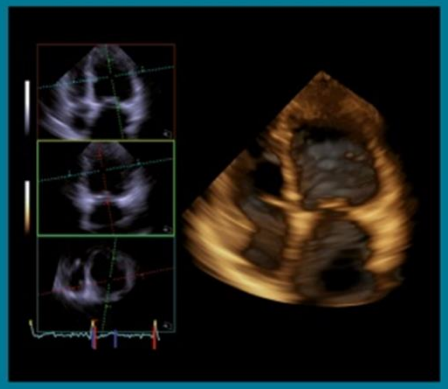


EuroValve

October 24-25 2014, Rome, Italy

www.eurovalvecongress.com

Challenges for Clinical Cardiologists: Is Echo Imaging helpful ?

Focus on aortic valve

Clinical case: 70 years old attorney with severe AS, impaired LV systolic function and MR

Should we repair / replace the mitral valve

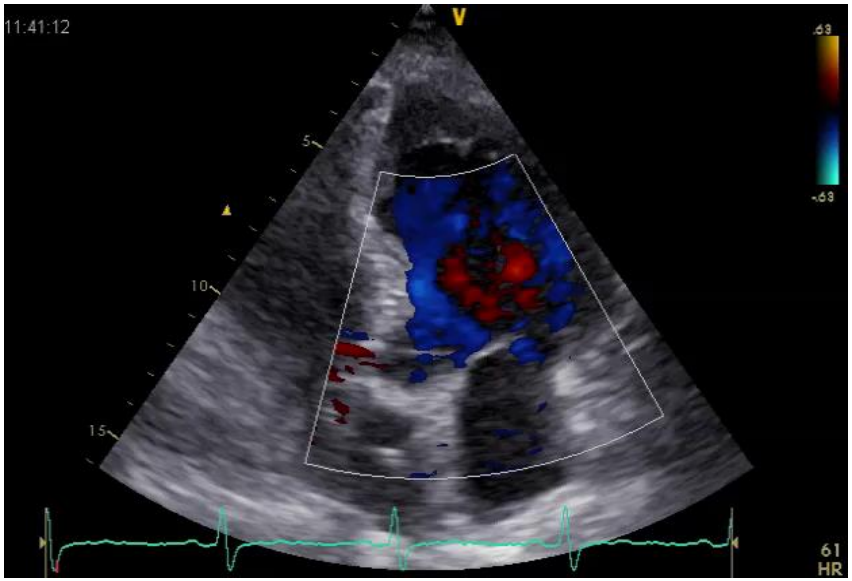
Maurizio Galderisi, FESC, MD

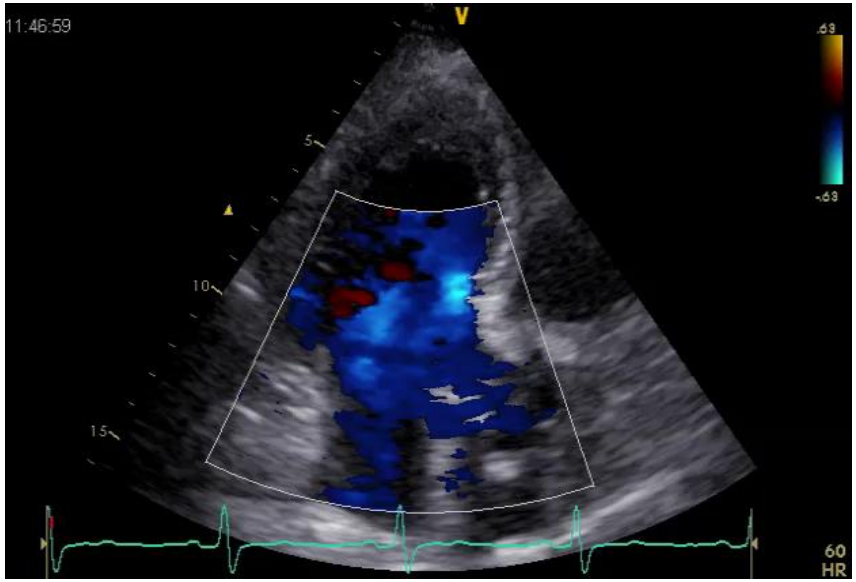
Federico II University Hospital
Naples, Italy

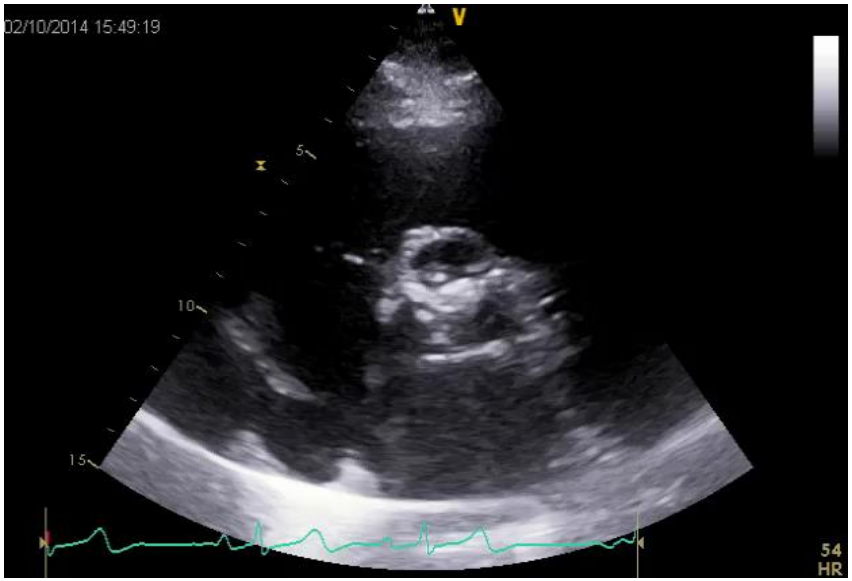
The Clinical Case

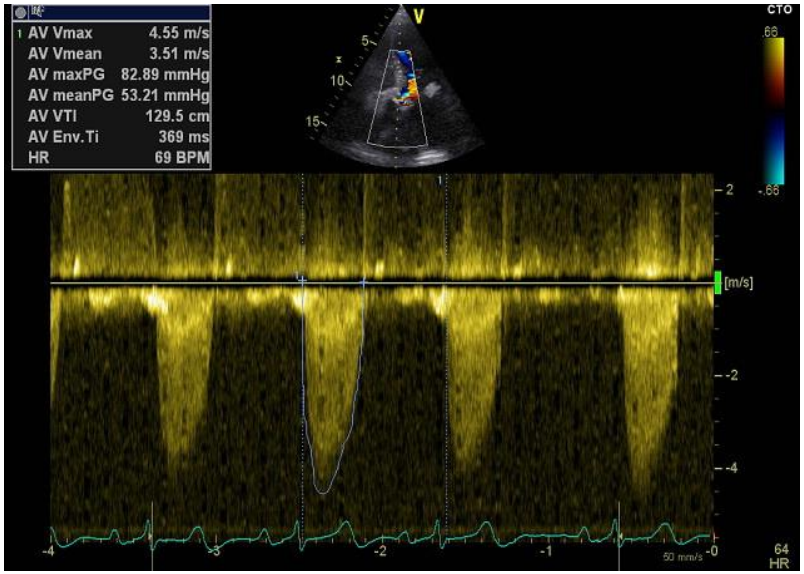
A 70 year old attorney with
- severe aortic stenosis
- impaired LV systolic function
- mitral regurgitation

