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Transcatheter edge-to-edge repair for mitral regurgitation early after acute myocardial infarction: aetiology-based analysis

The International Registry of Mitraclip in acute mitral regurgitation following acute Myocardial Infarction (IREMMI)

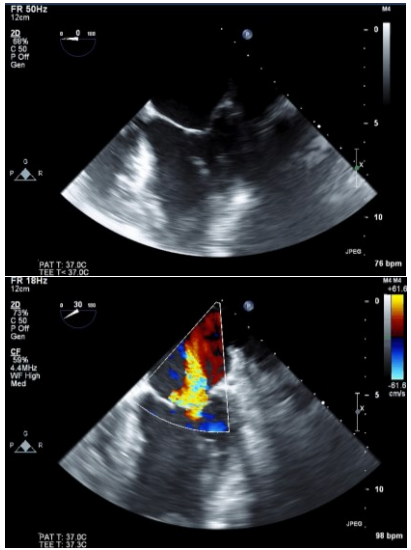
EAPCI
European Society of Cardiology

Potential conflicts of interest

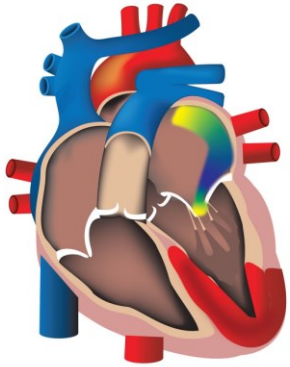
- ❑ I do not have any potential conflict of interest to report

Introduction

- Acute mitral regurgitation (MR) in the setting of myocardial infarction (MI) is the result of papillary muscle rupture (Primary) or rapid remodelling of infarcted left ventricle (Secondary)

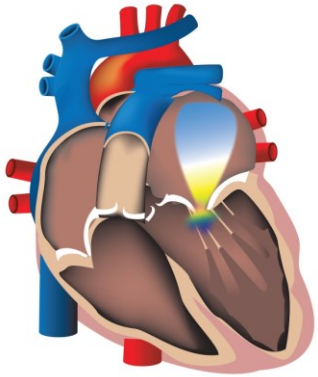


Acute Functional MR (Secondary)



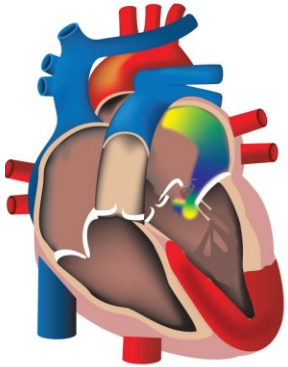
Normal sized chambers, acute LV hypo/akinesia, leaflet tethering

Chronic MR

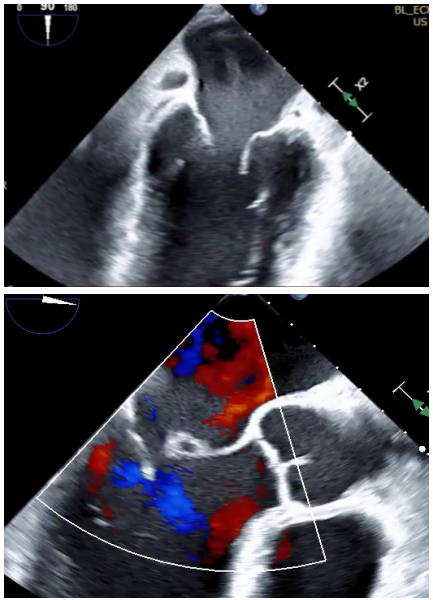


Enlarged left ventricle and atrium, central jet

Papillary muscle rupture (Primary)



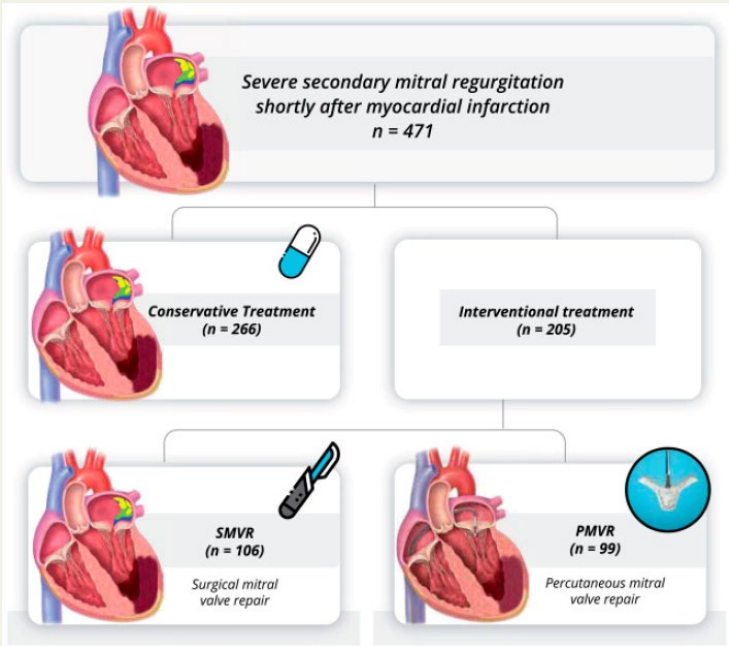
Normal size chambers, acute LV hypo/akinesia, ruptured papillary muscle and eccentric large jet



