Case Presentation.

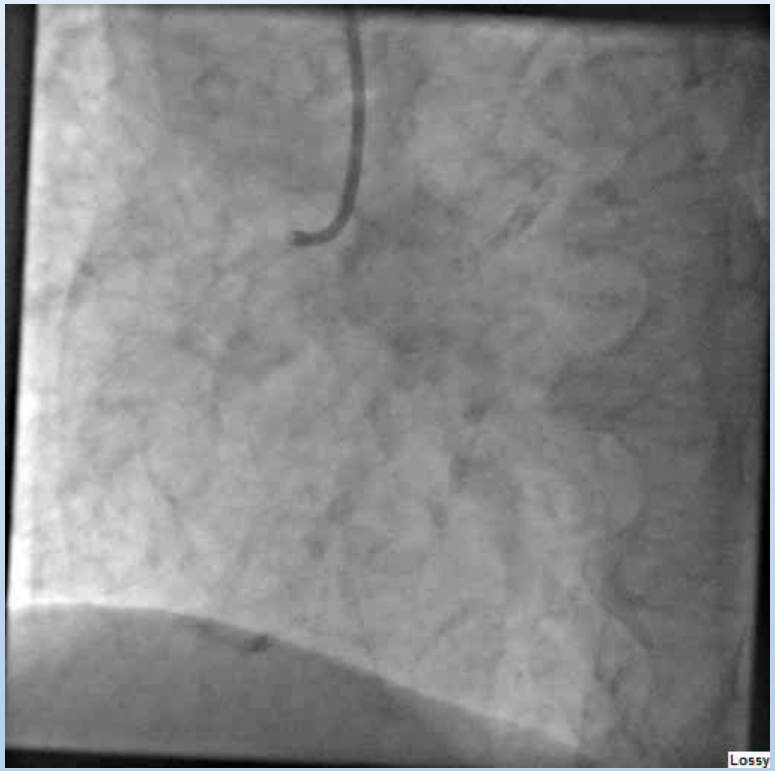
Acute MR

Mony Shuvy, MD

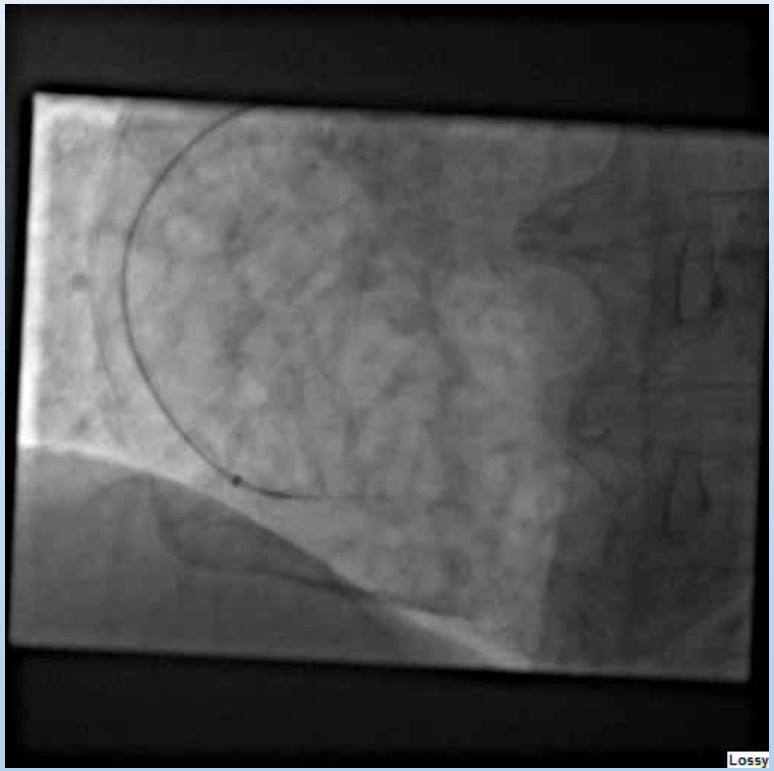
- 72-year-old female
- **Medical background:** Dyslipidemia, w/o previous cardiac morbidity
- **Initial complaint:** Extreme weakness for several hours
- **Vital signs:** Stable blood pressure,normal O2 saturation
- **Electrocardiogram:** Inferior STEMI

Coronary Angiogram and Intervention

Distal RCA Obstruction



Perforation

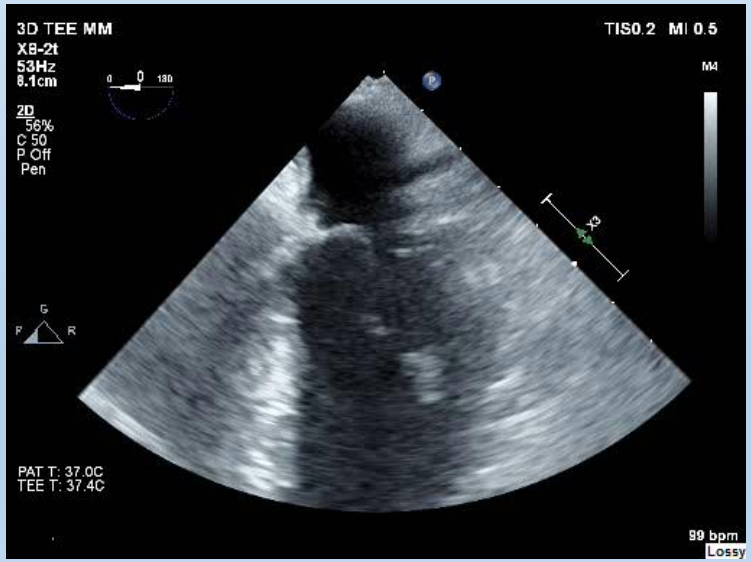


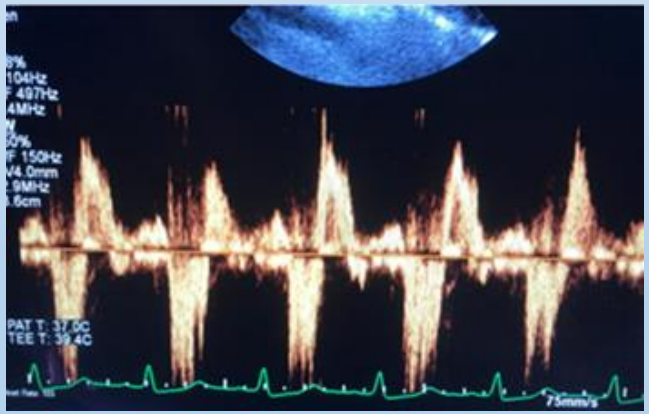
Coiling With Vessel Occlusion

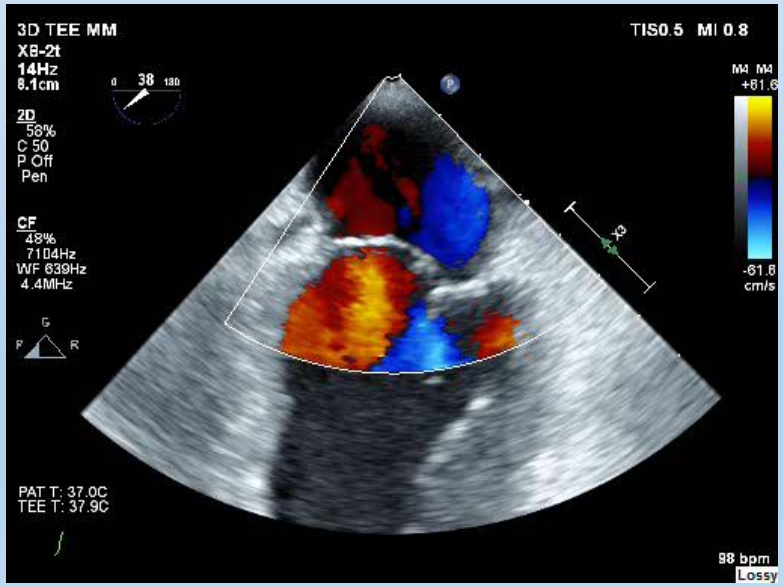
Back At the Cardiac Intensive Care Unit Following the PCI

- Hemodynamic deterioration , required three vasopressor agents
- Underwent mechanical ventilation
- Intra-aortic balloon pump (IABP) was inserted, Some hemodynamic improvement but… fully dependent upon it

