Asymptomatic VHD

An Asymptomatic Patient With Severe Mitral Regurgitation

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Eurovalve
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Asymptomatic Mitral Regurgitation

Question

What should a good presentation be like?

1. Like a Ferrari
2. Like a miniskirt
3. Like a painting by Matisse
4. Like a good bottle of Côte de Provence

Timing of Intervention in Mitral Regurgitation

What should a good presentation be like?

Like a miniskirt:

It should be short enough to attract attention but long enough so as not to loose it

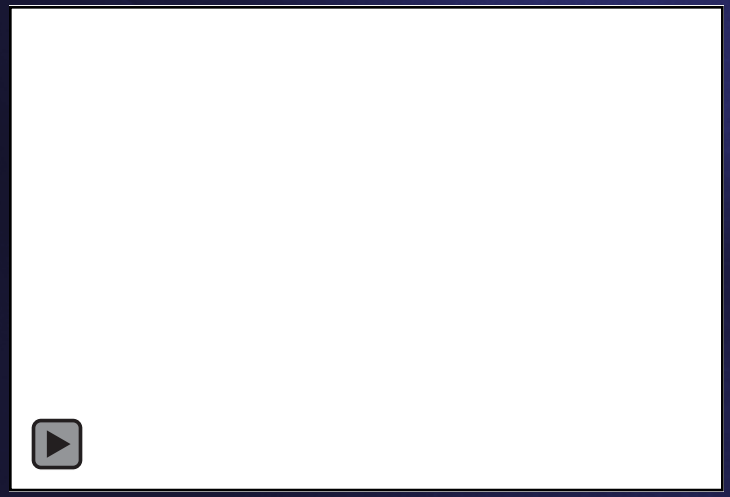
Risk Assessment

History 1

- 20 year old female patient
- Good exercise capacity
- Blood pressure 120/75 mmHg
- Reports of a recent syncope 3 months ago
- 56kg, 168cm
- Physical exam: Systolic murmur over the apex
- ECG: SR, HR 70 bpm

Timing of Intervention in Mitral Regurgitation

Echo



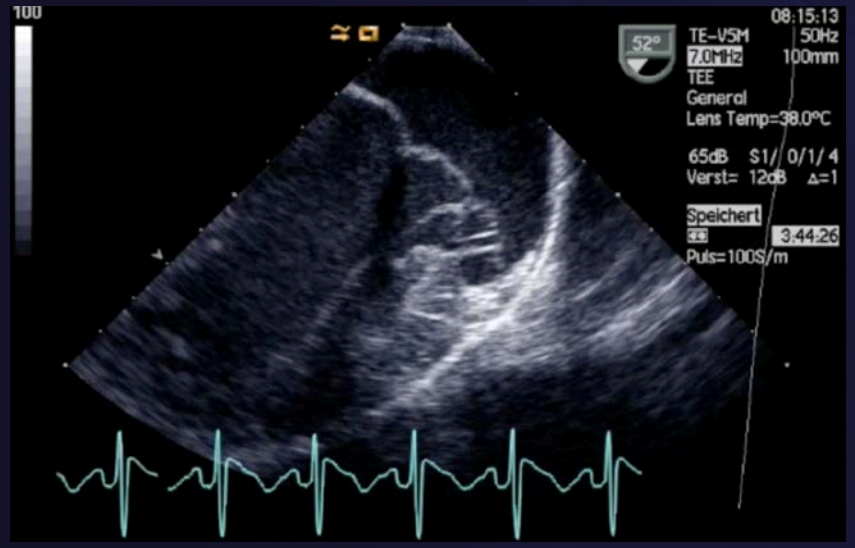
- sPAP 32 mmHg
- LA size 53 mm
- LVESD 33 mm

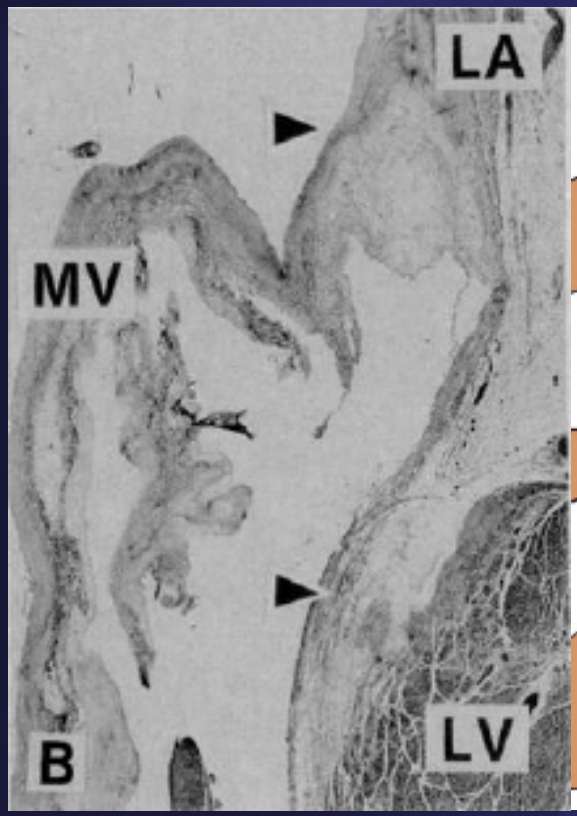
Timing of Intervention in Mitral Regurgitation

