

Timing dell'intervento chirurgico

Tutte le informazioni necessarie al chirurgo per la scelta della migliore soluzione possibile: riparazione percutanea, riparazione chirurgica o sostituzione valvolare?

Lucia Torracca
Direttore Cardiochirurgia
Ospedali Riuniti di Ancona



Linee guida

ESC 2007

ACC/AHA 2008

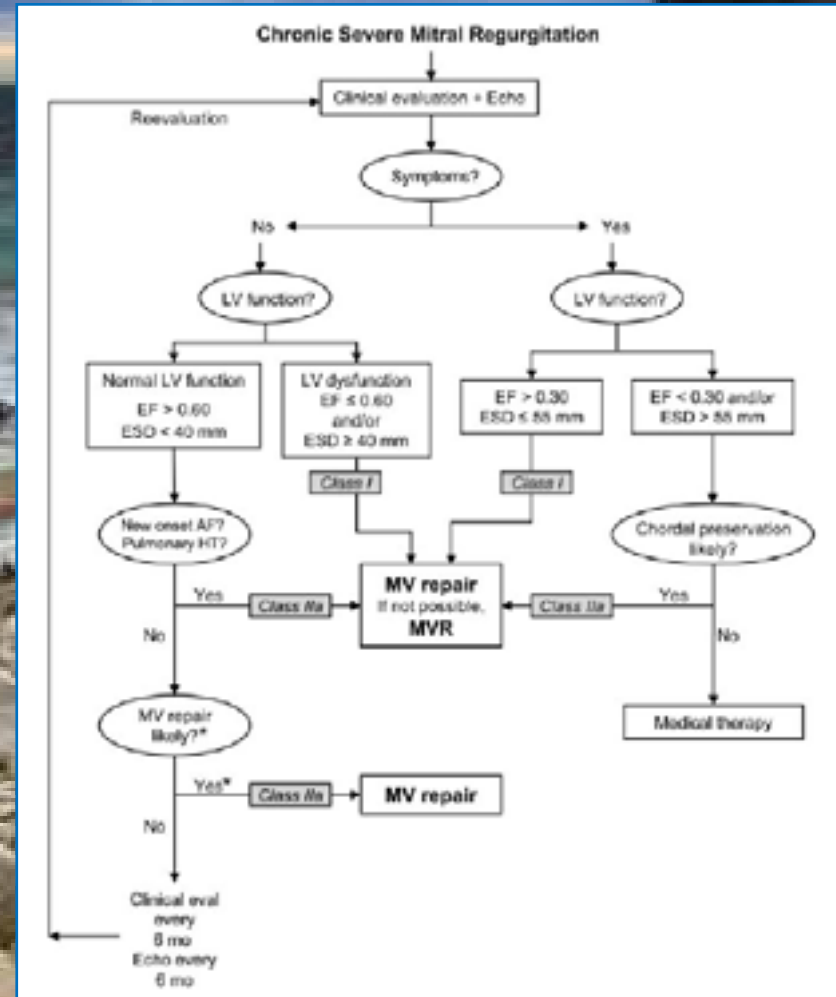
Table 8 Indications for surgery in severe chronic organic mitral regurgitation

	Class
Symptomatic patients with LVEF >30% and ESD <55 mm	IB
Asymptomatic patients with LV dysfunction (ESD >45 mm ^a and/or LVEF ≤60%)	IC
Asymptomatic patients with preserved LV function and atrial fibrillation or pulmonary hypertension (systolic pulmonary artery pressure >50 mmHg at rest)	IIaC
Patients with severe LV dysfunction (LVEF <30% and/or ESD >55 mm) ^a refractory to medical therapy with high likelihood of durable repair, and low comorbidity	IIaC
Asymptomatic patients with preserved LV function, high likelihood of durable repair, and low risk for surgery	IIbB
Patients with severe LV dysfunction (LVEF <30% and/or ESD >55 mm) ^a refractory to medical therapy with low likelihood of repair and low comorbidity	IIbC

Severity is based on clinical and echocardiographic assessment.

ESD = end-systolic dimension, EF = ejection fraction, LV = left ventricular, MR = mitral regurgitation.

^aLower values can be considered for patients of small stature.



Timing

- Pazienti con indicazione chirurgica **INDIPENDENTE** dalla tipologia di intervento
- Pazienti con indicazione chirurgica **SUBORDINATA** al tipo di intervento

Elementi di valutazione

➤ CLINICA

- sintomi

➤ STRUMENTALI

- ECG (RS, FA parossistica,
persistente, cronica)

- ECOCARDIOGRAMMA (TT, TEE)

Valutazione Ecocardiografica

- Quantificazione del rigurgito mitralico (I)
- Eziologia (II)
- Meccanismo IM (III)
- Alterazioni strutturali di ciascun elemento della valvola (IV)
- Funzione e dimensioni del ventricolo sinistro (V)
- Funzione del ventricolo destro (VI)

Quantificazione del rigurgito mitralico (I)

	Mild	Moderate	Severe
Specific signs	Small central jet <4 cm ² or <10% of LA, vena contracta width <0.3 cm, no or minimum flow convergence	MR more than mild, without any criteria for severe MR	Vena contracta width ≥0.7 cm with large central MR jet (area >40% of LA) or with a wall-impinging jet of any size; large flow convergence; systolic reversal in pulmonary veins; prominent flail leaflet or ruptured papillary muscle
Supportive signs	Systolic dominant flow in pulmonary veins; A-wave dominant mitral inflow; low-density doppler MR signal; normal LV size	MR more than mild, but no criteria for severe MR	Dense, triangular doppler MR signal; E-wave dominant mitral inflow (>1.2 m/s); enlarged LV and LA, (particularly with normal LV function)
Quantitative variables			
RVol (mL per beat)	<30	30-44; 45-59	≥60
RF	<30%	30-39%; 40-49%	≥50%
ERO area (cm ²)	<0.20	0.20-0.29; 0.30-0.39	≥0.40

Modified from Zoghbi and colleagues.⁵ ERO=effective regurgitant orifice area. LA=left atrium. LV=left ventricle. MR=mitral regurgitation. RF=regurgitant fraction. RVol=regurgitant volume.

Table 2: Gradation of mitral regurgitation by doppler echocardiography

Eziologia (II)

- **Degenerativa**

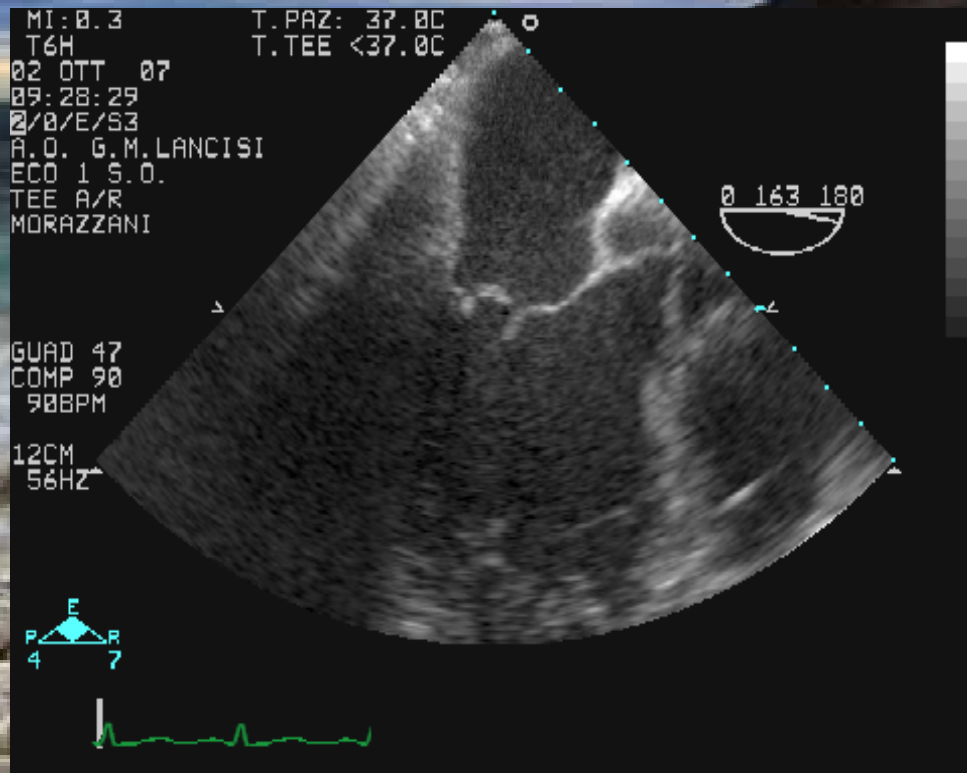
- **degenerazione fibroelastica**
- **degenerazione mixomatosa**
- **malattia di Barlow**

