDARY MITRAL REGURGITATION (SMR)

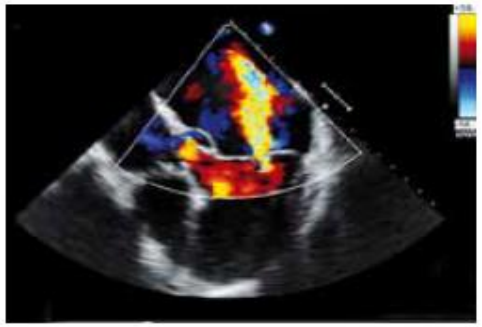


SMR VERTICAL COAPTATION LENGTH

The measurement should be taken in the 4-chamber view where the vertical coaptation length is shortest.



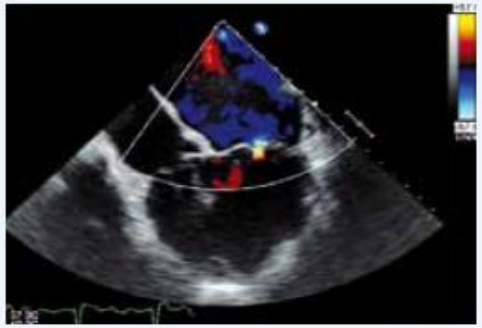
0° VIEWS, 5-CHAMBER AND 4-CHAMBER

SUPERIOR

5-chamber view with A1/P1 of the mitral valve (MV) clearly visualized.

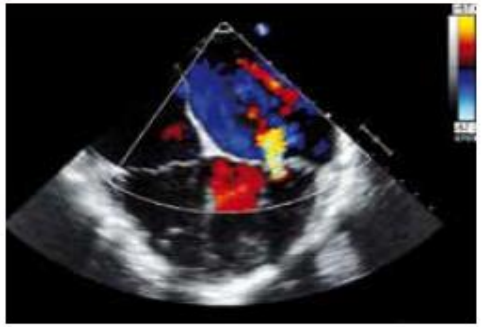
This view is obtained at the mid-esophageal level. The aortic valve and left ventricular outflow tract are clearly visualized. The LV is foreshortened.

CENTRAL

4-chamber view with A2/P2 clearly visualized.

Advanced probe 1–3 cm. The LV cavity is more completely visualized. For secondary MR, vertical coaptation length should be measured. For primary MR, flail gap should be measured, if present.

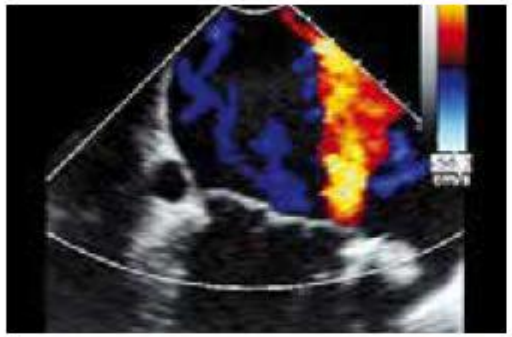



INFERIOR

4-chamber view with A3/P3 clearly visualized.

The probe is further advanced 1–3 cm. The coronary sinus and tricuspid valve may be seen.

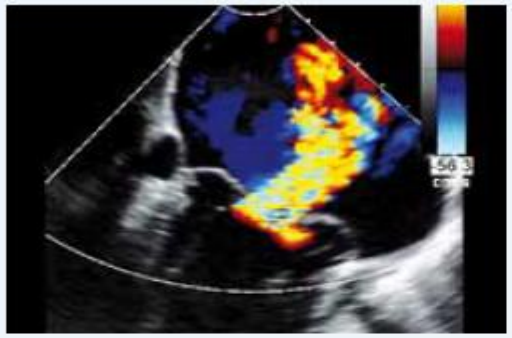
60-90°, BICOMMISSURAL

ANTERIOR

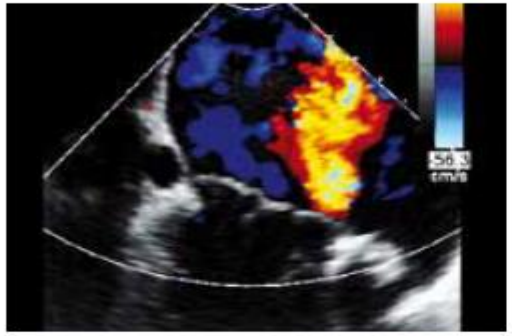
This view is obtained at the anterior side of the valve to visualize A1, A2, and A3 scallops.