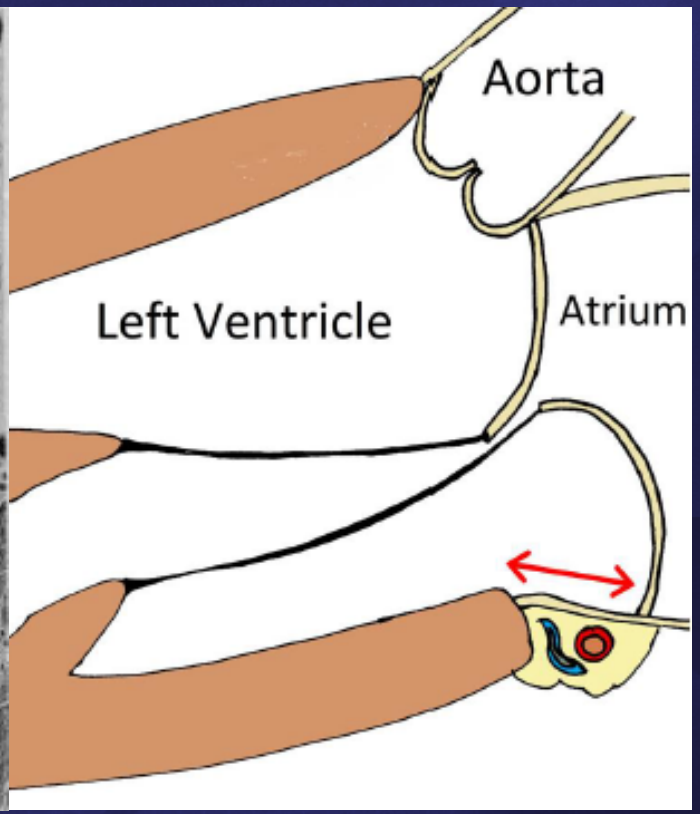
Echo

Mitral Regurgitation

Mitral Annular Disjunction



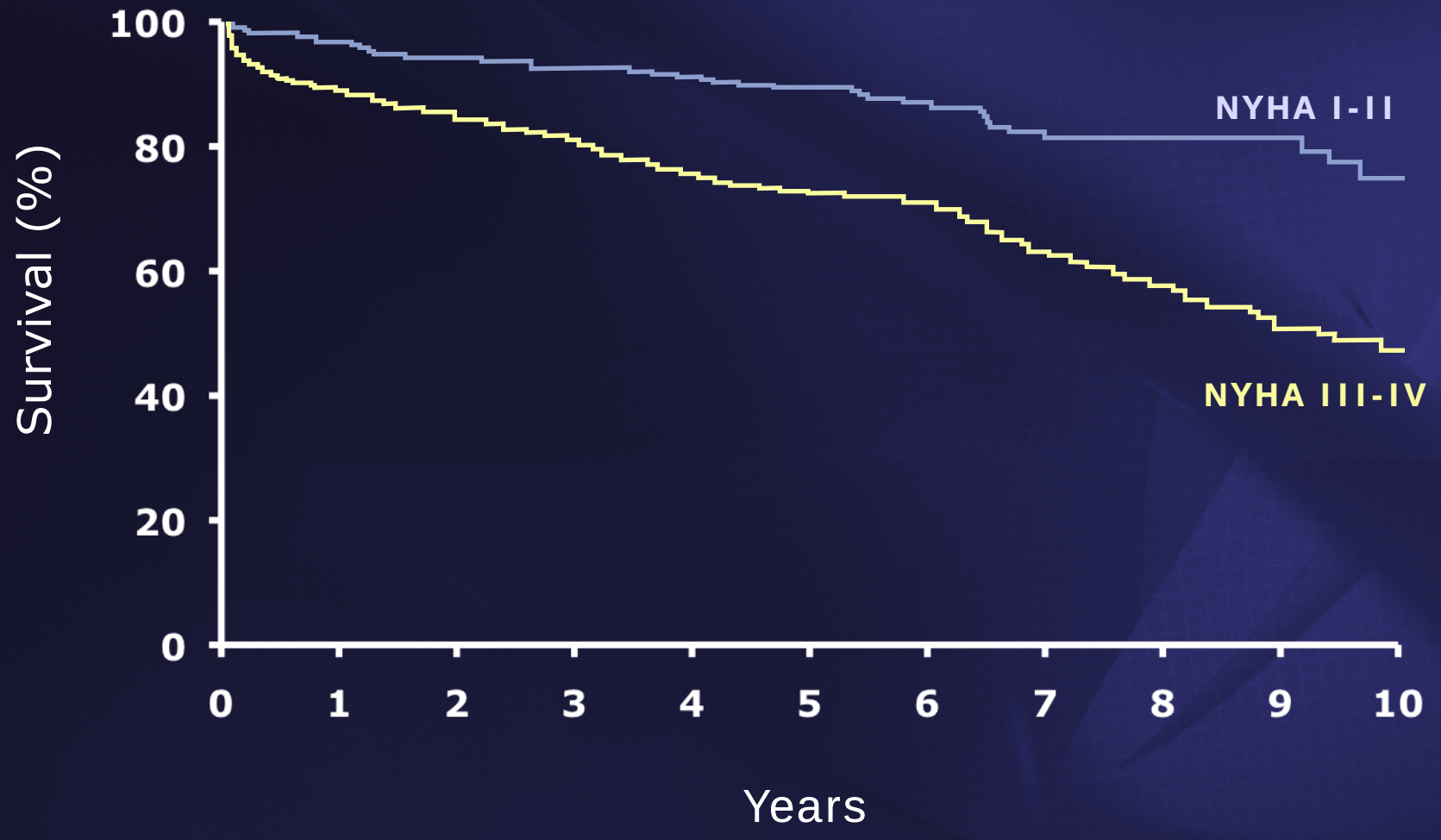




Carmo P et al. Cardiovascular Ulstrasound 2010;8:53

Timing of Intervention in Mitral Regurgitation

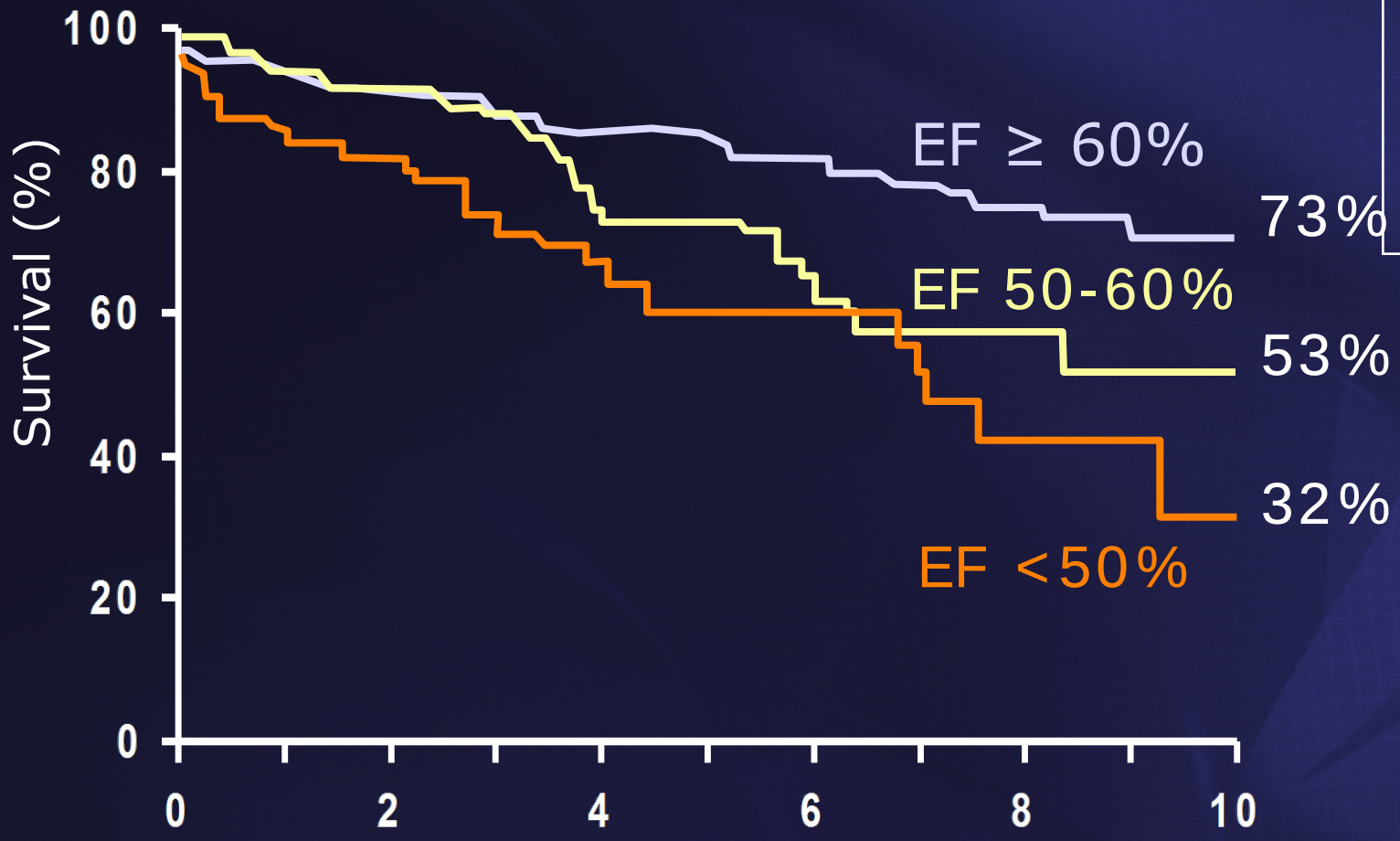
Impact of Preoperative Symptoms on Survival