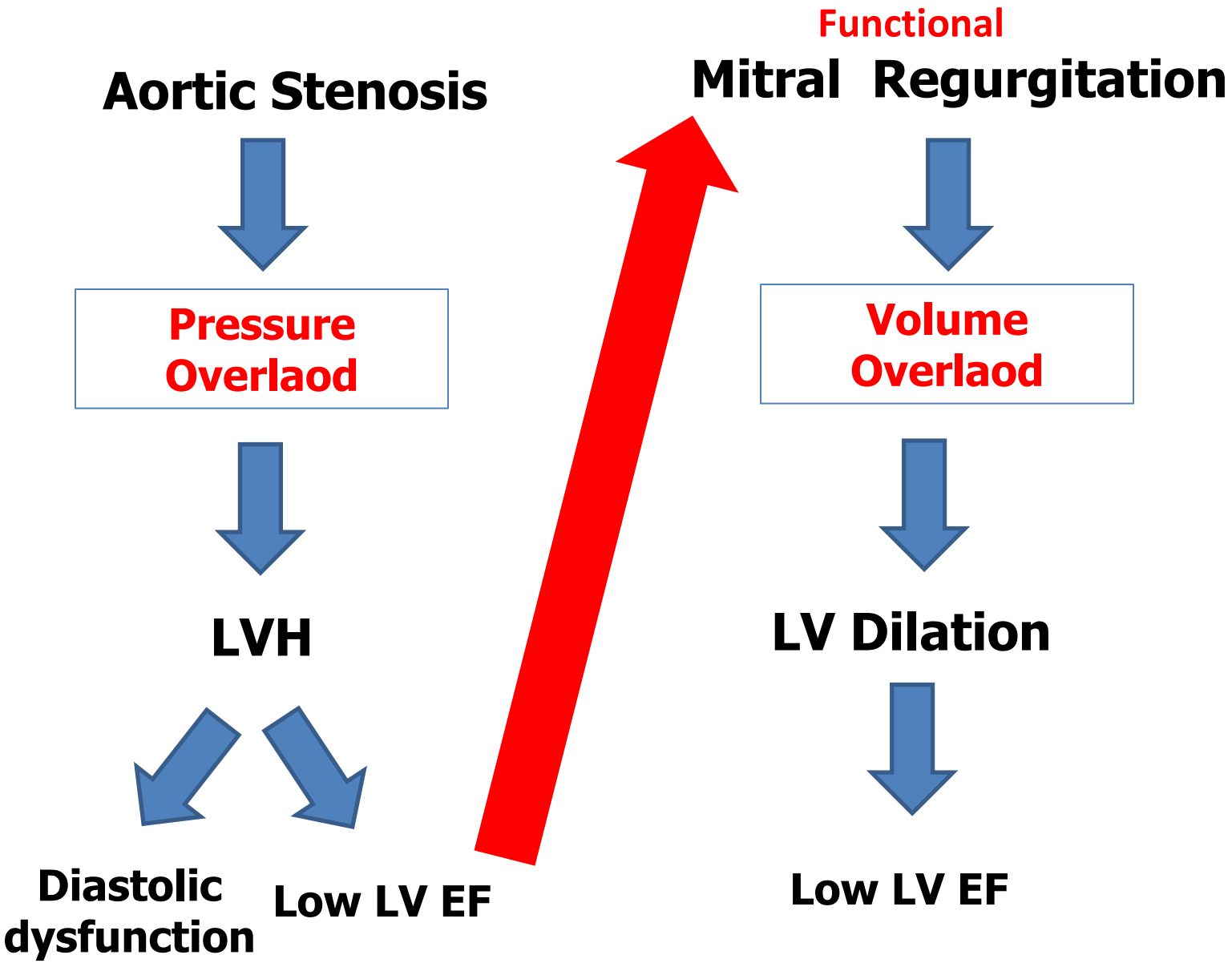
Concomitant AS and MR










Functional
Aortic Stenosis
Mitral Regurgitation
Pressure Overlaod
Volume Overlaod
LVH
LV Dilation
Diastolic dysfunction
Low LV EF
Low LV EF