The anterior leaflet can be isolated by torquing/rotating the probe clockwise from the midline.

MIDLINE

This view is obtained at the midline of the valve to visualize P1, A2, and P3 scallops.

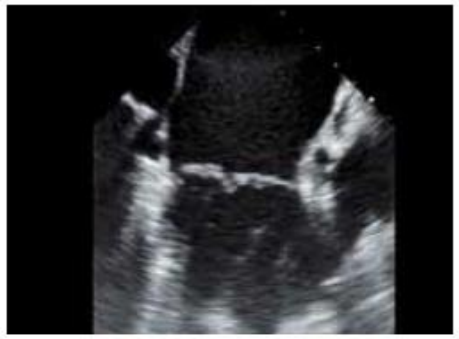



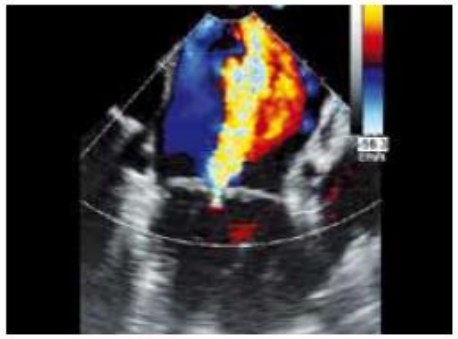
POSTERIOR

This view is obtained at the posterior side of the valve to visualize P1, P2, and P3 scallops.

The posterior leaflet can be isolated by torquing/rotating the probe counterclockwise from midline.

110-130° VIEWS TO OBTAIN | LEFT VENTRICULAR OUTFLOW TRACK (LVOT)

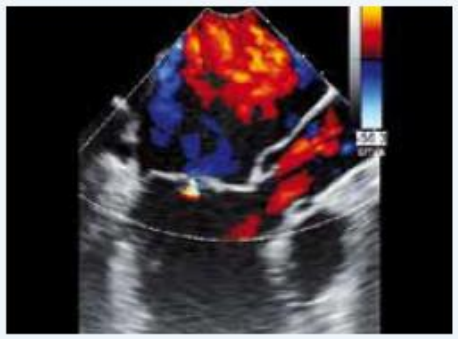




LATERAL

This view is obtained at the lateral side of the valve to visualize A1 and P1 scallops.

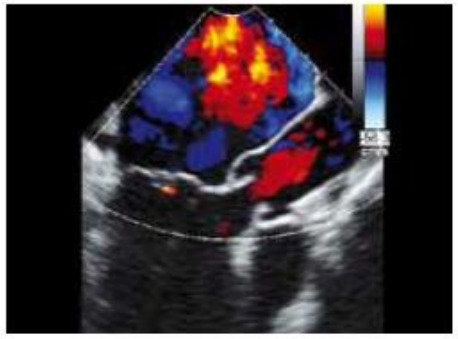
The lateral aspect can be isolated by torquing/rotating the probe counterclockwise from central.



CENTRAL

This view is of the central aspect of the valve with A2 and P2 scallops clearly visualized.

For primary MR, flail gap should be measured, if present.

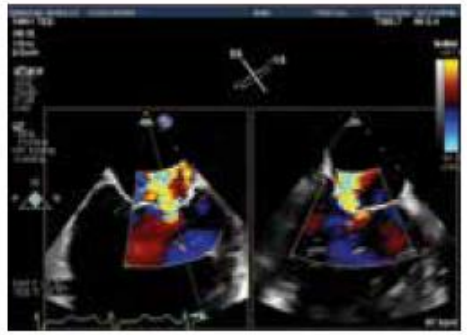


MEDIAL

This view is obtained at the medial side of the valve to visualize A3 and P3 scallops.