Tribouilloy C et al. Circulation 1999;99:400

Timing of Intervention in Mitral Regurgitation

Impact of Preoperative EF on Survival

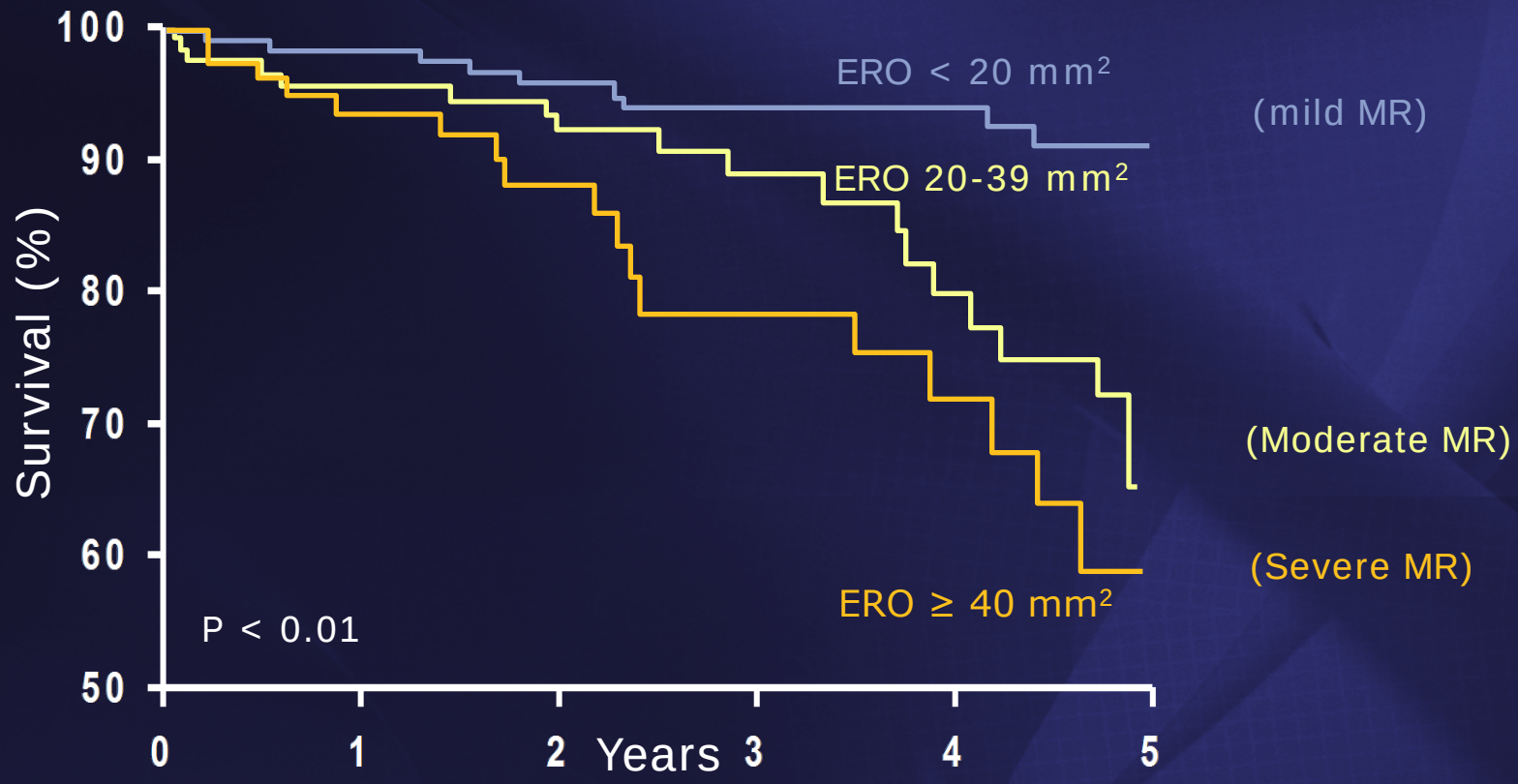


- NYHA I: 45 (11%)
- NYHA II: 86 (21%)
- NYHA III: 213 (52%)
- NYHA IV: 65 (16%)

Enriquez-Sarano et al. Circulation 1994;90:830-837.

Timing of Intervention in Mitral Regurgitation

Predictive Value of ERO in MR



- Prospectively enrolled, Quantitative
- No regular follow-up exams
- Inclusion of patients with an EF 50-60%

Enriquez-Sarano, M. et al. N Engl J Med 2005;352:875-883

The MIDA Registry
The Publications

First Author	Year	Journal	Centers	Pts	Type	inclusion
Grigioni	2008	JACC Cardiovasc Img	4	394	Consecutive	1988-2004
Tribouilloy	2009	J Am Coll Cardiol	5	**739**	Consecutive	**1980-2004**
Barbieri	2011	Eur Heart J	5	437	Consecutive	1987-2004
Rusinaru	2011	Circ Cardiovasc Imaging	5	1158	Consecutive	?
Avierinos	2013	Eur Heart J	**5**	**862**	Consecutive	**1980-2004**
Suri	2013	JAMA	**6**	**2097**	Consecutive	**1980-2004**

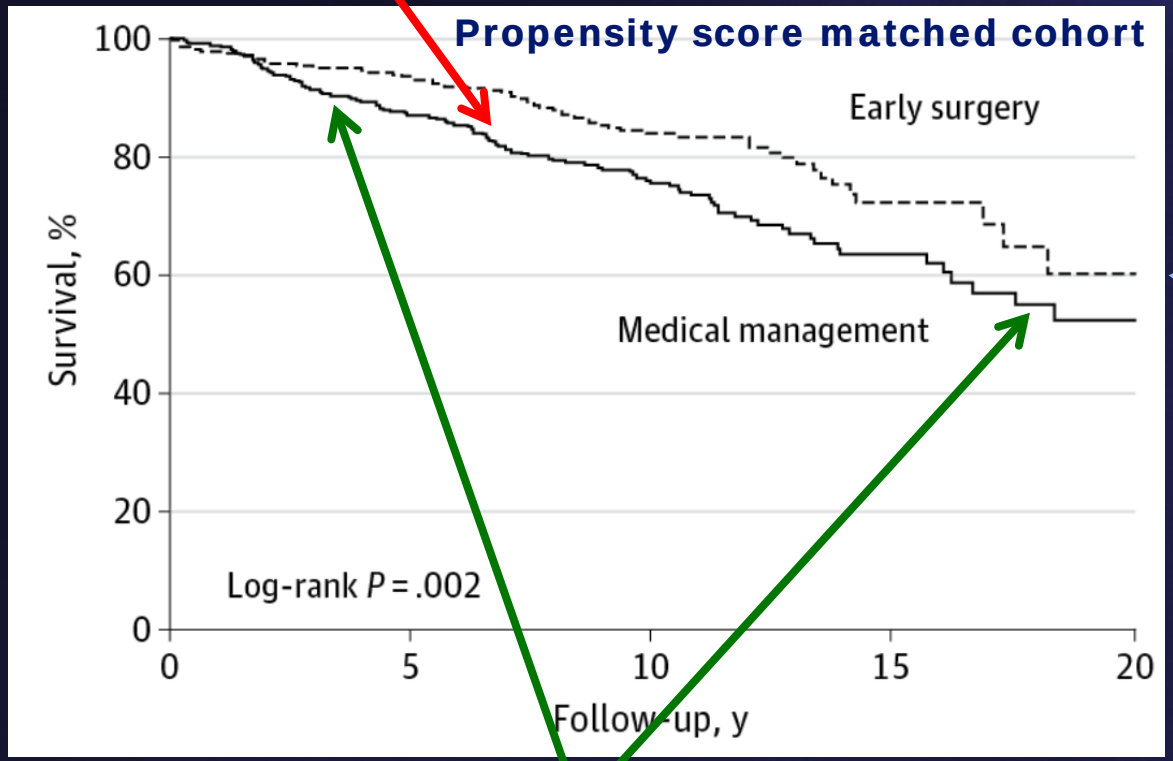
MIDA: Outcome in Severe Flail MR

Early Surgery vs „Watchful Waiting“

Retrospective registry

19% with class II indication (AFib 10%, PHT 11.8%)

6 centers – 24 years (1980-2004)
1021 of 2097 pts without a class I indication for surgery



Arbitrary Cutoff:
Early surgery defined as
“within 3 months of diagnosis”

Watchful Waiting?: „Each patient had follow-up visits with a physician within each participating center or elsewhere“

Suri RM. et al. JAMA 2013;310:609-16

Mitral Regurgitation Quantification

MIDA (1980-2004)

Methodology of MR quantification:

mensions. The severity of mitral regurgitation was assessed semiquantitatively on a scale from 1 to 4 by Doppler echocardiography according to American Society of Echocardiography criteria.[18] Diagnosis of flail leaflet was based on failure of

Table 1 Qualitative and quantitative parameters useful in grading mitral regurgitation severity

