

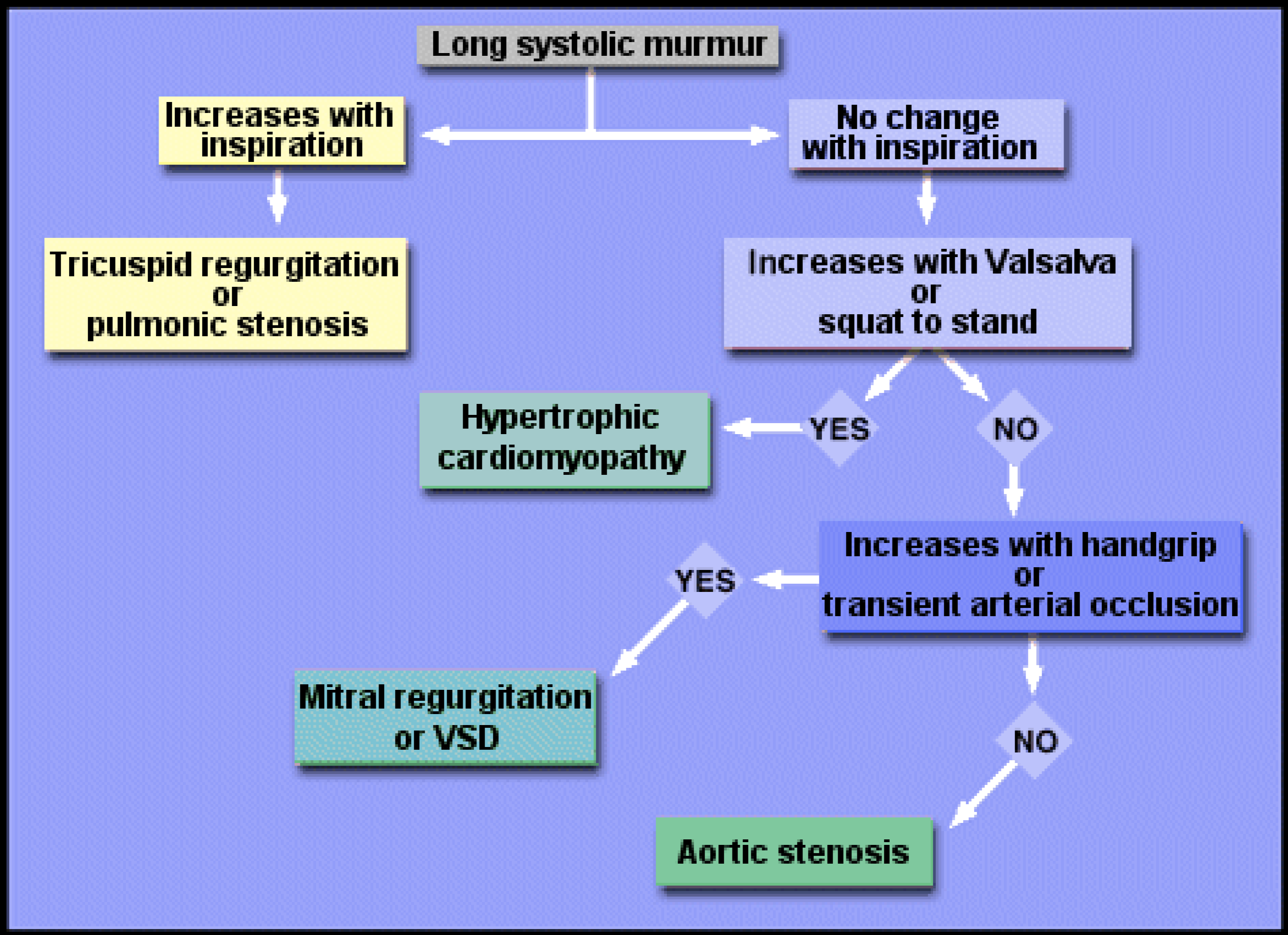
Mitral Regurgitation

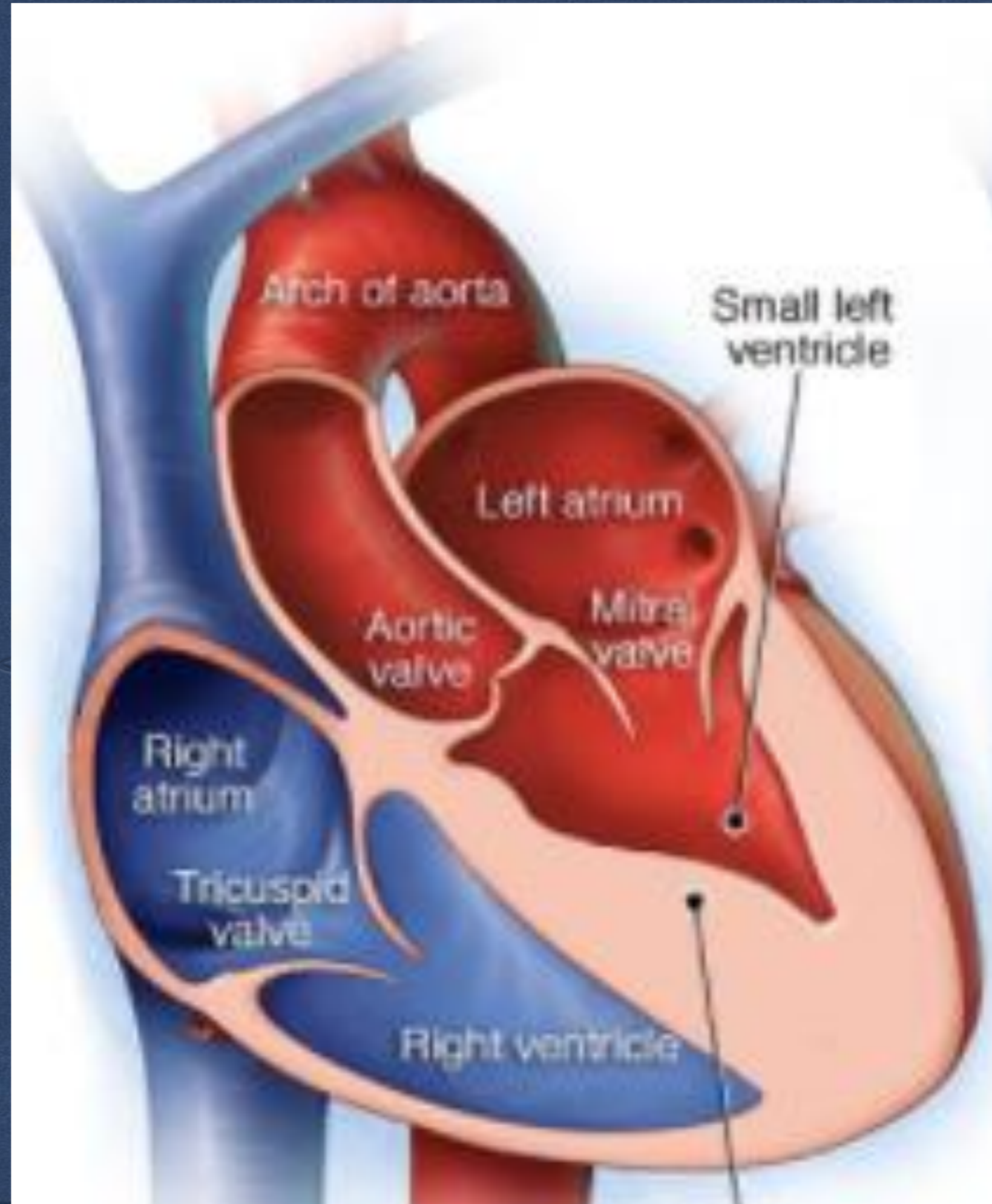
Daniel Lee MD

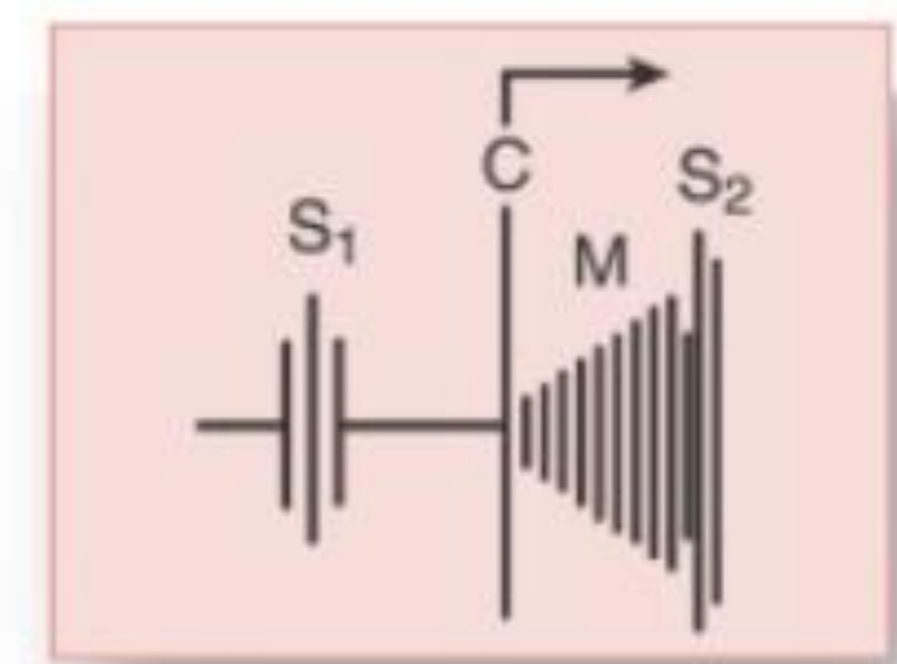
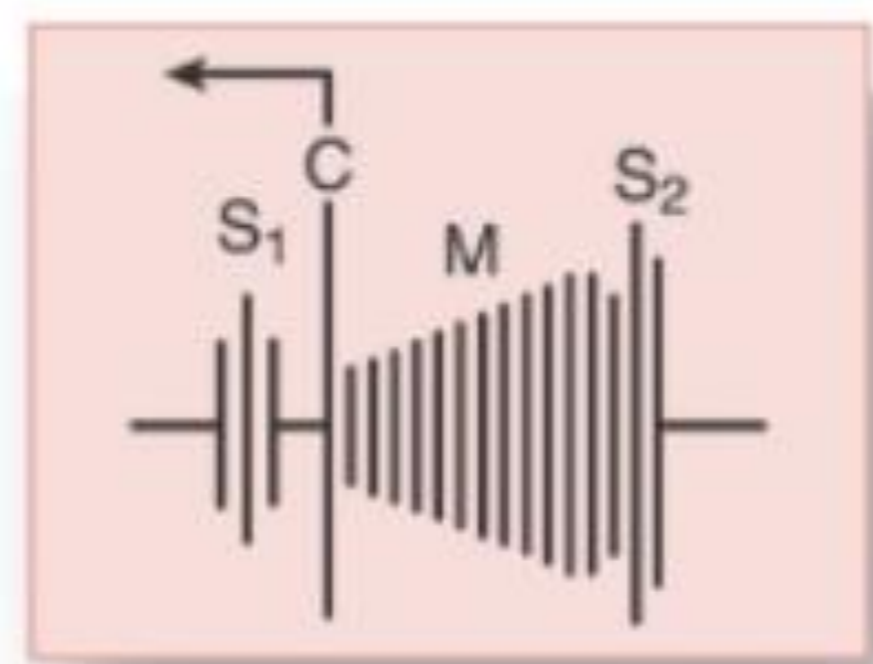
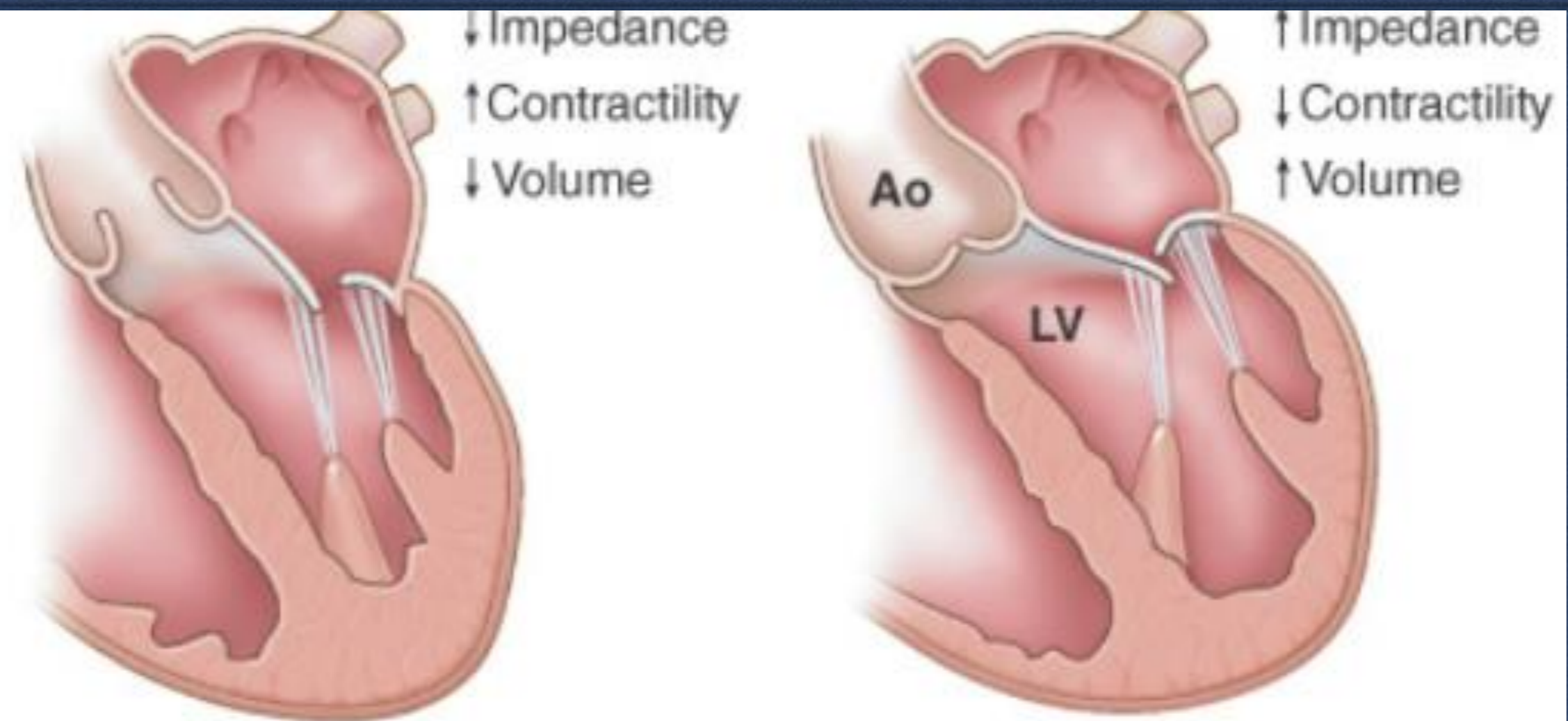
Bay Regional Heart and Vascular