- **Endocarditica**

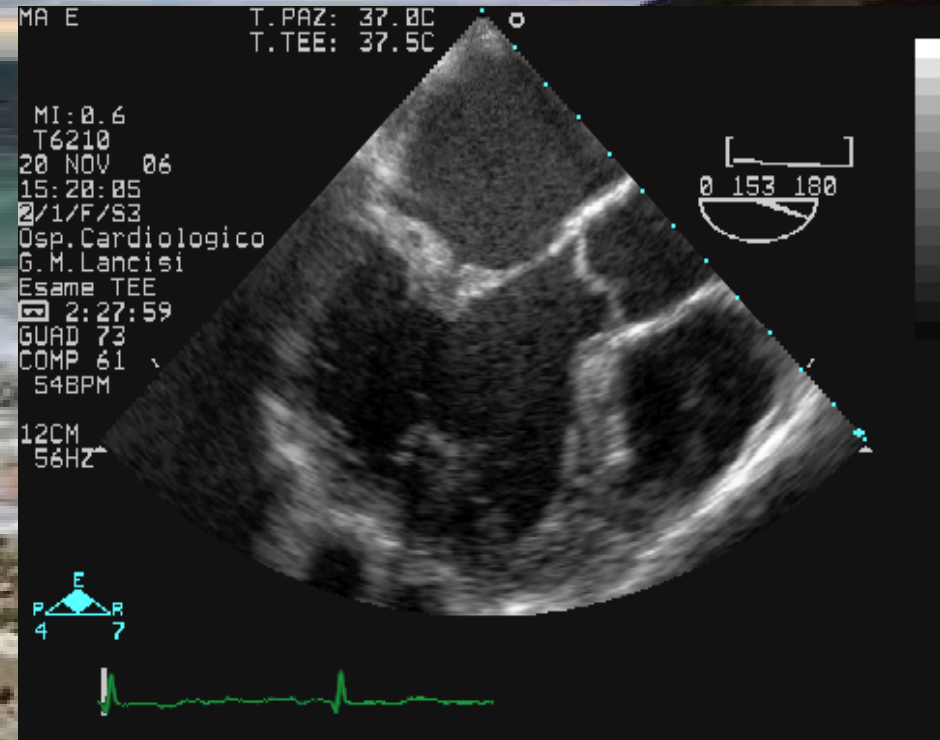
- **Reumatica**

- **Funzionale**

DEFICIENZA FIBROELASTICA

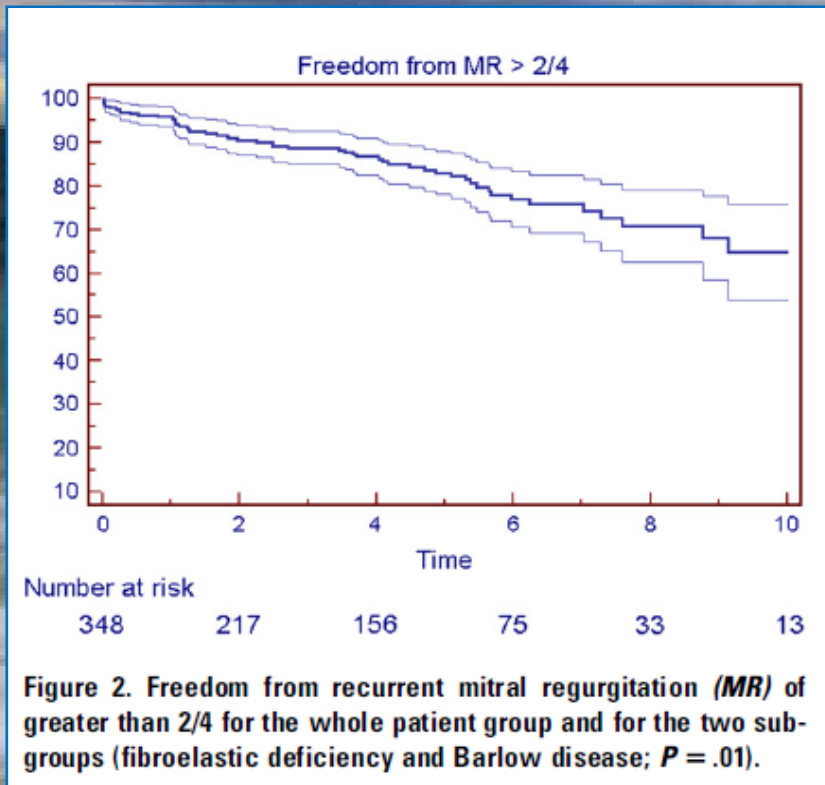


DEGENERAZIONE MIXOMATOSA



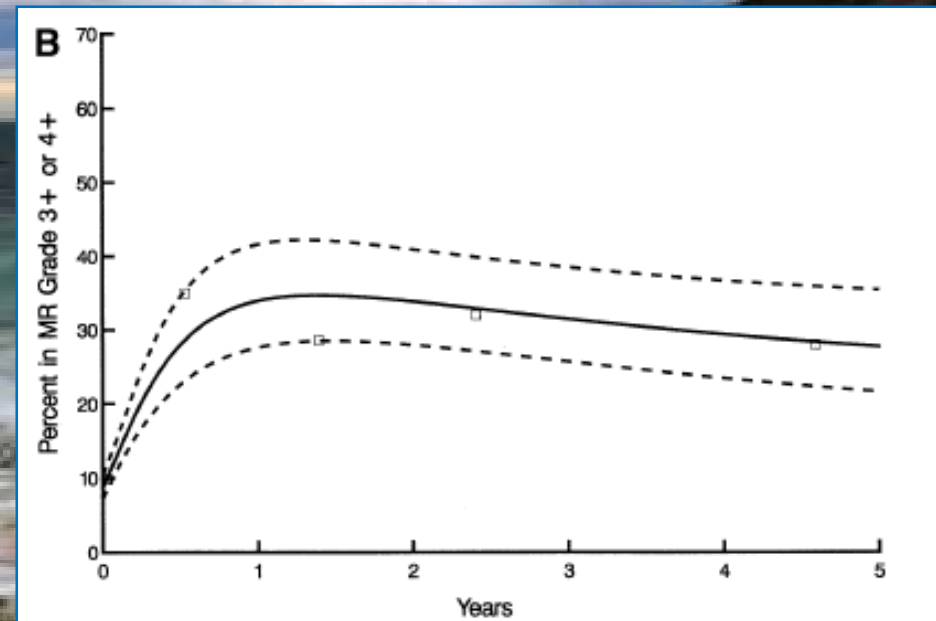
Eziologia (II)

Degenerativa



Flameng J Thorac Cardiovasc Surg 2008;135:274-82

Ischemica

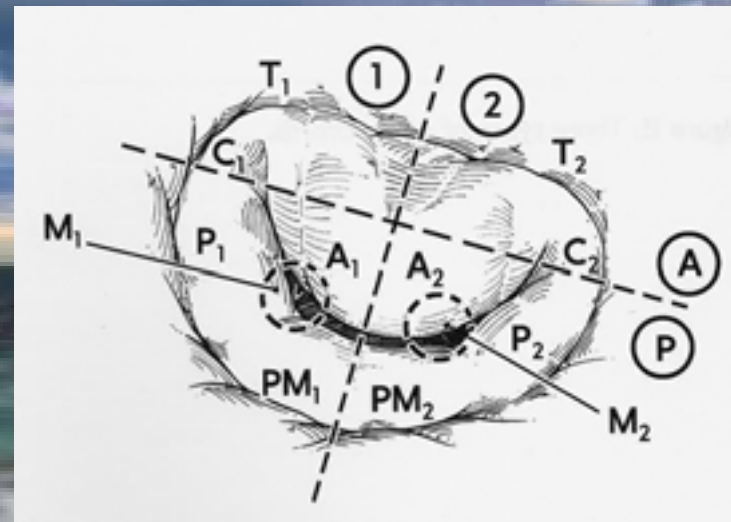
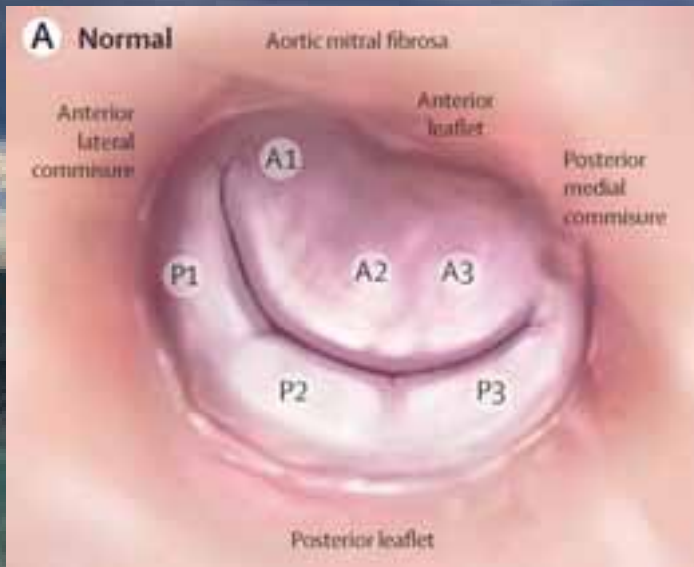


Reumatica

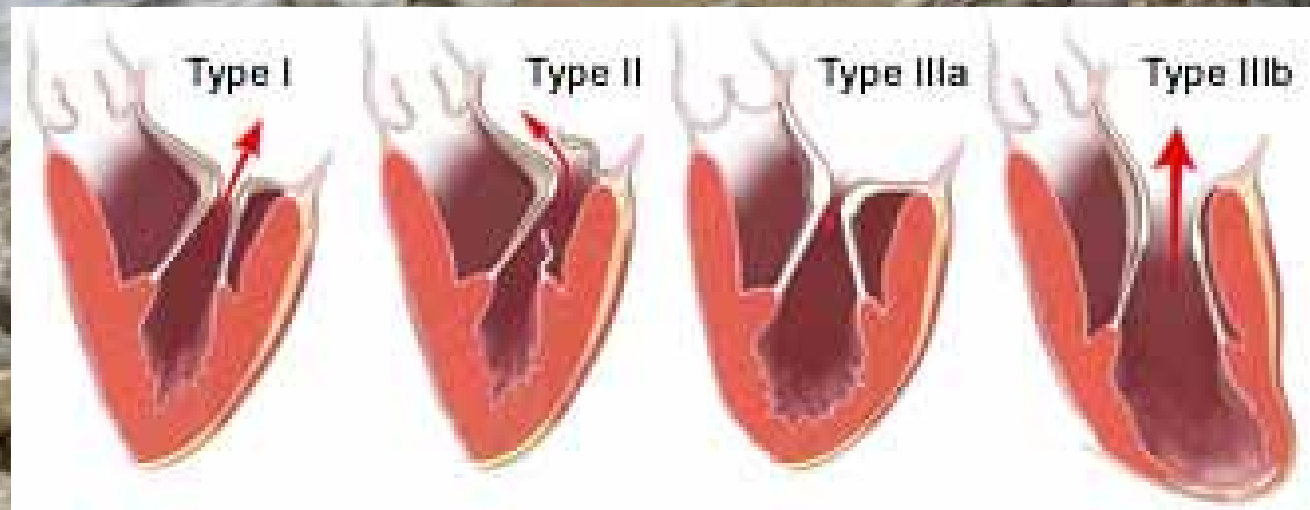
17% recidiva di IM o SM a 5,5 anni

Kin et al EJCTS 2009

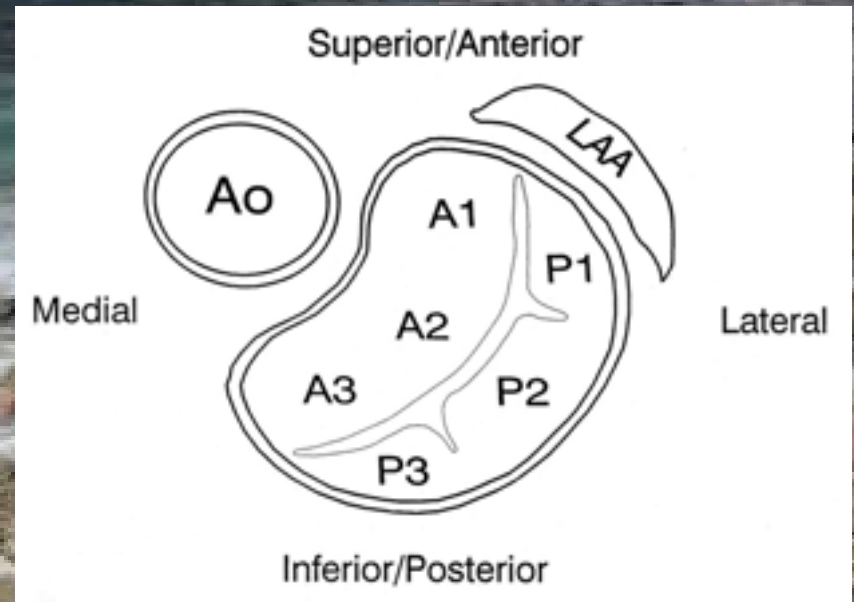
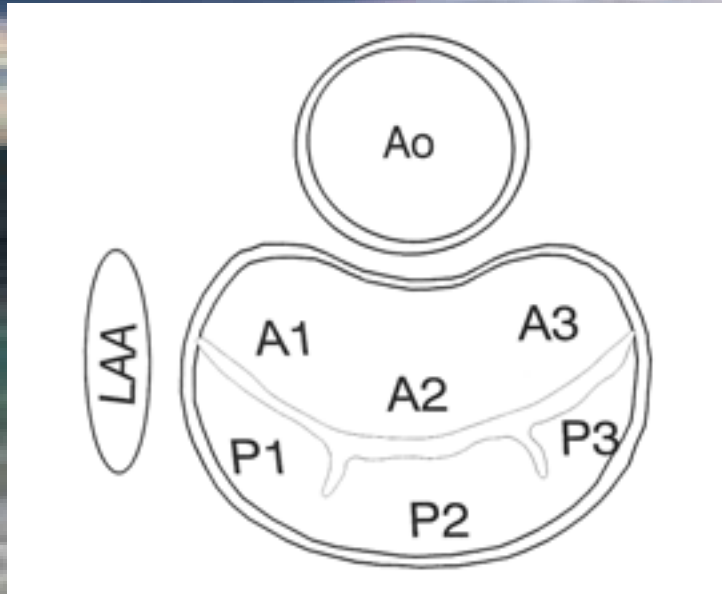
Il meccanismo della IM (III)