New MR Due To
Papillary Muscle
Rupture With PVSRF

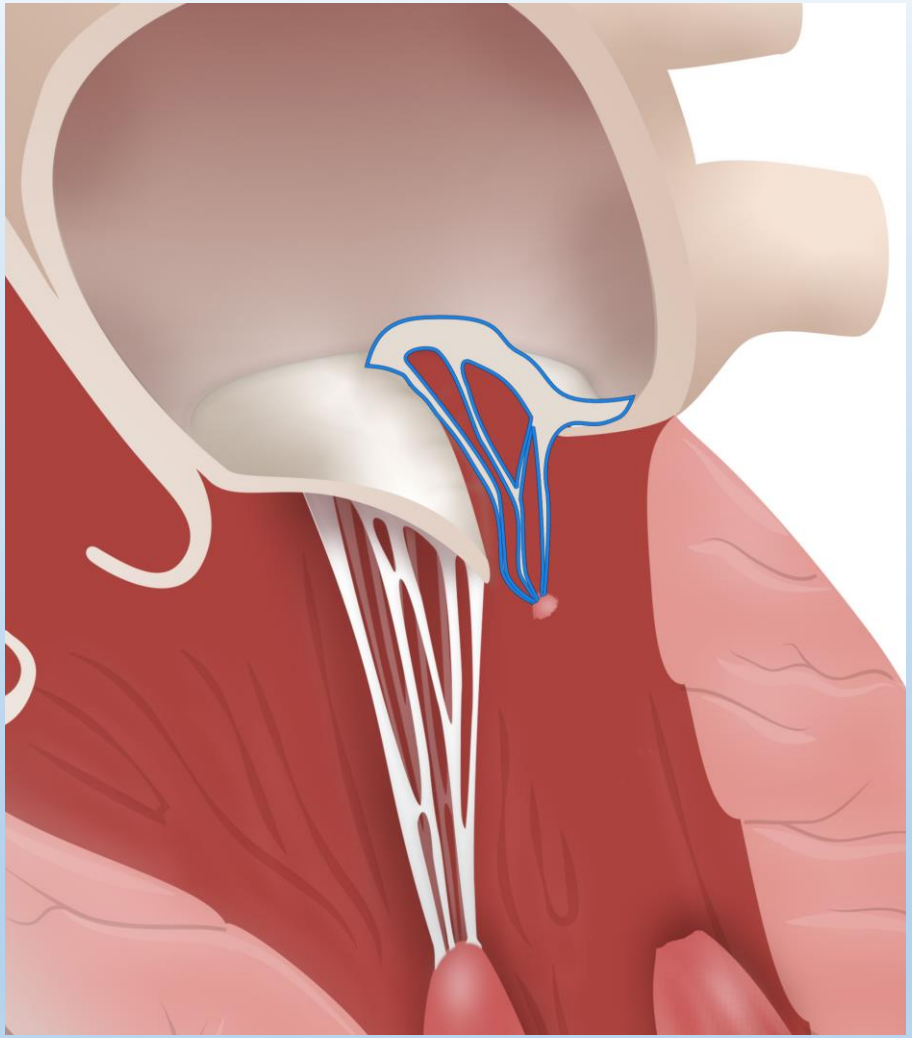






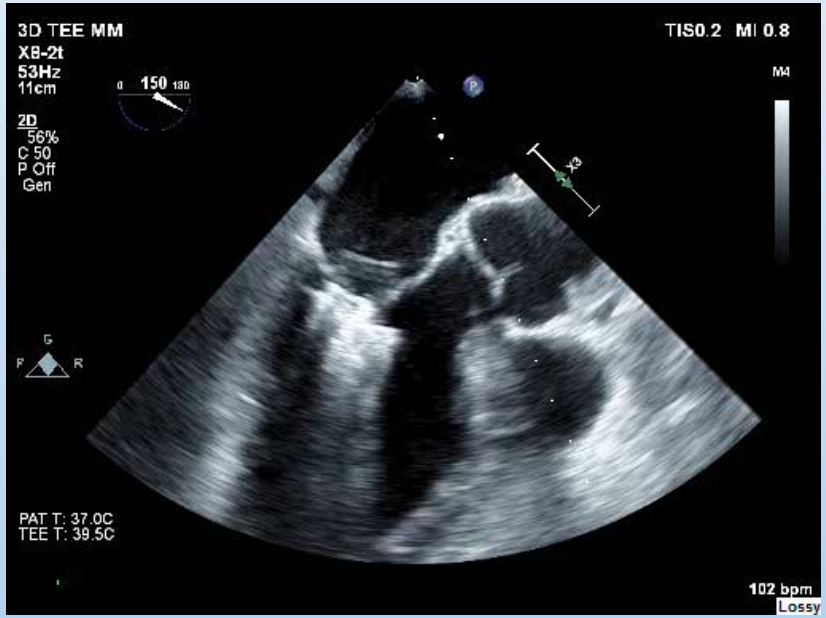
- Papillary muscle rupture.
  - Treatment options