54 year old female presents with a systolic murmur





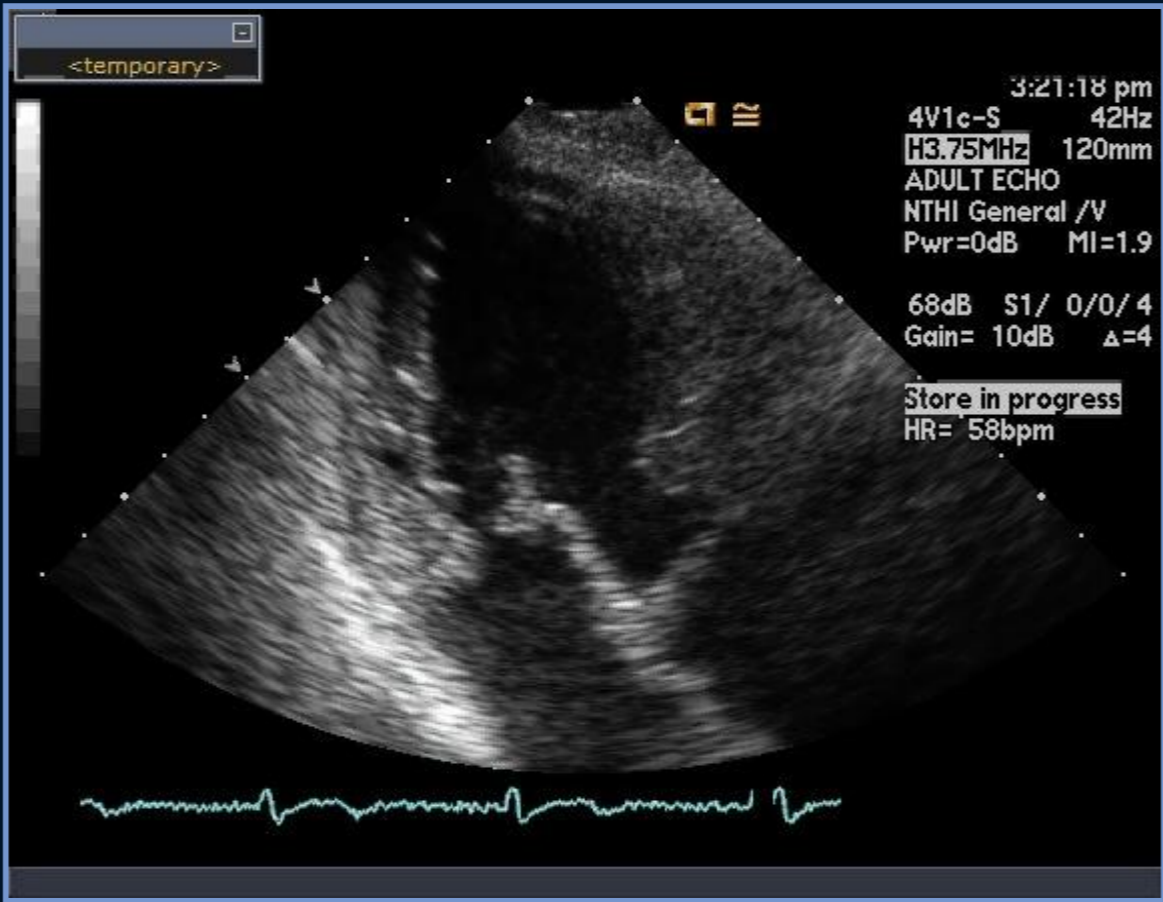




Classification of MR

Primary

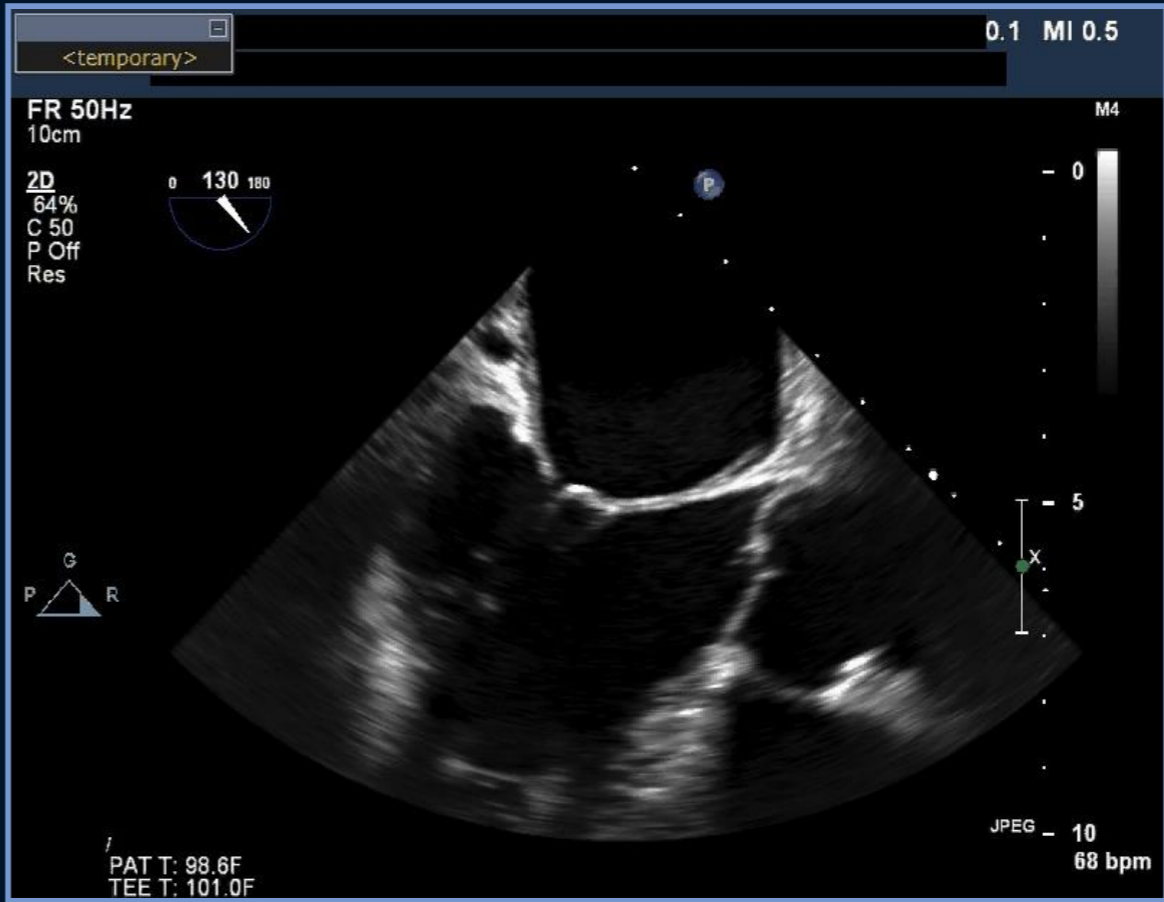
“The Valve”