Classificazione di Carpentier



Visione chirurgica



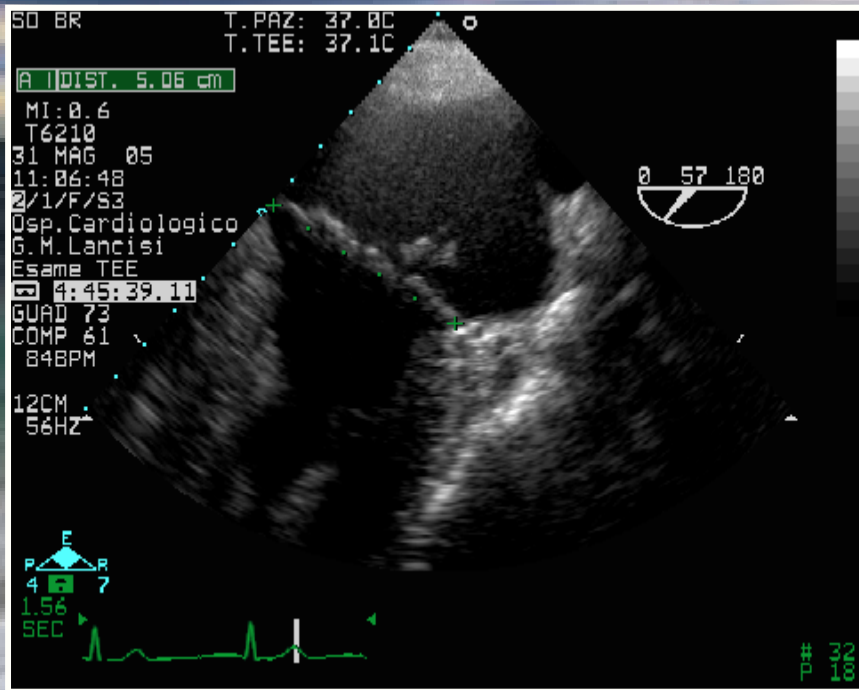
Visione ecocardiografica

Alterazioni strutturali degli elementi valvolari (IV)

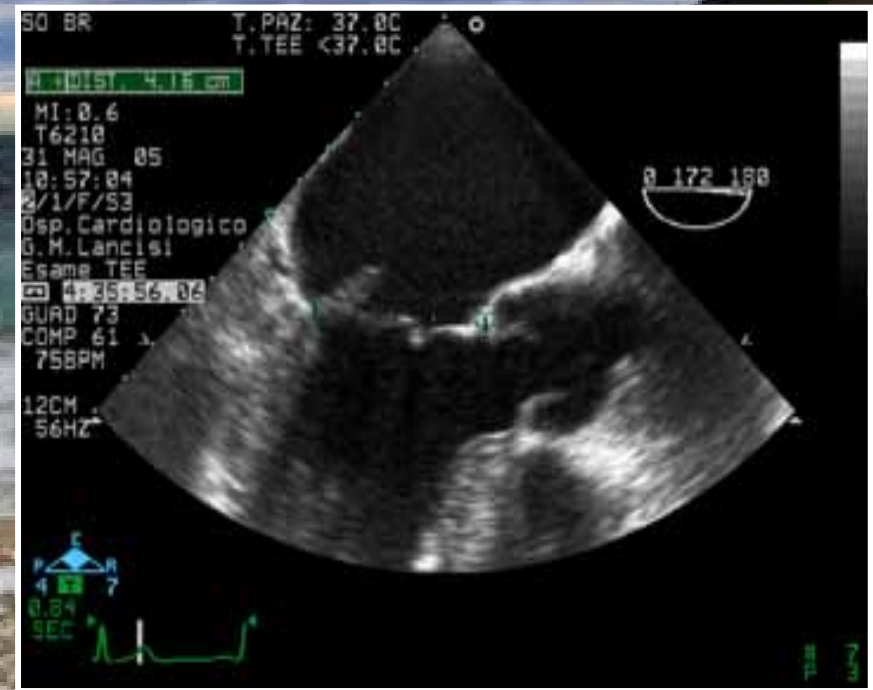
Anello

- **Dimensioni**
- **Calcificazioni : Parcellari (sede)
Diffuse**

DIMENSIONI DELL'ANNULUS



Intercommisurale



Setto-laterale

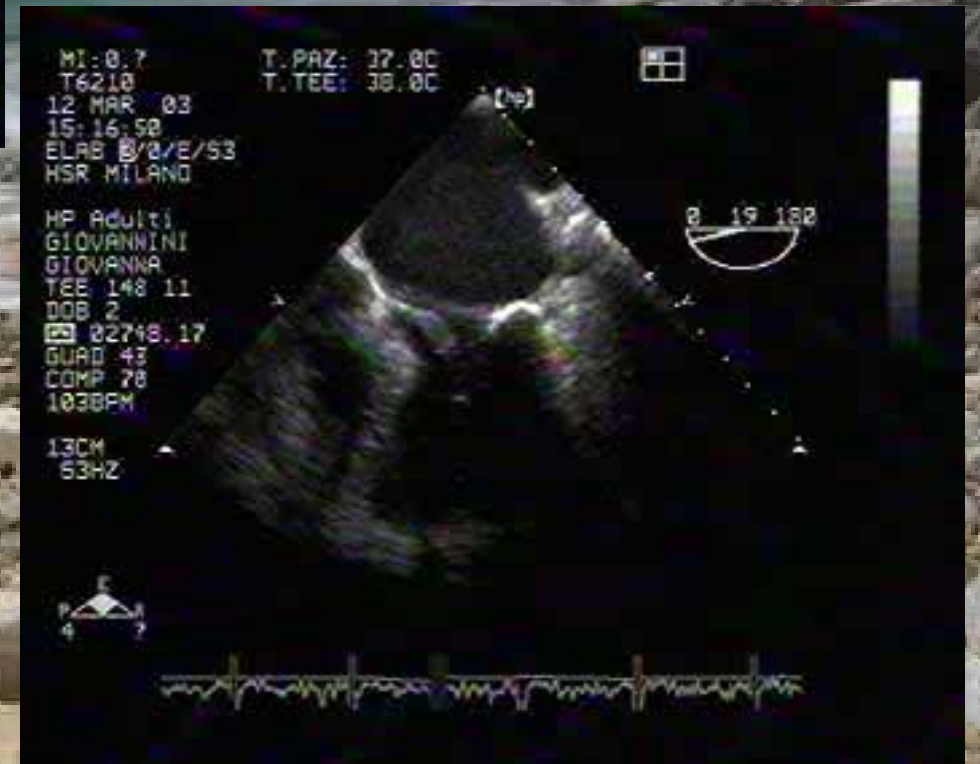




Posterior annulus calcification



Leaflets extension

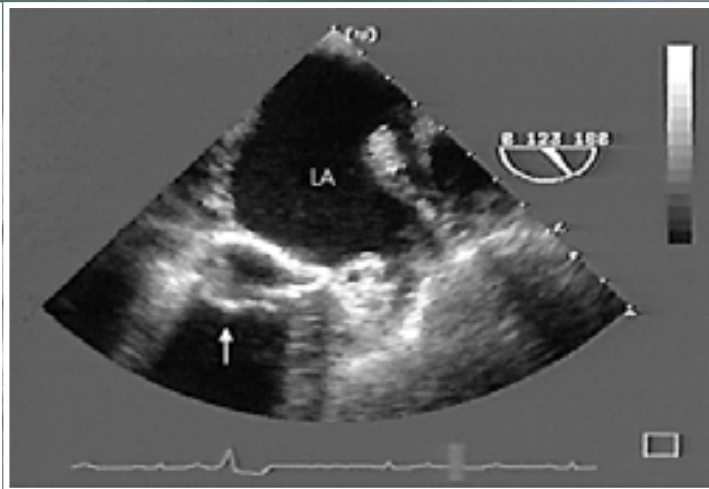


Alterazioni strutturali degli elementi valvolari (IV)