- Medical therapy /ECMO / IMPELLA
- Surgical Mitral valve replacement
- TEER

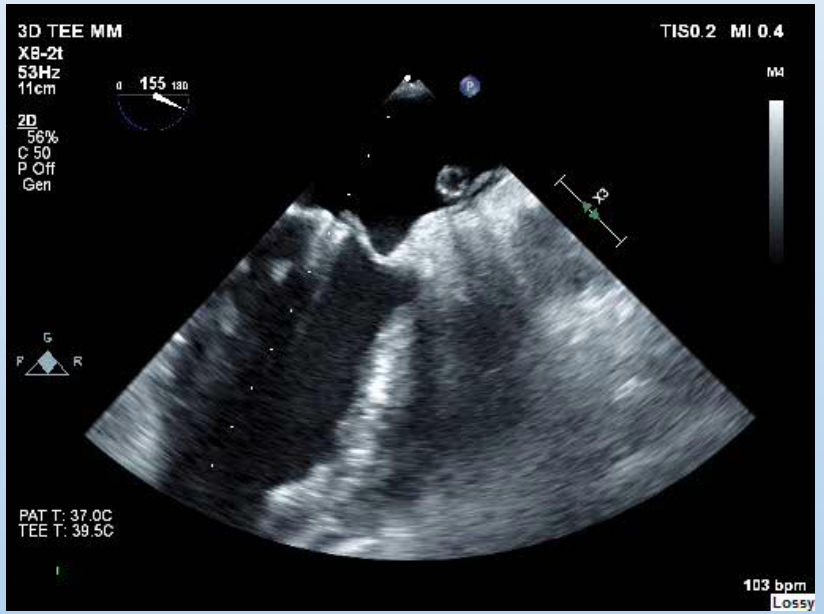


TEER – 1ST Clip Implantation

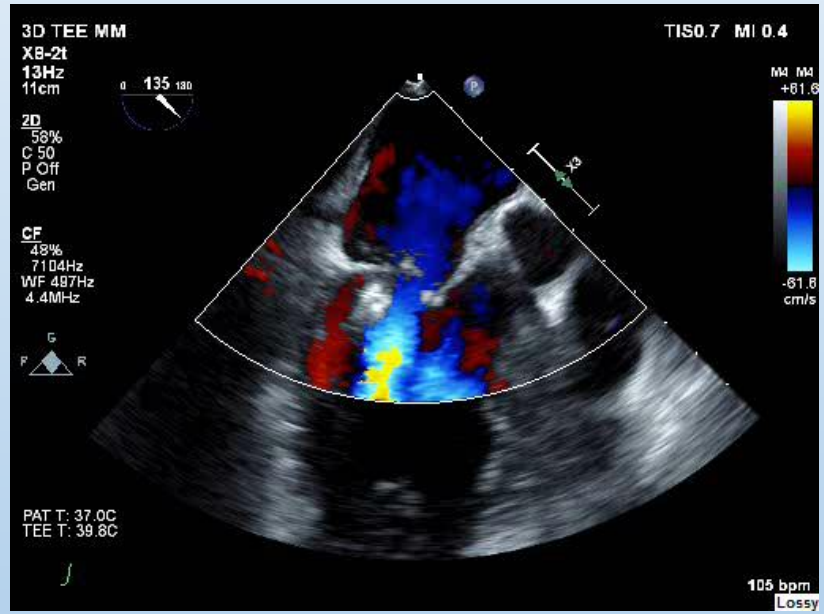
Grasping



Clip Highly Mobile After Release

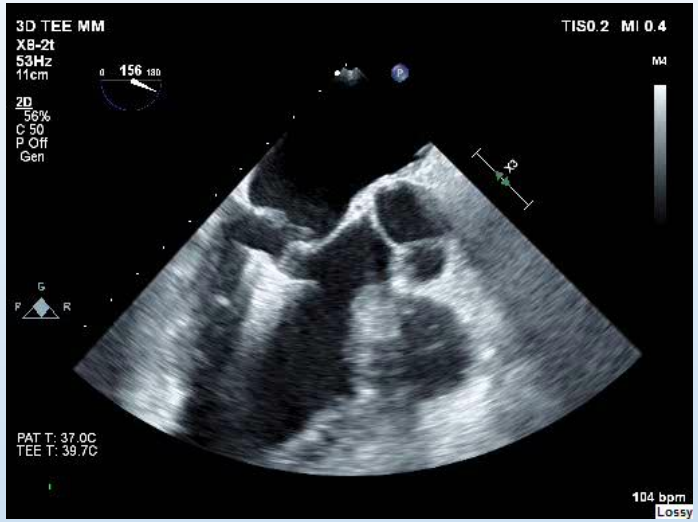


Significant Posterior Jet

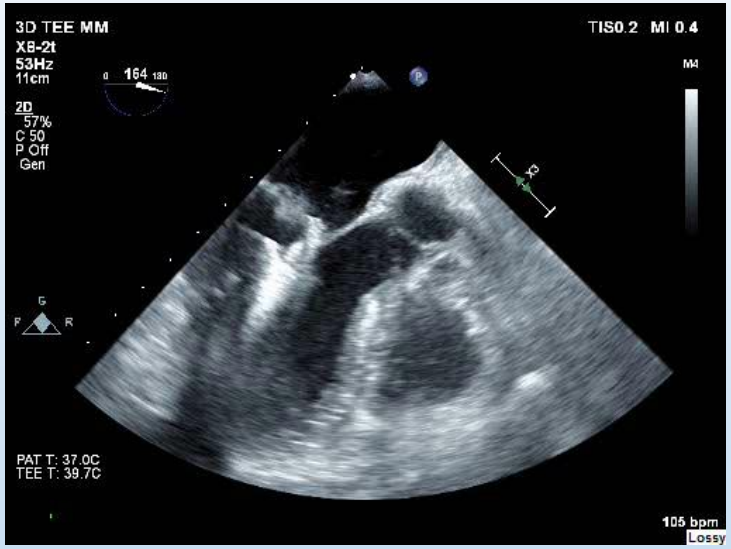


TEER- 2ND Clip Implantation

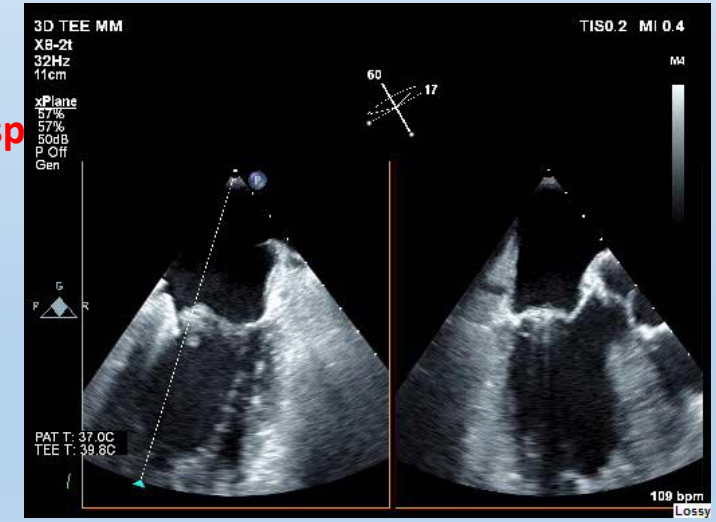
Grasping



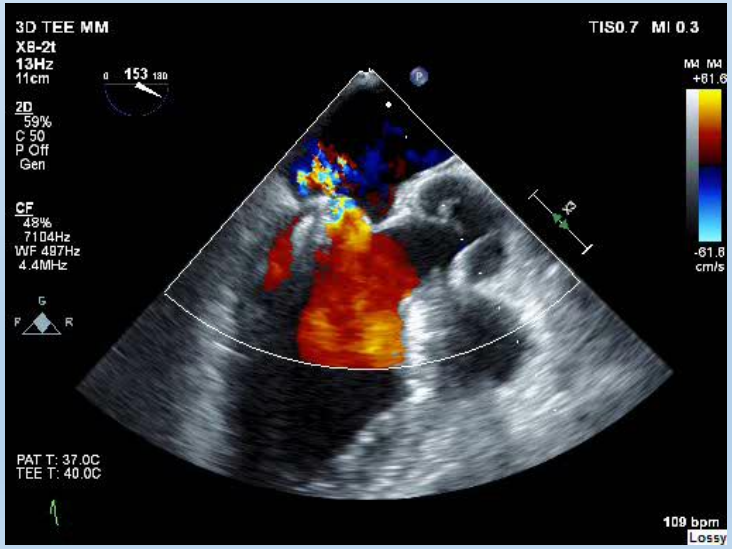
1st Clip Detachment



Good 2nd Clip Grasp
1st Clip Detached

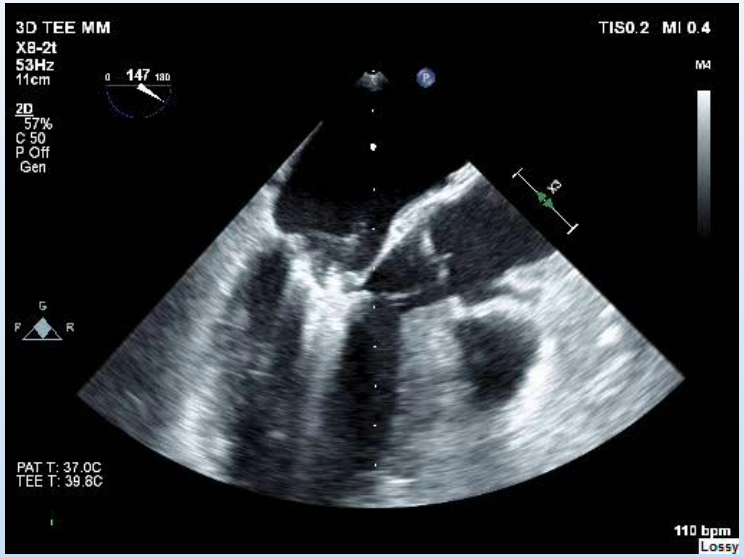