Usually myxomatous

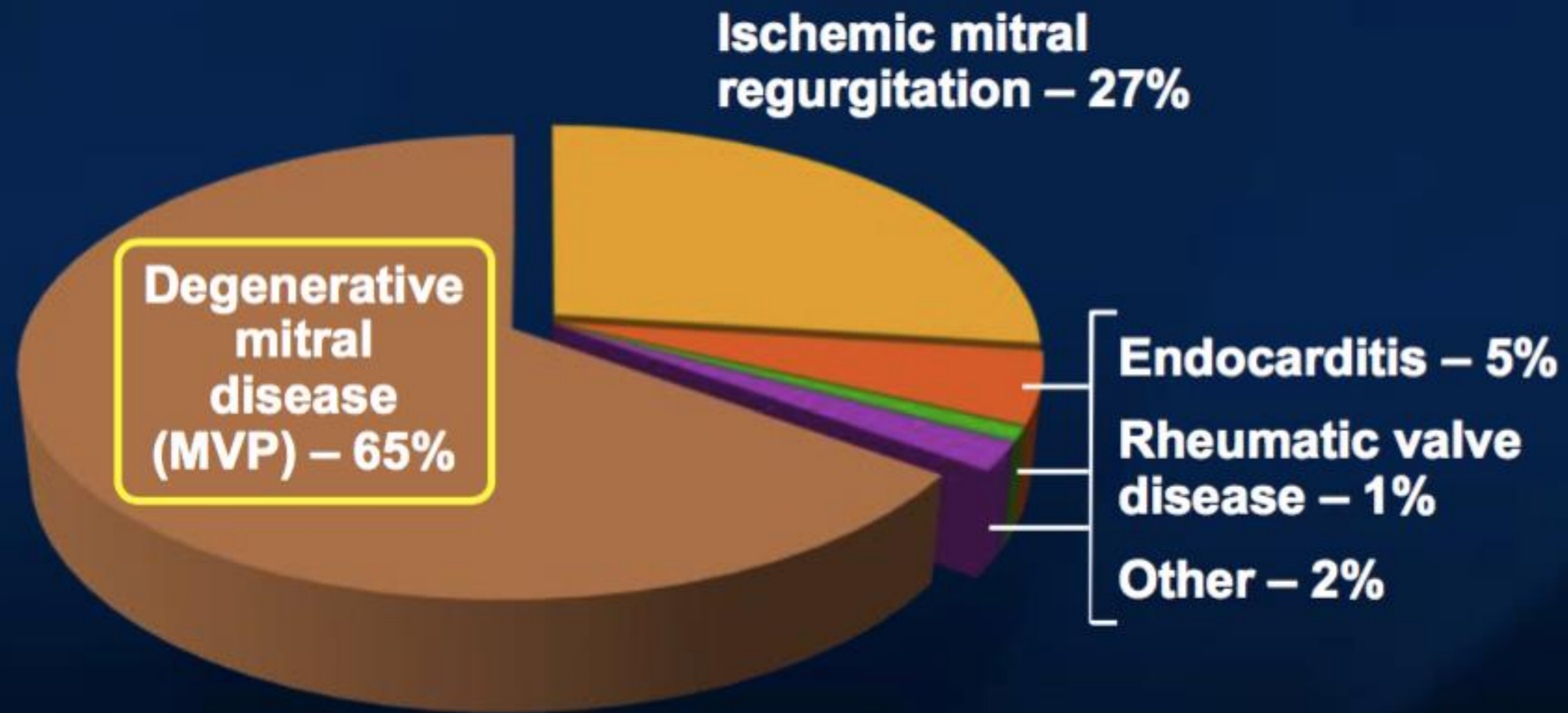
Secondary

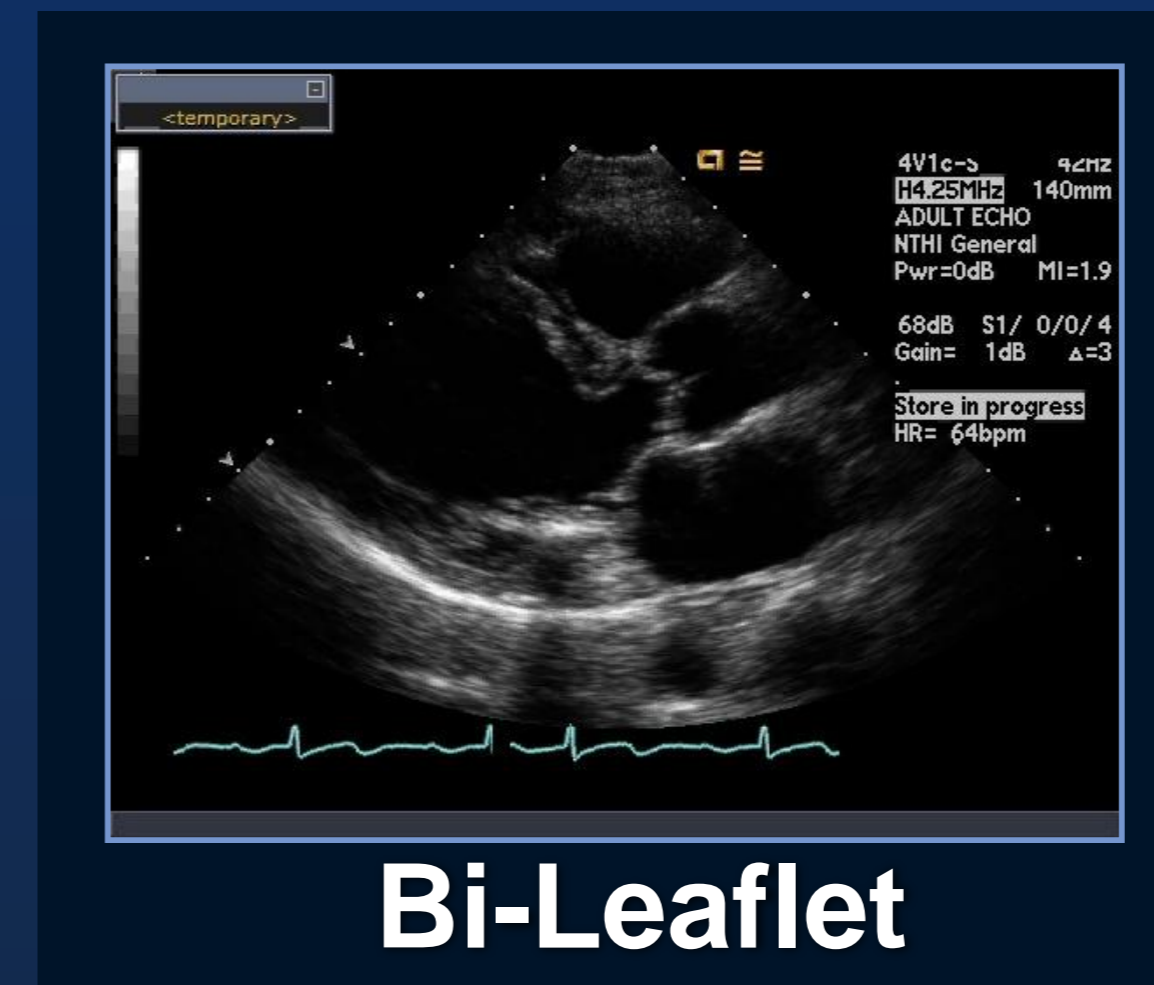
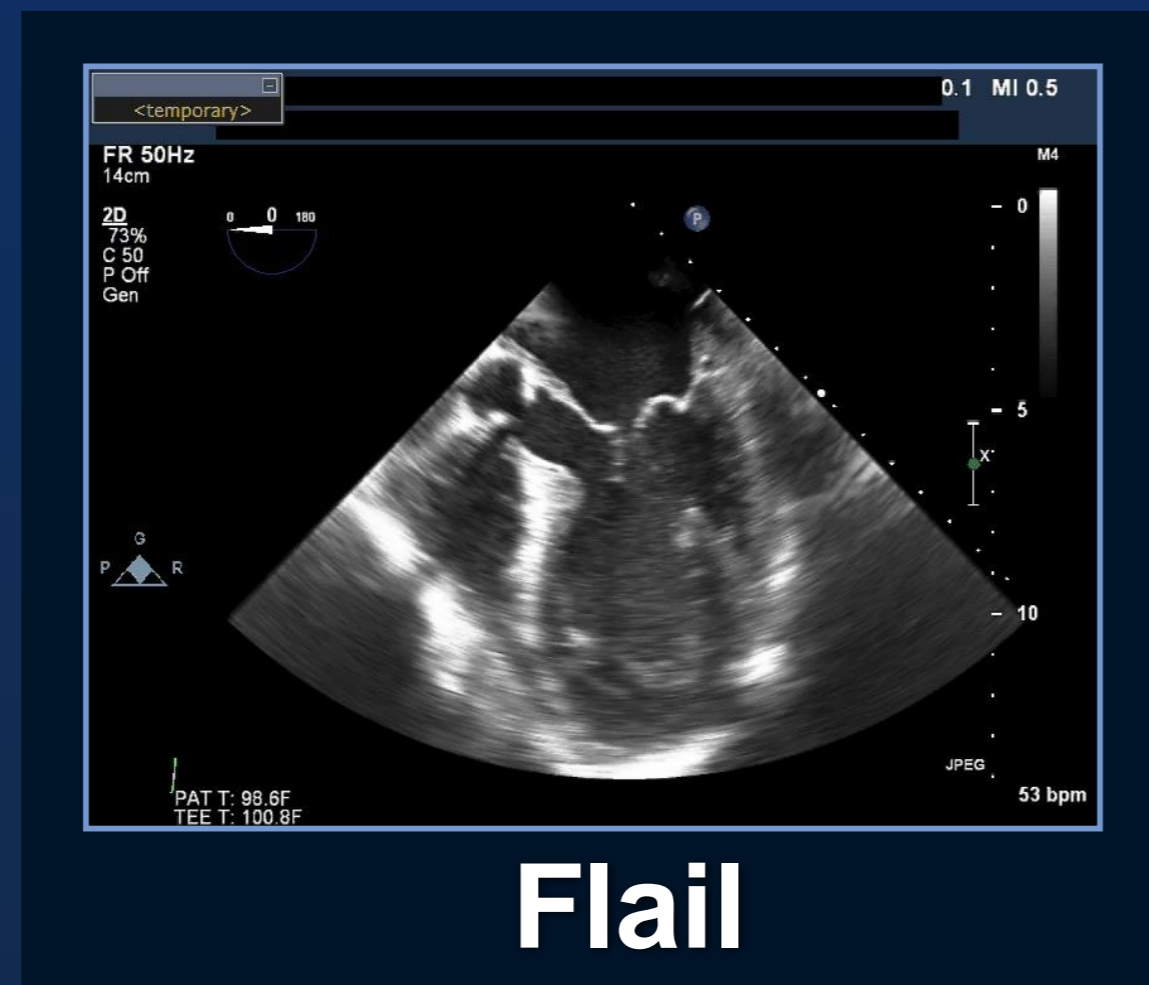
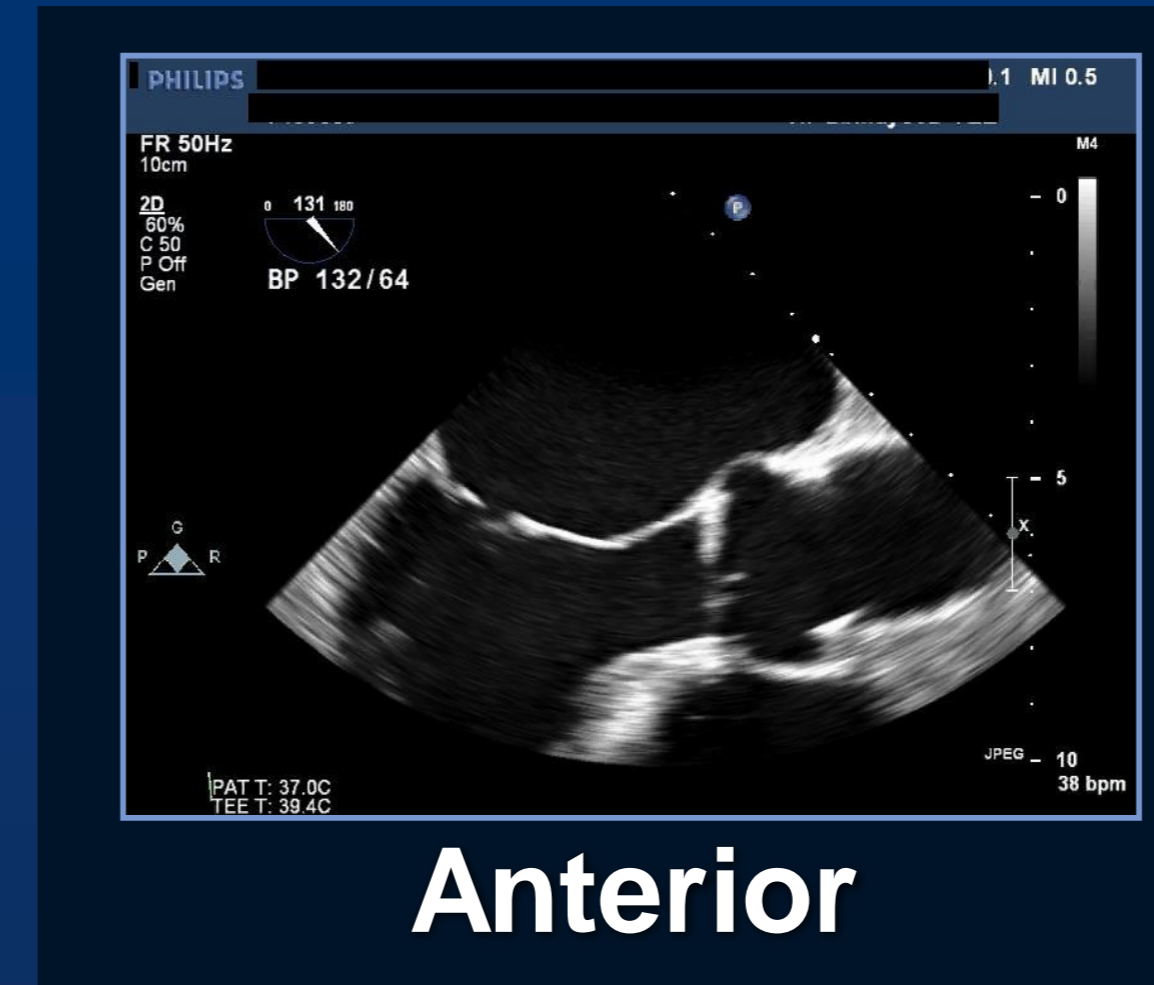
“The Ventricle”