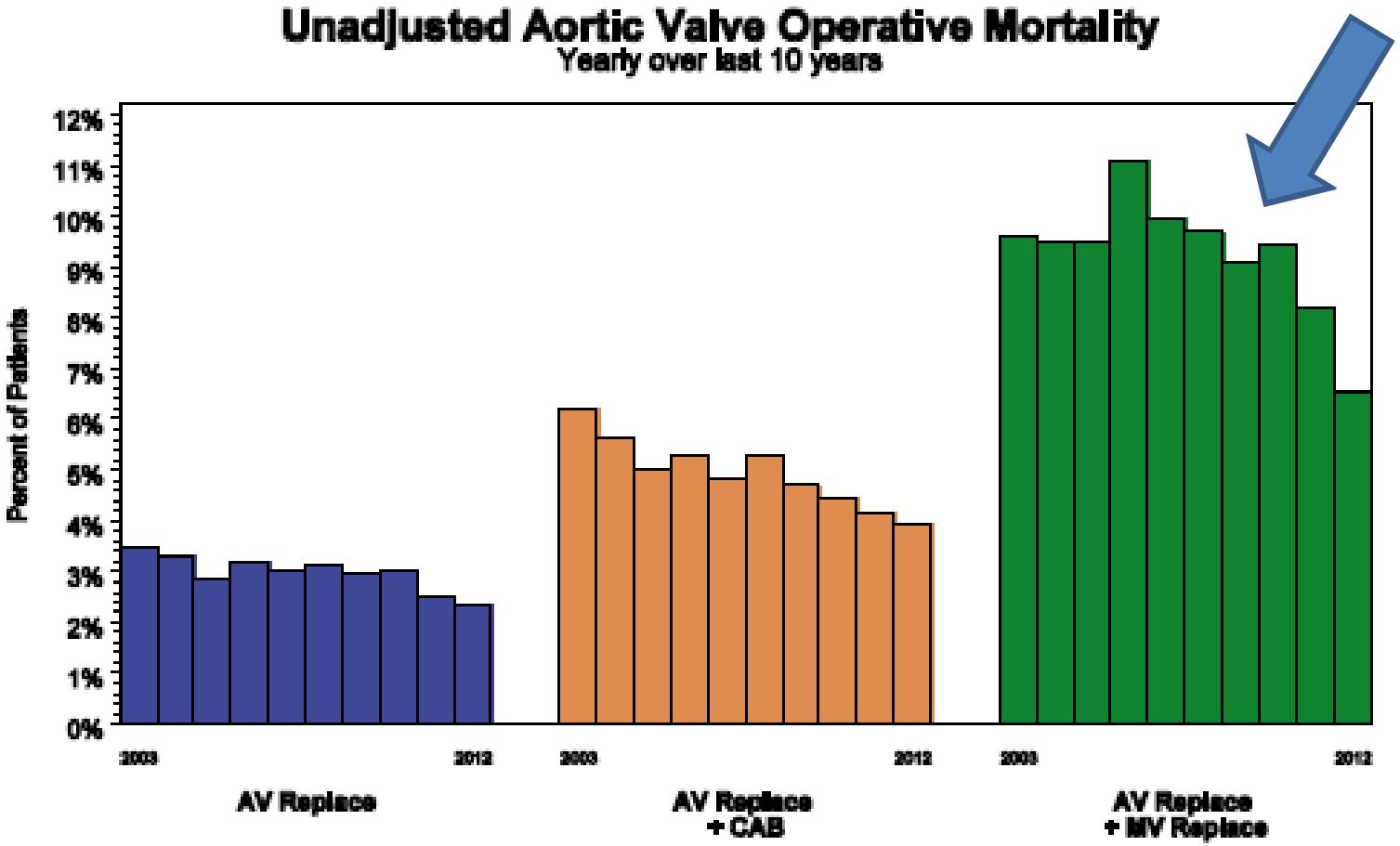
European Heart Journal (2012) 33, 2451–2496
doi:10.1093/eurheartj/ehs109

Guidelines on the management of valvular heart disease (version 2012)

10. Combined and multiple valve diseases

- Indications for intervention are based on global assessment of the consequences of the different valve lesions, i.e. symptoms or presence of LV dilatation or dysfunction. Intervention can be considered for non-severe multiple lesions associated with symptoms or leading to LV impairment.
- The decision to intervene on multiple valves should take into account the extra surgical risk of combined procedures.

Impact of the combined mitral and aortic valve surgery on mortality



Society of Thoracic Surgeons. Adult cardiac surgery database executive summary 10 years.

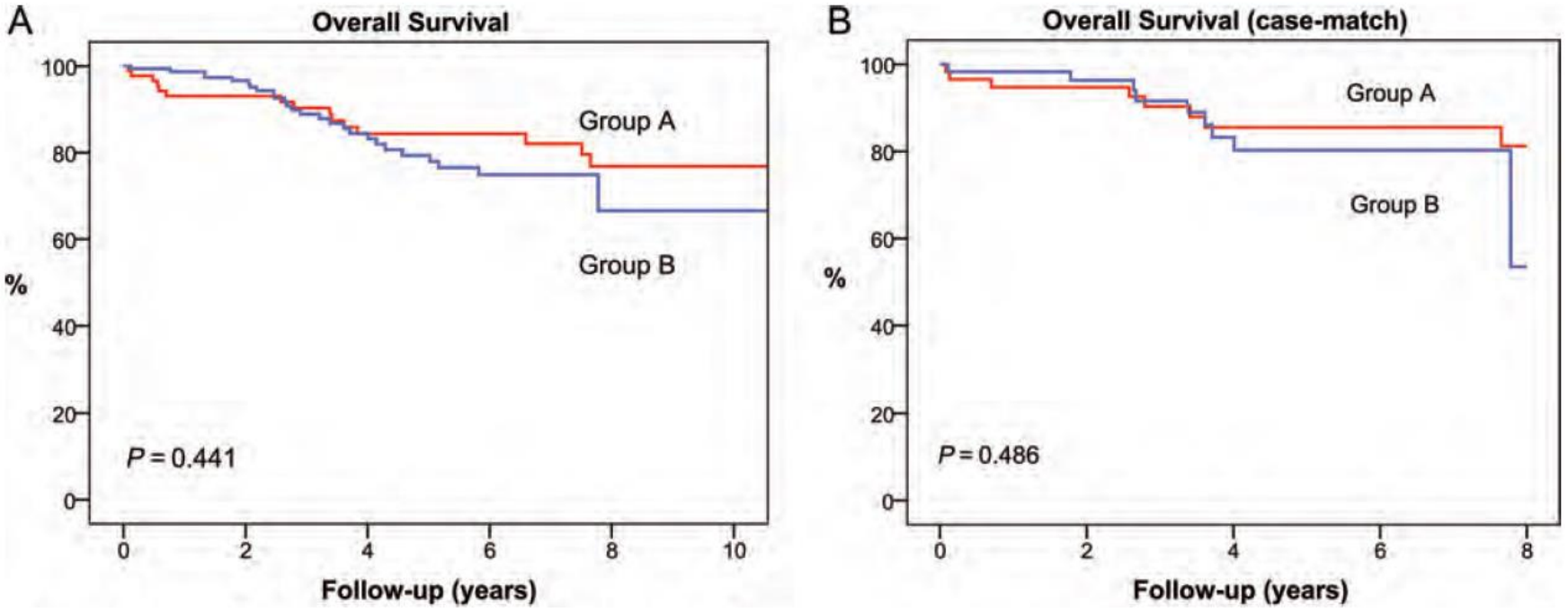
Impact of the combined mitral and aortic valve surgery on mortality