Improvement, But Still Significant Jet

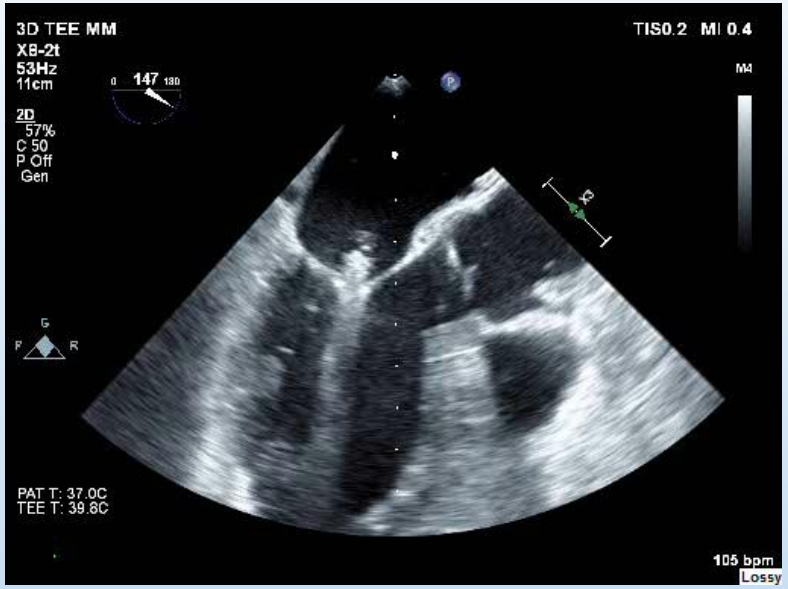


TEER- 3RD Clip Implantation

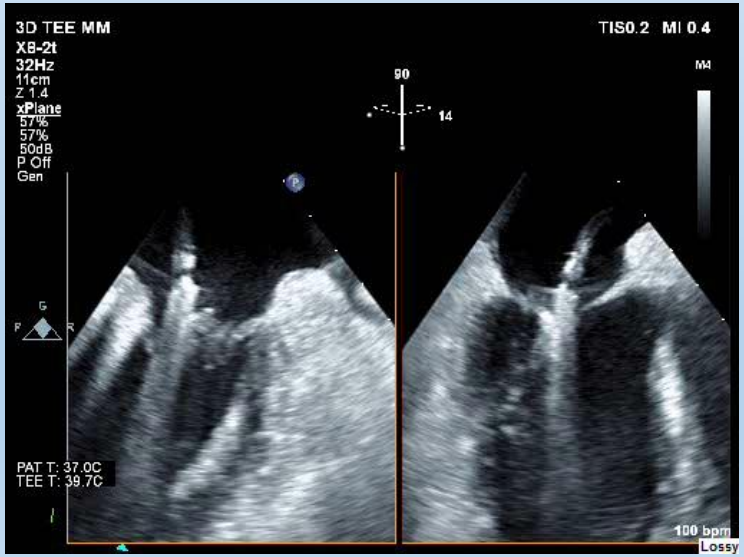
Highly mobile posterior leaflet



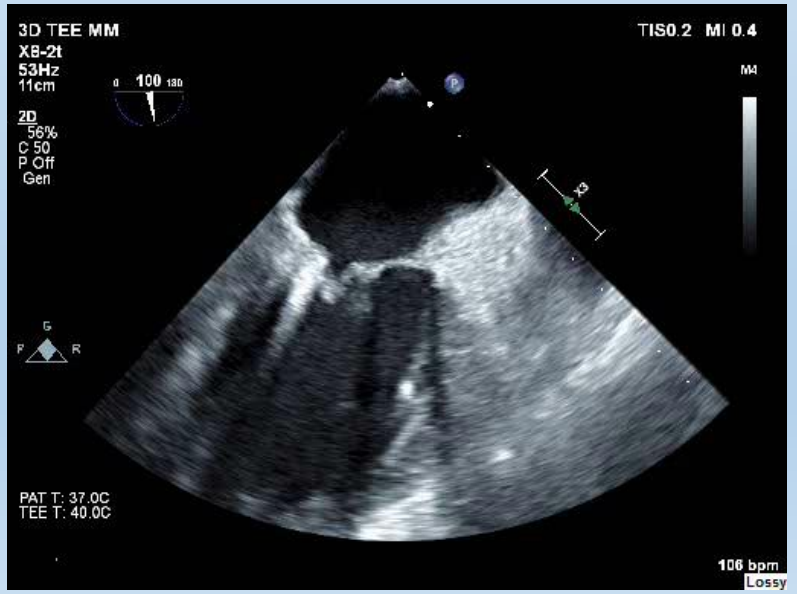
Good Grasping



X-Plane

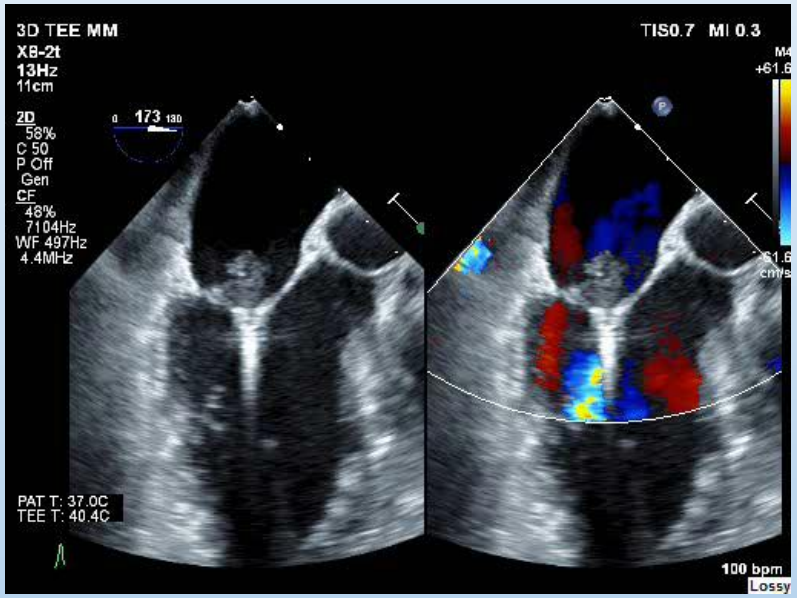


Papillary Muscle Rupture Freely Flowing

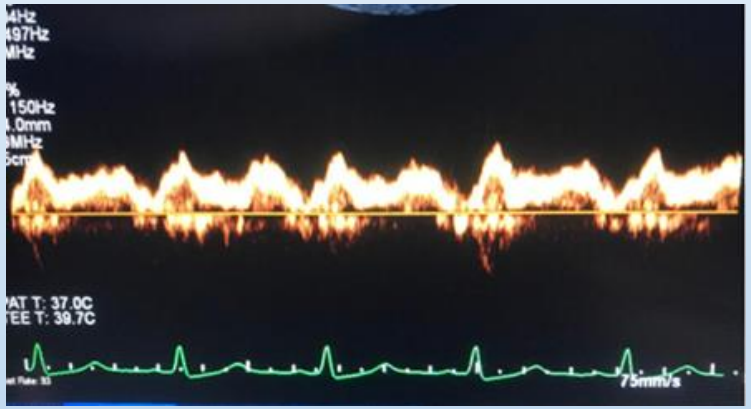


Final Result

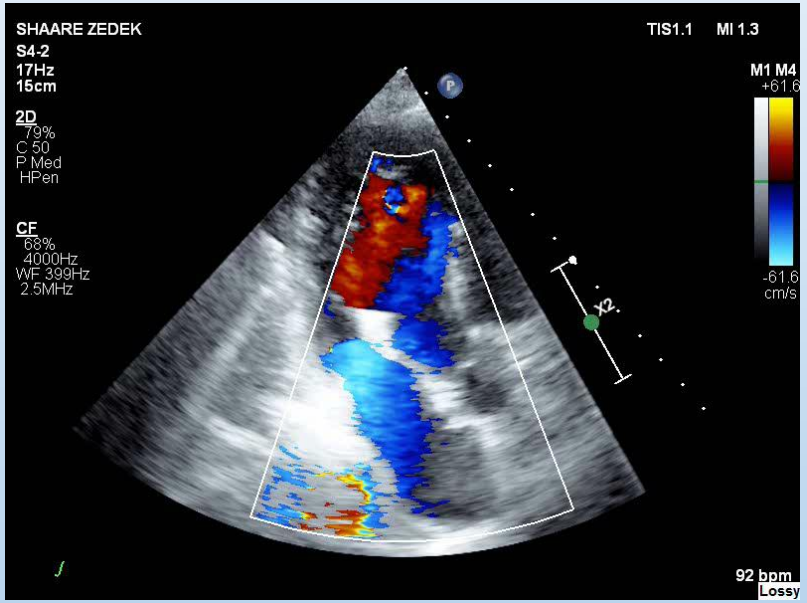
TEE at The End of The Procedure



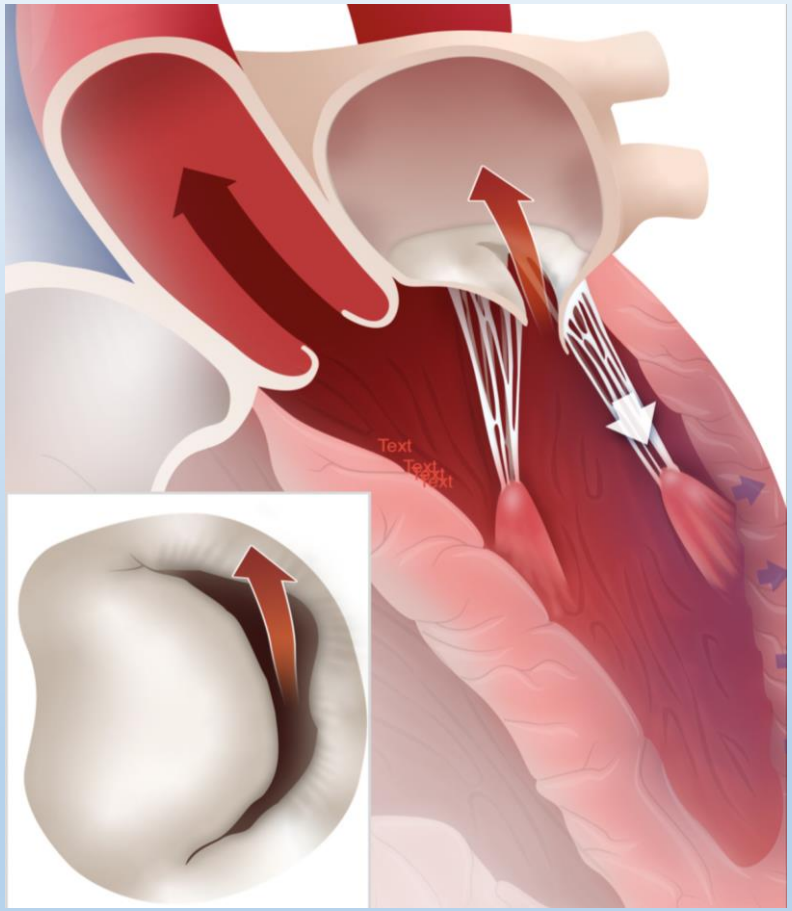
Pulmonic Vein Flow



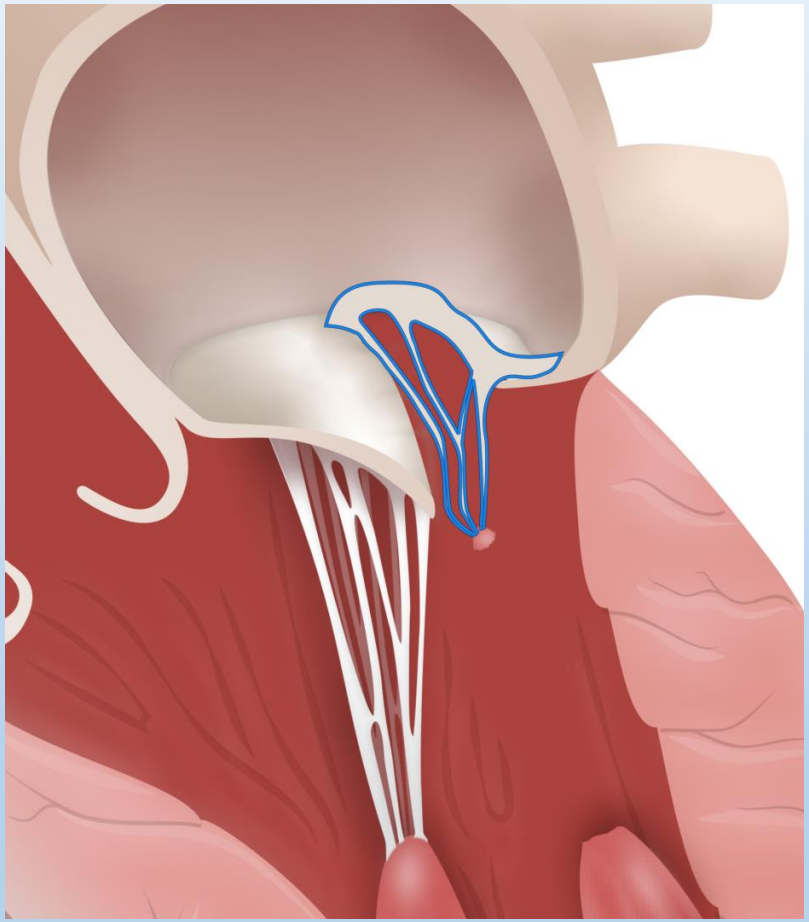