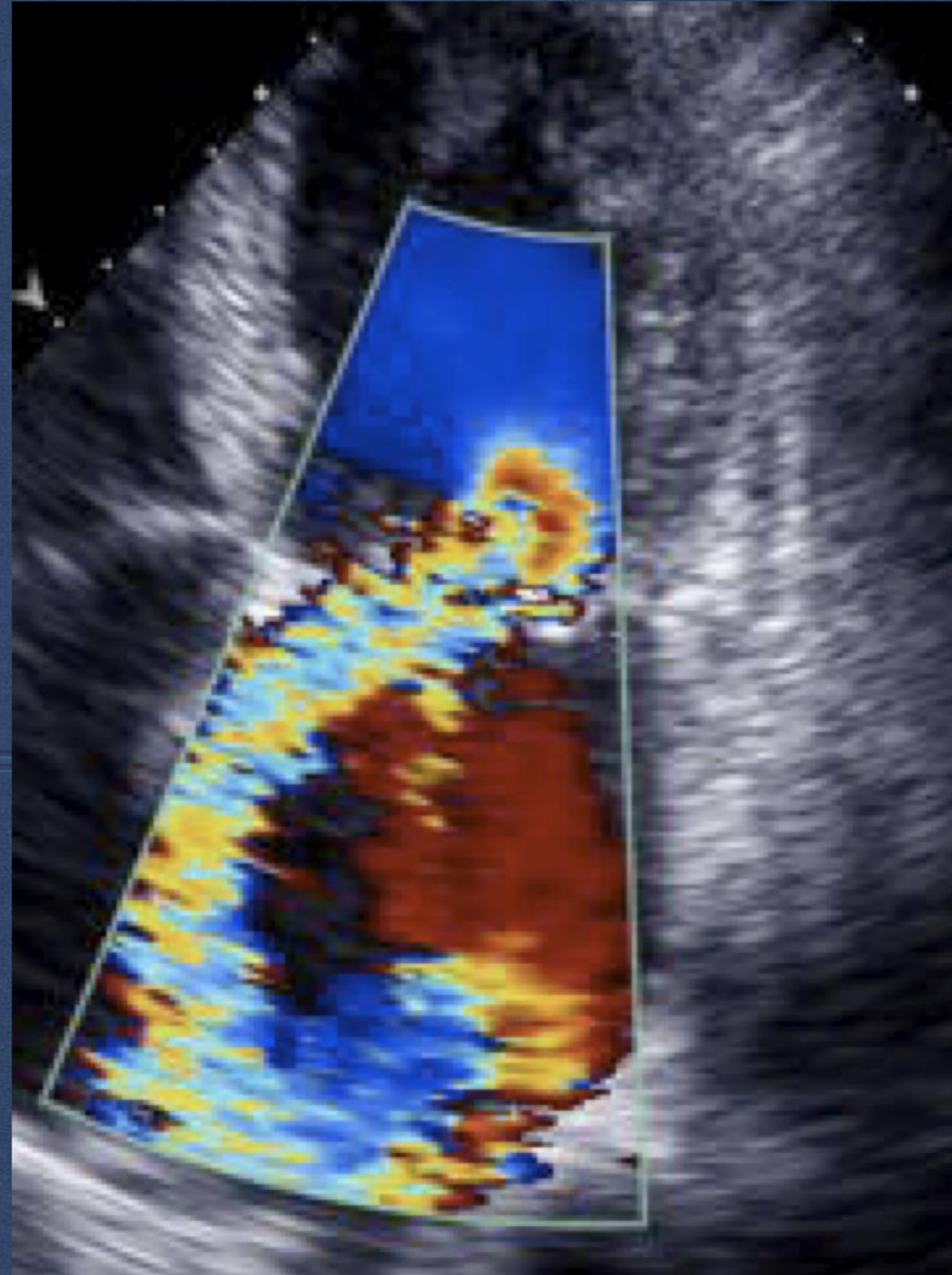


Ischemic or not

Etiology of Mitral Regurgitation







Beware the Eccentric Jet

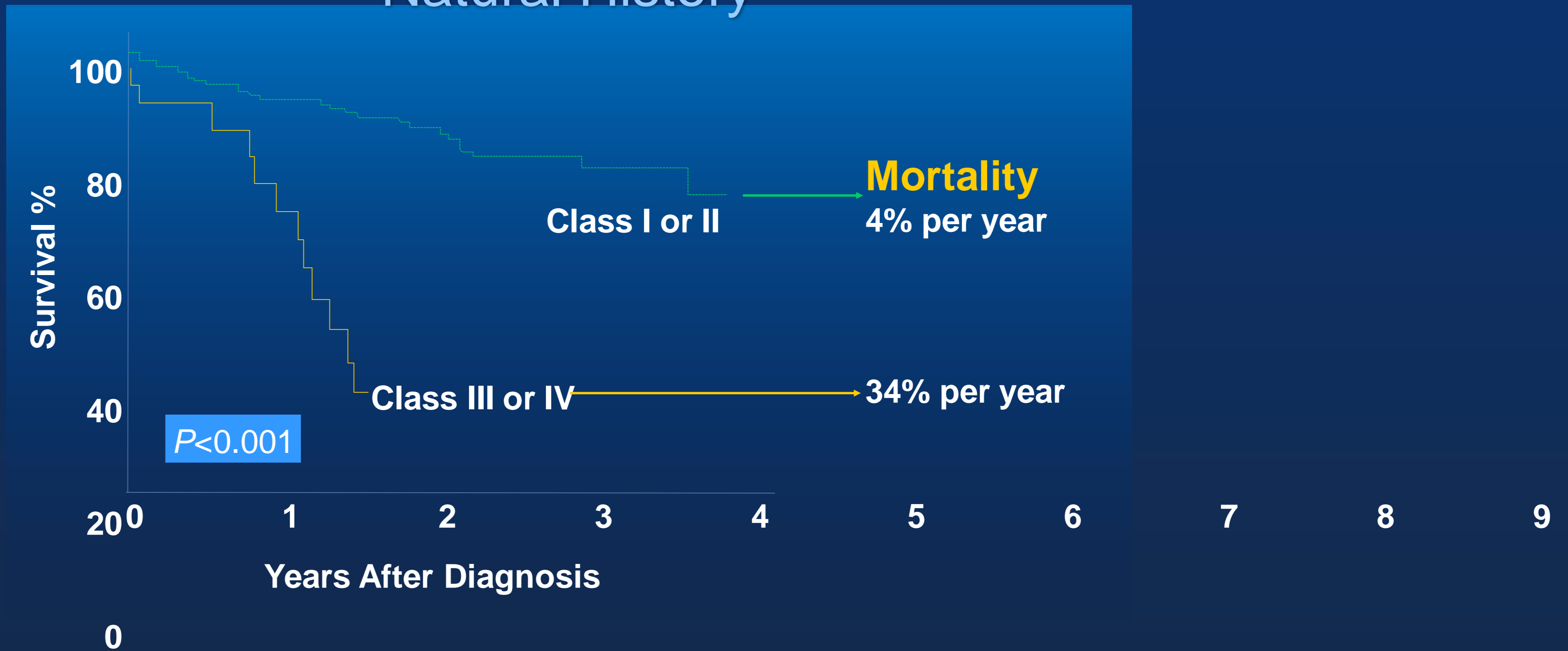


Chordae

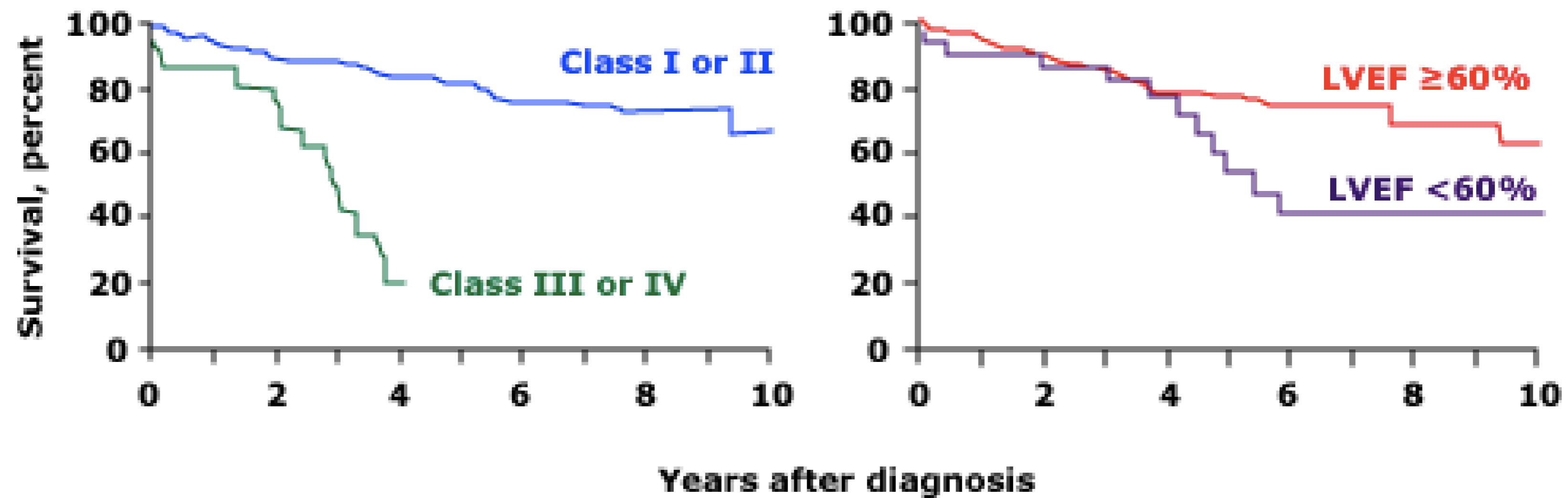
Papillary

Flail Mitral Leaflet

Natural History



Long-term survival in flail mitral leaflet



Chronic Mitral Regurgitation

Medical Therapy

In the absence of systemic hypertension, there is no indication for vasodilator therapy in asymptomatic patients with preserved LV function