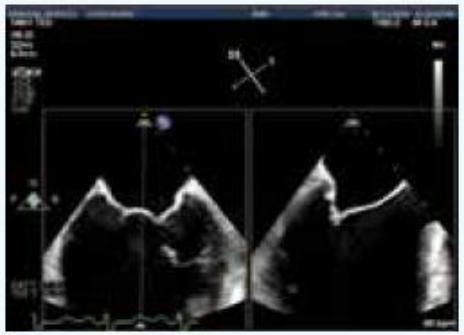
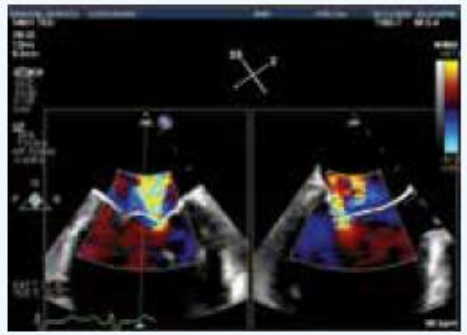
The medial aspect can be isolated by torquing/rotating the probe clockwise from central.

X-PLANE OR MULTIPLANE

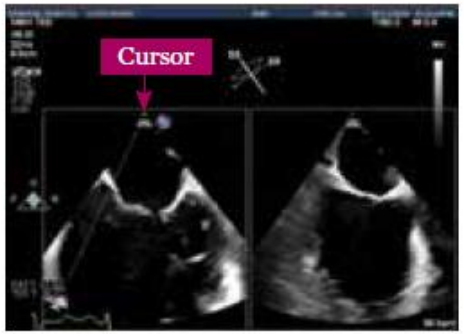
A1-P1 EXAMPLE

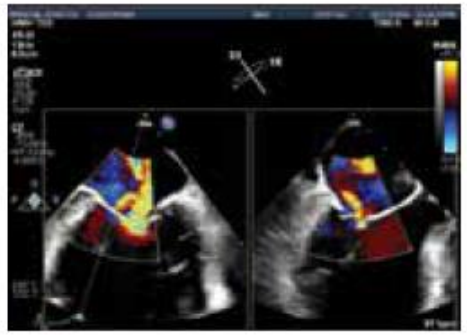
Once an inter-commissural view is obtained, use the bi-plane cursor to image the long axis/LVOT view to help assess the lateral (A1-P1) part of the valve. Perform this with and without color.

A2-P2 EXAMPLE

Once an inter-commissural view is obtained, use the bi-plane cursor to image the long axis/LVOT view to help assess the central (A2-P2) part of the valve. Perform this with and without color.

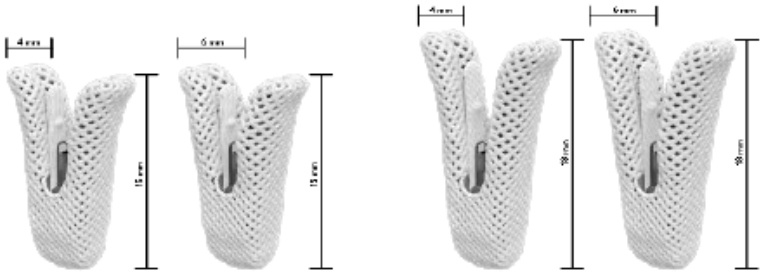




A3-P3 EXAMPLE

Once an inter-commissural view is obtained, use the bi-plane cursor to image the long axis/LVOT view to help assess the medial side (A3-P3) of the valve. Perform this with and without color.