	Mild	Moderate	Severe
Structural parameters			
LA size	Normal*	Normal or dilated	Usually dilated**
LV size	Normal*	Normal or dilated	Usually dilated**
Mitral leaflets or support apparatus	Normal or abnormal	Normal or abnormal	Abnormal/ Flail leaflet/ Ruptured papillary muscle
Doppler parameters			
Color flow jet area‡	Small, central jet (usually < 4 cm^2 or < 20% of LA area)	Variable	Large central jet (usually > 10 cm^2 or > 40% of LA area) or variable size wall-impinging jet swirling in LA
Mitral inflow –PW	A wave dominant§	Variable	E wave dominant§ (E usually 1.2 m/s)
Jet density –CW	Incomplete or faint	Dense	Dense
Jet contour –CW	Parabolic	Usually parabolic	Early peaking–triangular
Pulmonary vein flow	Systolic dominance‖	Systolic blunting‖	Systolic flow reversal†
Quantitative parameters¶			
VC width (cm)	< 0.3	0.3-0.69	≥ 0.7
R Vol (ml/beat)	< 30	30-44 / 45-59	≥ 60
RF (%)	< 30	30-39 / 40-49	≥ 50
EROA (cm^2)	< 0.20	0.20-0.29 / 0.30-0.39	≥ 0.40

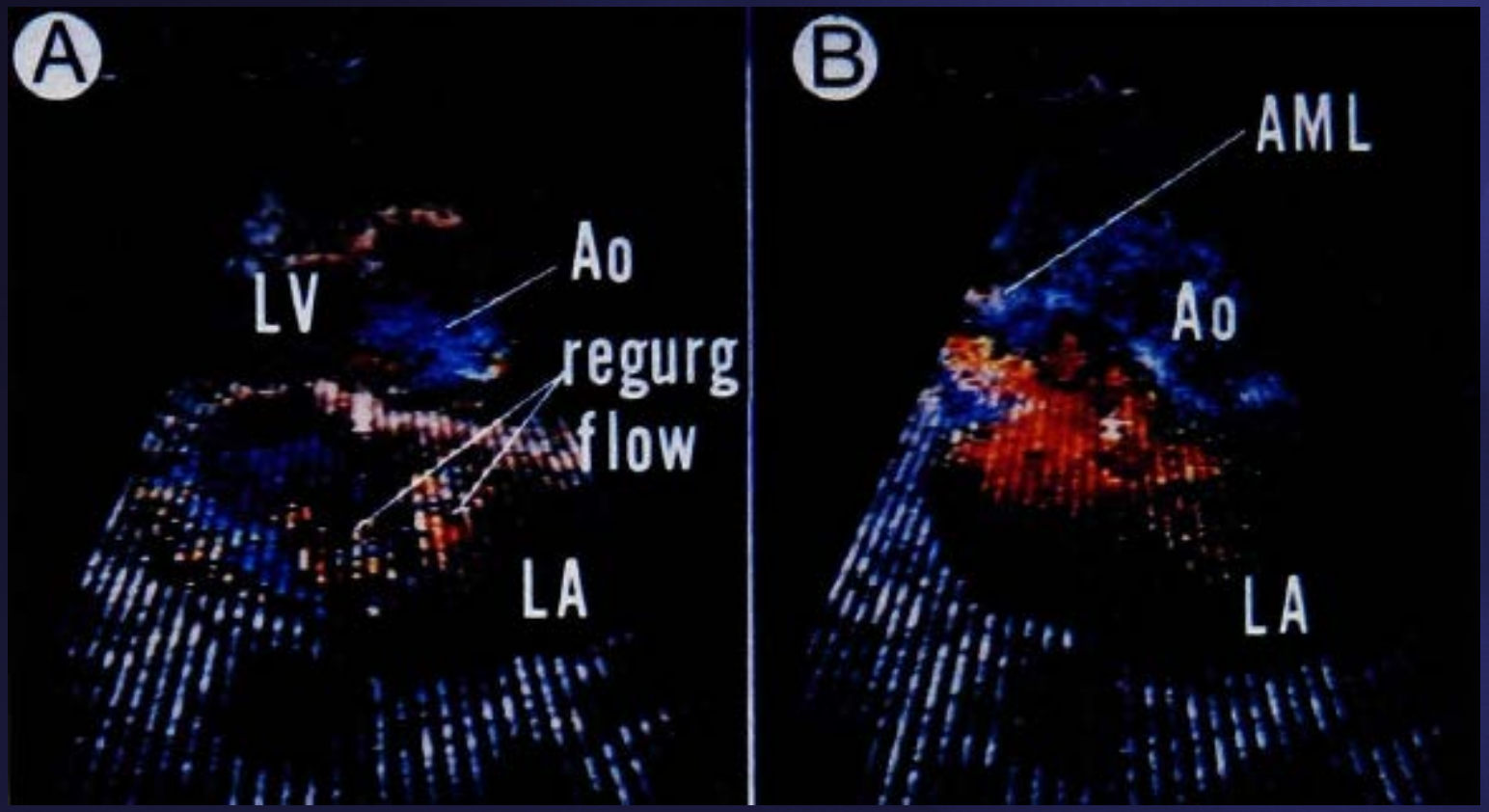
18. Agricola E, Oppizzi M, De Bonis M, et al. Multiplane transesophageal echocardiography performed according to the guidelines of the American Society of Echocardiography in patients with mitral valve prolapse, flail, and endocarditis. *J Am Soc Echocardiogr*. 2003;16(1):61-66.

Suri RM. et al. JAMA 2013;310:609-16

Mitral Regurgitation by Color Doppler 1984

MIDA (1980-2004)

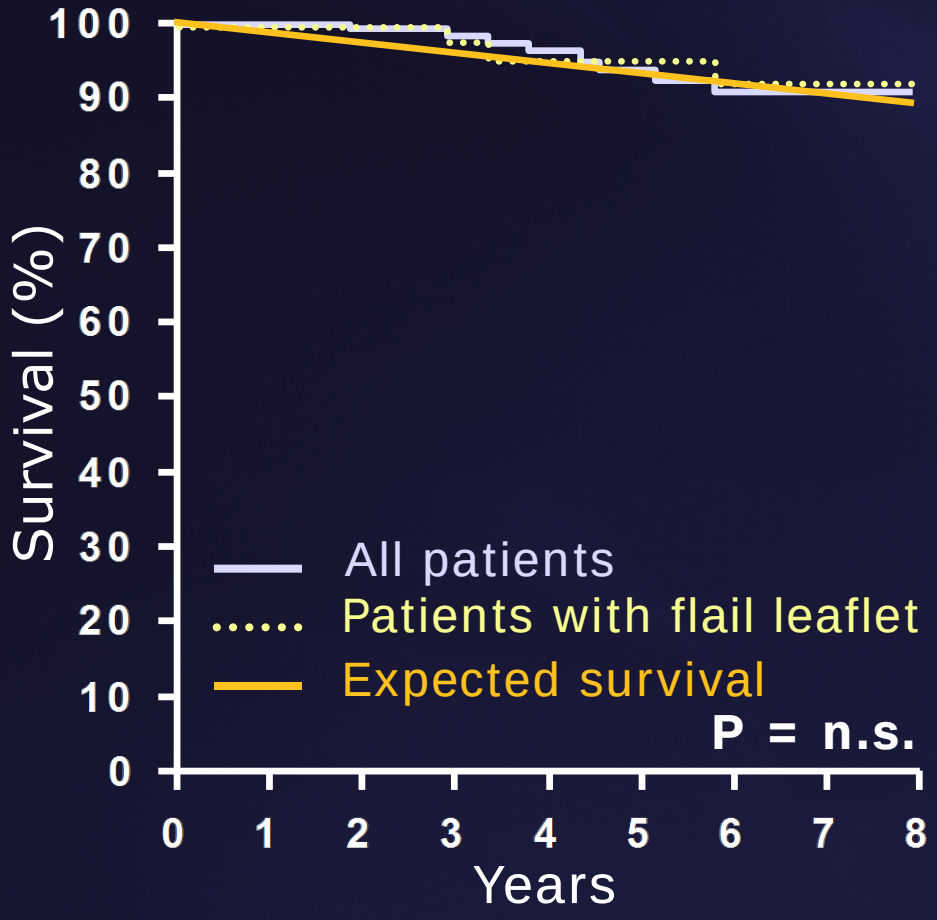
"The Development of Real-Time 2D Echocardiography and its Clinical Significance in Acquired Valvular Diseases"