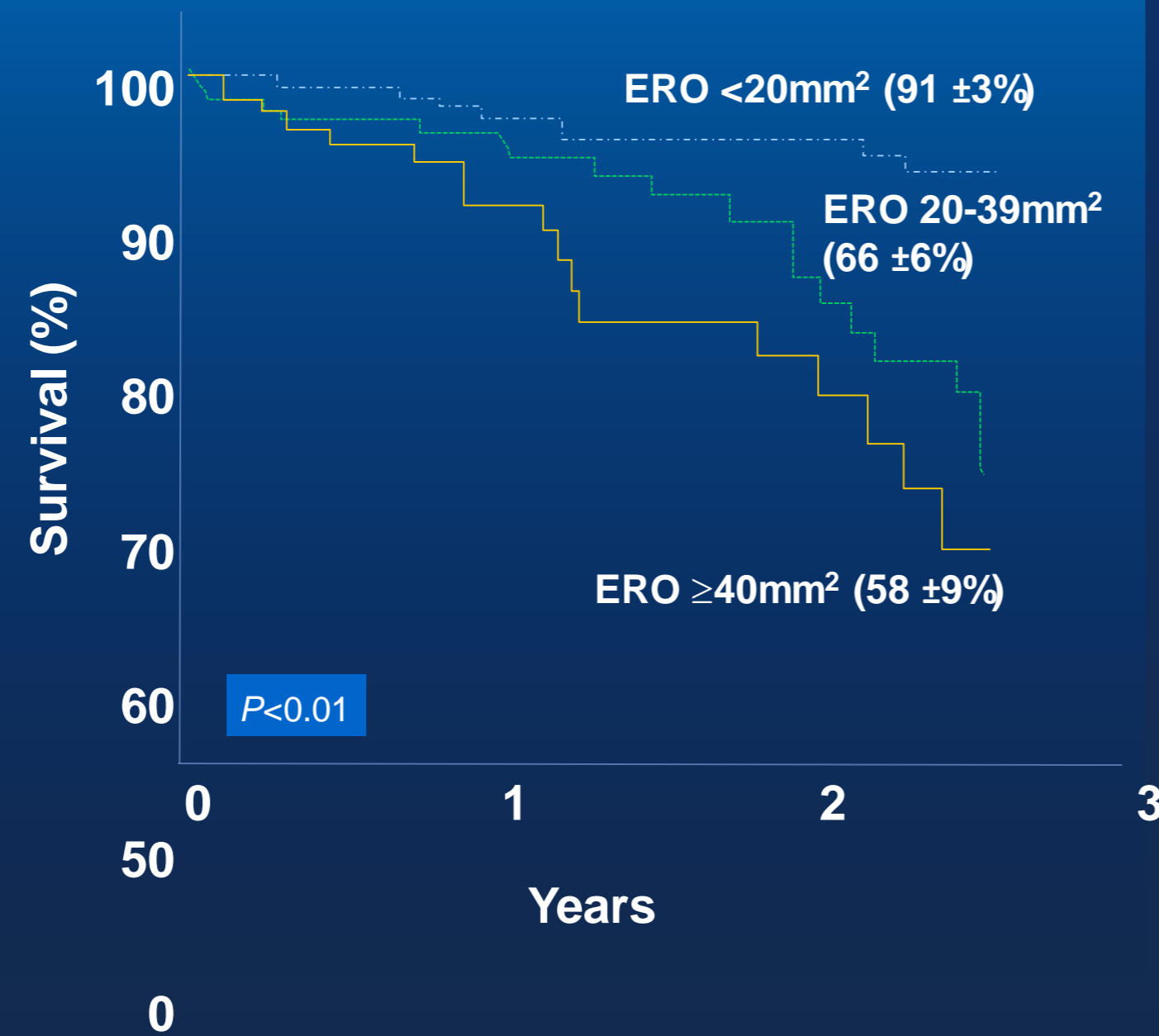
Prognostic Determinants

Severity

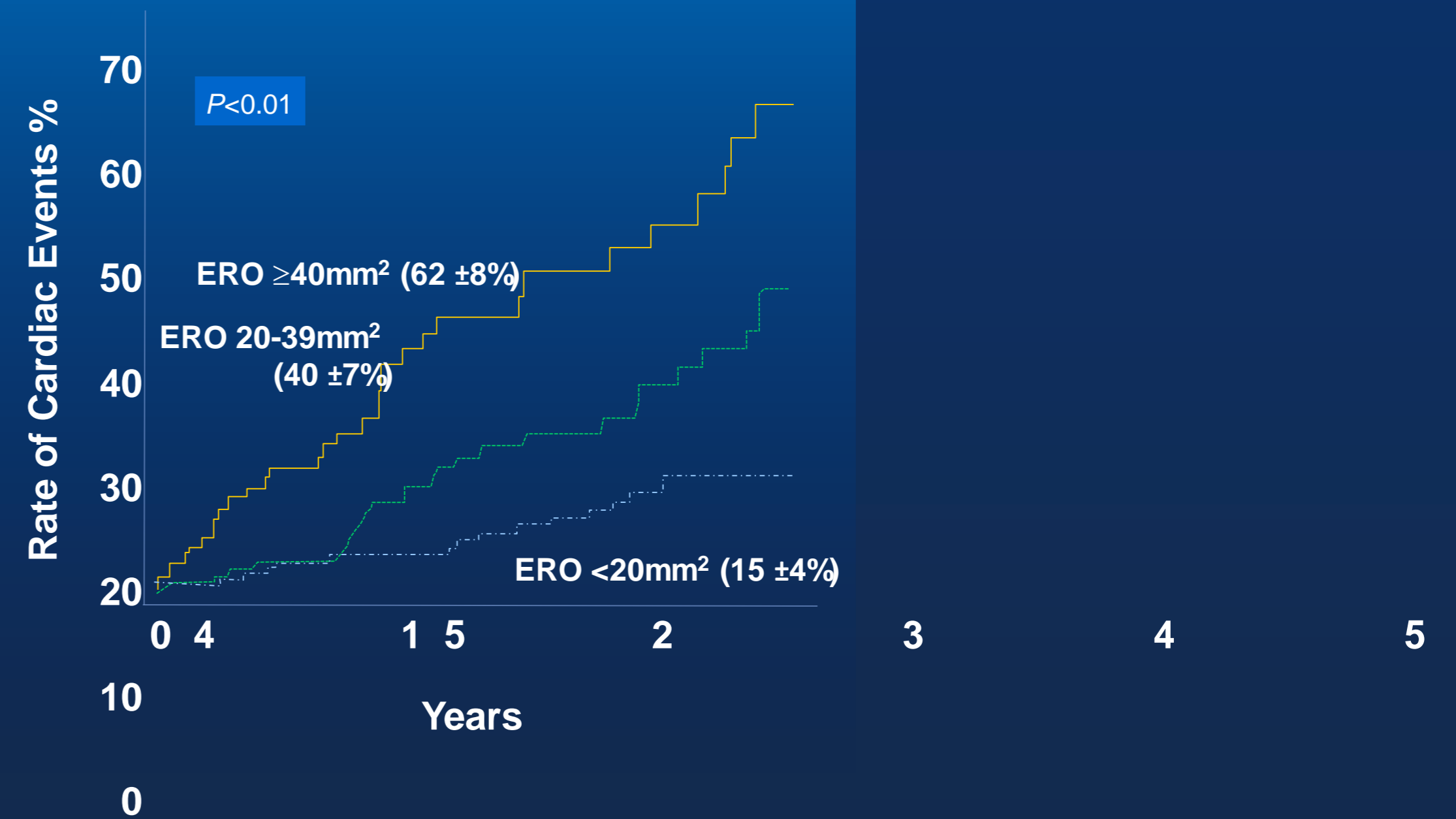
Asymptomatic Primary MR

Severity and Survival

Worse Survival



More CV Events

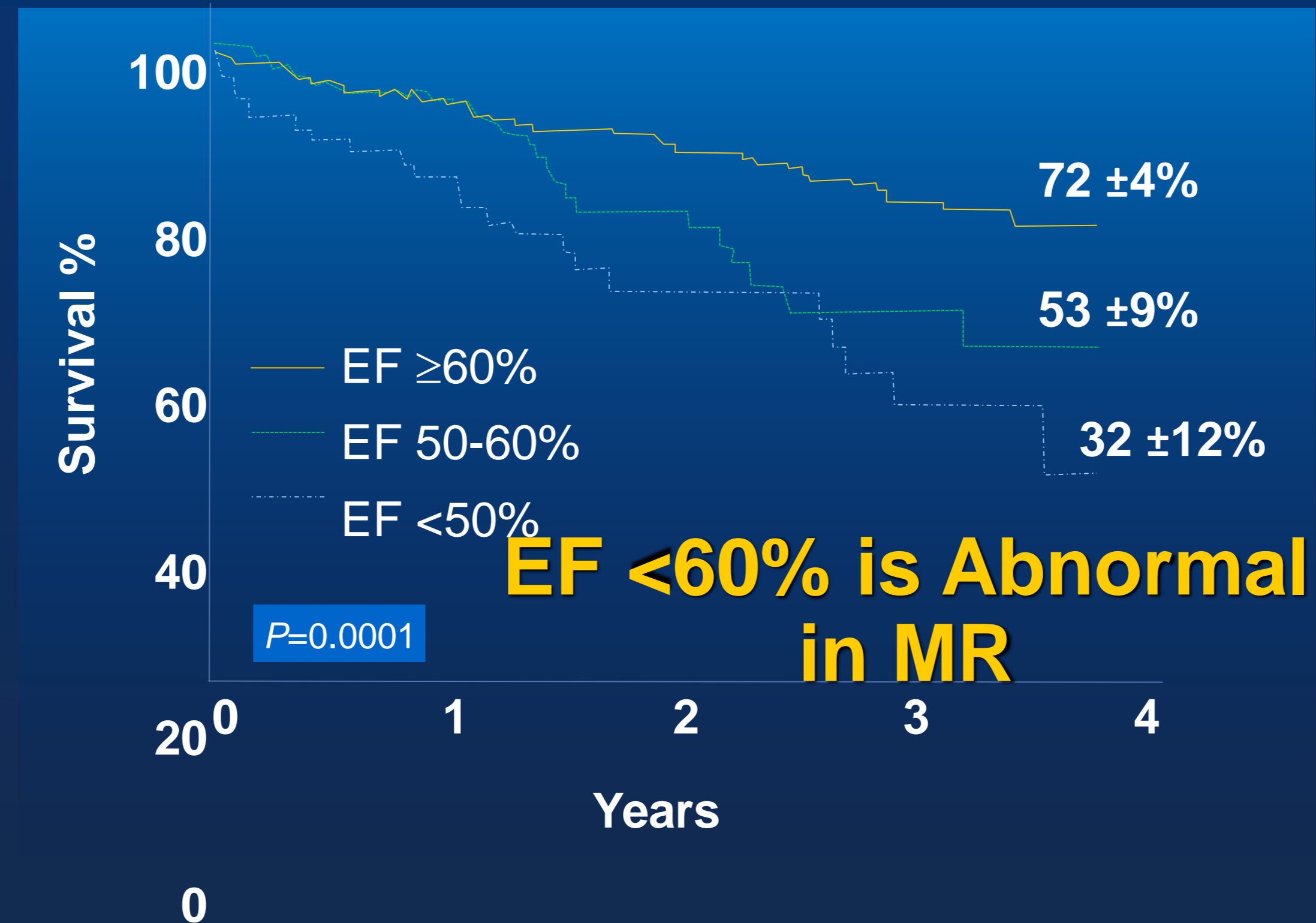


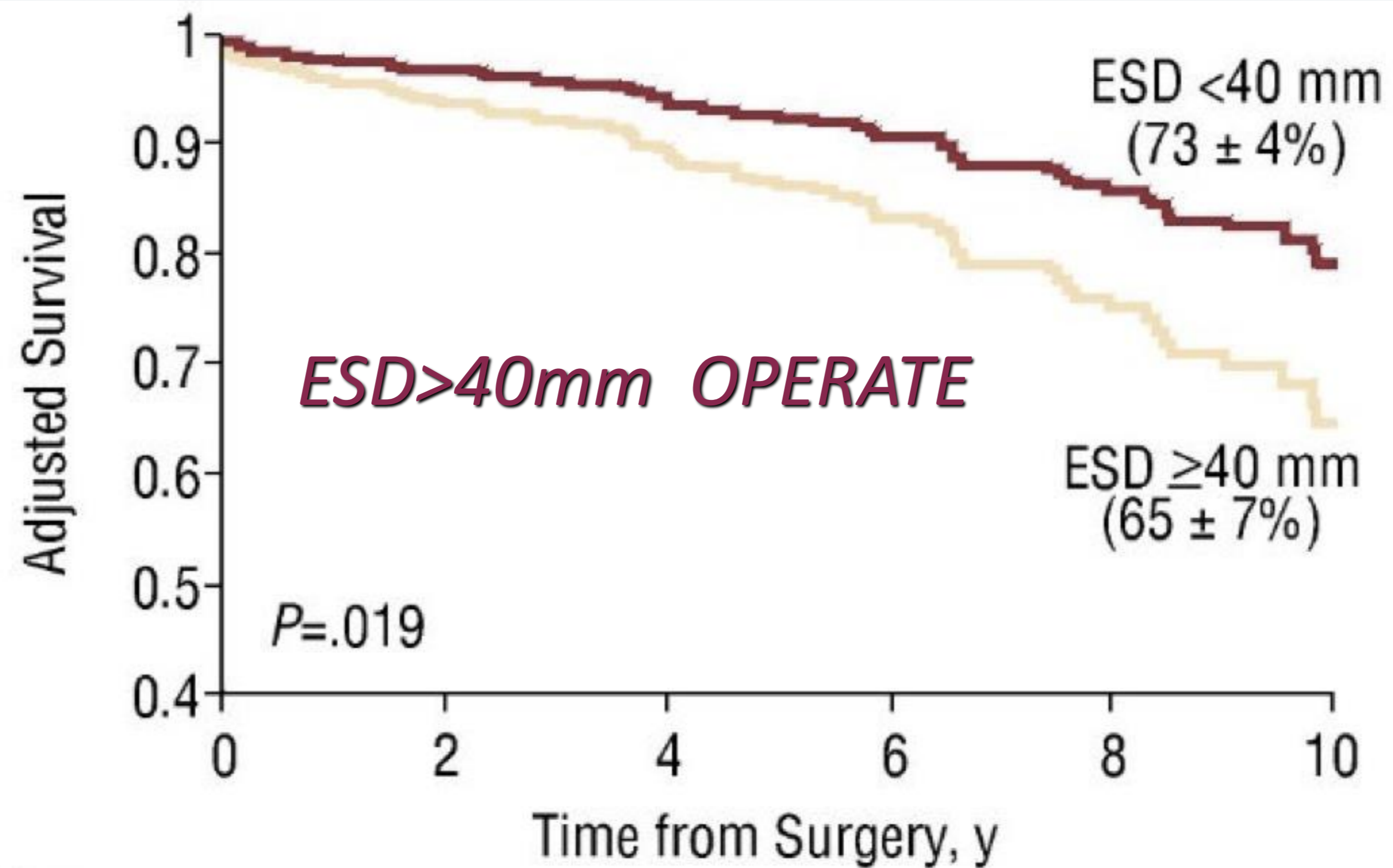
Prognostic Determinants

Severity

Left Ventricular Function

EF and Surgical Outcome





At risk							
<40 mm	393	303	230	149	86	38	
≥40 mm	159	128	92	70	32	13	

Prognostic Determinants

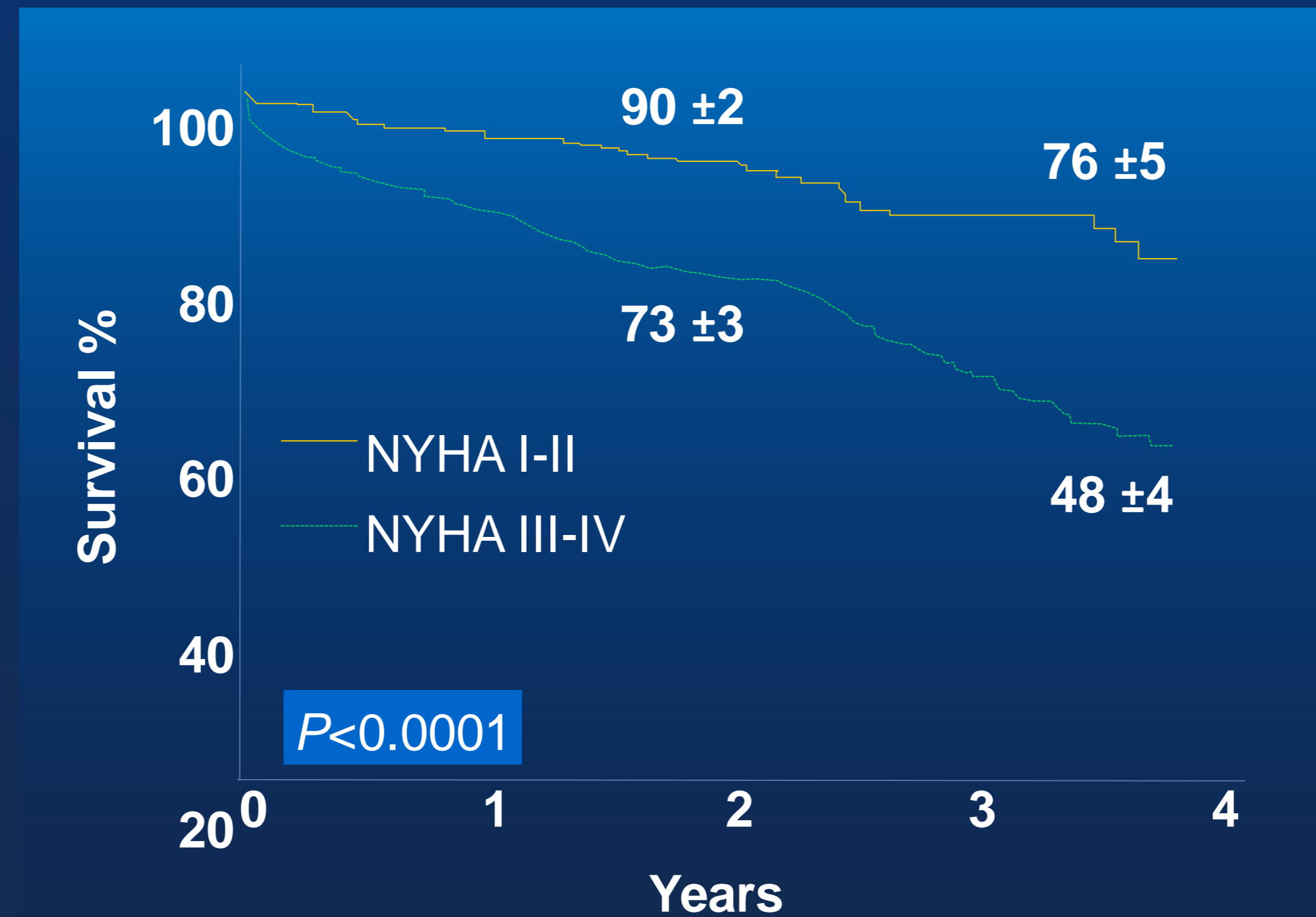
Severity

Left Ventricular Function

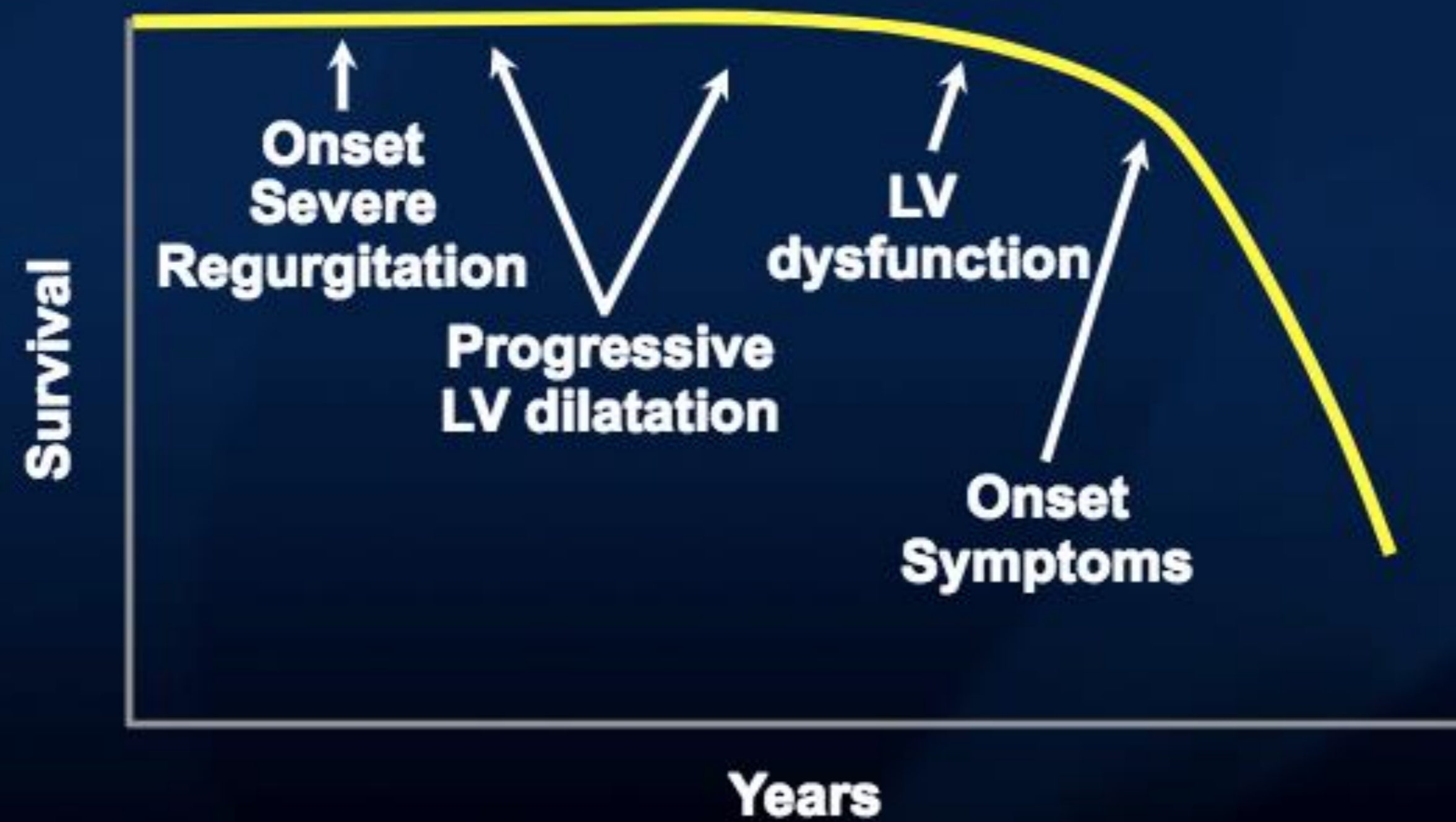
Symptoms

Symptoms and Surgery

Outcome with Primary MR



Regurgitant Lesions Concept of Volume Overload



Regurgitant Lesions Concept of Volume Overload



**And once there is LV dysfunction
The prognosis is poorer
(with or without operation)**

Years

Timing of Surgical Intervention

ACC/AHA Guidelines – Primary MR

Consider surgery *when*

Symptoms

or

LV dysfunction (EF<60%, ESD≥40 mm)