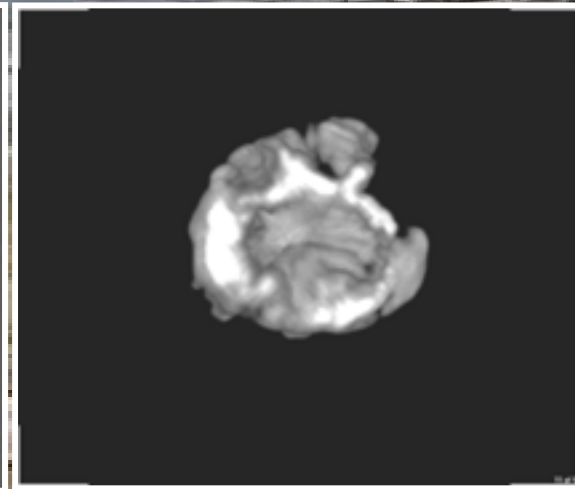
Calcificazioni *Imaging techniques*



Xray

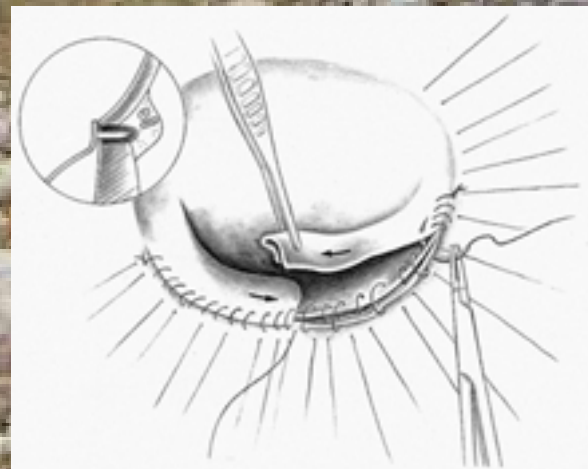
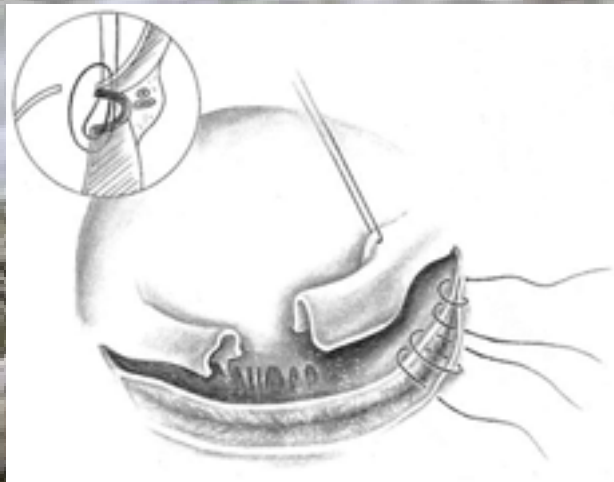
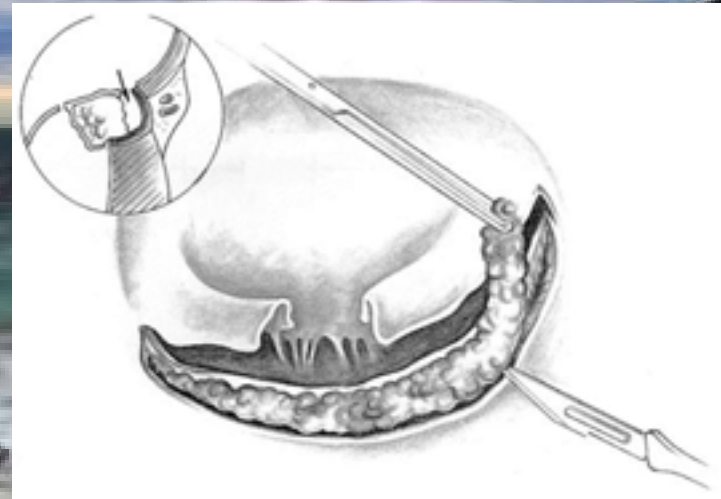
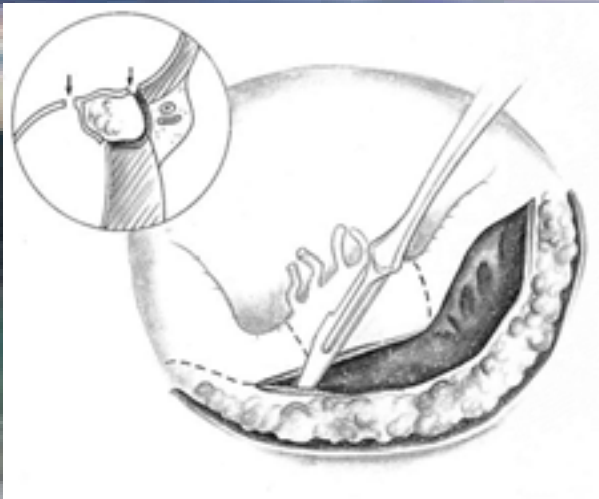


2D ECO

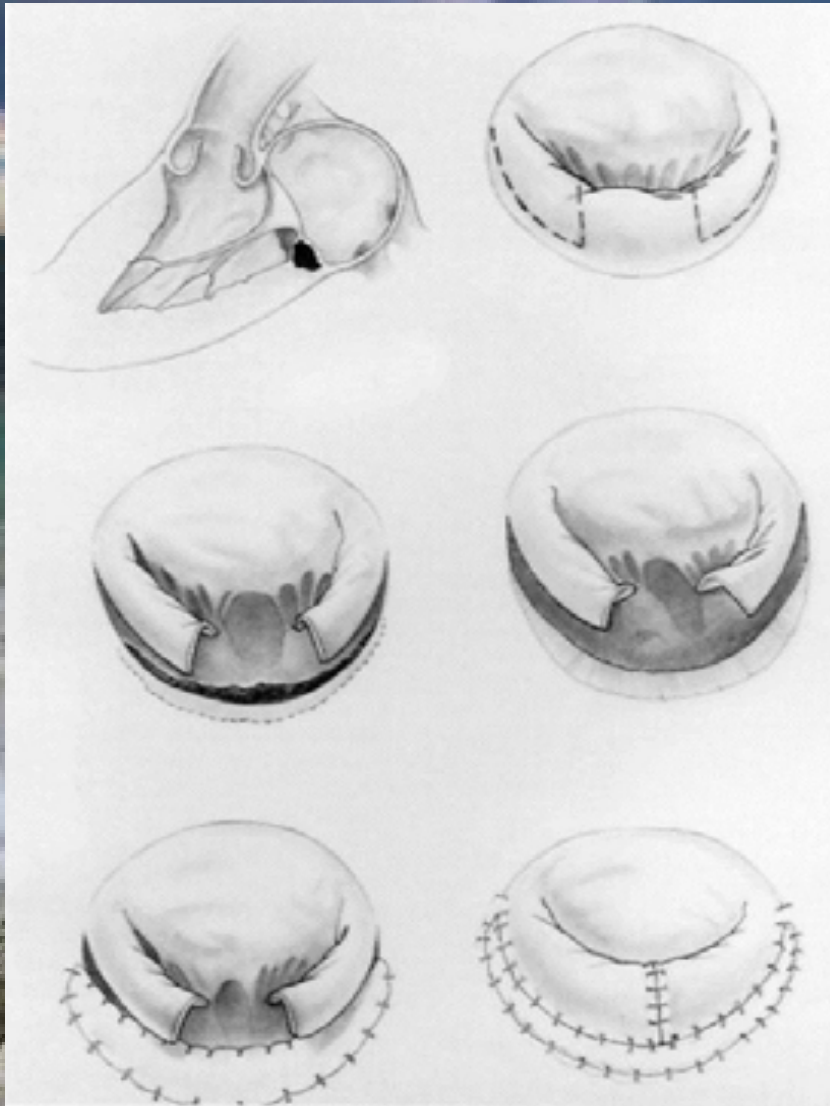


3D ECO

Complete anulus decalcification



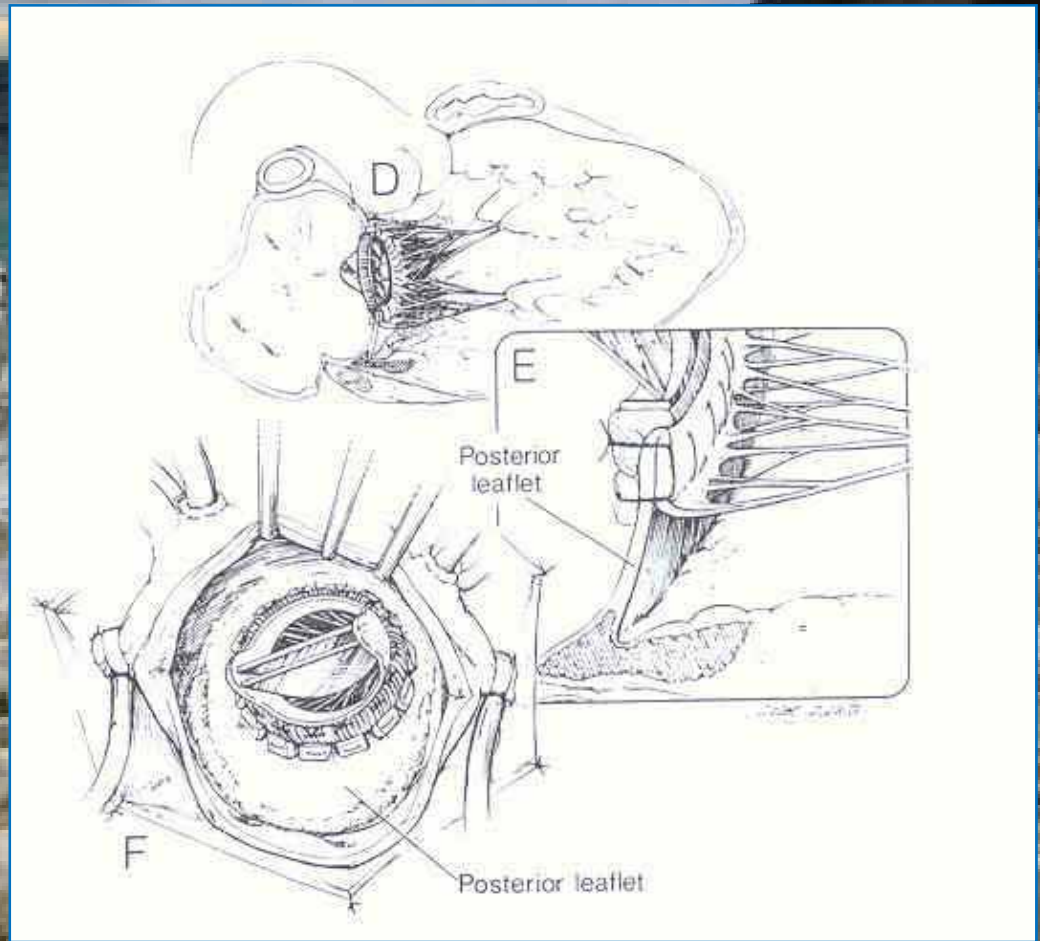
Patch reconstruction



Operative mortality
3,3% - 9,3%

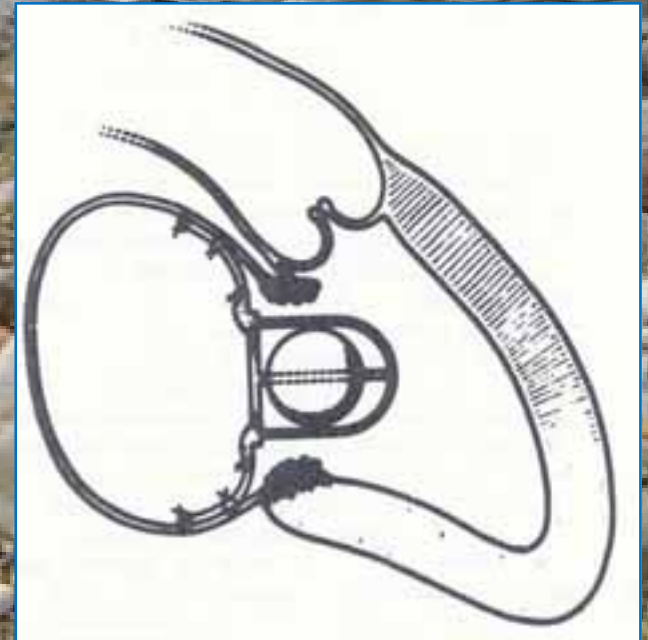
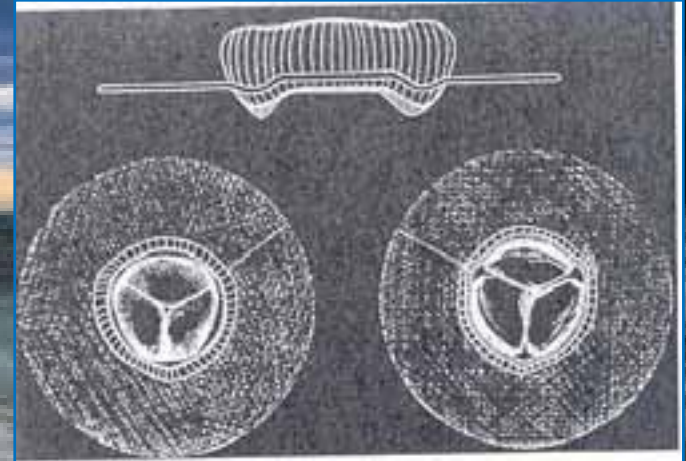
SVM: Intravalvular insertion

