

Role of Echo Related to 2014 AHA/ACC Valvular Guidelines

Mitral Valve: How Much is
Severe? It Depends!

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Your Mission:

1) What is the cause of the MR?

- 1) Primary versus Functional

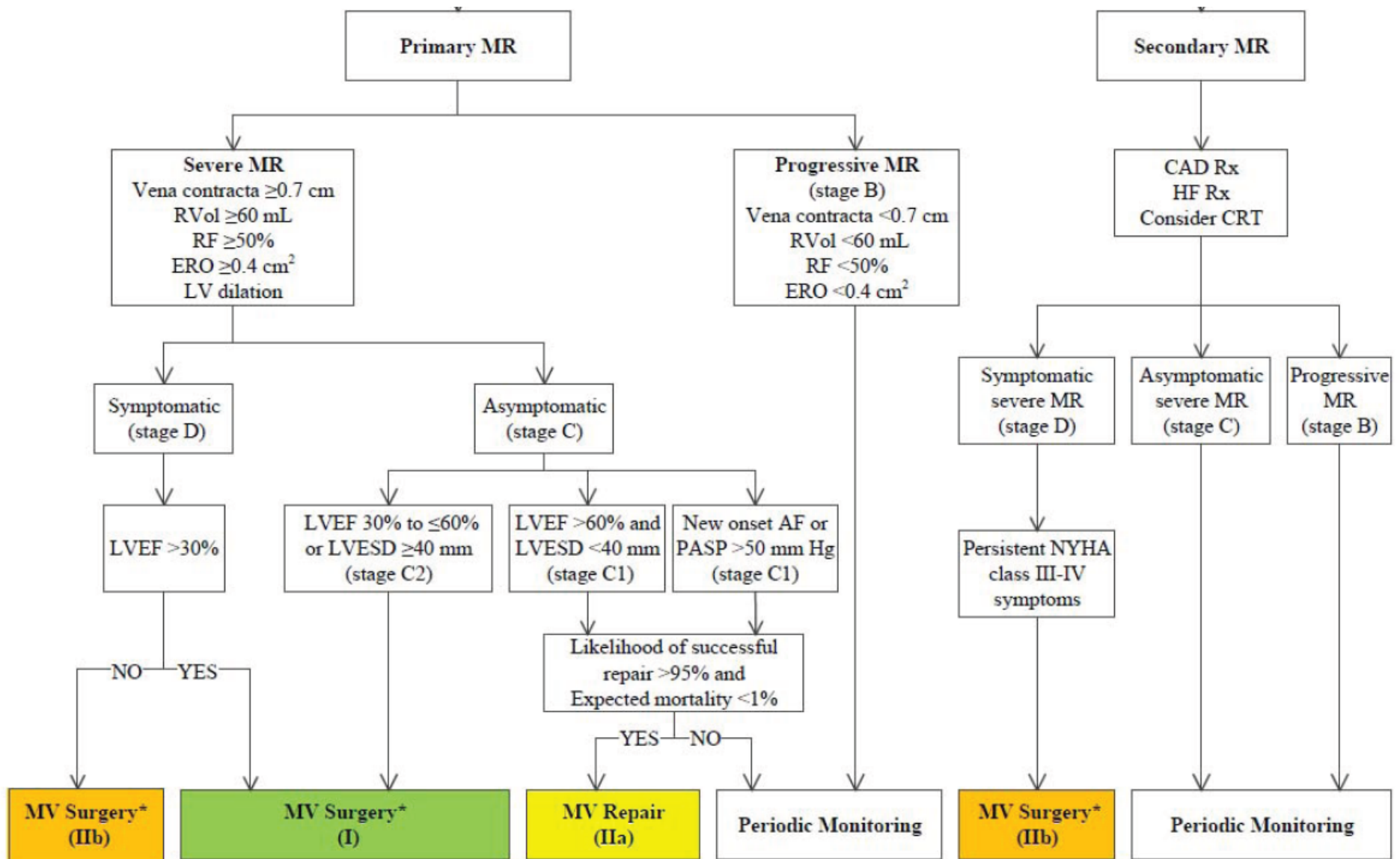
2) How much MR is there?

- 1) Qualitative Factors
- 2) Quantitative Factors
 - 1) PISA – EROA
 - 2) Vena Contracta
 - 3) Jet Area
 - 4) PV flow reversal

Part I Causes

Condition	Example	Pathology
Primary valve	Mitral valve prolapse	Myxomatous degeneration Redundant leaflet tissue Ruptured chordae
	Rheumatic heart disease	Leaflet thickening and restriction Commissural fusion
	Endocarditis	Leaflet destruction
	Papillary muscle rupture	Myocardial infarction
	Congenital	Cleft mitral valve Double orifice mitral valve
	Miscellaneous	Drugs (e.g. fenfluramine)
Functional mitral	Mitral annular dilatation	Dilated cardiomyopathy
	Left ventricular wall motion abnormality	Myocardial ischaemia/infarction

When is Quantification of MR Necessary? Severe vs Moderate



- *Specific* Signs of MR:

1. PISA gives you EROA $\geq 0.4 \text{ cm}^2$ (Rvol RF)

2. Vena Contracta $\geq 0.7 \text{ cm}$

3. Jet area 40% of LA

4. Pulmonary vein flow reversal

How many do you need?

-At least one along with supportive signs

-Does calling it severe make sense?

Perfecting your PISA

- Sphere as opposed to elliptical
- Flat portion of leaflets
- Reduce Nyquist (< 40 cm/s)
- Zoom
- Scroll to Largest Sphere
- Check that radius measured is at same point in cardiac cycle as peak MR velocity



Coanda Effect:

Fluid jet attracted
to a nearby surface

In echo, may
minimize
appearance of
significant
regurgitant jet
(wall hugging)

Relation to or effect on colour jet size

Factor

Effects on measured or displayed flow velocities

Haemodynamic effects	LA compliance	Direct
	LA pressure	Inverse
	LV systolic function	Direct
	LV pressure	Direct
Instrument settings	Colour gain	Direct
	Wall filter	Inverse
	Transducer frequency	Direct
	Pulse repetition frequency	Inverse

LA, left atrium, LV, left ventricle.

Direct, jet size increases as factor increases; Inverse, jet size decreases as factor increases.

Factor		Relation to or effect on colour jet size
Other factors affecting colour jet size		
Transducer position	Relative to direction of flow	Doppler angle effects
	Inadequate alignment to jet	Underestimation of true jet size
Jet eccentricity	Coanda effect	Reduced jet dimensions
<p>LA, left atrium, LV, left ventricle. Direct, jet size increases as factor increases; Inverse, jet size decreases as factor increases.</p>		