RULE of “100”

Timing of Surgical Intervention

ACC/AHA Guidelines – Primary MR

Prophylactic Repair

Can be done *if*

likelihood of success >95%

and

mortality rate <1%

Indications for Operation: Severe MR

ACC/AHA Valve Guidelines

Class I

1. Mitral valve surgery is beneficial for acute symptomatic MR. *(Level of Evidence: B)*
2. Mitral valve surgery is beneficial for patients with chronic severe MR and NYHA functional Class II, III, or IV symptoms in the absence of severe LV dysfunction (defined as end-systolic dimension greater than 55 mm and/or ejection fraction less than 0.30). *(Level of Evidence: B)*
3. Mitral valve surgery is beneficial for asymptomatic patients with chronic severe MR and mild to moderate LV dysfunction, ejection fraction 0.35 to 0.60, and/or end-systolic dimension 40 to 55 mm. *(Level of Evidence: B)*

Class IIa

1. Mitral valve surgery is reasonable for asymptomatic patients with chronic severe MR, preserved LV function and new onset of atrial fibrillation. *(Level of Evidence: C)*
2. Mitral valve surgery is reasonable for asymptomatic patients with chronic severe MR, preserved LV function and pulmonary hypertension (pulmonary artery systolic pressure greater than 50 mm Hg at rest or greater than 60 mm Hg with exercise). *(Level of Evidence: C)*
3. Mitral valve surgery is reasonable for patients with severe LV dysfunction (ejection fraction less than 0.30 and/or end-systolic dimension greater than 55 mm) in whom chordal preservation is highly likely. *(Level of Evidence: C)*
4. Mitral valve surgery can be effective for asymptomatic patients with chronic severe MR with preserved LV function (ejection fraction greater than .60 and end-systolic dimension less than 40 mm) in whom mitral valve repair is highly likely. *(Level of Evidence: C)*

Class III

1. Mitral valve surgery is not indicated for asymptomatic patients with preserved LV function (ejection fraction greater than .60 and end-systolic dimension less than 40 mm) in whom significant doubt about the feasibility of repair exists. *(Level of Evidence: C)*

CLASS III

Mitral valve surgery is NOT indicated for asymptomatic patients with preserved LV function (EF >60% and ESD <40mm) in whom doubt about feasibility of repair exists

Surgical Options



Mechanical and Tissue Mitral Valves

Mechanical Replacement

- Valve thrombosis
- Bleeding from chronic anticoagulation



No anticoagulation but
limited durability



Mitral Repair/Valvuloplasty

- Better Long term survival
- DAPT for three months then asa only**



Prosthetic valves

- INR goals:

- Mechanical aortic valve: 2.0-3.0 + ASA

- Mechanical mitral valve: 2.5-3.5 + ASA

- Mechanical aortic + mitral valve: 2.5-3.5 + ASA

Antithrombotic Therapy for Prosthetic Valves (cont.)

Recommendations	COR	LOE
Aspirin 75 mg to 100 mg daily is recommended in addition to anticoagulation with a VKA in patients with a mechanical valve prosthesis	I	A
Aspirin 75 mg to 100 mg per day is reasonable in all patients with a bioprosthetic aortic or mitral valve	IIa	B
Anticoagulation with a VKA is reasonable for the first 3 months after bioprosthetic MVR or repair to achieve an INR of 2.5	IIa	C

Infective Endocarditis: *Prophylaxis*

INDICATED	NOT INDICATED
✓ Prior history of endocarditis	✗ Previous rheumatic fever or Kawasaki disease without valvular dysfunction
✓ Cardiac valve disease in a transplanted heart	✗ Acquired valvular dysfunction ✗ Bicuspid aortic valve
✓ Unrepaired cyanotic congenital heart disease or incompletely repaired congenital heart disease	✗ Simple atrial septal defect ✗ Mitral valve prolapse with regurgitation ✗ Hypertrophic cardiomyopathy
✓ Congenital heart disease repaired using prosthetic material ✓ A prosthetic heart valve ✓ Valve repair using material prosthetic	✗ Valve repair without prosthetic material

Mechanical Heart Valves

Bottom Line:

- Bridge all patients with mechanical heart valves with the exception of those with isolated bi-leaflet aortic valves and no risk factors.
- Generally recommend LMWH for bridging if you do decide to bridge.

WHETHER TO BRIDGE

2 Assess patient thrombotic risk definitions:

Low:
CHA₂DS₂-VASc 1-4 (annualized stroke risk <5%), no prior TE

Moderate:
CHA₂DS₂-VASc 5-6 (annualized stroke risk 5-10%) or prior TE more than 3 months previously

High:
CHA₂DS₂-VASc 7+ (annualized stroke risk >10%) or prior TE within 3 months

1 Assess patient bleed risk checklist

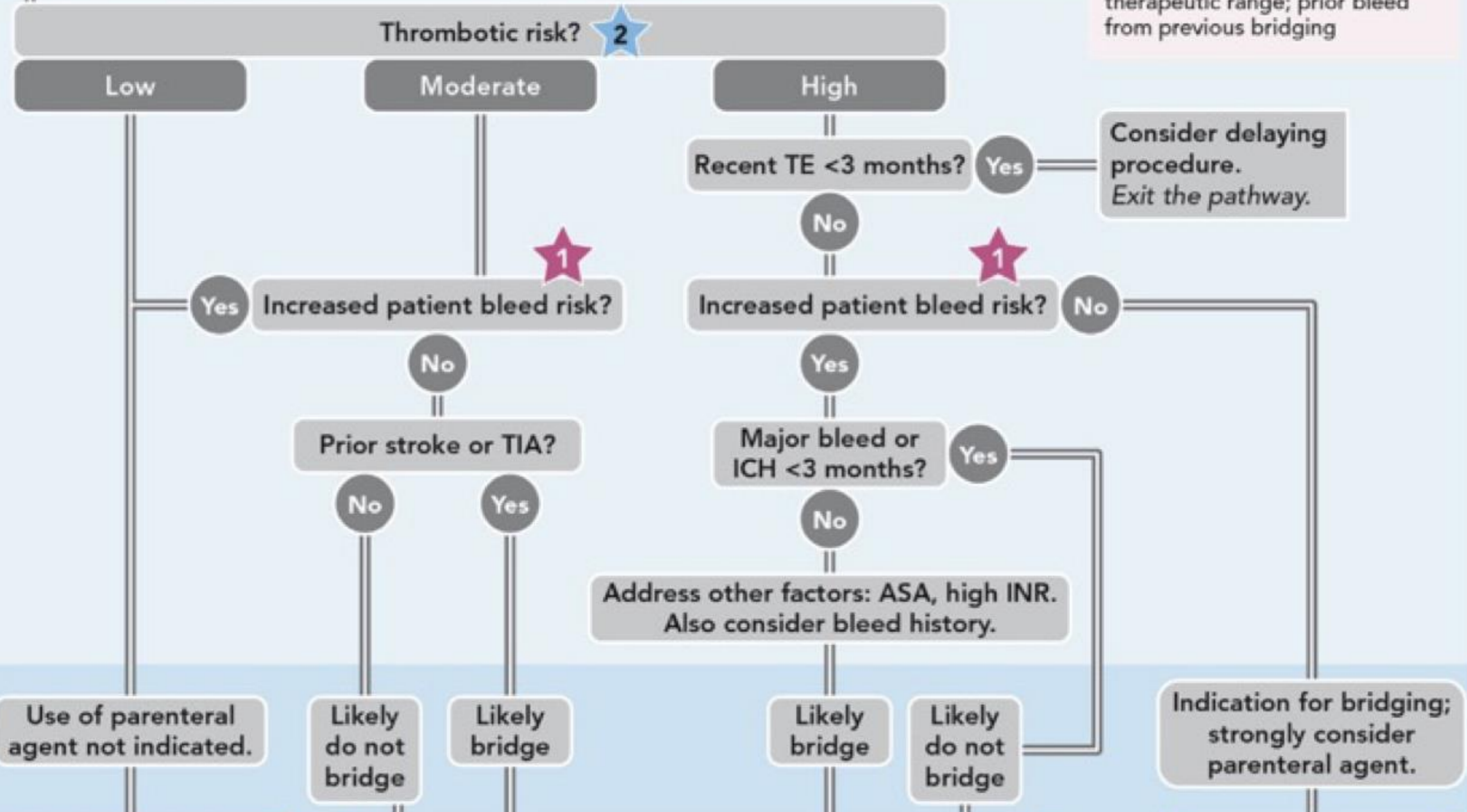
Bleed risk considered increased if any 1 of the following: major bleed or ICH <3 months; quantitative or qualitative platelet abnormality including aspirin use, INR above therapeutic range; prior bleed from previous bridging

Type of anticoagulant?