Introduction #2

- Associated with variable clinical condition and high morbidity and mortality

- Our group previously demonstrated that transcatheter edge-to-edge repair (TEER) was successful in decreasing secondary MR and improving hemodynamic parameters



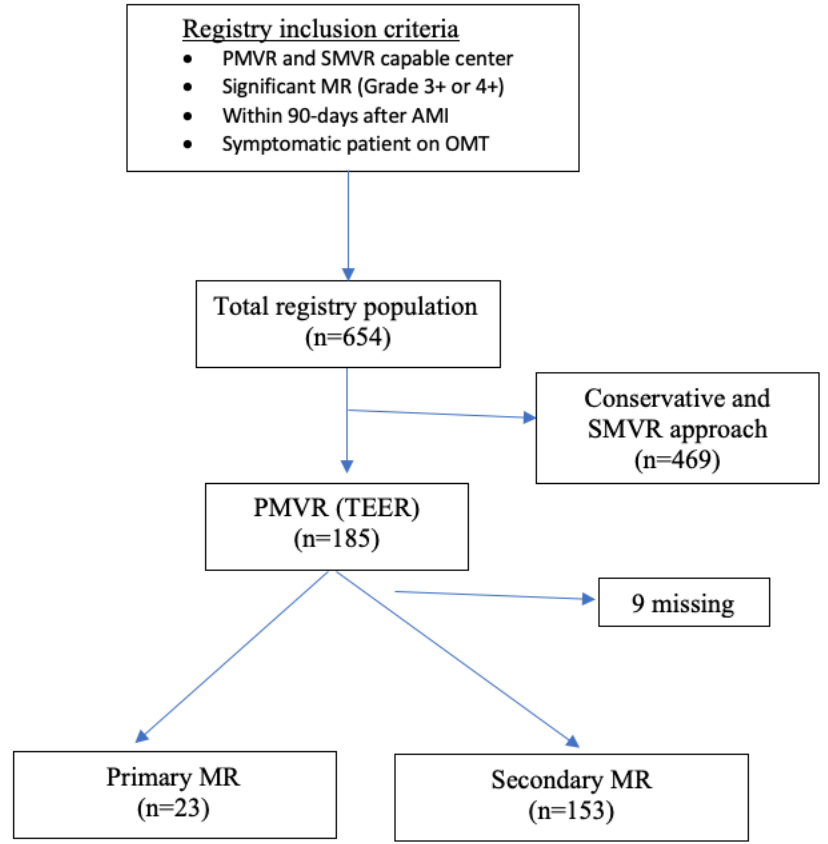
Haberman D, et al. Conservative, surgical, and percutaneous treatment for mitral regurgitation shortly after acute myocardial infarction. *Eur Heart J* 2022;43:641–650

Methods

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

- Data obtained from IREMMI, over 25 centers in Europe, North America and the Middle East

- We compared post-MI acute MR patients, based on underling aetiology; primary and secondary



Results - Baseline characteristics

Primary MR
- Higher risk
- More severe presentation

Secondary MR
- Lower LVEF

Variable	Primary MR	Secondary MR	P Value
N	23	153	
Age, years	68 ± 13	71 ± 10	0.32
Gender (females), n (%)	10 (44)	64 (42)	0.88
Euroscore 2, %	27 ± 21	17± 15	**0.01**
Left Ventricle EF, %	45 ± 21	35 ± 10	**<0.01**
Mean Killip class,	3.8 ± 0.5	3.2 ± 0.9	**0.01**
Cardiogenic shock, n (%)	19 (91)	73 (51)	**<0.01**
Mechanical Ventilation, n (%)	18 (86)	60 (41)	**0.12**
Mechanical circulatory support, n (%)	16 (70)	51 (34)	**<0.01**