- Leaflets tissue pliable
- Adequate valve area



SVM: Intra-atrial insertion

- Extension of the sewing ring with Dacron
- Fixation of the valve to the atrial wall



Alterazioni strutturali degli elementi valvolari(IV)

Lembi

- **Dimensioni**

- **AMPIEZZA LEMBO ANT e POST**

- **Prolasso, flail, retrazione, fibrosi, calcificazione**

- **SEDE**

- **ESTENSIONE**

Il rischio di SAM

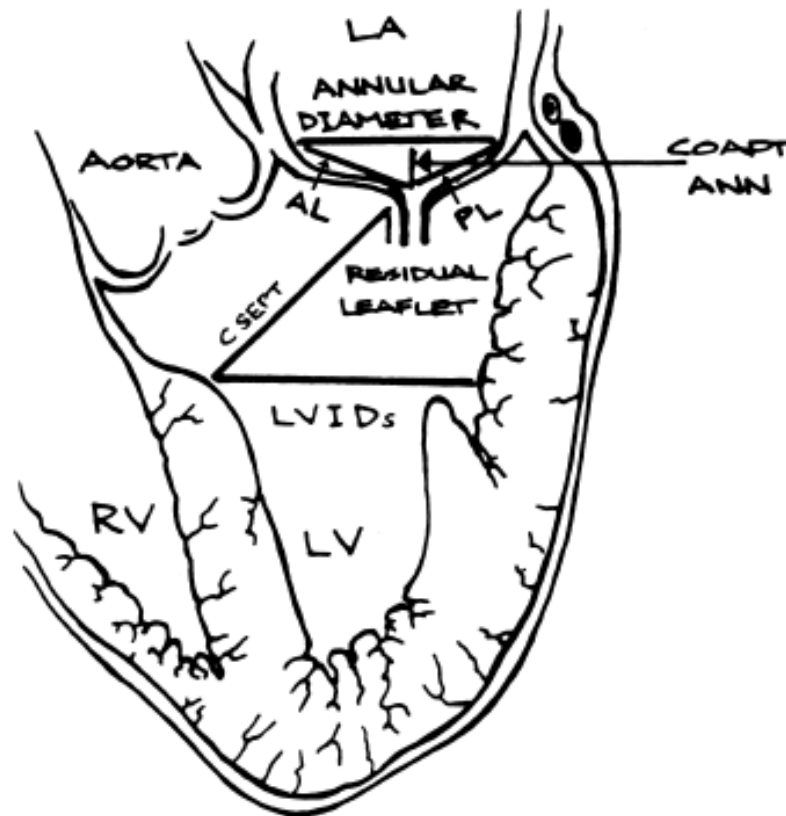
Systolic Anterior Motion
of the anterior leaflet of the mitral valve
is a dynamic complication of MVR
that is dependent
on haemodynamic
and anatomic factors leading to LVOT
obstruction and/or mitral regurgitation

INCIDENCE: 2-16%

Echocardiographic Predictors of Left Ventricular Outflow Tract Obstruction and Systolic Anterior Motion of the Mitral Valve After Mitral Valve Reconstruction for Myxomatous Valve Disease

Andrew D. Maslow, MD,*|| Meredith M. Regan, ScD,+ J. Michael Haering, MD,*
Robert G. Johnson, MD,‡ Robert A. Levine, MD§

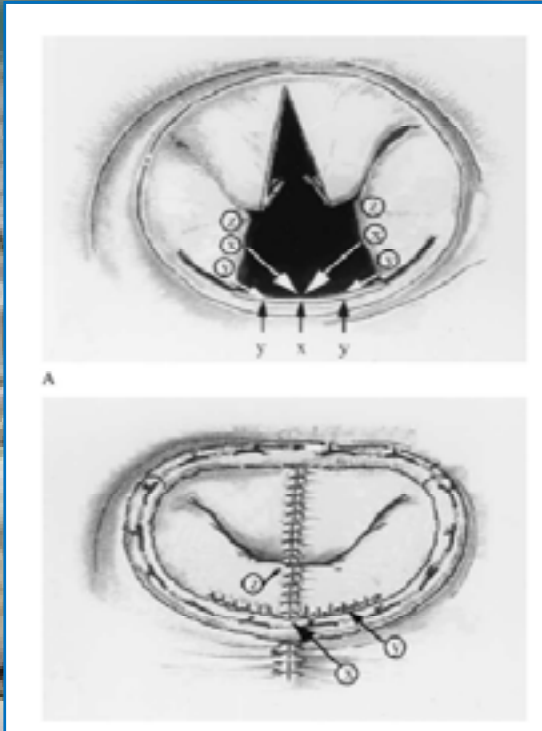
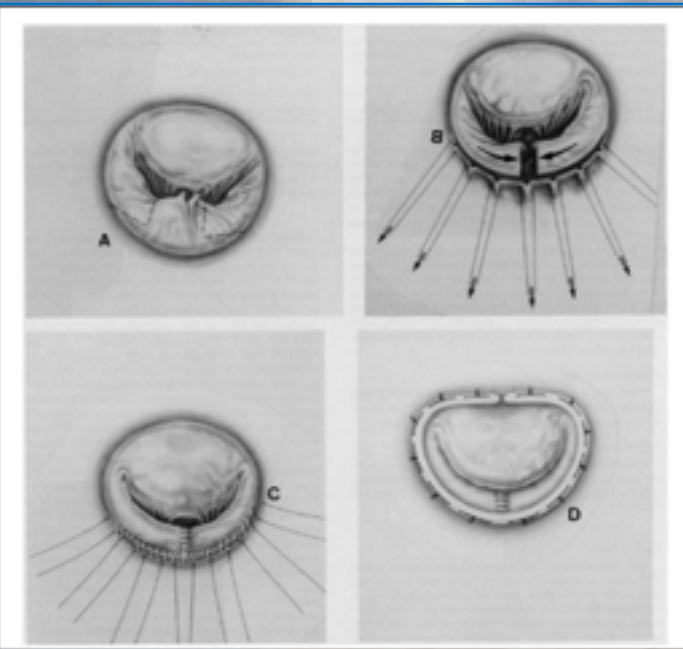
Boston, Massachusetts



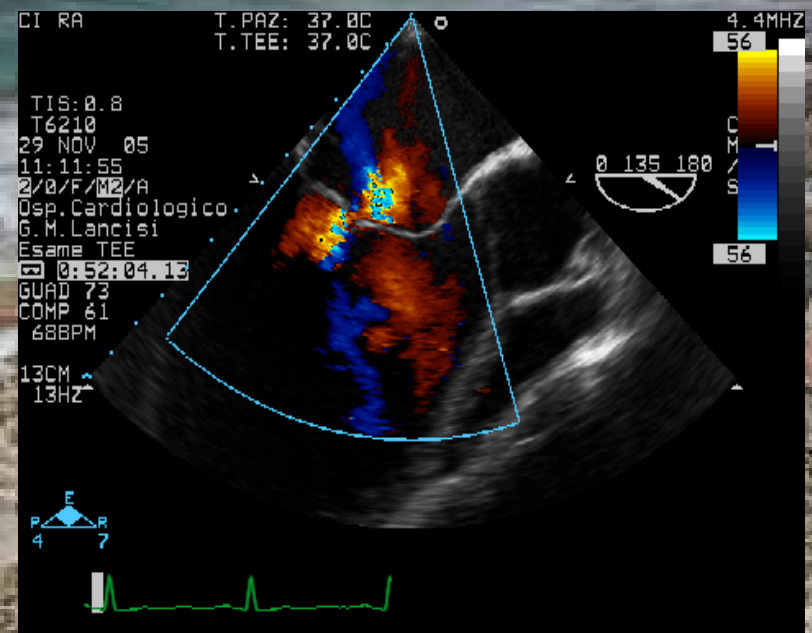
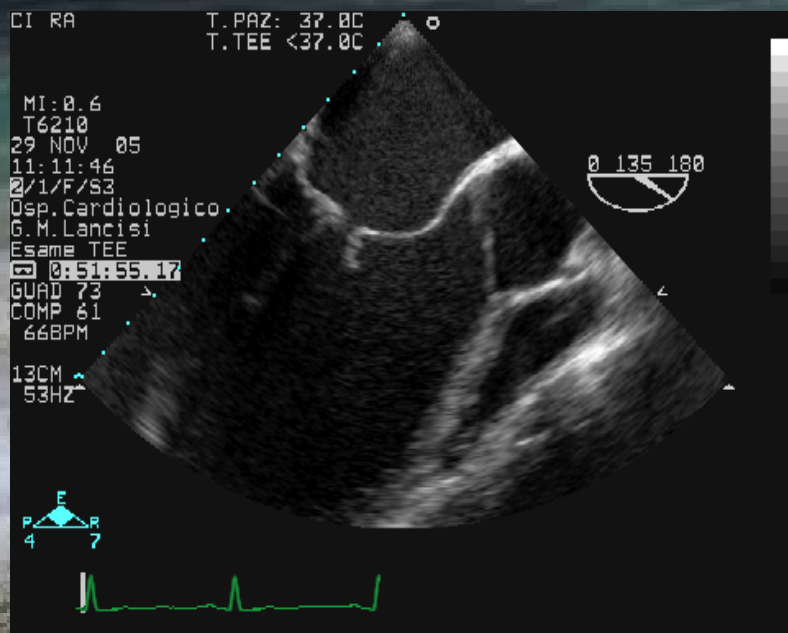
• $AL/PL \leq 1.3$