3339 AS patients underegoing AVR

255 patients with concomitant functional MR >/= 2+

Group A: mitral surgery
Group B: no mitral surgery

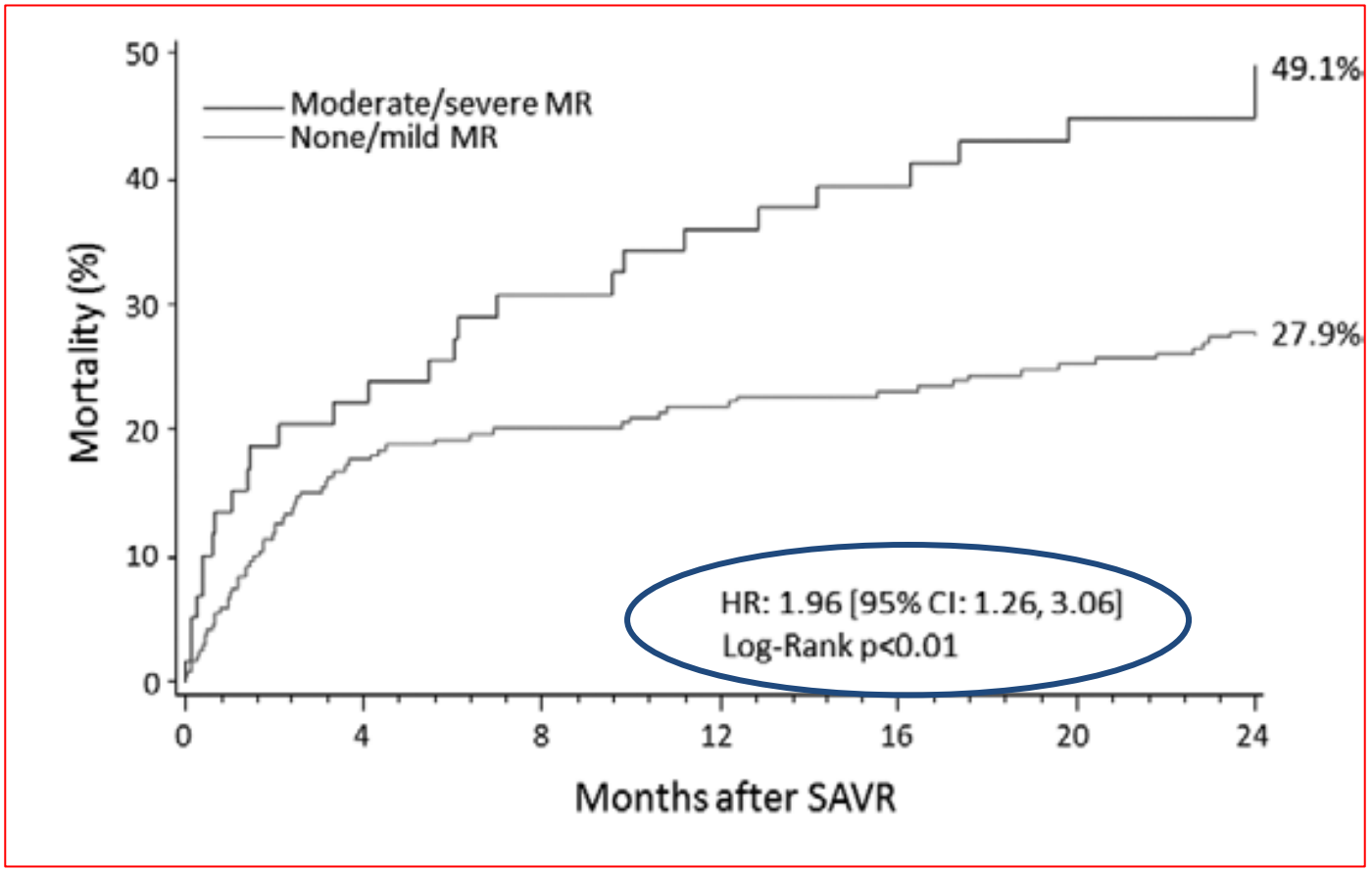
Survival



Coutinho GF et al. *Eur J Cardiothorac Surg* 2013;44:32–40.

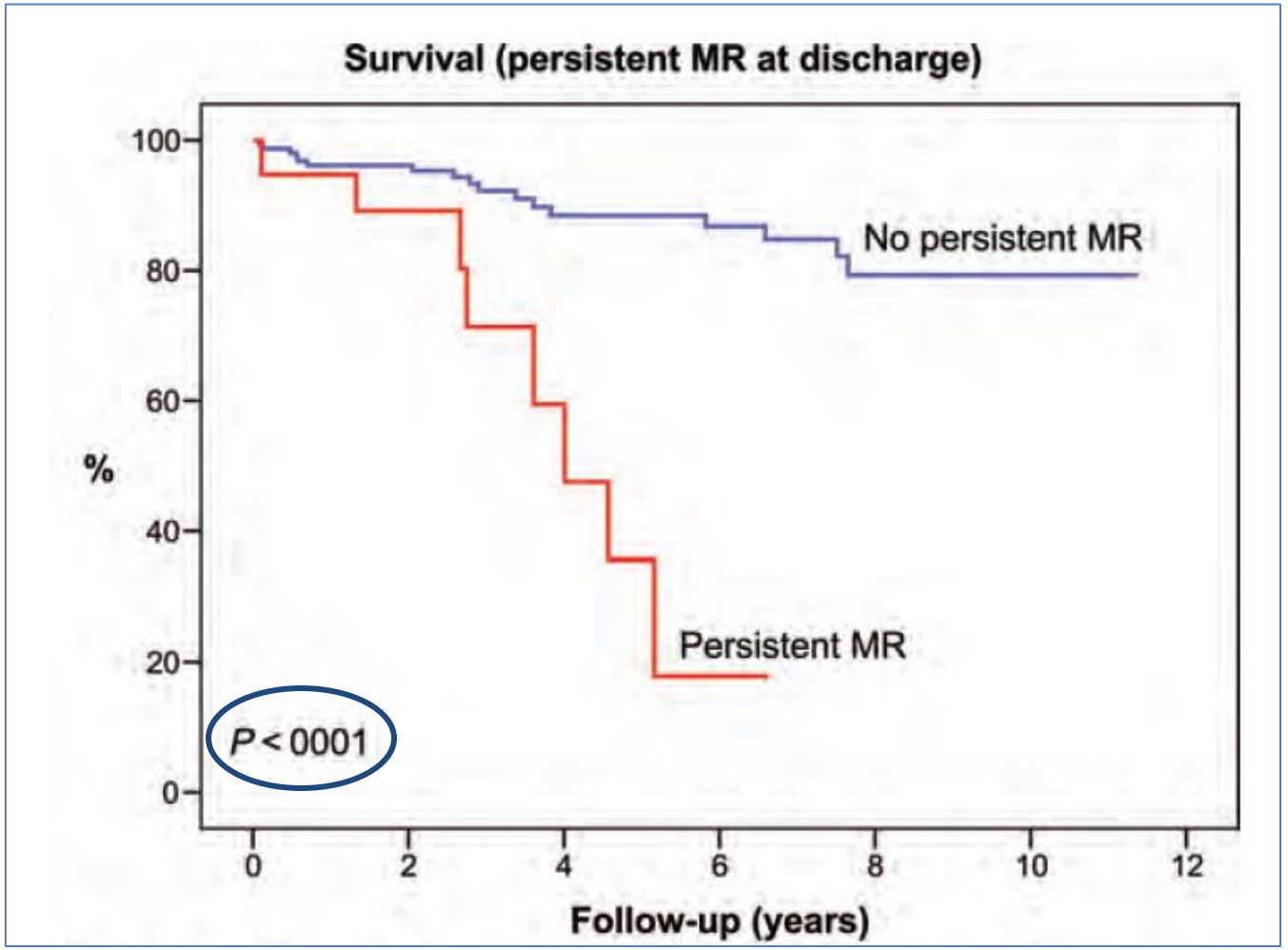
Impact of MR on mortality after surgical AVR

299 patients undergonig AVR (59 with moderate-severe MR)



Barbanti M et al, *Circulation* 2013;128:2776–84.