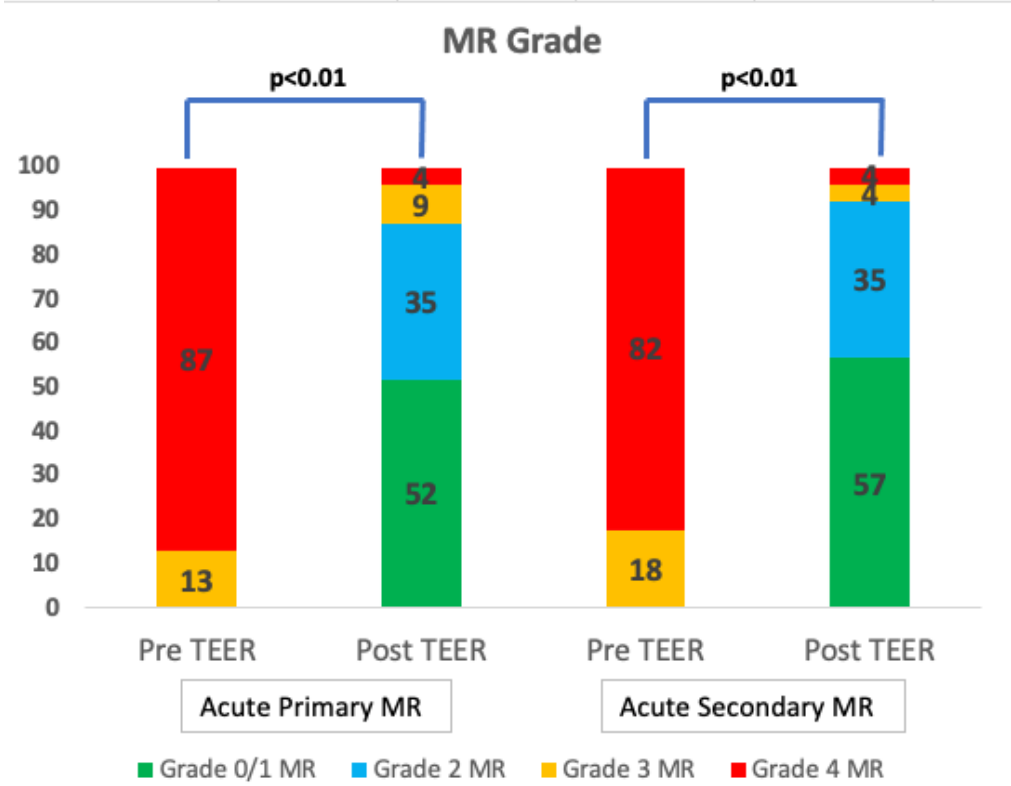
Results – Procedural outcomes

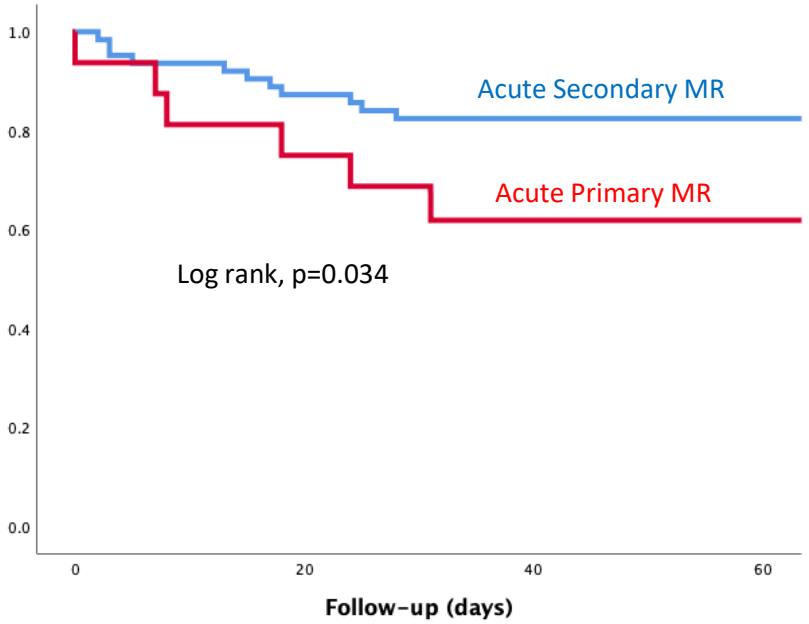
Primary MR

- Shorter MI to procedure time
- Similar procedural success
- Higher in-hospital mortality
- Higher convertion to MVR