• C-sept dist ≤ 25 mm

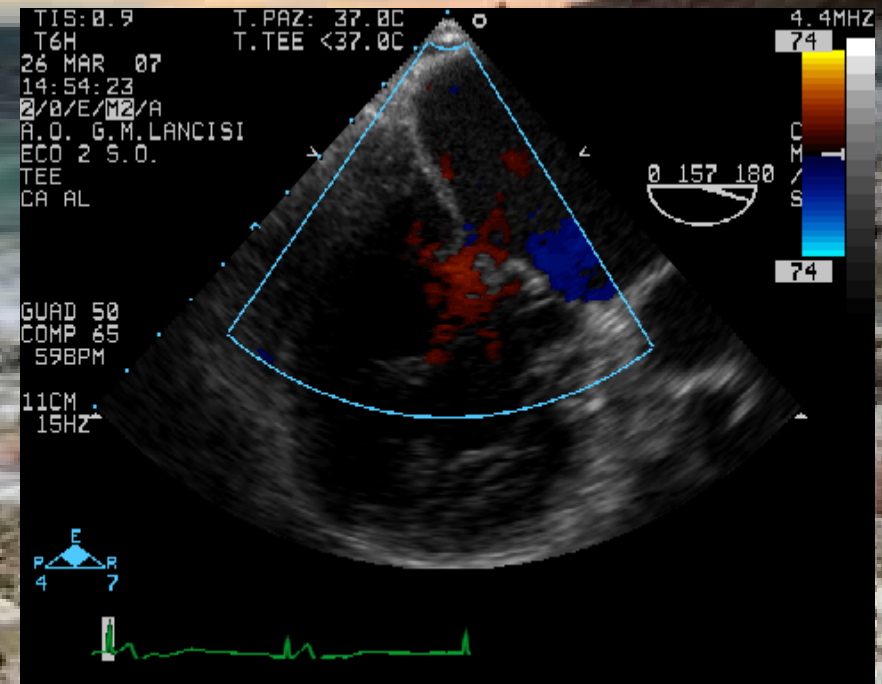
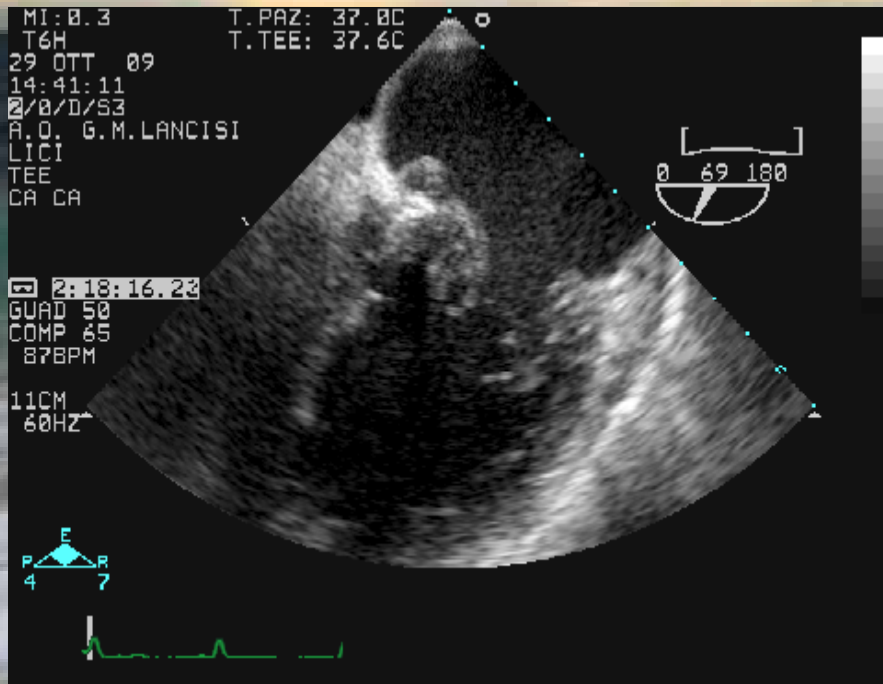
Tecnica chirurgica



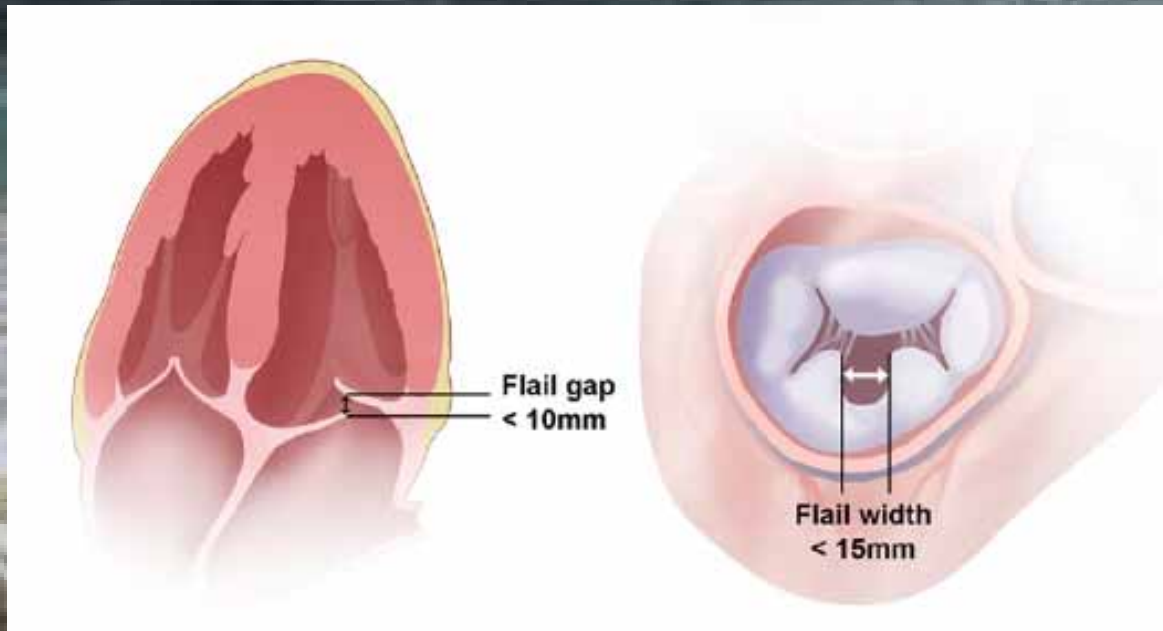
FLAIL



PROLASSO BILEMBO



Criteria di eleggibilità per trattamento percutaneo del flail



Alterazioni strutturali degli elementi valvolari (IV)

Corde e muscoli papillari

- Allungamento
- Fibrosi
- Calcificazione

Il ventricolo sinistro (V)

- Dimensioni
- Funzione contrattile



FUNZIONE VS POST-CHIRURGICA

Table 4. Incidence of Postoperative LV Dysfunction According to Classes of Preoperative LVEF

Preoperative LVEF (%)	<50	<55	<60	≥60	Total
Postoperative LVEF <50% (n)	5	3	2	10	20
Postoperative LVEF ≥50% (n)	4	9	20	118	151
Total (n)	9	12	22	128	171
Incidence of LV dysfunction* (%)	56	25	9	8	12

*Defined as LVEF <50%.

LV = left ventricular; LVEF = left ventricular ejection fraction.

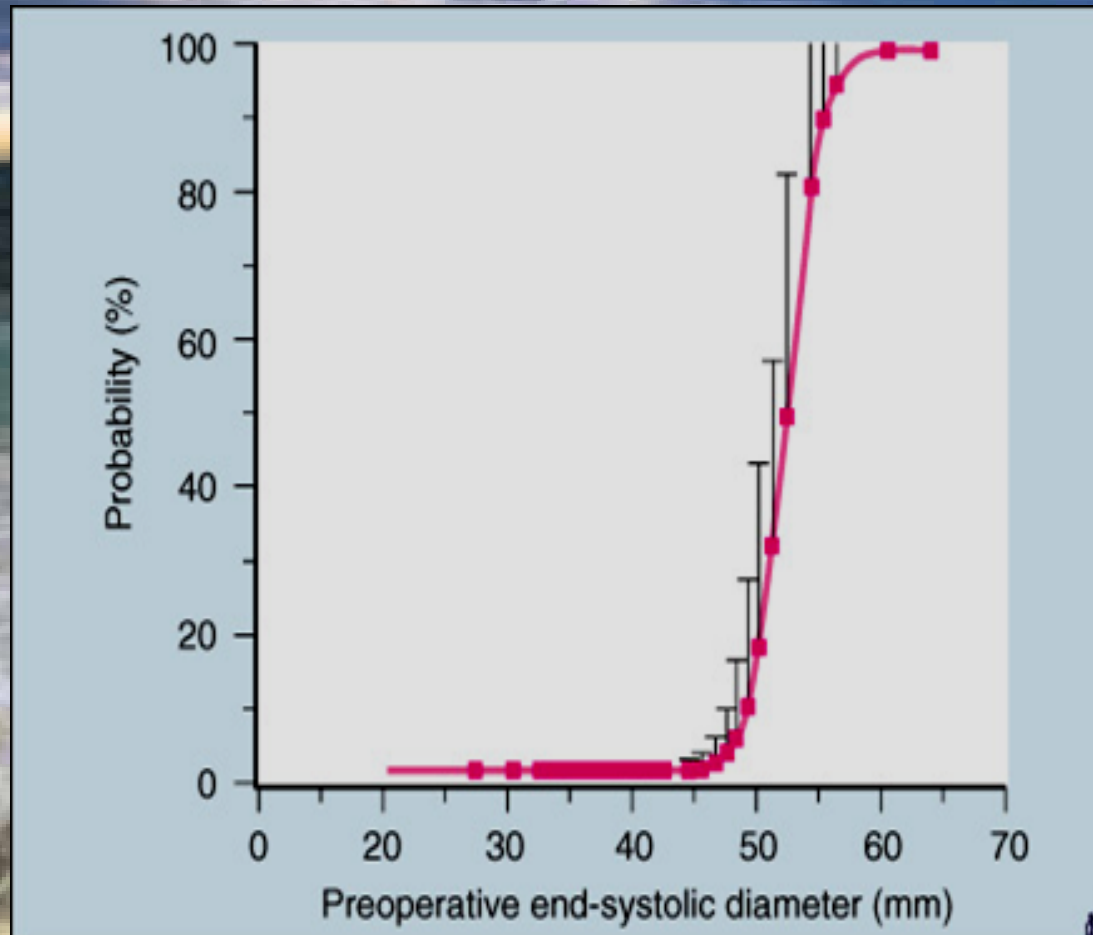
Table 5. Incidence of Postoperative LV Dysfunction Stratified by Preoperative LVDs

Preoperative LVDs (mm)	<30	<35	<40	<45	≥45	Total
Postoperative LVEF <50% (n)	1	4	3	5	7	20
Postoperative LVEF ≥50% (n)	15	48	54	18	16	151
Total (n)	16	52	57	23	23	171
Incidence of LV dysfunction* (%)	6	8	5	22	30	12