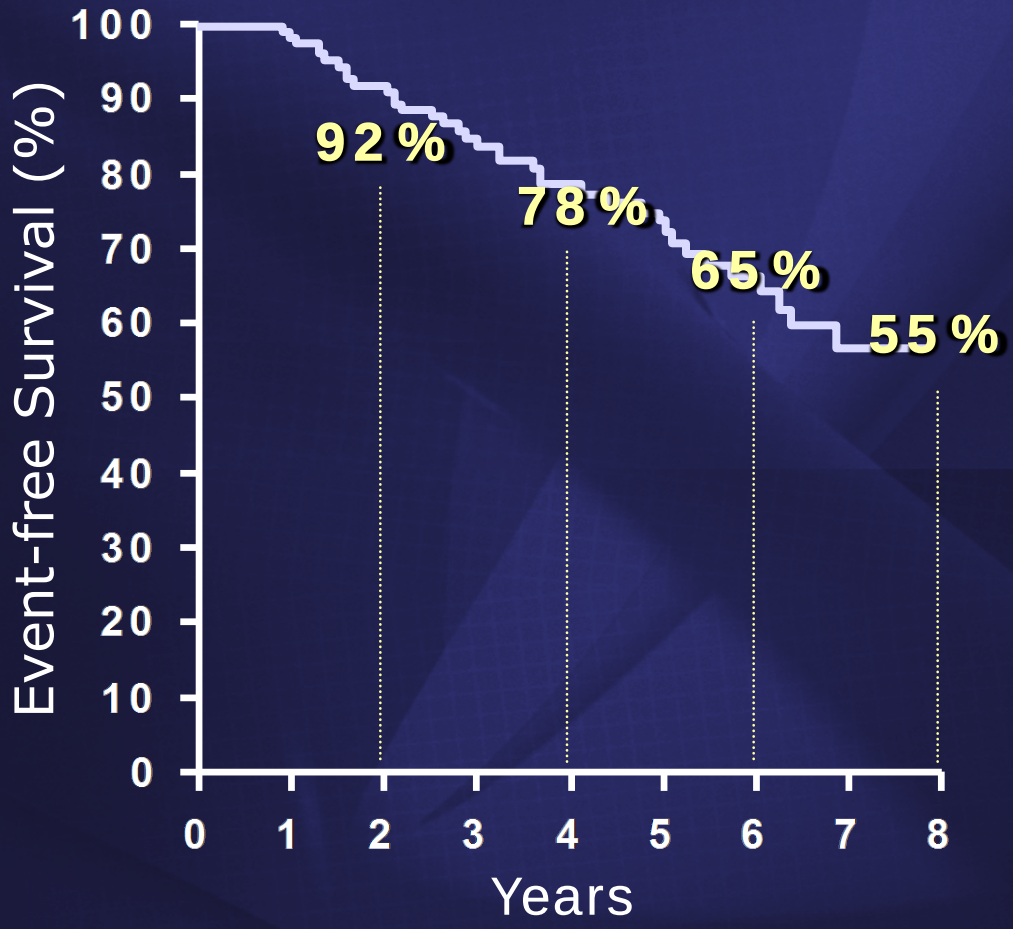


Omoto R. et al. Jpn Heart J 1984;25:325-340

Asymptomatic Severe Mitral Regurgitation

Survival - Watchful Waiting Strategy

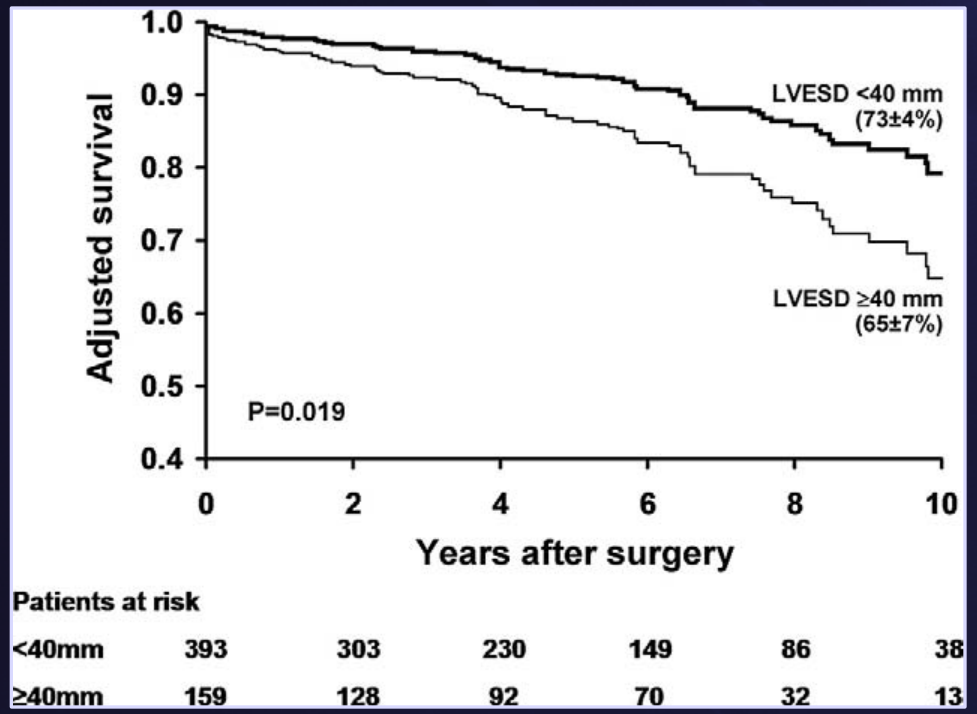




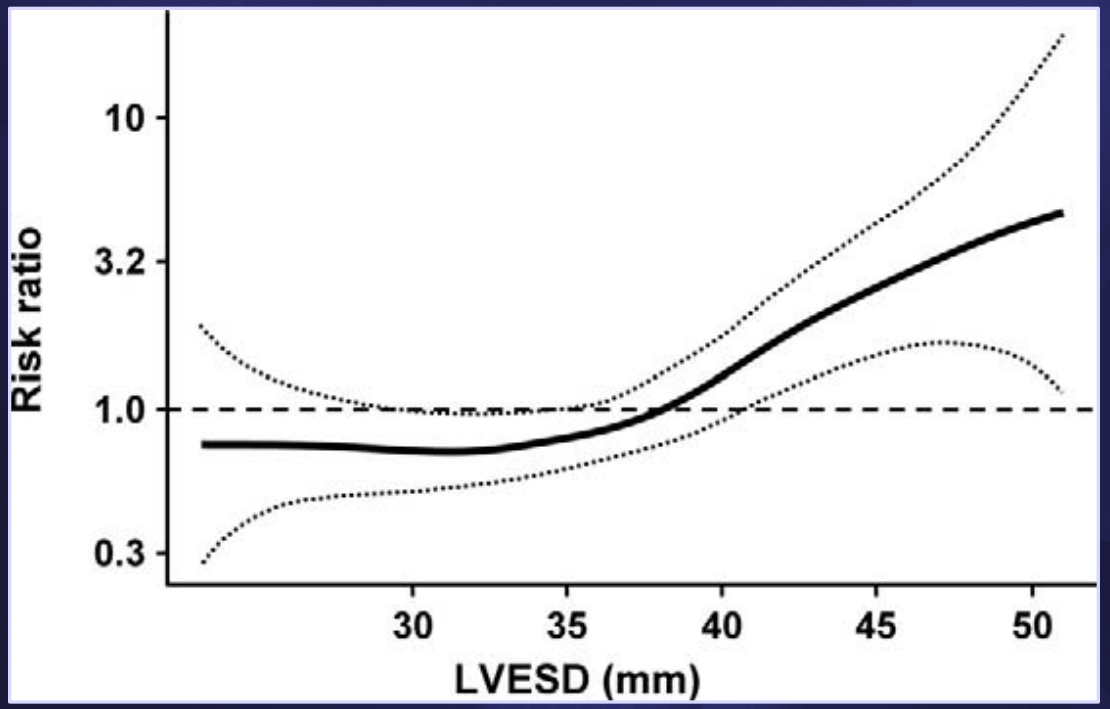
Rosenhek et al. Circulation 2006;113:2238-2244.