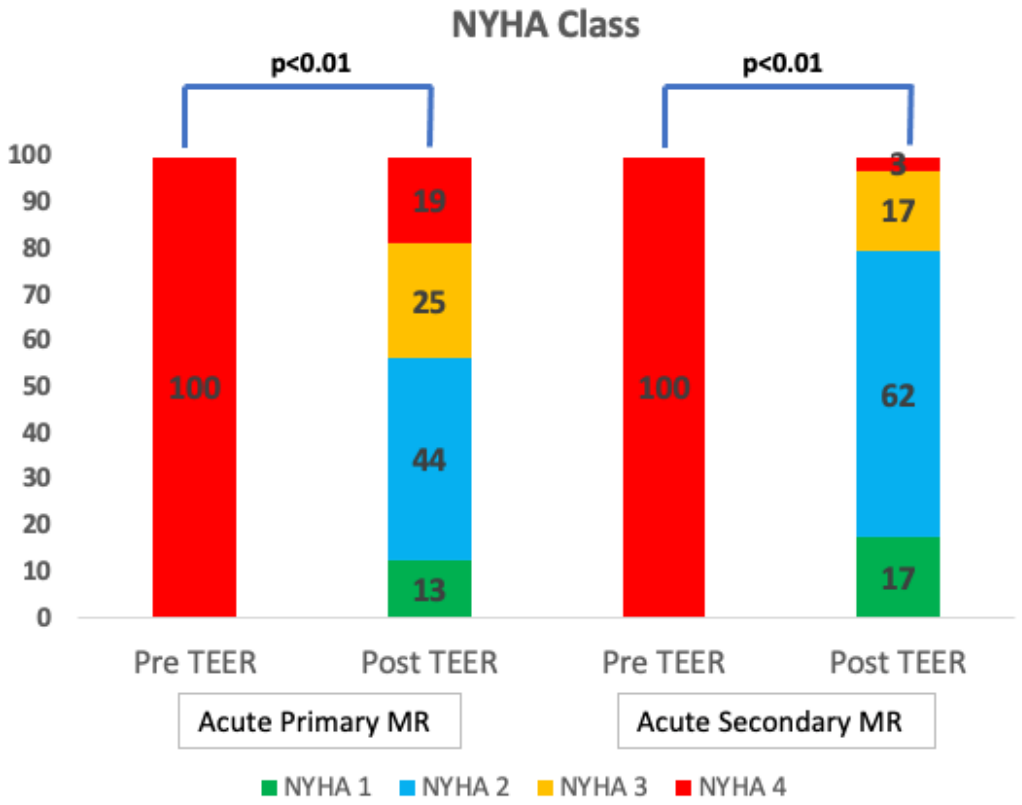
Variable	Primary MR	Secondary MR	P Value
N	23	153	
Procedure Time, Min (IQR)	117 (60 – 150)	92 (60 – 128)	0.28
MI to Procedure, days (IQR)	6 (3.5 - 12)	20 (12 - 37)	**<0.01**
Procedure Success, n (%)	20 (87)	140 (92)	0.49
Major complications, n (%)	2 (9)	12 (8)	0.36
Hospital Stay, days (IQR)	18 (12 - 29)	16 (8 - 31)	0.68
ICU Stay, Median days (IQR)	12 (7 - 18)	8 (2-20)	0.17
In-hospital Mortality, n (%)	7 (30)	10 (7)	**<0.01**
Conversion to MVR, n (%)	5 (22)	5 (3)	**<0.01**