TTE a Day After The Procedure



Acute mitral regurgitation in the setting of myocardial infarction



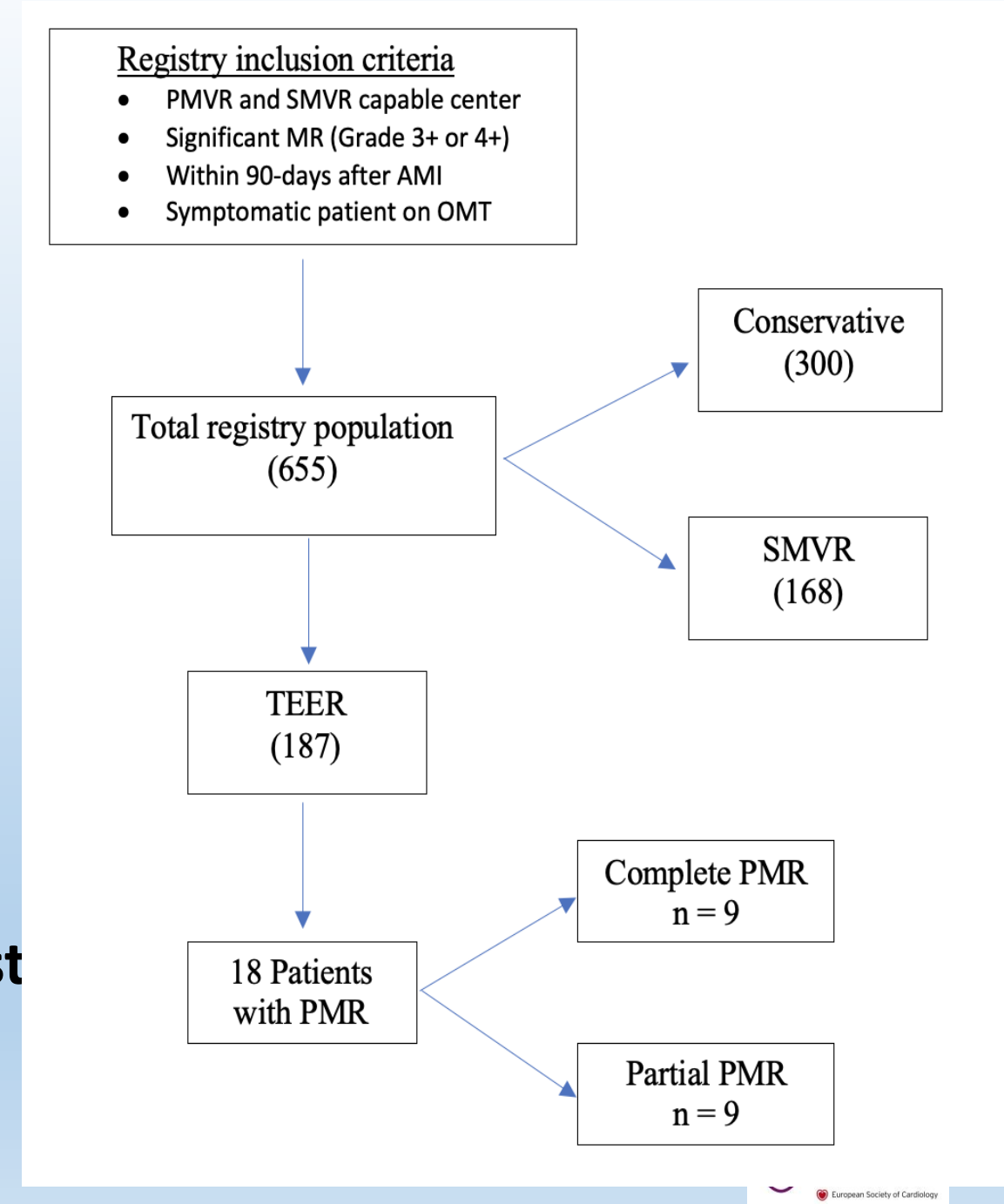
Rapid remodeling of infarcted left ventricle



Papillary muscle rupture (PMR)

- **Retrospective analysis of patients with significant MR (3^+ or 4^+) and heart failure symptoms (NYHA >3) within 90-days following acute MI**

- **Data obtained from The International Registry of Mitraclip in acute mitral regurgitation following acute Myocardial Infaction (IREMMI), over 25 centers in Europe, North America and the Middle East**