DOAC VKA

CONSIDERATIONS

GUIDANCE



DO NOT BRIDGE

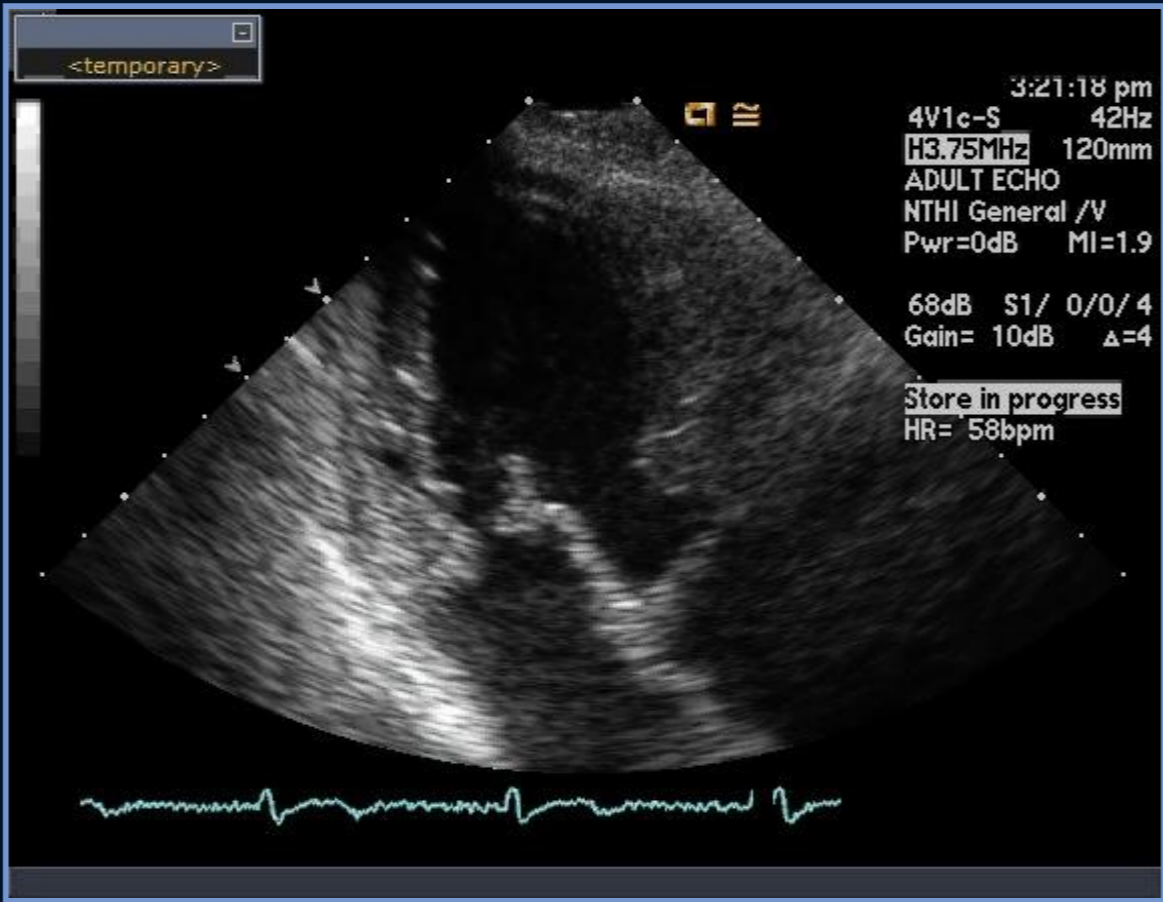
USE CLINICAL JUDGMENT

BRIDGE

Classification of MR

Primary

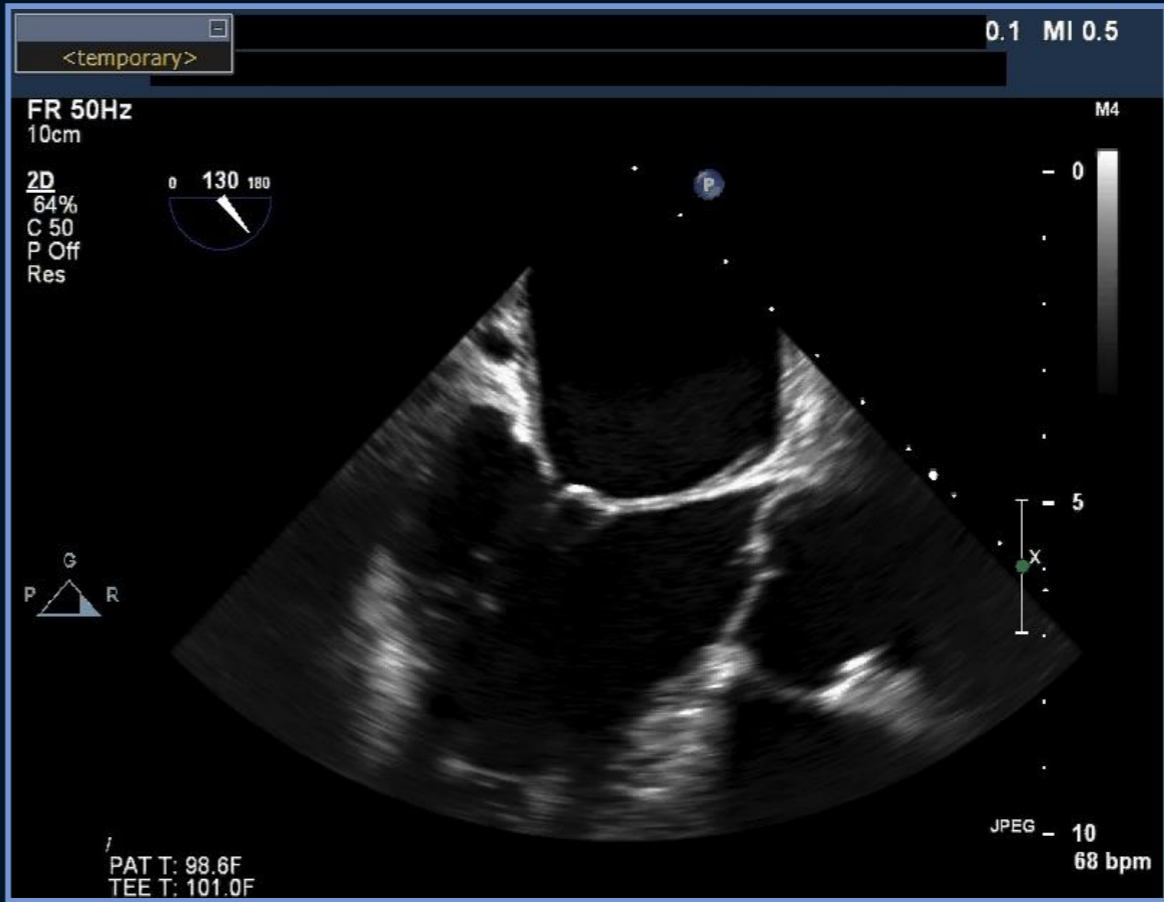
“The Valve”



Usually myxomatous

Secondary

“The Ventricle”



Ischemic or not

General Principles of Therapy

Primary

No medical option for valve
Surgery for symptoms or LV dysfunction
Asymptomatic if repairable and low risk

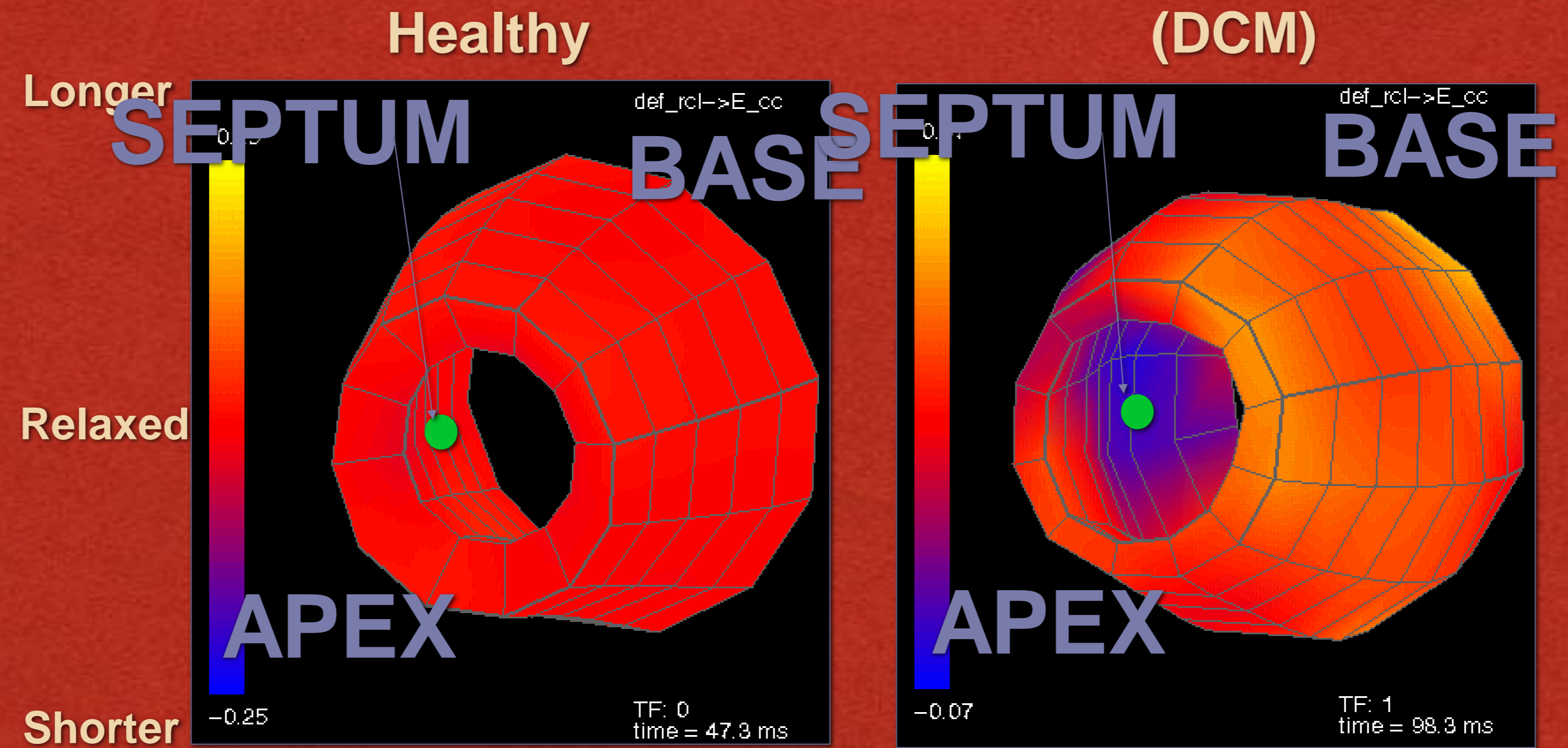
Secondary

Medical therapy first
Consider CRT
Surgery only in highly selected patients with HF

ISSUES ASSOCIATED WITH HEART FAILURE

Abnormal local wall strain

Dilated Cardiomyopathy
(DCM)

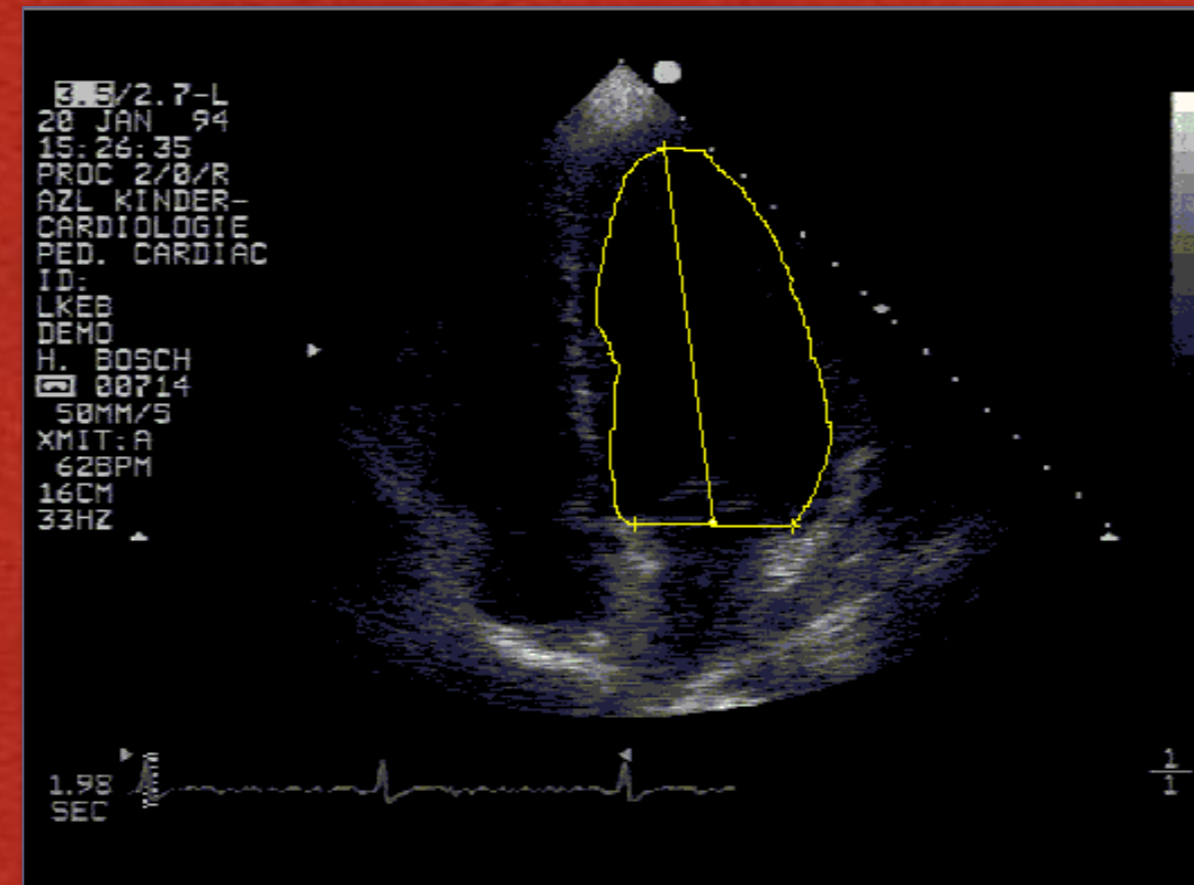


Courtesy of D. Kass, MD, Johns Hopkins University, Maryland.