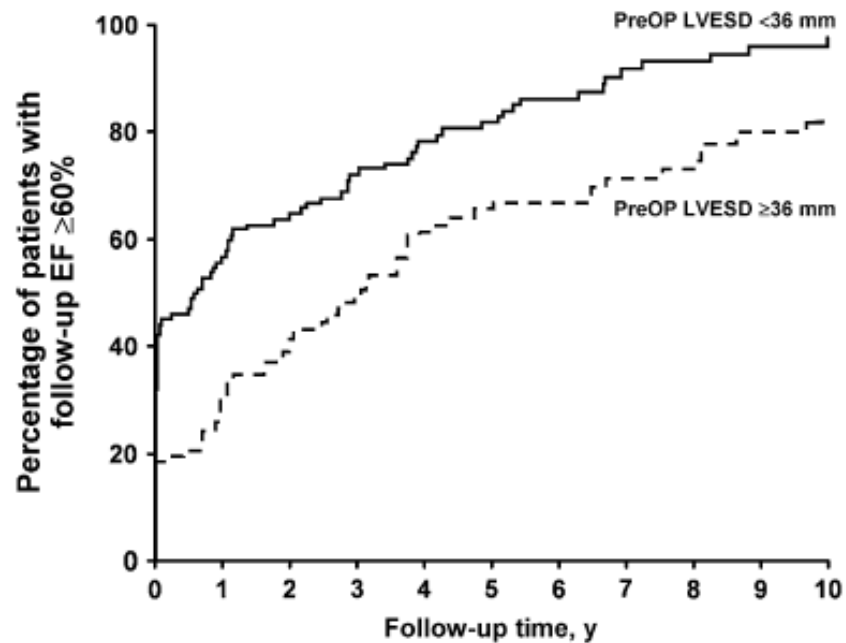
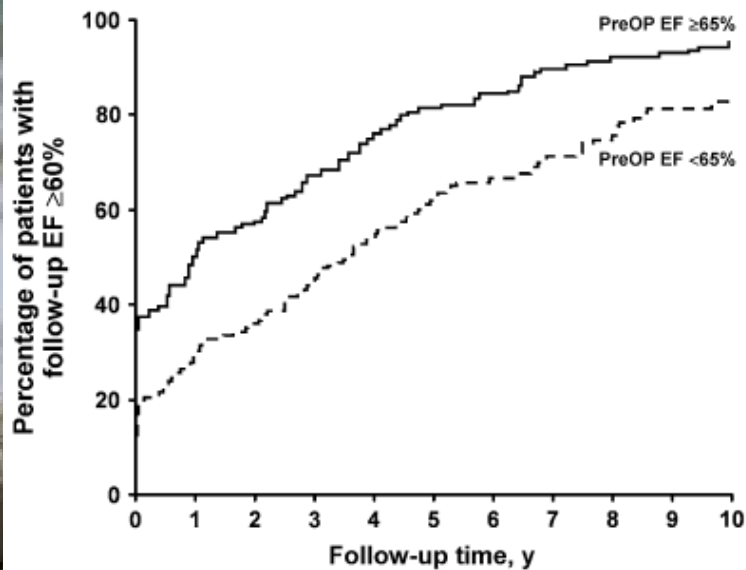
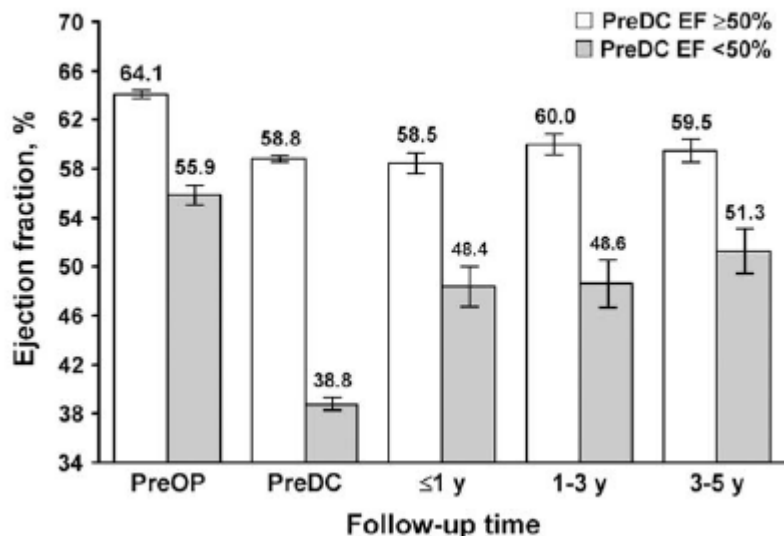
*Defined as LVEF <50%.

Abbreviations as in Tables 2 and 4.

FUNZIONE VS POST-CHIRURGICA



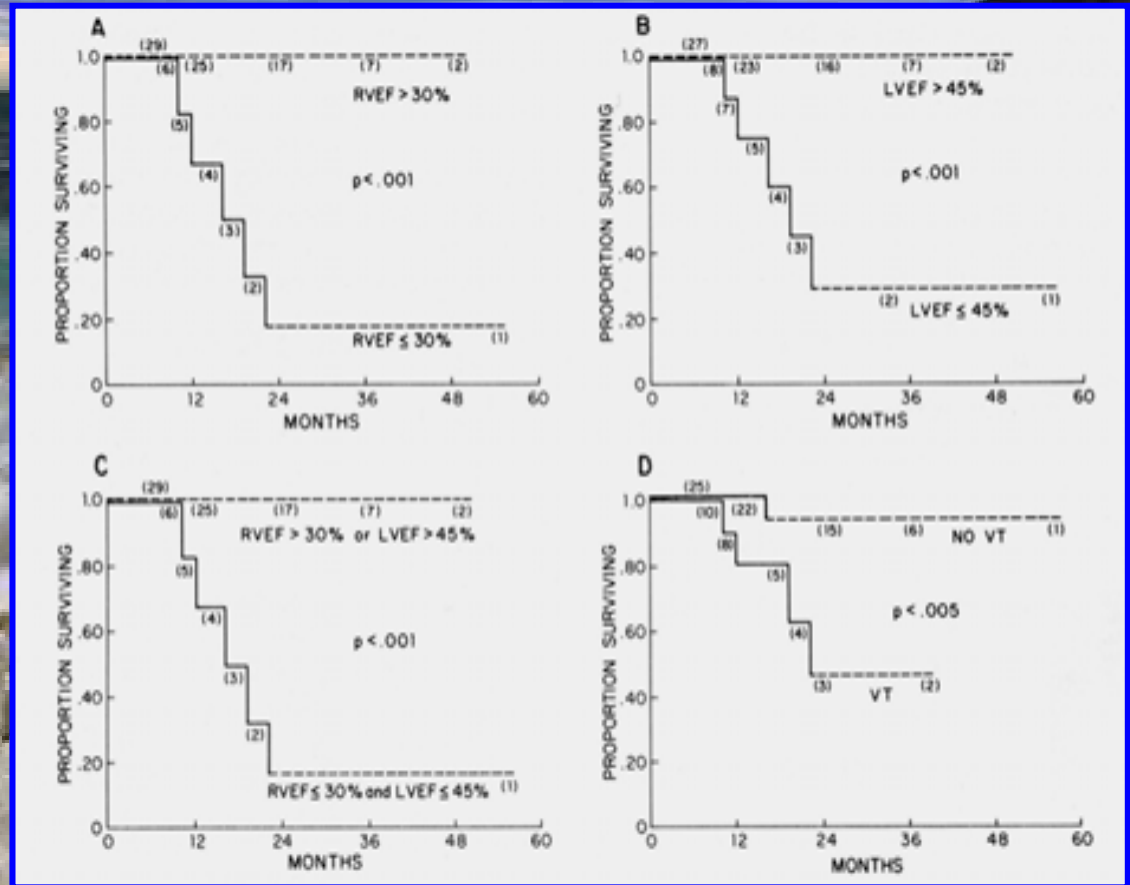
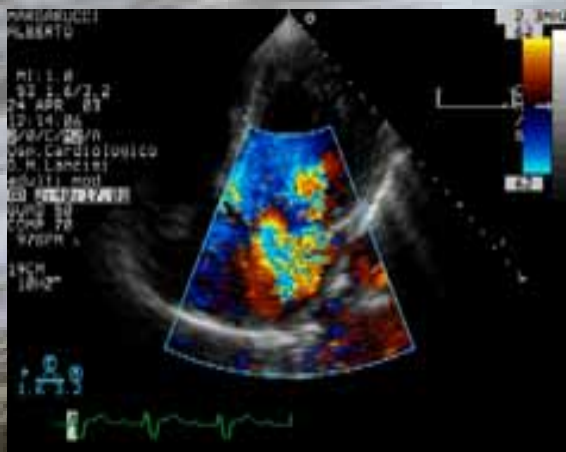
Suri et al JTCVS 2009



Il ventricolo destro (VI)



Funzione ventricolare destra



A scenic photograph of a rocky beach at sunset. The foreground is filled with smooth, light-colored stones and pebbles. The ocean waves are breaking gently onto the shore, creating white foam. The sky is filled with dramatic, dark clouds, with a bright orange and yellow glow from the setting sun visible on the horizon. A small boat is visible in the distance on the right side of the frame. The word "Ritmo" is overlaid in a green, sans-serif font in the center of the image.