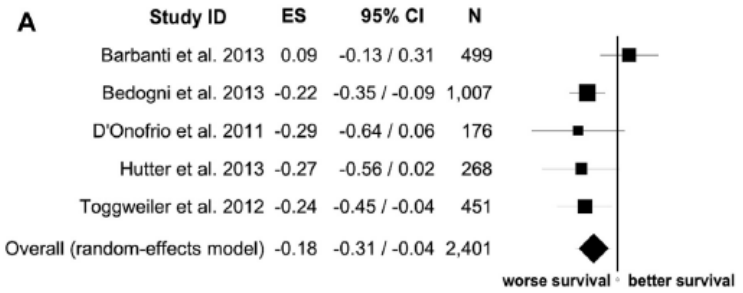
Impact of MR on survival after surgical AVR



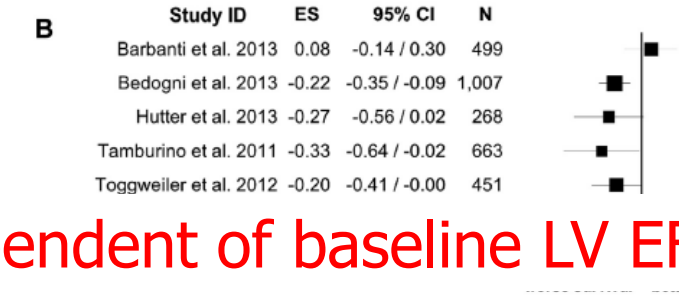
Coutinho GF et al, *Eur J Cardiothorac Surg* 2013;44:32–40.

Impact of moderate-to-severe MR on survival after TAVR

30 days



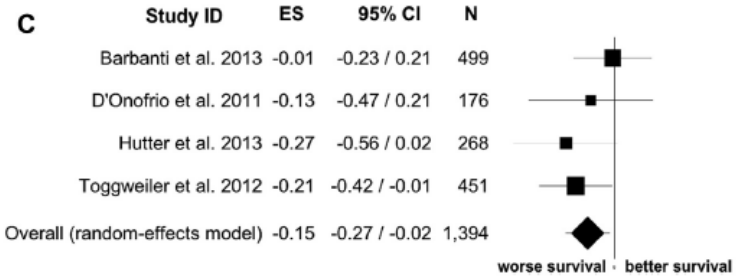
1 year



4839 patients

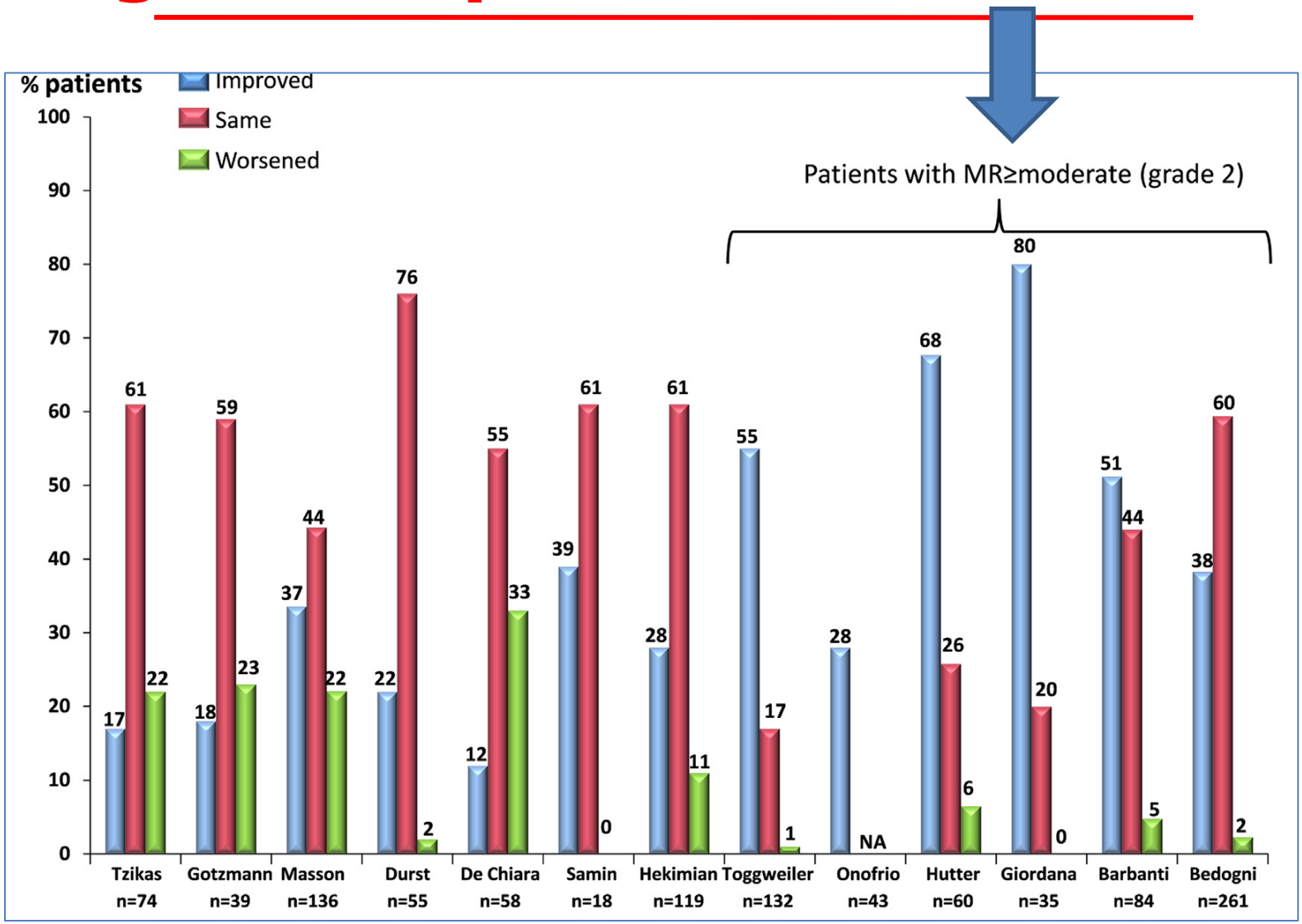
Independent of baseline LV EF

2 years



Sannino A et al. *Am J Cardiol* 2014 (Epub ahead of print)