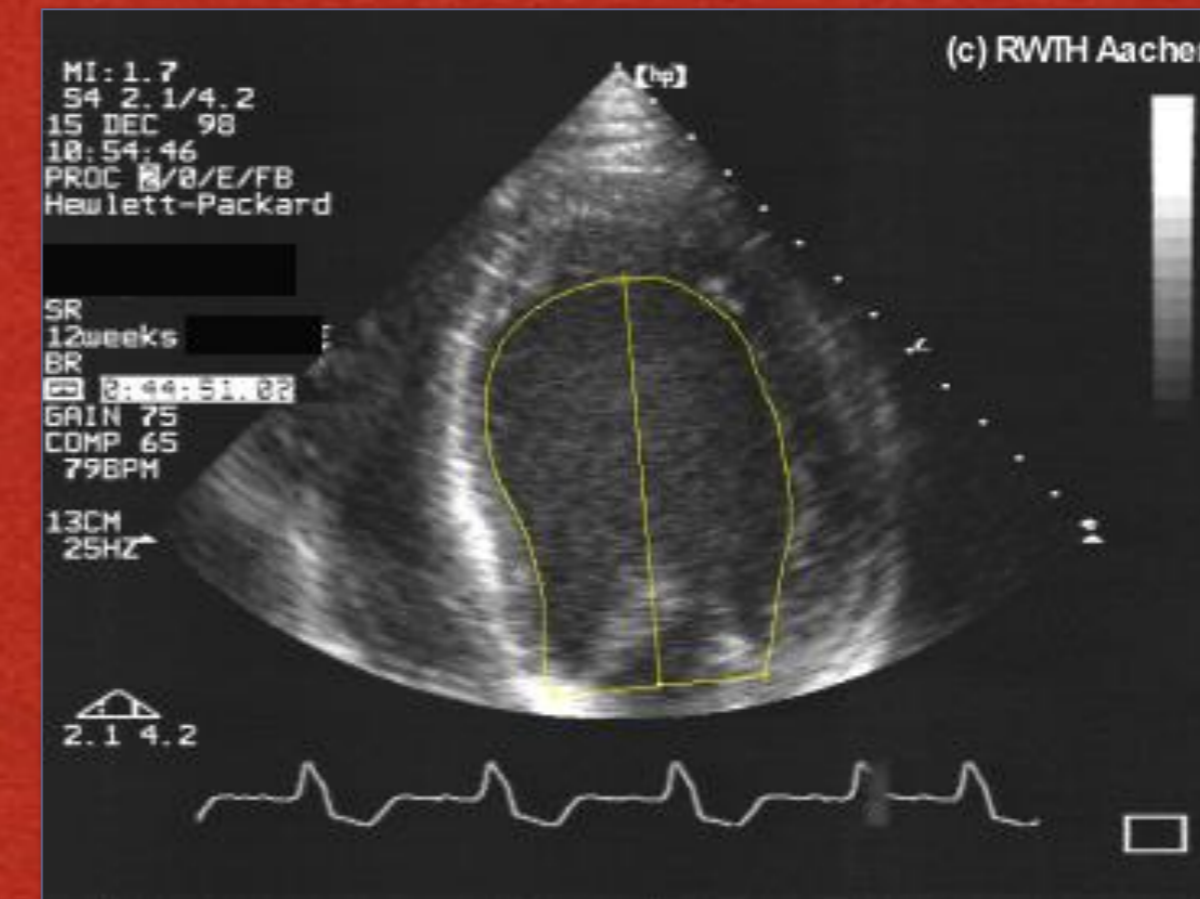
Issues Associated with Heart Failure

Abnormal wall motion

Healthy



DCM - Intrinsic

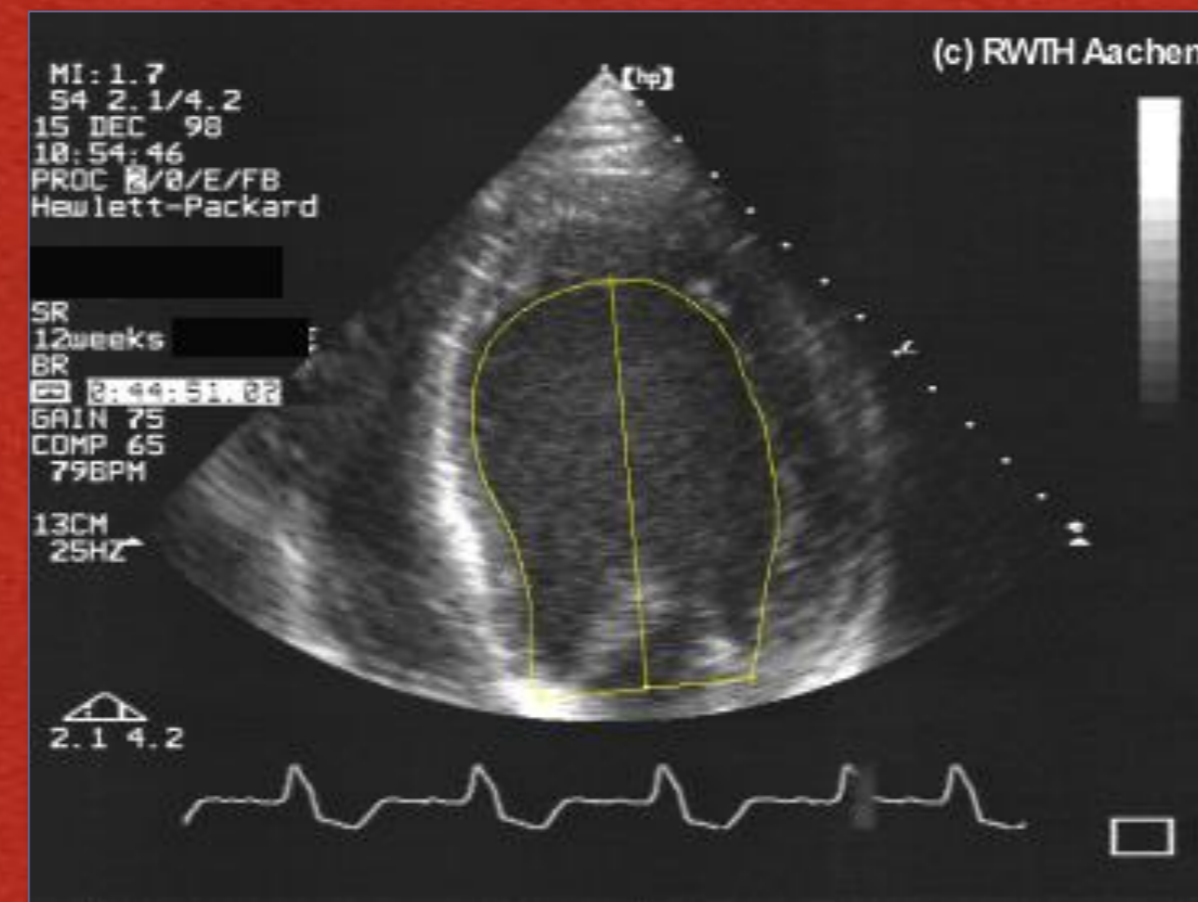


Courtesy of C. Stellbrink, MD.

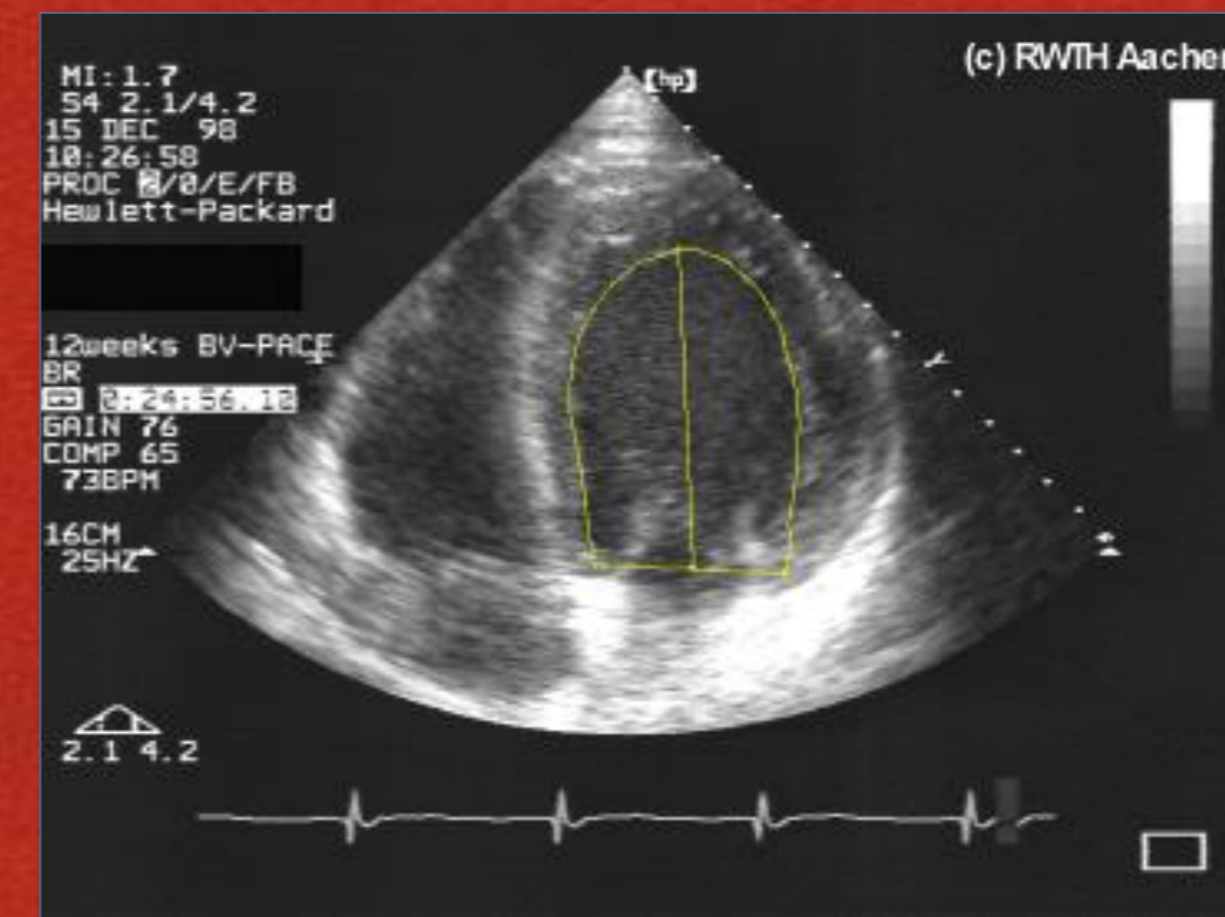
Issues Associated with Heart Failure

Cardiac resynchronization therapy (CRT)– global synchrony

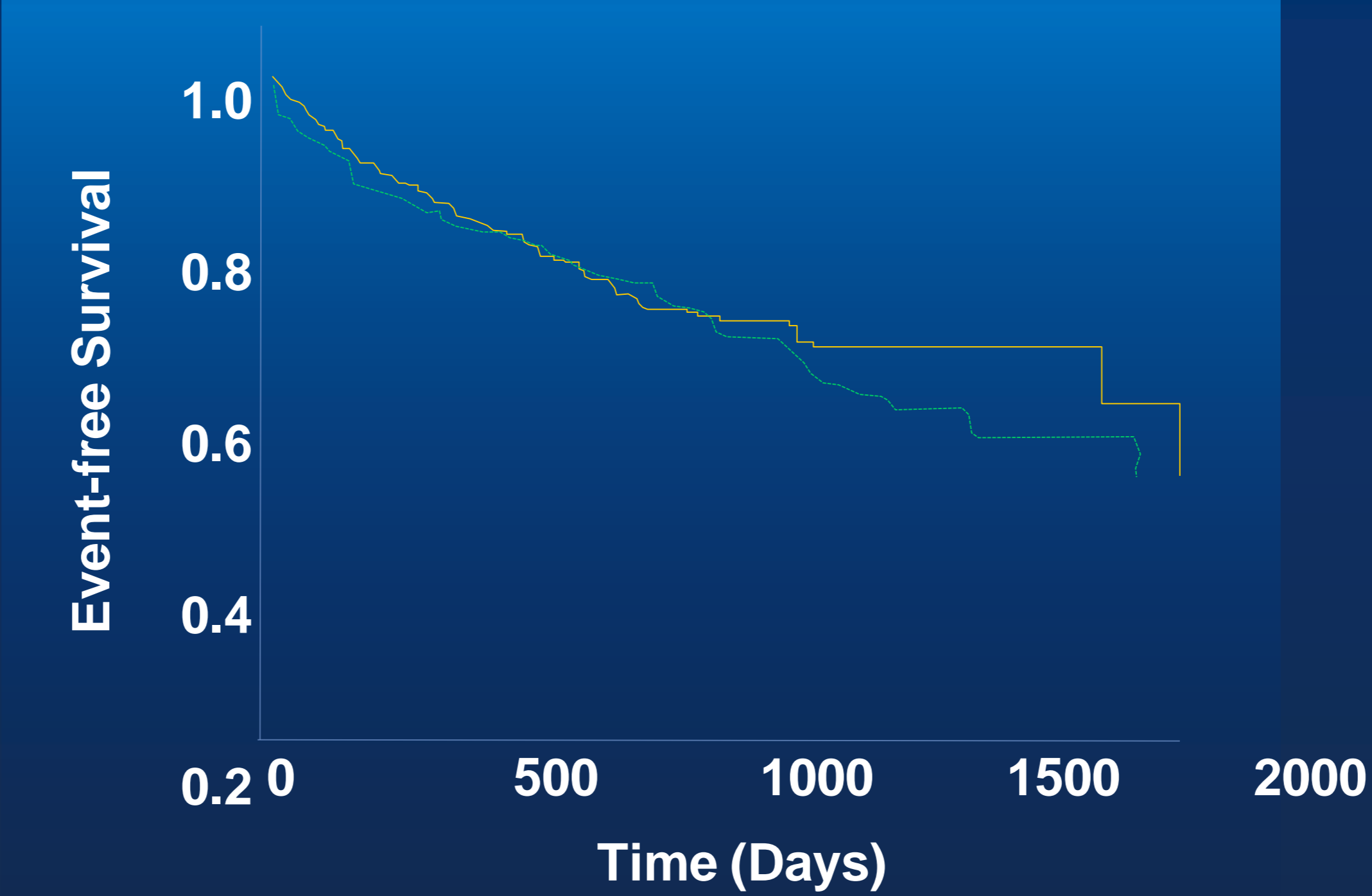
Baseline



DCM - CRT



Surgery for Secondary MR



**No Mortality
Benefit**

Wu AH, et al. J Am Coll Cardiol 2005;45:381-87

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Etiology: Ventricle (Secondary MR)

Dilated

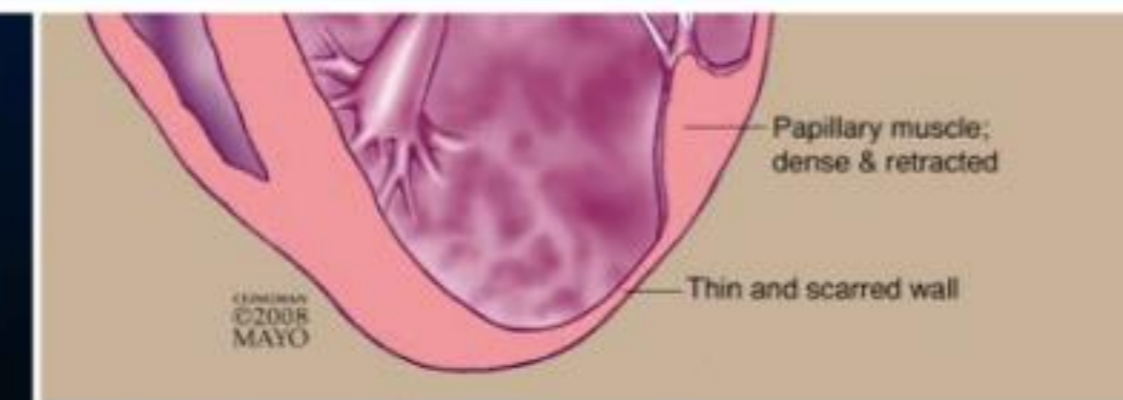
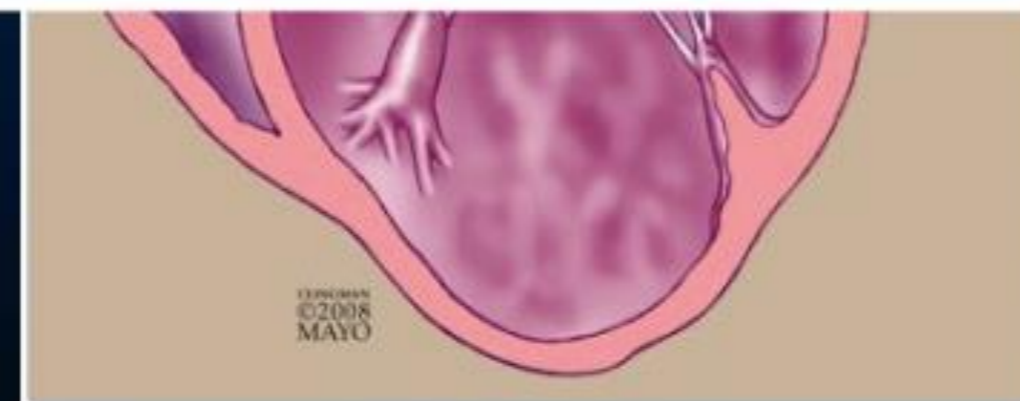


Ischemic



**Indication for operation unclear
(disease of the ventricle)**

**Usually reserve for severe MR with symptoms
unresponsive to treatment of the LV**



Surgical Intervention

ACC/AHA Guidelines – Secondary MR

**Surgery may be
considered for severe
symptoms despite
optimal GDMT for HF (IIb)**

**Also for other CV surgery if
severe (IIa) or moderate (IIb)**