MIDA: Outcome in Severe MR

Left Ventricular Endsystolic Diameter



Adjusted Post-Operative Overall Survival according to LVESD



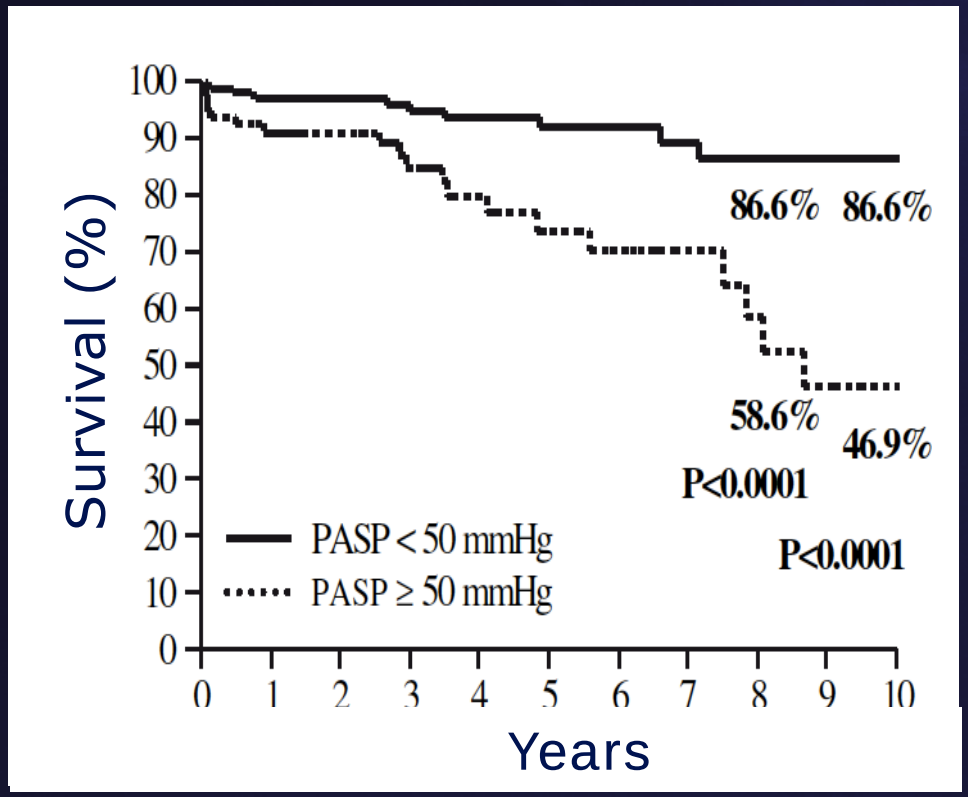
LVESD and the Risk of Overall Mortality under Conservative Management