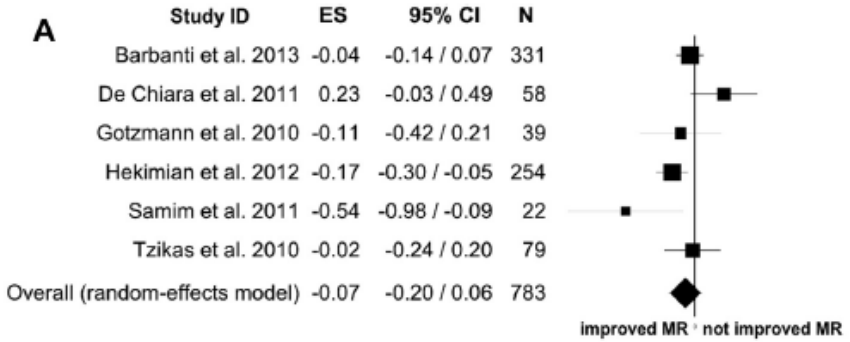
MR grade improvement after TAVR



Nombela-Franco L. et al. *JACC* 2014;24;63:2643-58.

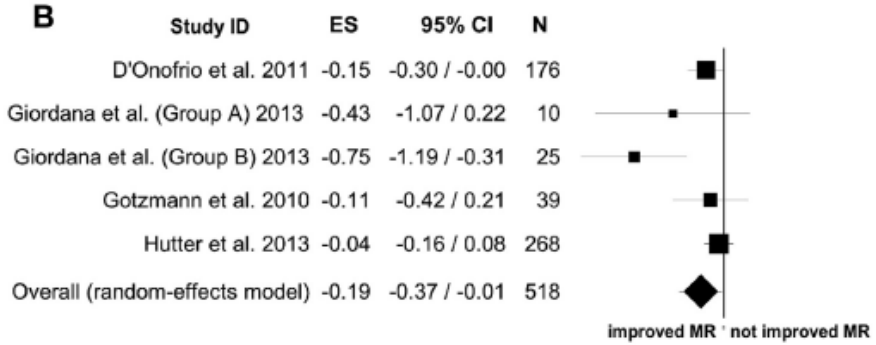
MR improvement after TAVR

1 month



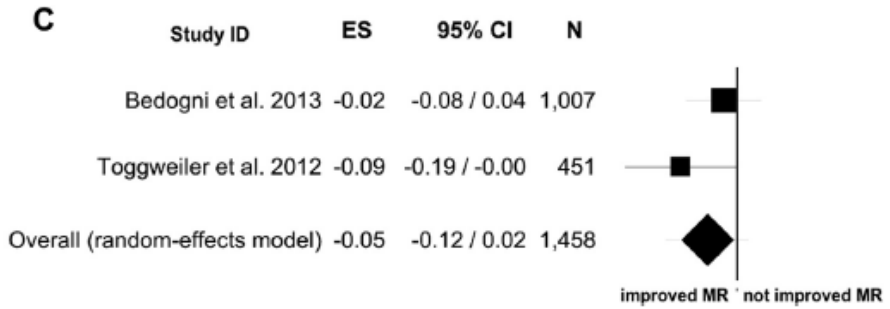
Not significant

3-6 months



Significant

1 year

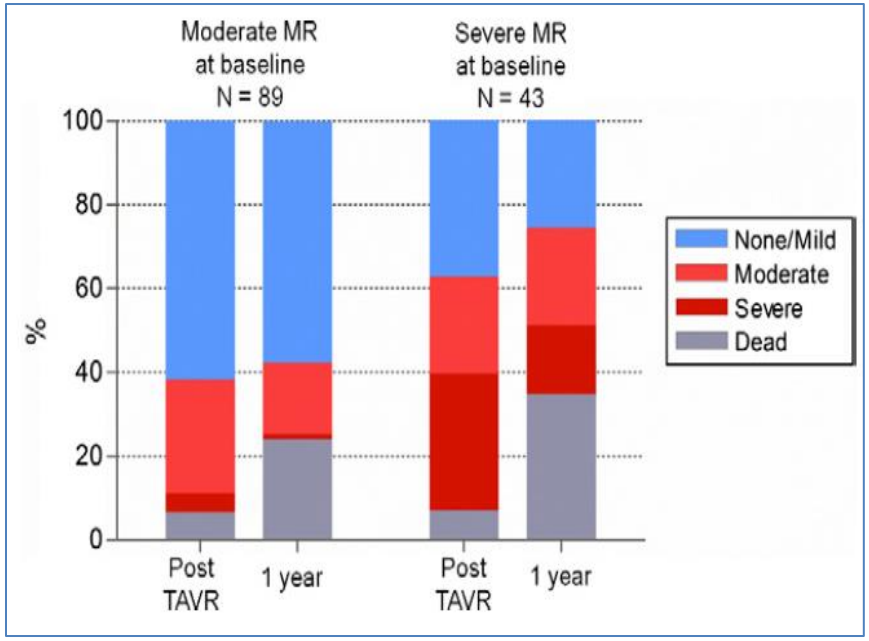


Significant

Sannino A et al. *Am J Cardiol* 2014 (Epub ahead of print)

MR improvement after TAVR

Degree of MR after TAVR at 1-year follow-up in pts with baseline MR



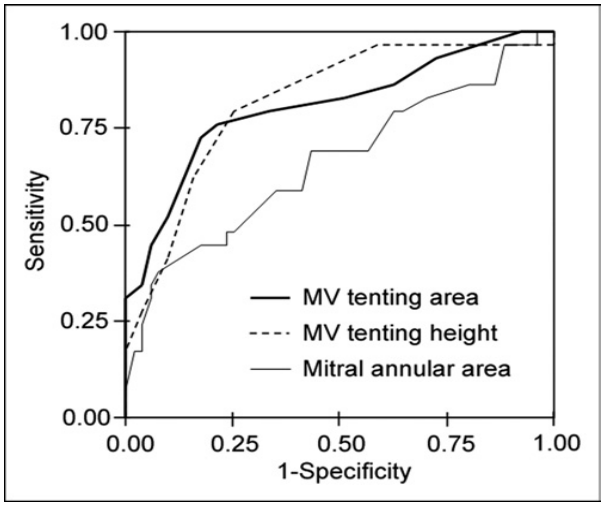
Multivariate Predictors of reduced MR at 1-year follow-up

	Multivariate Odds Ratio (95% CI)	Multivariate p Value
Pulmonary pressure <60 mm Hg	2.68 (1.09-6.58)	0.03
Absence of atrial fibrillation	2.55 (1.17-5.55)	0.02
Mean gradient ≥40 mm Hg	2.71 (1.19-6.18)	0.02
Functional MR	2.61 (1.15-5.93)	0.02

Toggweiler S et al. *J Am Coll Cardiol* 2012;59:2068–74

MV tenting as a predictor of persistent functional MR after AVR

Variable	Persistent MR: No (n = 51)	Persistent MR: Yes (n = 29)	p Value
Mitral valve tenting area (cm^2)	1.2 ± 0.3	1.7 ± 0.6	<0.001
Mitral valve tenting height (cm)	0.7 ± 0.1	0.9 ± 0.2	<0.001
Mitral annular area (cm^2)	8.2 ± 1.2	9.2 ± 2.3	<0.05
Mitral annular diameter (cm)	8.2 ± 1.2	9.2 ± 2.3	0.03



Cut offs for persistent MR:
Tenting area >1.4 cm^2 (AUC= 0.81)
Tenting height > 0.7 cm (AUC= 0.81)
MV area > 9.7 cm^2 (AUC= 0.66)

Matsumura Y et al. *Am J Cardiol* 2010;106:701–6.