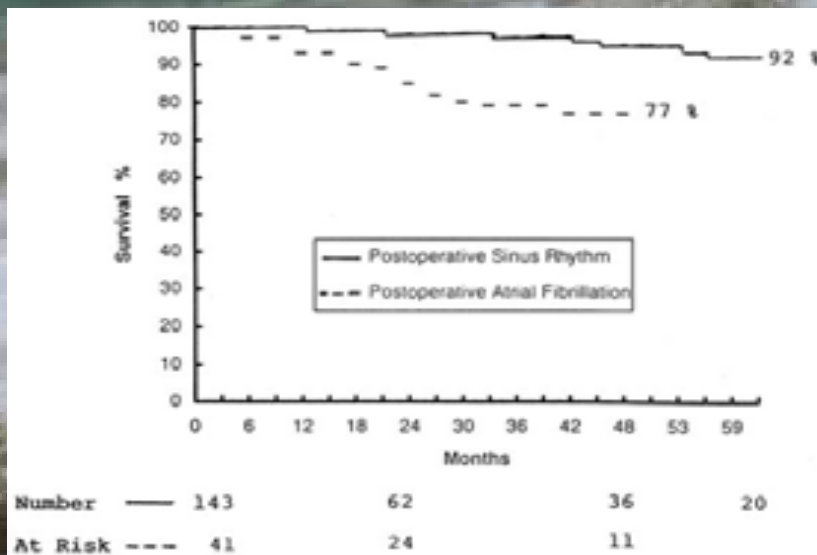
Ritmo

Rhythm after heart surgery

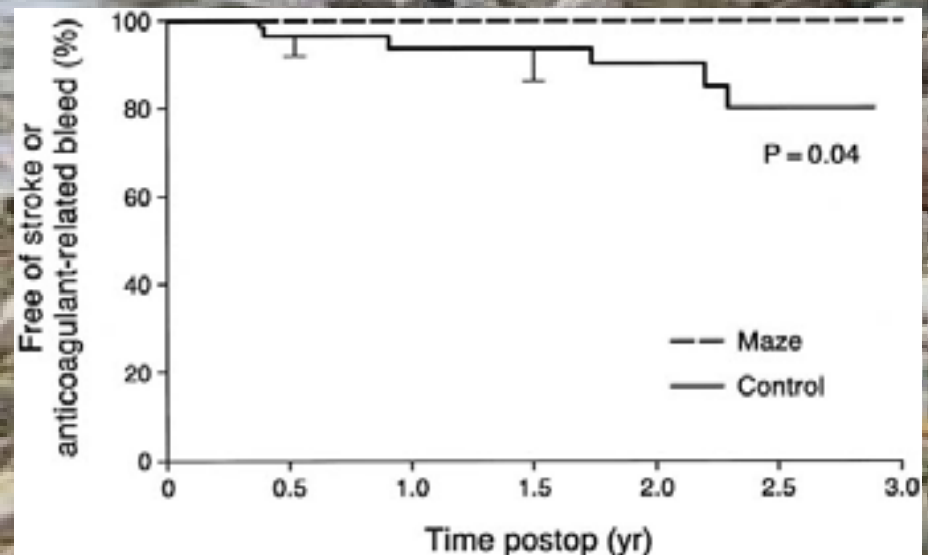
SR recovery after mitral valve repair

↑ survival

↓ thromboembolic risk
↓ hemorrhagic risk



Obadia, 1997

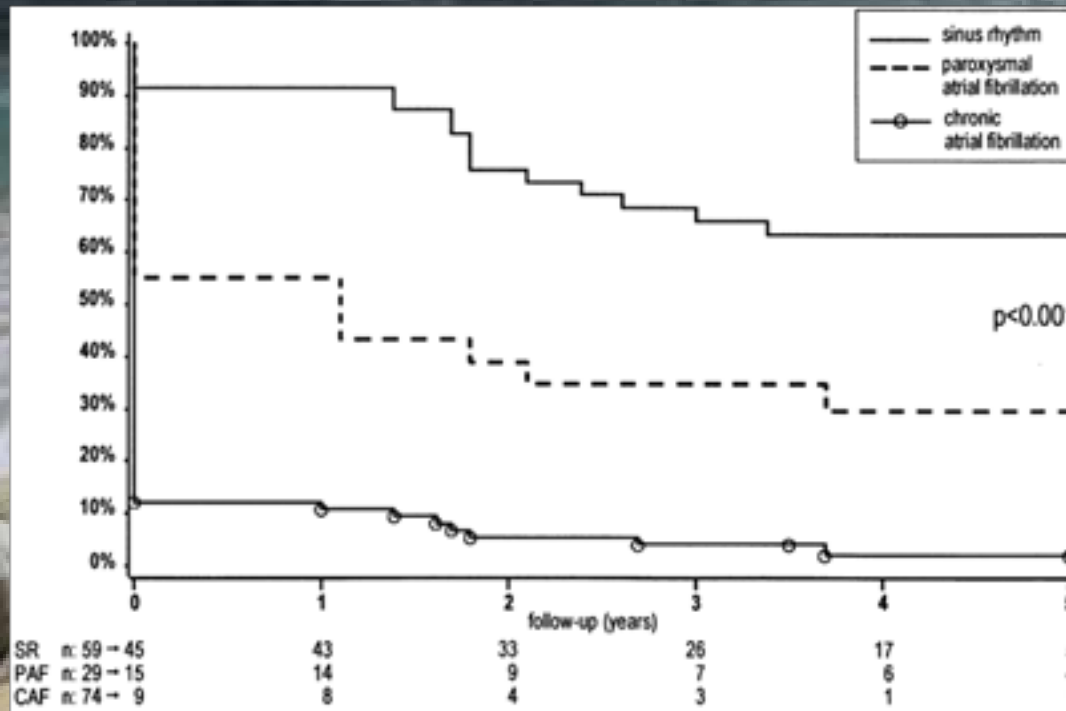


Shaff, 2000

Rhythm after heart surgery

Spontaneous recovery of SR after mitral valve surgery

< 10%



< 40%

Jessurun, 2000

without specific treatment

Left Atrial Radiofrequency Ablation During Mitral Valve Surgery for Continuous Atrial Fibrillation

A Randomized Controlled Trial

George Doukas, FRCSI
Nilesh J. Samani, MD, FRCP
Christos Alexiou, FRCS, PhD
Mehmet Oz, MD
Derek T. Chin, MD
Peter G. Stafford, MD
Leong L. Ng, MD
Tomasz J. Szyt, FRCS, MD

↑ recovery LV function

↑ exercise capacity

↓ BNP

Functional and Biochemical Outcomes*

Outcomes	RFA Group	Control Group	P Value
Shuttle-walk distance, m			
Baseline	281 (143)	253 (115)	.33
6 mo	331 (136)	297 (114)	.34
12 mo	358 (140)	304 (120)	.02
Change from baseline to 12 mo	78 (94)	49 (97)	.13
NYHA class			
Baseline	2.5 (0.7)	2.4 (0.6)	.90
6 mo	1.4 (0.6)	1.5 (0.6)	.67
12 mo	1.2 (0.5)	1.3 (0.5)	.34
BNP level, median (IQR), fmol/mL			
Baseline	212 (151-319)	185 (96-294)	.30
6 mo	155 (109-219)	152 (65-243)	.72
12 mo	160 (103-210)	148 (81-231)	.80
Change from baseline to 12 mo	76 (125)	30 (71)	.02

HRS/EHRA/ECAS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation: Recommendations for Personnel, Policy, Procedures and Follow-Up

A report of the Heart Rhythm Society (HRS) Task Force on Catheter and Surgical Ablation of Atrial Fibrillation.

Developed in partnership with the European Heart Rhythm Association (EHRA) and the European Cardiac Arrhythmia Society (ECAS); in collaboration with the American College of Cardiology (ACC), American Heart Association (AHA), and the Society of Thoracic Surgeons (STS).

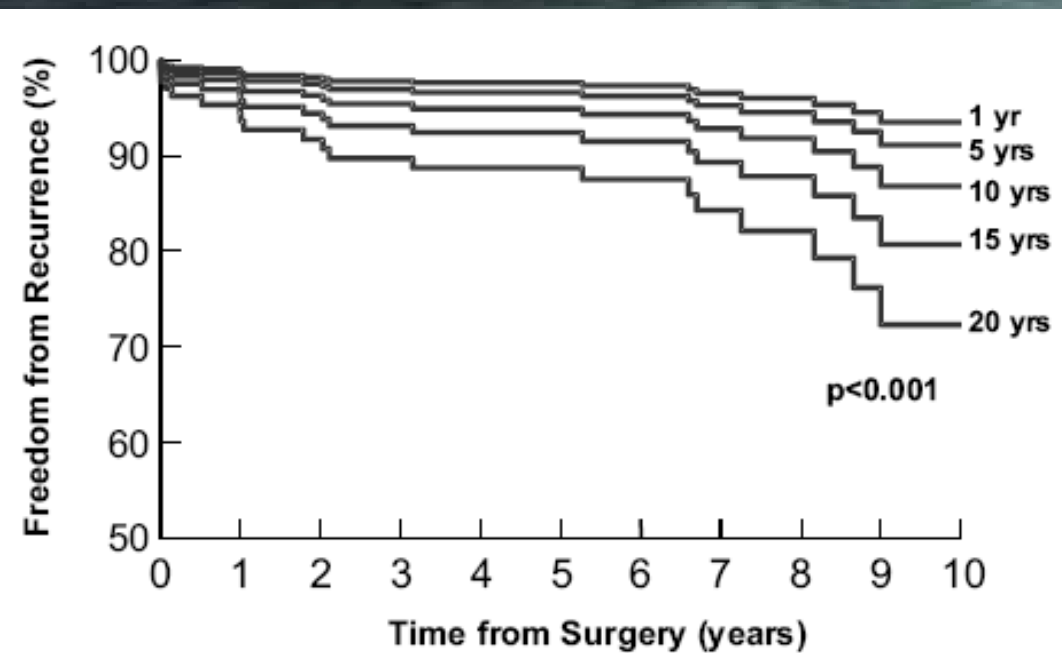
Endorsed and Approved by the governing bodies of the American College of Cardiology, the American Heart Association, the European Cardiac Arrhythmia Society, the European Heart Rhythm Association, the Society of Thoracic Surgeons, and the Heart Rhythm Society.

“In summary, **all patients with AF undergoing other cardiac surgery** should be considered for AF ablation **if the risk** of adding the procedure **is low**, there is a **reasonable chance for success**, and the surgery is performed by an **experienced surgeon**.”

Surgical treatment of atrial fibrillation: Predictors of late recurrence

Sydney L. Gaynor, MD
Richard B. Schuessler, PhD
Marci S. Bailey, RN
Yosuke Ishii, MD
John P. Boineau, MD
Marye J. Gleva, MD
James L. Cox, MD
Ralph J. Damiano, Jr, MD

The Journal of Thoracic and Cardiovascular Surgery • January 2005



Predictors of
AF recurrence:

- Duration of the arrhythmia

Ten-year Experience With the Cox-Maze Procedure for Atrial Fibrillation: How Do We Define Success?

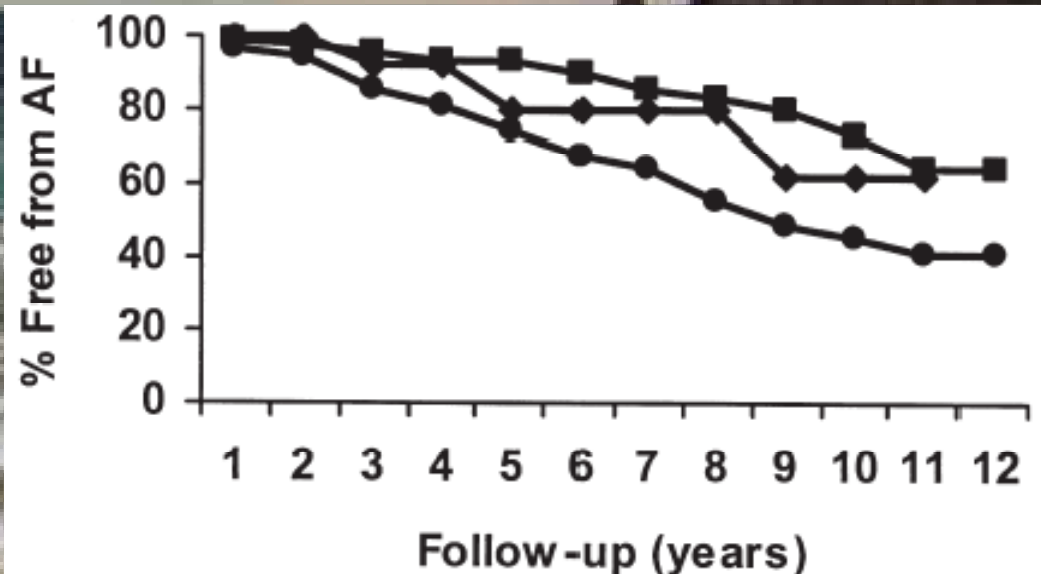
John M. Stulak, MD, Thoralf M. Sundt III, MD, Joseph A. Dearani, MD,
Richard C. Daly, MD, Thomas A. Orsulak, MD, and Hartzell V. Schaff, MD

(Ann Thorac Surg 2007;83:1319-25)

Division of Cardiovascular Surgery, Mayo Clinic and Foundation, Rochester, Minnesota

Predictors of AF recurrence:

- Type of AF
- Concomitant surgery
- Left atrial diameter



Conclusione

- **Valutazione clinica accurata**
- **Esame ecocardiografico completo**



Grazie