Tribouilloy, C. ... Enriquez Sarano M. J Am Coll Cardiol 2009;54:1961-8

Risk Stratification in Asymptomatic MR

Pulmonary Hypertension

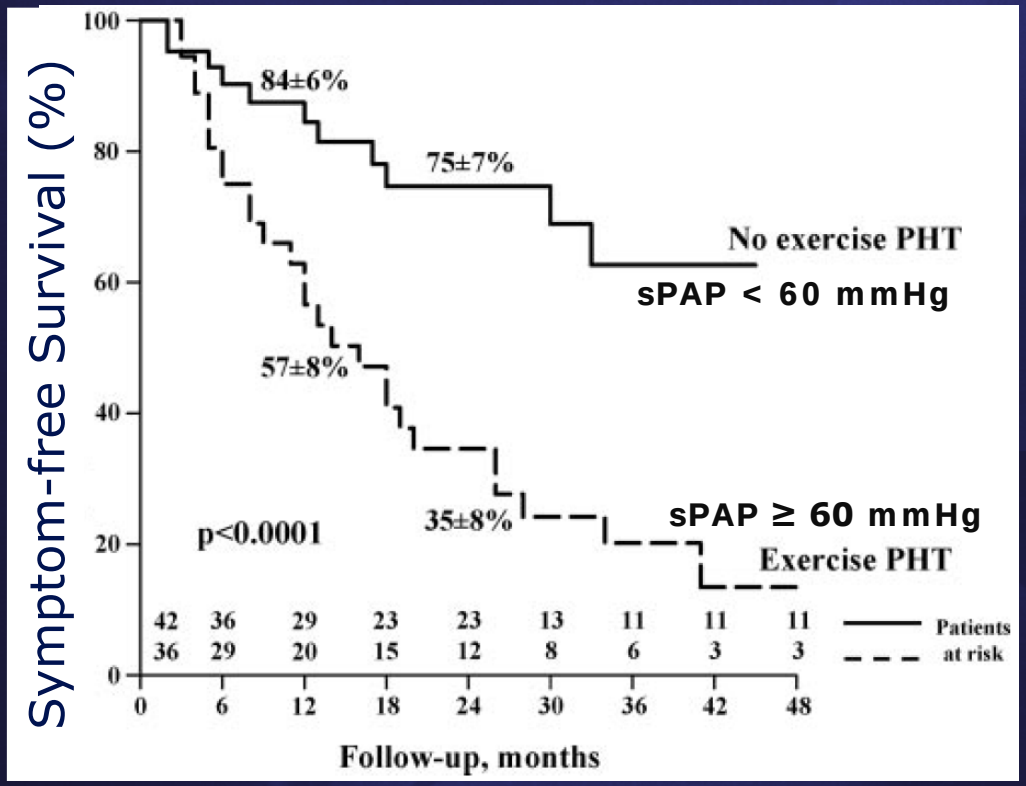
Postoperative survival



* 37% in NYHA classes III and IV

Le Tourneau et al. Heart 2010;96:1311-1317

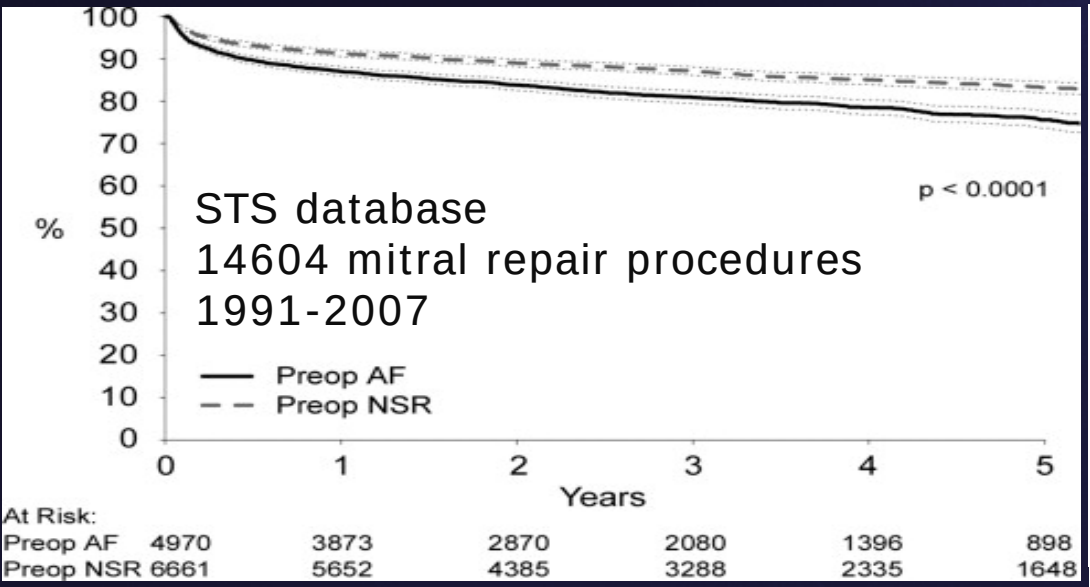
Event-free survival



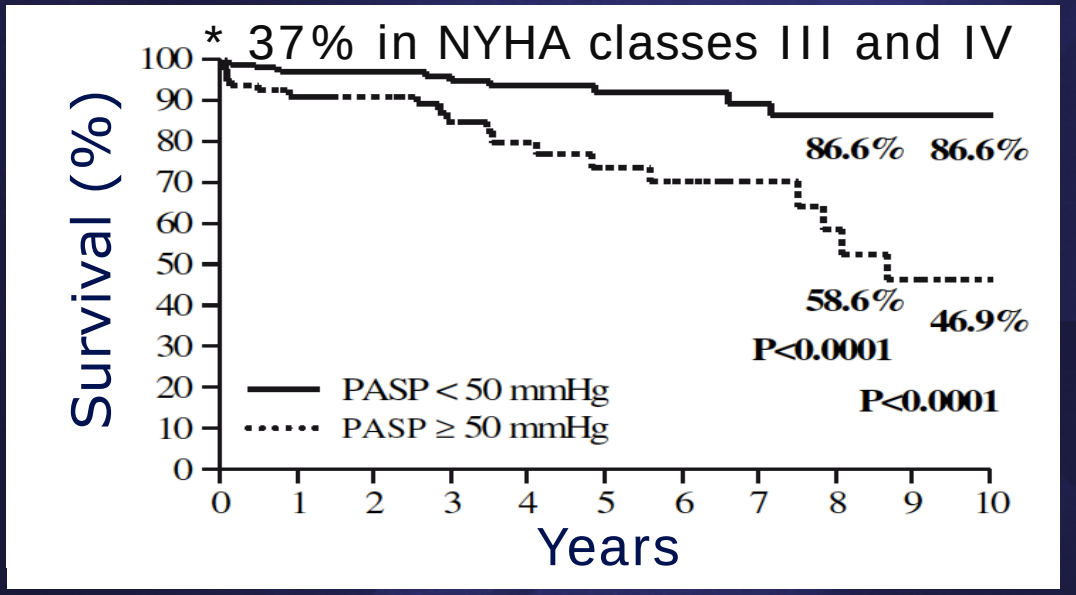
Magne J et al. Circulation 2010;122:33-41

Outcome of Mitral Valve Surgery

Atrial Fibrillation and PHT



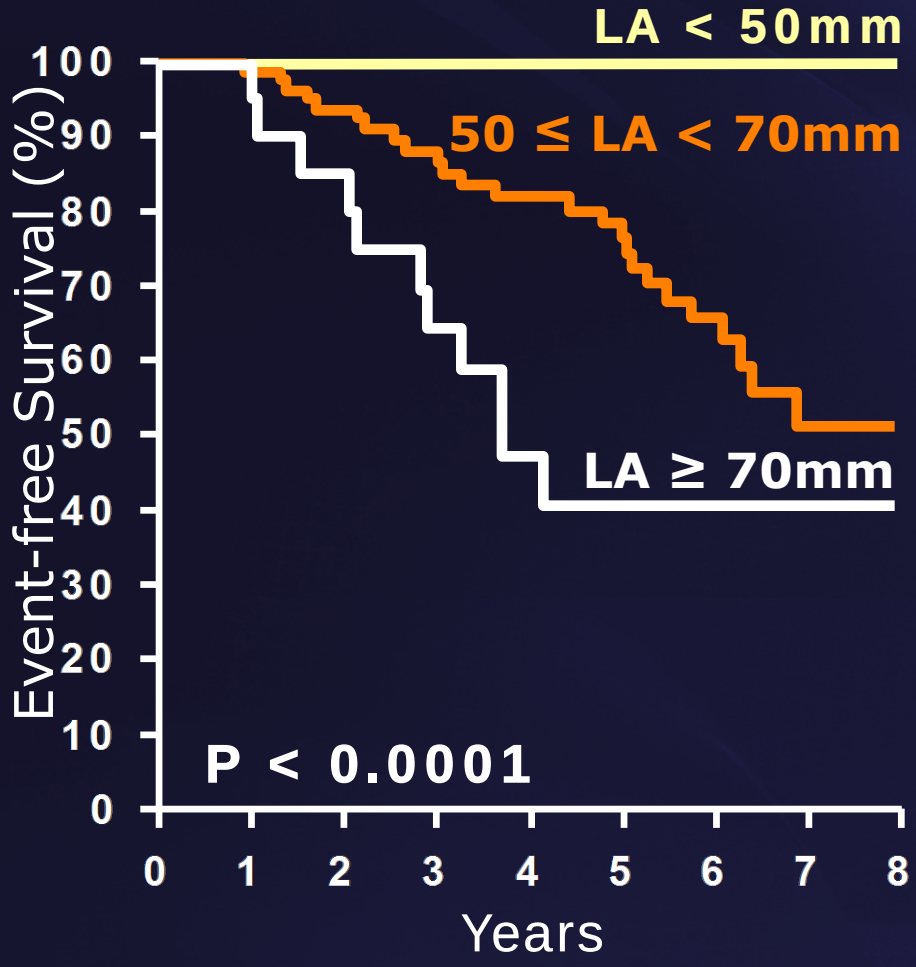
Badhwar et al. Ann Thor Surg 2012

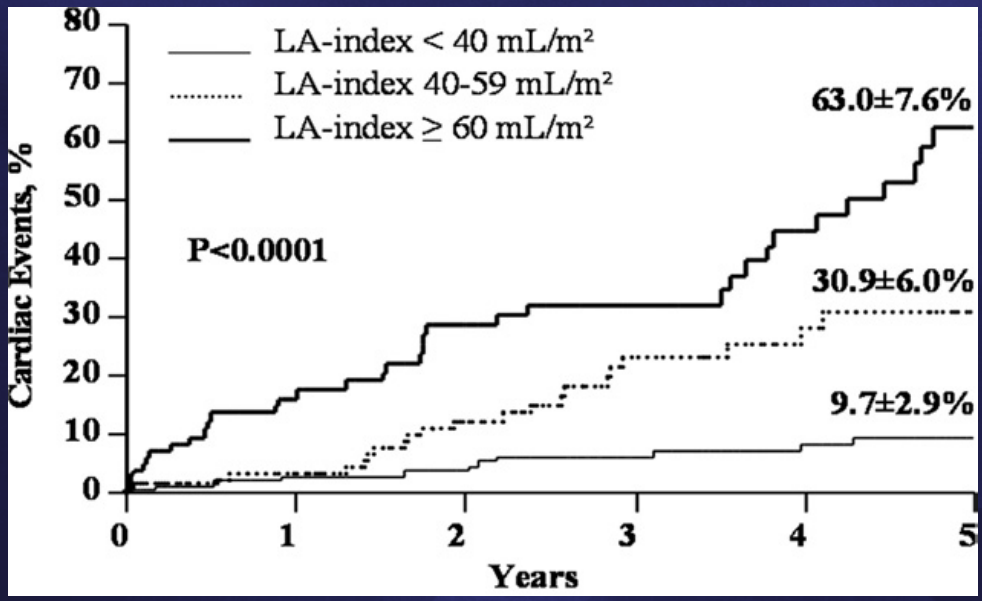


Le Tourneau et al. Heart 2010;96:1311-1317

Outcome in Severe Asymptomatic MR

Event-free Survival: **LA-Size**





Rosenhek R. et al. Circulation 2006 (abstract)