Results – Mortality and MR reduction



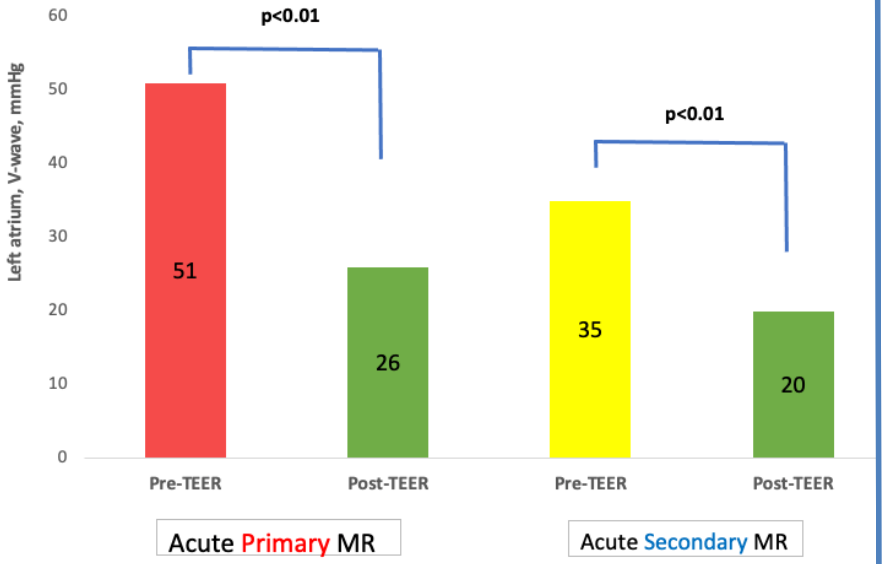


Results – Quality of life, NYHA

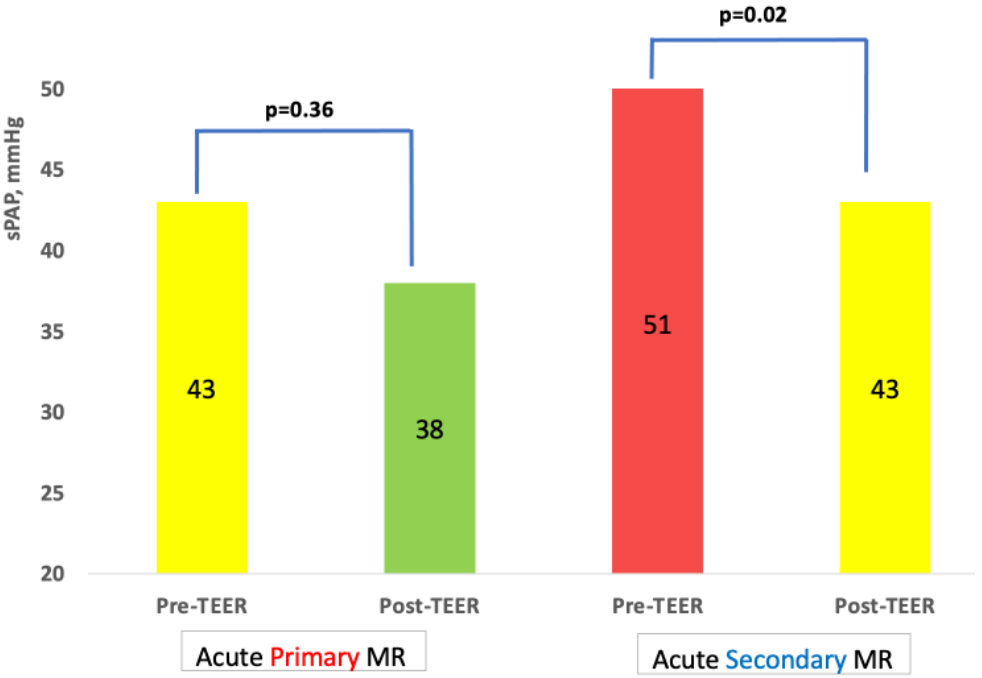


Results - Hemodynamics

V-Wave



sPAP

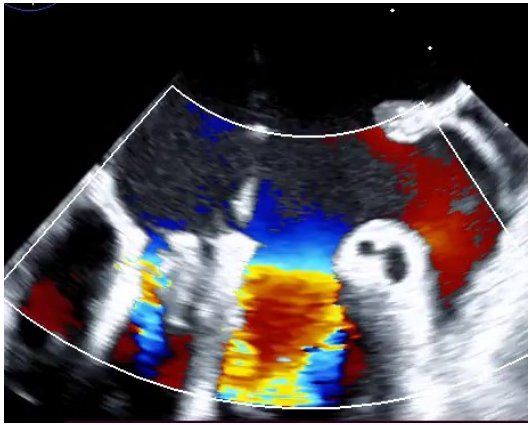


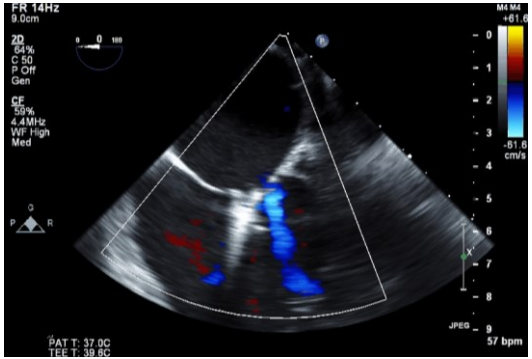
Conclusions

- Post MI significant MR is associated with poor outcomes, TEER is an emerging treatment option in this population

- TEER for primary MR was conducted earlier then secondary MR with comparable procedural success

- TEER in primary MR is associated with higher in-hospital mortality and higher conversion to MVR over secondary MR





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Additional side – Proposed algorithm