Mechanisms of MR improvement after TAVR

Hypothesis

1. Drop in LV atrial pressure gradient

2. LV reverse remodeling

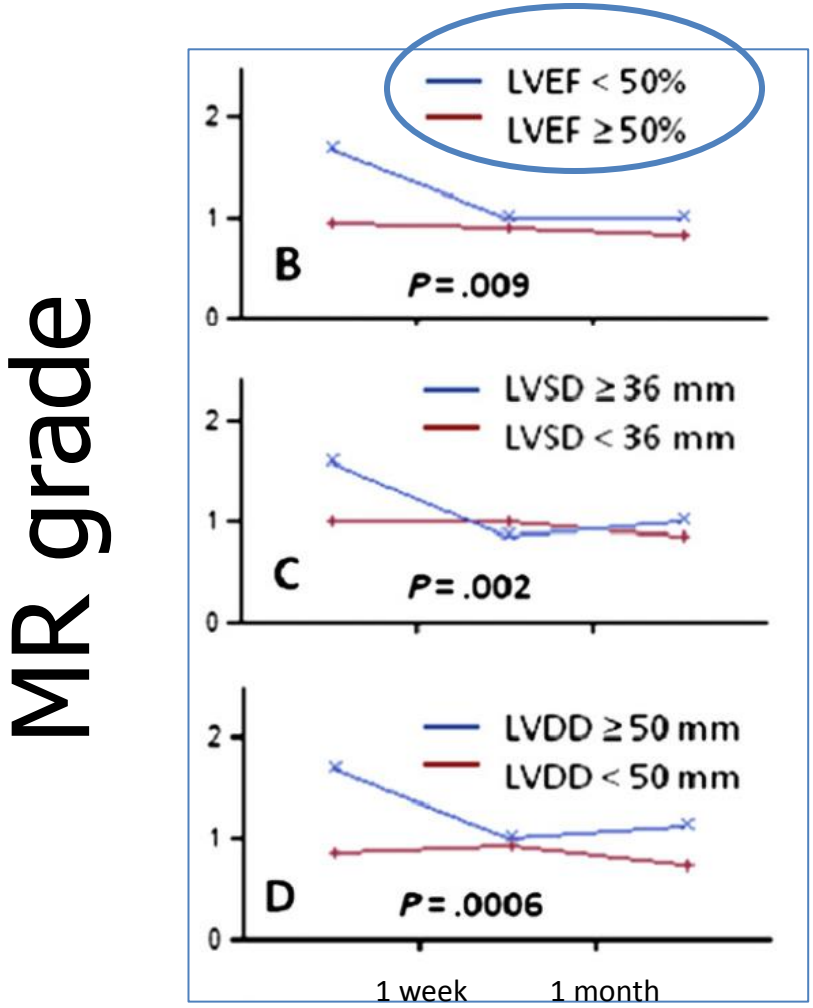
3. Improvement of low LV systolic function

Table 4 Predictive Factors Associated With Improvement in Mitral Regurgitation Severity After Aortic Valve Replacement (Surgical Aortic Valve Replacement and Transcatheter Aortic Valve Replacement)

Factors	Procedure (Ref. #)	OR/HR in Multivariate Analysis (Ref. #)
MR etiology (functional vs. organic)	SAVR (19,31,86) TAVR (41,46,48)	HR: 2.6 (1.8–3.1) p <0.01 (41) HR: 2.6 (1.1–5.9) p = 0.02 (48)
Absence of pulmonary hypertension	SAVR (30) TAVR (41,48)	OR: 3.0 (1.0–10.0) p = 0.05 (30) HR: 2.9 (2.7–3.3) p <0.01 (41) HR: 2.7 (1.1–6.6) p = 0.03 (48)
Absence of atrial fibrillation	SAVR (29,92) TAVR (41,48)	p = 0.03 (90) HR: 2.0 (1.9–2.5) p <0.01 (41) HR: 2.5 (1.2–5.5) p = 0.02 (48)
LVEF (low vs. normal) and LV diameters	SAVR (27) TAVR (20,42,43,47)	OR: 1.1 (1.0–1.1) p = 0.01(27) OR: 5.4 (1.2–23.4) p = 0.02* (20)
Mean gradient	SAVR (29) TAVR (48)	HR: 2.7 (1.2–6.2) p = 0.02 (48)
Residual aortic regurgitation	SAVR (91) TAVR (97)	p = 0.01 (91)
Increase left atrial size	SAVR (25,29,91)	p = 0.03* (25) p <0.01 (91)
Presence of coronary artery disease or previous myocardial infarction	SAVR (28,30,84)	OR: 5.0 (1.4–18.4) p = 0.01 (28) OR: 3.7 (1.1–13.0) p = 0.04 (30)
Prosthesis patient mismatch	SAVR (98)	
Absence of mitral annular calcification with restriction	TAVR (44)	17% vs. 61%, p = 0.05* (44)
Valve type (ES vs. CV)	TAVR (49)	Greater improvement with ES* (49)
Deeper implantation CV	TAVR (45)	9.4 vs. 7.6 mm p = 0.02* (45) Not found in (41)

Nombela-Franco L et al, *JACC* 2014;24;63:2643-58.