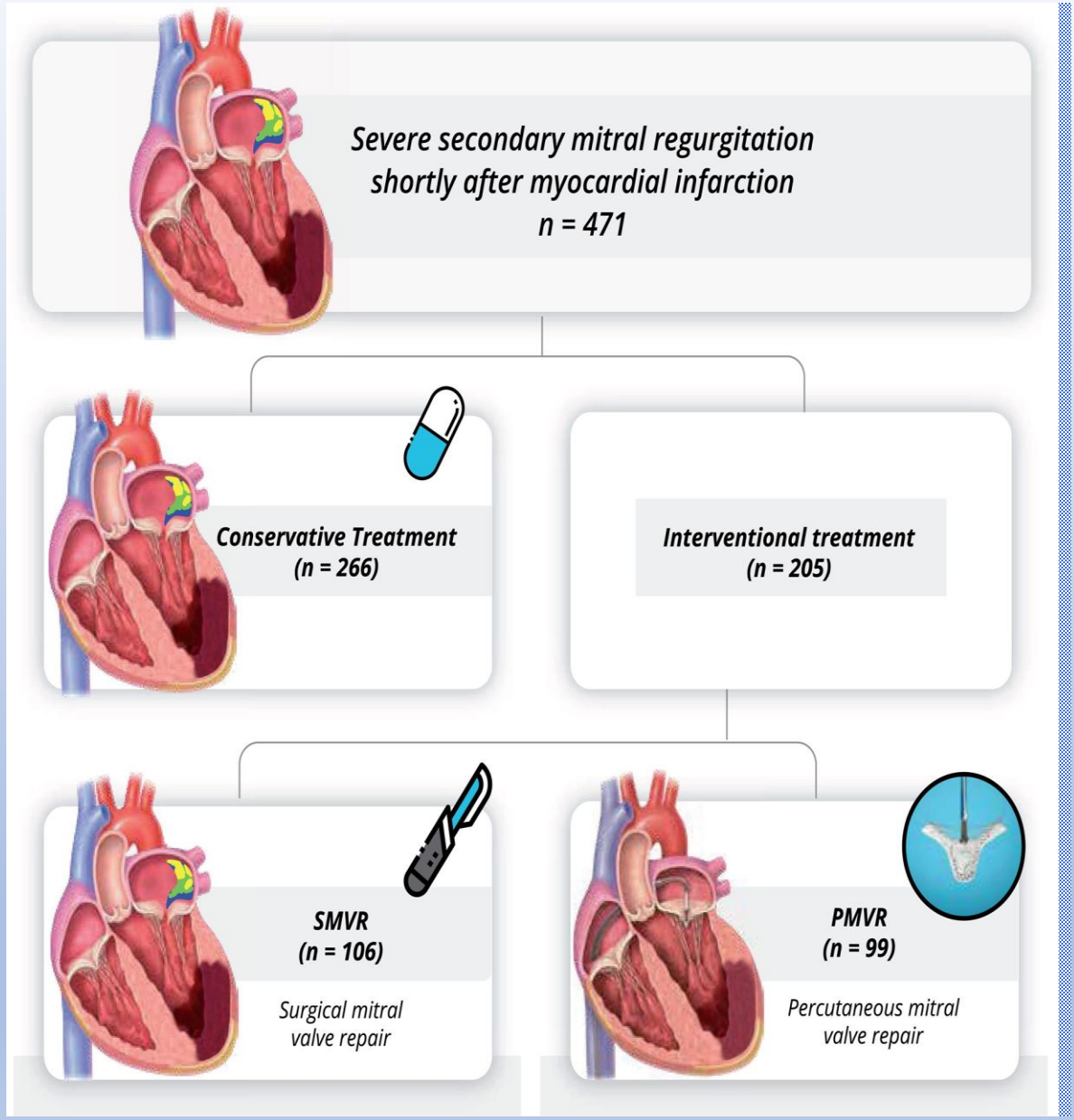
ESC European Society of Cardiology

European Heart Journal (2022) **43**, 641–650
https://doi.org/10.1093/eurheartj/ehab496

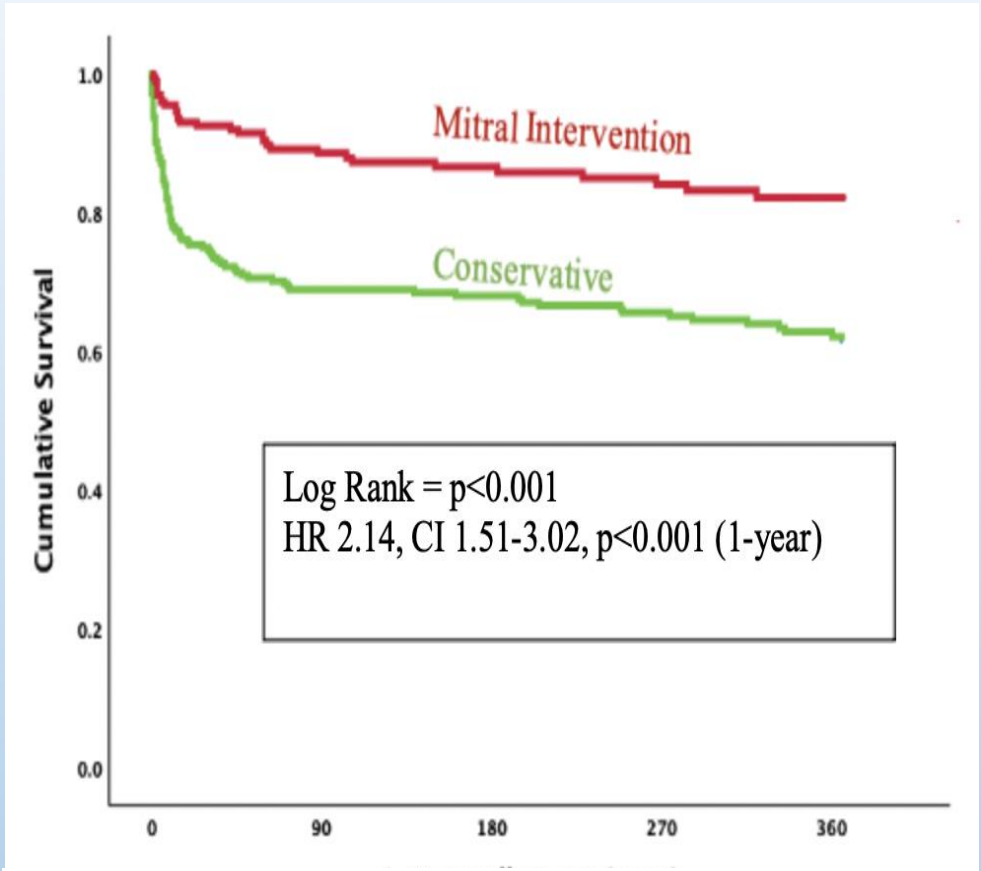
CLINICAL RESEARCH
Valvular heart disease

Conservative, surgical, and percutaneous treatment for mitral regurgitation shortly after acute myocardial infarction

Dan Haberman [1*†], Rodrigo Estévez-Loureiro [2†], Tomas Benito-Gonzalez [3], Paolo Denti [4], Dabit Arzamendi [5], Marianna Adamo [6], Xavier Freixa[7], Luis Nombela-Franco [8], Pedro Villablanca[9], Lian Krivoshei[10], Neil Fam[11], Konstantinos Spargias[12], Andrew Czarnecki [13], Isaac Pascual [14], Fabien Praz [15], Doron Sudarsky [16], Arthur Kerner [17],Vlasis Ninios [18], Marco Gennari[19,20], Ronen Beeri [21], Leor Perl [22], Yishay Wasserstrum [23], Haim Danenberg[21], Lion Poles[1], Jacob George[1], Berenice Caneiro-Queija[2], Salvatore Scianna[20], Igal Moaraf[24], Davide Schiavi [4], Claudia Scardino [25], Noé Corpataux [15], Julio Echarte-Morales[3], Michael Chrissoheris[12], Estefanía Fernández-Peregrina [5], Mattia Di Pasquale [6], Ander Regueiro[7], Carlos Vergara-Uzcategui [8], Andres Iñiguez-Romo[2], Felipe Fernández-Vázquez [3], Danny Dvir[26], Francesco Maisano[4], Maurizio Taramasso [20†], and Mony Shuvy[21,26*†]