- The latest generation MitraClip G4 System introduced **two wider Clips: XTW and NTW, in addition to the standard width Clips, NT and XT, to tailor mitral valve repair.**
- The global **EXPAND G4 Study** was initiated to evaluate safety and effectiveness of the MitraClip G4 System, and **showed significant 30-Day MR reduction (91% MR ≤ 1+) and low rate of adverse events in real world settings**[1,2]



STANDARD LENGTH ARM
(G4 NT / G4 NTW)

LONG LENGTH ARM
(G4 XT / G4 XTW)

- **Consensus-based recommendations for clip usage were provided by an expert physician panel** based on the following anatomical considerations[3,4,*].

	Anatomical Considerations		Favors G4 NTW	Favors G4 NT	Favors G4 XTW	Favors G4 XT
1. Leaflet insertion	Length of mobile leaflet in grasping zone?	Leaflet Length < 9 mm	+	+		
		Leaflet Length ≥ 9 mm			+	+
2. Jet Width	Width of jet?	Broad jet	+		+	
3. MVA	Area of valve?	Smaller Valve		+		
		Larger Valve	+		+	+

[1] Von Bardeleben et al. Contemporary Outcomes of 1000+ Patients Treated with MitraClip™ G4, TCT 2022

[2] Rinaldi et al. Safety and Echo Outcomes with MitraClip™ G4, PCR LV 2022

[3]Rottbauer WD. Contemporary Clinical Outcomes with MitraClip™ (NTR/XTR) System: Core-lab Echo Results from +1000 Patient the Global EXPAND Study. Data presented at PCR 2020.

[4] Maisano F. Clip Selection Strategy and Outcomes with MitraClip™ (NTR/XTR): Evidence-Based Recommendations from the Global EXPAND Study. Data presented at PCR 2020.

** Tests performed by and data on file at Abbott.*

Da Maisano F. et al - Clip Selection Strategy with 4th Generation Mitraclip™: Evidence-Based Recommendations fron the Global EXPAND G4 Study

- Caso clinico 1
  - C.G. 76 anni
  - Affetto da: Dislipidemia, Ateromasia dei TSA, IRC stadio III. Cardiomiopatia ipertrofica in fase dilatativa. Nel 2009 impianto di CRT-D.
  - Durante follow-up ambulatoriale riscontro all'ecocardiogramma TT di IM severa in paziente sintomatico per dispnea per sforzi lievi.
  - ECG al ricovero: Ritmo elettroindotto a FC 70 bpm.
  - Ecocardiogramma TT: Ventricolo sinistro dilatato per BSA (VTD 161 mL; VTS 101) con funzione sistolica globale moderatamente ridotta FE 43 %. Valvola aortica tricuspide, fibrotica con normale apertura sistolica ed insufficienza moderata (VC 5 mm). Atrio sinistro severamente dilatato . Valvola mitrale con insufficienza di grado severo. Sezioni destre di normali dimensioni con conservata cinesi longitudinale del ventricolo destro.

- Caso clinico 2
  - P.G. 87 anni
  - Affetto da: Dislipidemia, obesità. Insufficienza venosa cronica. Non antecedenti cardiologici di rilievo.
  - Accesso al PS della nostra A.O. per intensa dispnea a riposo; storia di dispnea ingravescente negli ultimi 3 mesi. Trasferito presso la nostra UTIC con quadro di EPA.
  - ECG al ricovero: FA a RVM di 110 bpm;
  - Ecocardiogramma TT: Ventricolo sinistro di normali dimensioni e cinesi (FE 55%). Atrio sinistro dilatato (50 mm in AP). IM di grado severo. Pattern flussimetrico transmitralico monofasico. Radice aortica ectasica con sclerosi delle cuspidi. Ventricolo destro dilatato. Assenza di versamento pericardico. Versamento pleurico basale bilaterale.

- Cas
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enza renale
idotta FE e
so cardiaco
edurale con
ti. Anomalie
olari.
STS 49 mm;
con severa

FIGURE 2 Relationship Between EROA and LVEDV Illustrating Domains That Define Disproportionately Severe, Proportionately Severe, and Nonsevere Functional Mitral Regurgitation