Improvement of MR grade after TAVR



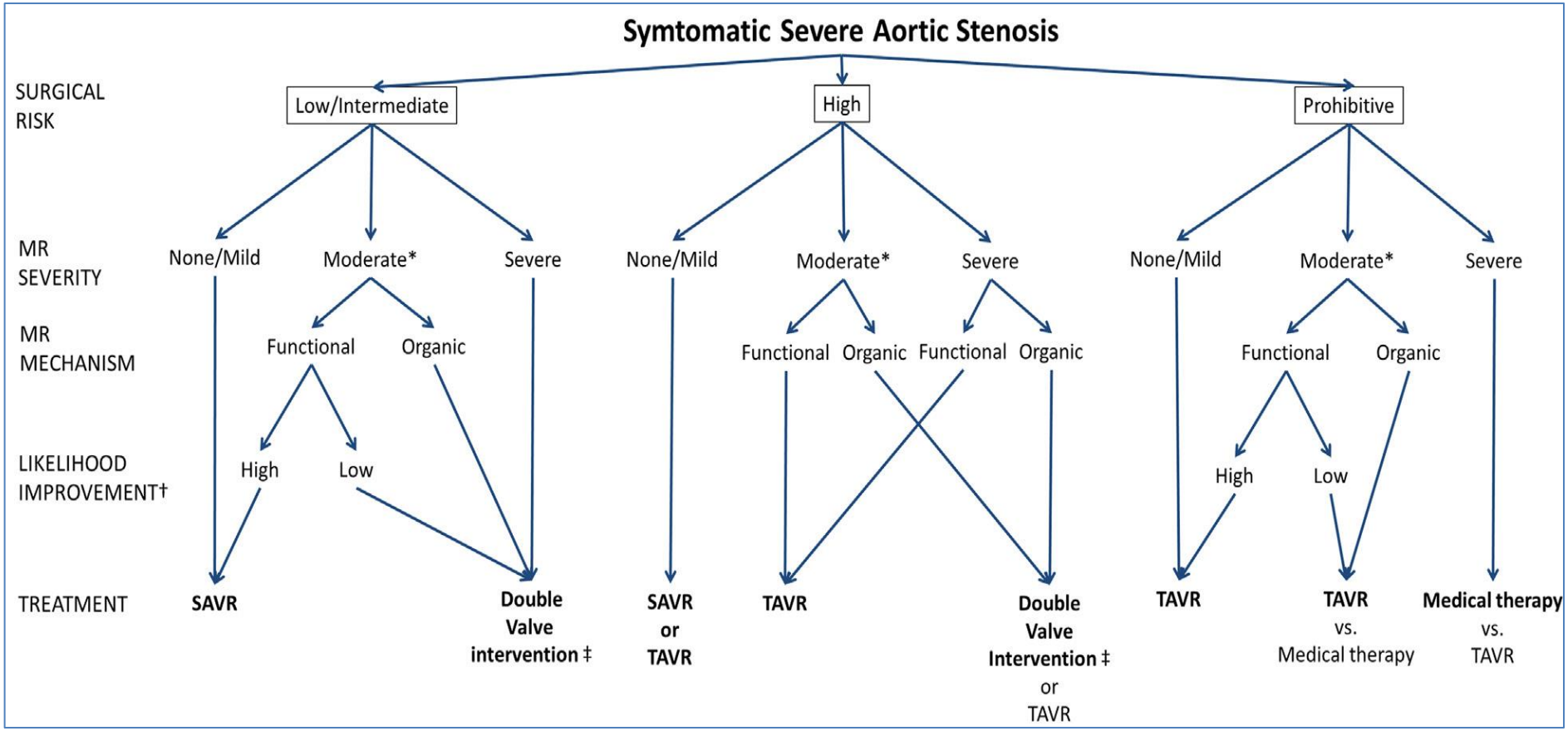
Hekimian et al. *J Am Soc Echocardiogr* 2012;25:160–5

Predictors of MR improvement after TAVR

- Functional etiology
- Absence of pulmonary hypertension
- Absence of AF
- **Low EF and increased LV diameters**
- Absence of residual AO regurgitation
- Baloon exbandible AO prosthesis

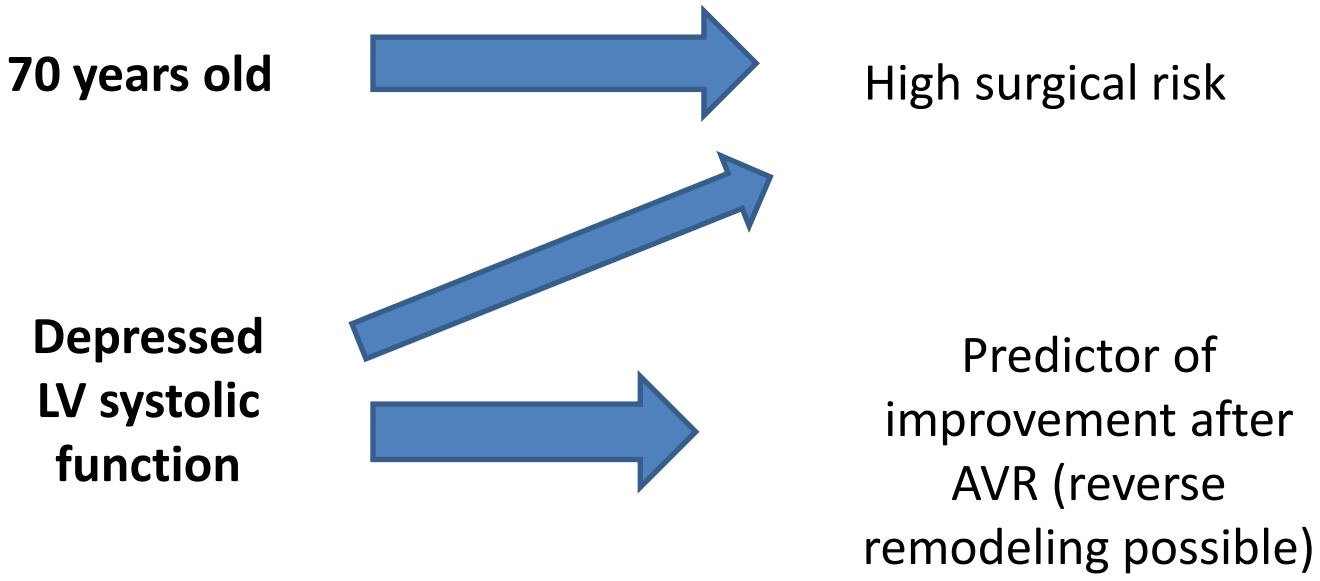
Nombela-Franco L et al, *JACC* 2014;24;63:2643-58.

A proposal for a "decision making" algorythm



Nombela-Franco L. et al. *JACC* 2014;24;63:2643-58

A 70 year old attorney with severe aortic stenosis, impaired LV systolic function and mitral regurgitation.



TAVR

Take-home message

Concomitant significant MR is common in patients undergoing AVR or TAVI for severe AS.

Survival and functional status after AVR are worse in patients with concomitant MR.

MR can improve after AVR/TAVR, especially functional MR (which is related to depressed LV systolic function).

The decision on whether to perform MVR together with AVR shoud be based on a comprehensive evaluation of surgical risk, MR severity and etiology, LV function and likelihood of improvement after isolated AVR.

Join us in Vienna! 3 - 6 December 2014

Still time to REGISTER