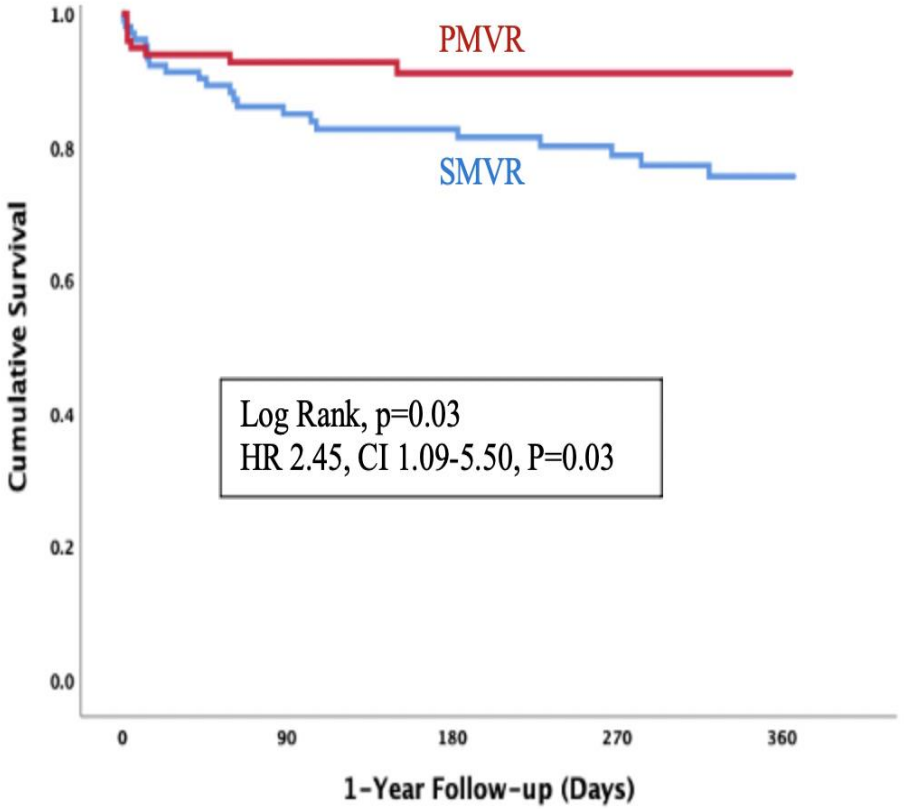


Conservative vs. Intervention



Conservative	256	161	147	126	90
Intervention	201	184	139	115	64

PMVR vs. SMVR



Number at Risk	0	3-Month	6-Month	9-Month	1-Year
SMVR	103	77	66	53	36
PMVR	98	72	55	38	28

Conservative, surgical, and percutaneous treatment for mitral regurgitation shortly after acute myocardial infarction. Eur Heart J. 2022 Feb 12;43(7):641-650

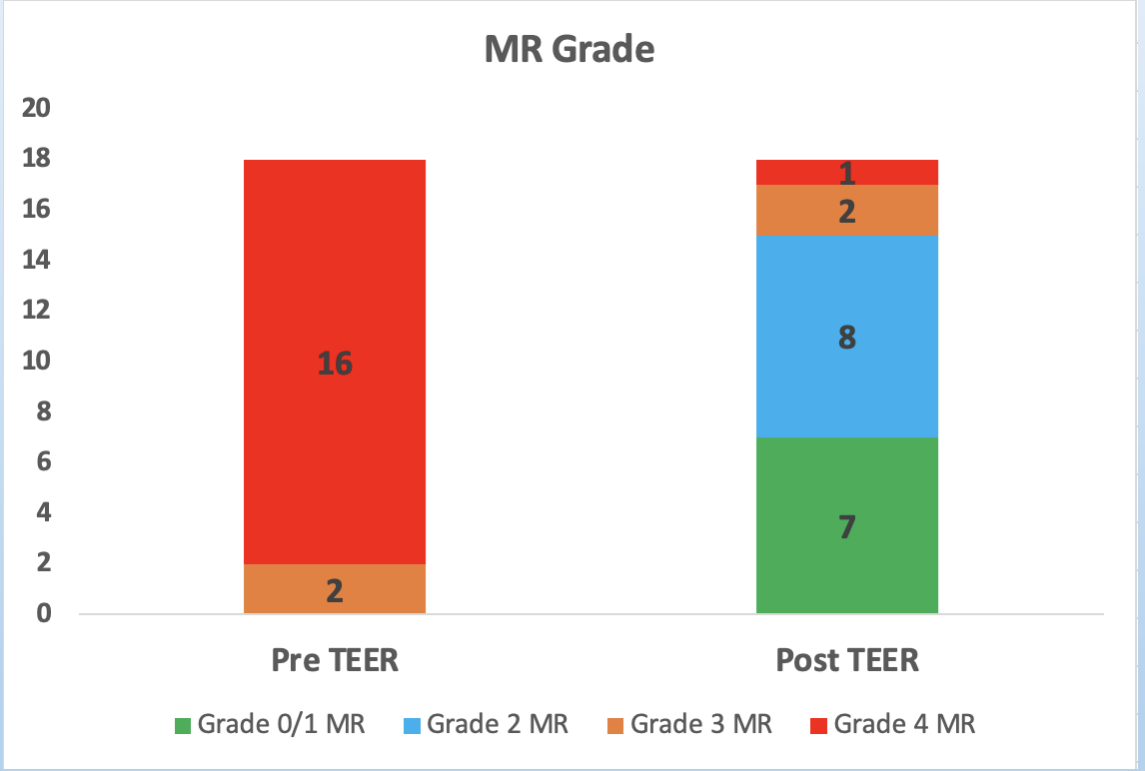
Primary MR (Papilary muscle rupture) treated with TEER

In this study we focused on patients with Primary MR treated with TEER.

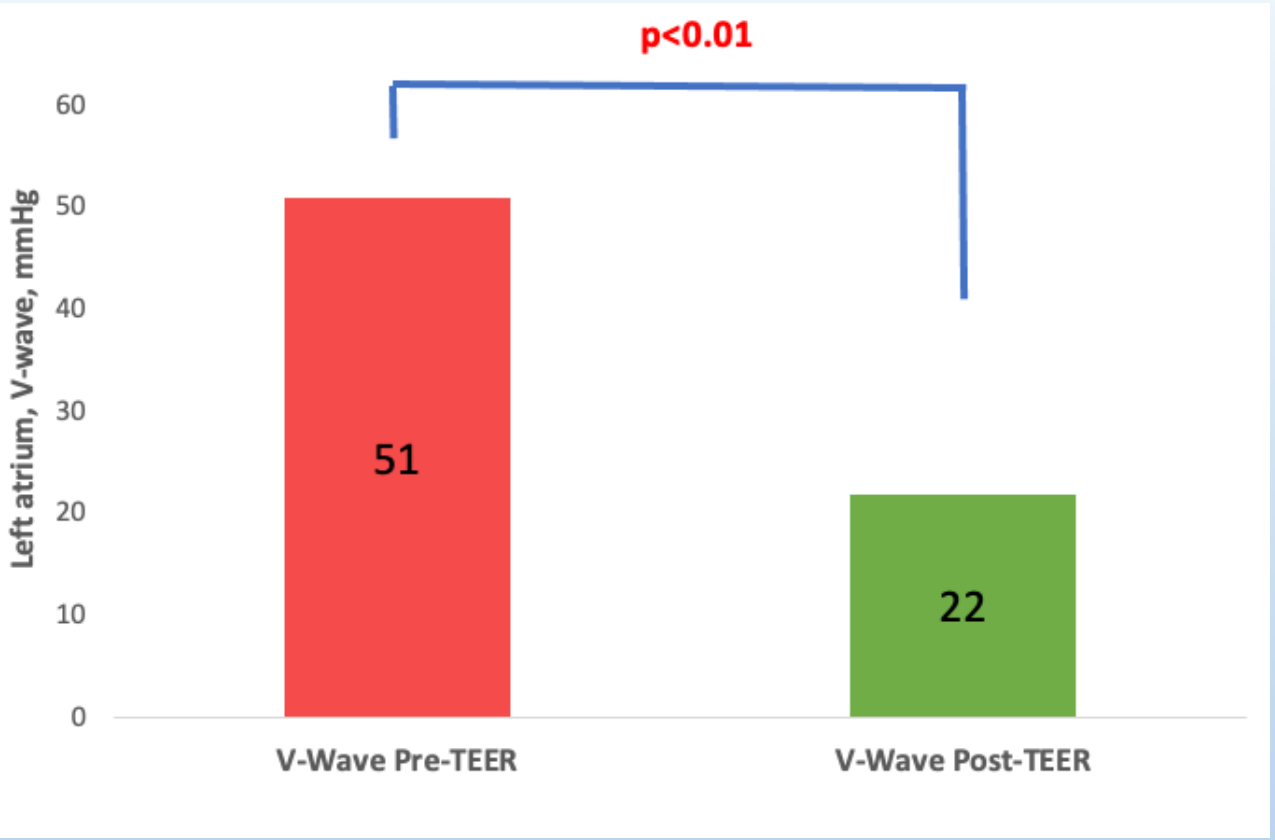
Variable	PMR
N	18
Age, years	67 ± 13
Gender (females), n (%)	9 (50)
Prior MI, n (%)	11 (61)
Multivessel CAD, n (%)	12 (67)
Anterior wall involved, n (%)	4 (22)
Left Ventricle EF, %	49 ± 13
Euroscore 2, % (IQR 1,3)	23 (13 – 31)
Cardiogenic shock, n (%)	16 (94)
Mechanical Ventilation, n (%)	14 (82)
Mechanical circulatory support, n (%)	13 (72)
VA – ECMO, n (%)	3 (18)