Le Tourneau T. et al. J Am Coll Cardiol 2010;56:570-8

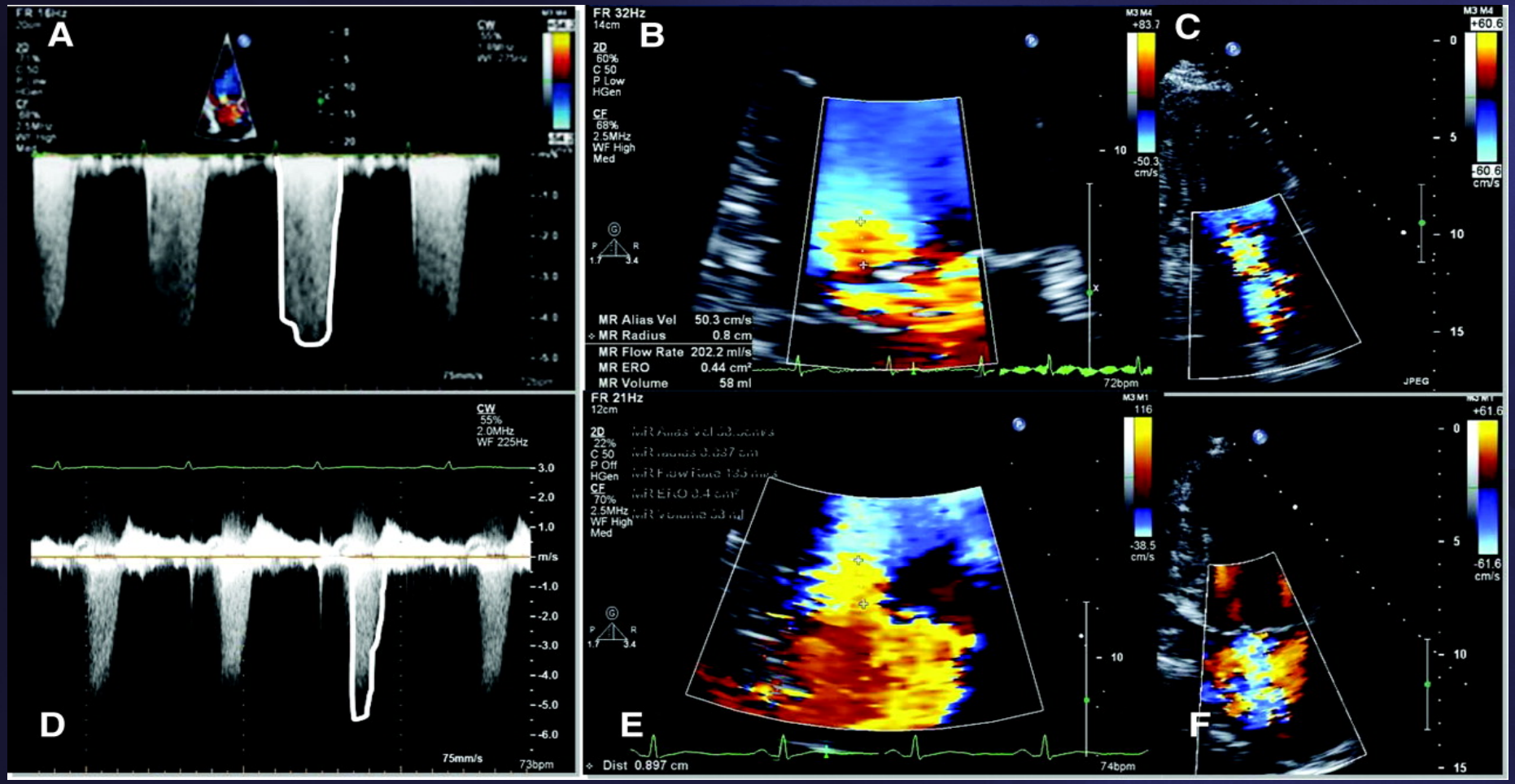
Timing of Surgery in Mitral Regurgitation

Indications for Surgery in Severe Primary MR

	ESC/EACTS
Symptomatic and LVEF > 30%	I
Asymptomatic and LVEF 30-60%	I
Asymptomatic and LVESD ≥ 45 mm	I
Asymptomatic with flail leaflet and LVESD ≥ 40 mm (with low surgical risk and high likelihood of repair)	IIa
Asymptomatic and new onset atrial fibrillation or sPAP ≥ 50 mmHg	IIa
Asymptomatic with left atrial dilatation (≥ 60 ml/m^2 or pulmonary hypertension on exercise (sPAP ≥ 60mmHg) when there is a low surgical risk and high likelihood of repair	IIb

Degenerative Mitral Valve Disease

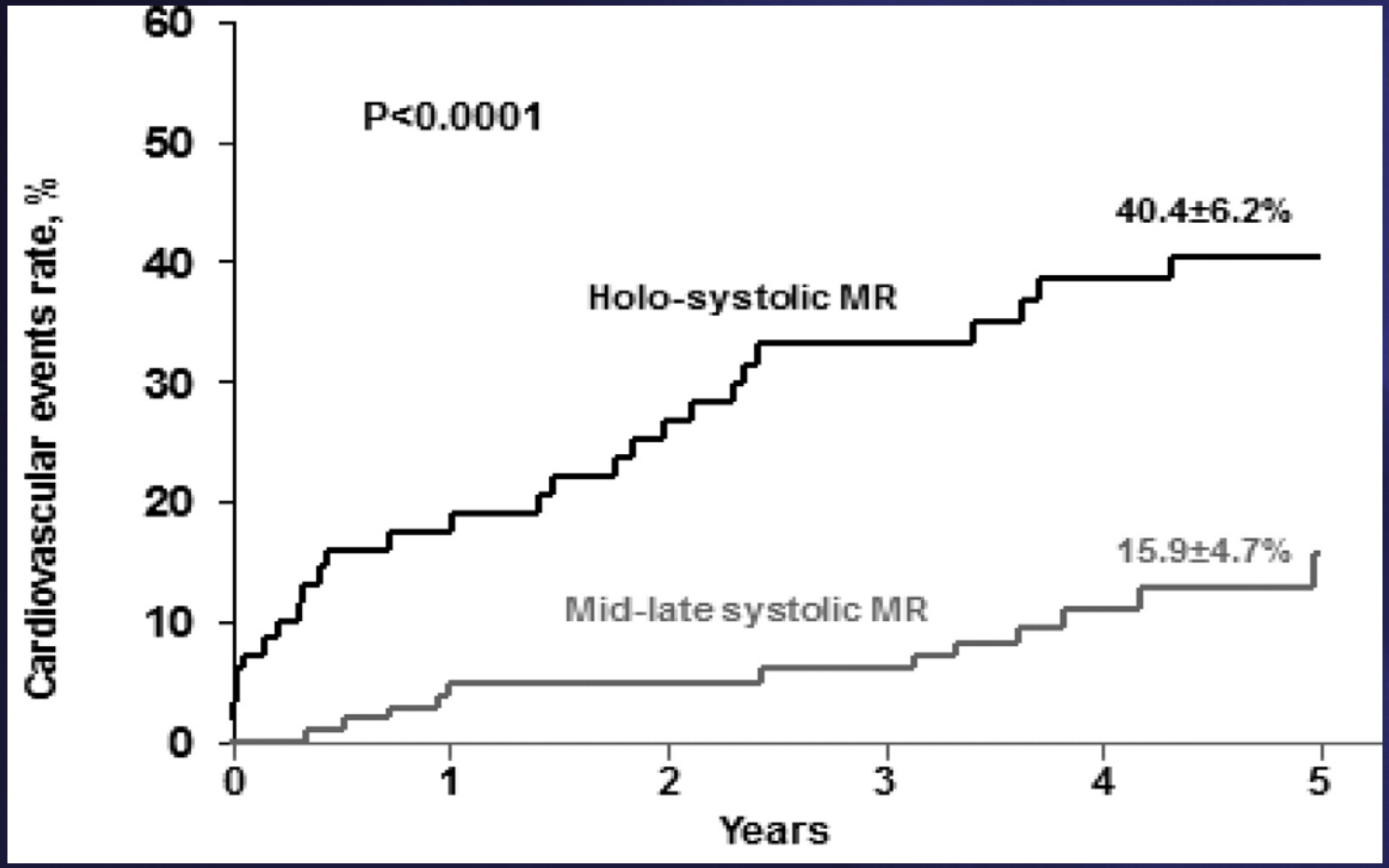
Holosystolic vs. Late Systolic MR



Topilsky Y et al. Circulation 2012;125:1643-1651

Holosystolic vs Late Systolic Mitral Regurgitation

Event-free Survival



Topilsky Y et al. Circulation 2012;125:1643-1651

Mitral Regurgitation

History

- Recent episode of syncope, dizzyness
- 24hr ECG: multiple polymorphic ventricular extrasystoles, couplets, triplets, non-sustained polymorphic VT over 10 beats with a heart rate of 224 bpm.
- Admitted to the service for further work-up
- Sudden death 10 min after admission
- Successful CPR

Mitral Regurgitation

History 3

- Options of mitral surgery and ICD discussed
- Arrhythmia may persist after MV surgery
- MV repair complex – no strong valve related indication for surgery

- The patient received an ICD
  - 1 appropriate discharge 2 years after implantation
  - Pt still asymptomatic 5 yrs later

Timing of Intervention in Mitral Regurgitation

Follow-up