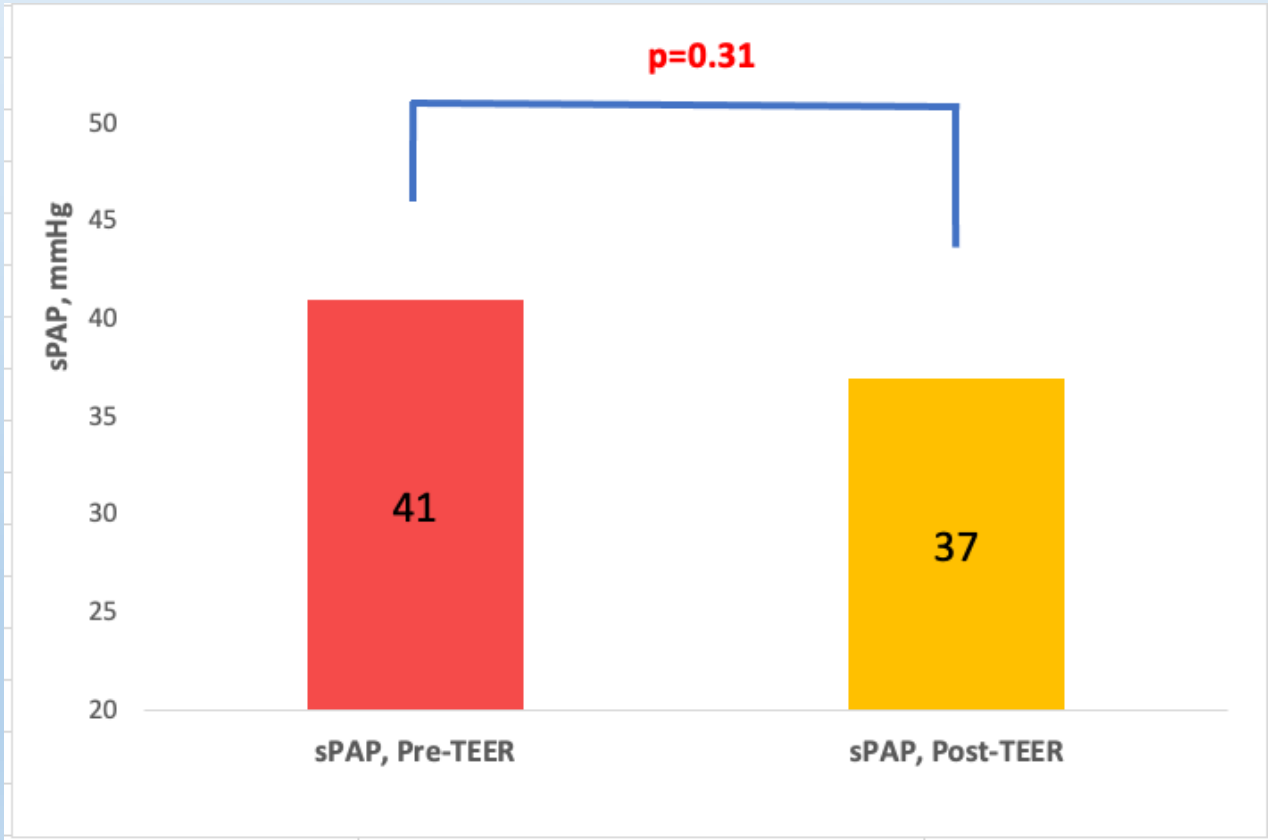
Results

Variable	PMR
N	18
Procedure Time, Min (IQR)	117 (60-150)
MI to Procedure, days (IQR)	6 (4-12)
Procedure Success, n (%)	16 (89)
Major complication, n (%)	2 (11)
Hospital Stay, days (IQR)	18 (12-24)
ICU Stay, Median days (IQR)	8 (6-16)



Results

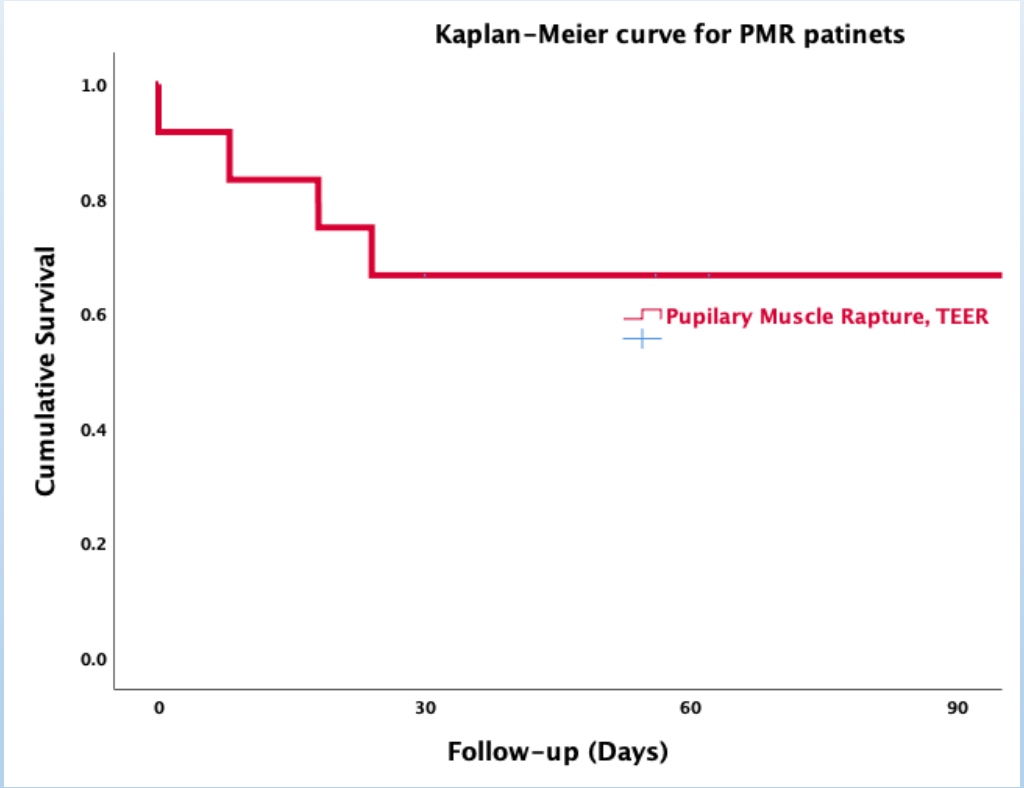

p<0.01
Left atrium, V-wave, mmHg
60
50
40
30
20
10
0
51
22
V-Wave Pre-TEER
V-Wave Post-TEER


p=0.31
sPAP, mmHg
50
45
40
35
30
25
20
41
37
sPAP, Pre-TEER
sPAP, Post-TEER

Results

- **Twelve patients (66.7%) survived to hospital discharge**

- **Ultimately, Five patients underwent mitral valve surgery (of 12 patients survived) at median time of 120 days (IR 39-270) after index event**



Conclusions

- **Papillary muscle rupture often presents with pulmonary edema and cardiogenic shock. Patient are at very high risk for surgery**
- **TEER was safe and effective in reducing MR and improving hemodymanic parameters**
- **TEER should be considered as an alternative or a bridge to emergent mitral valve surgery**