



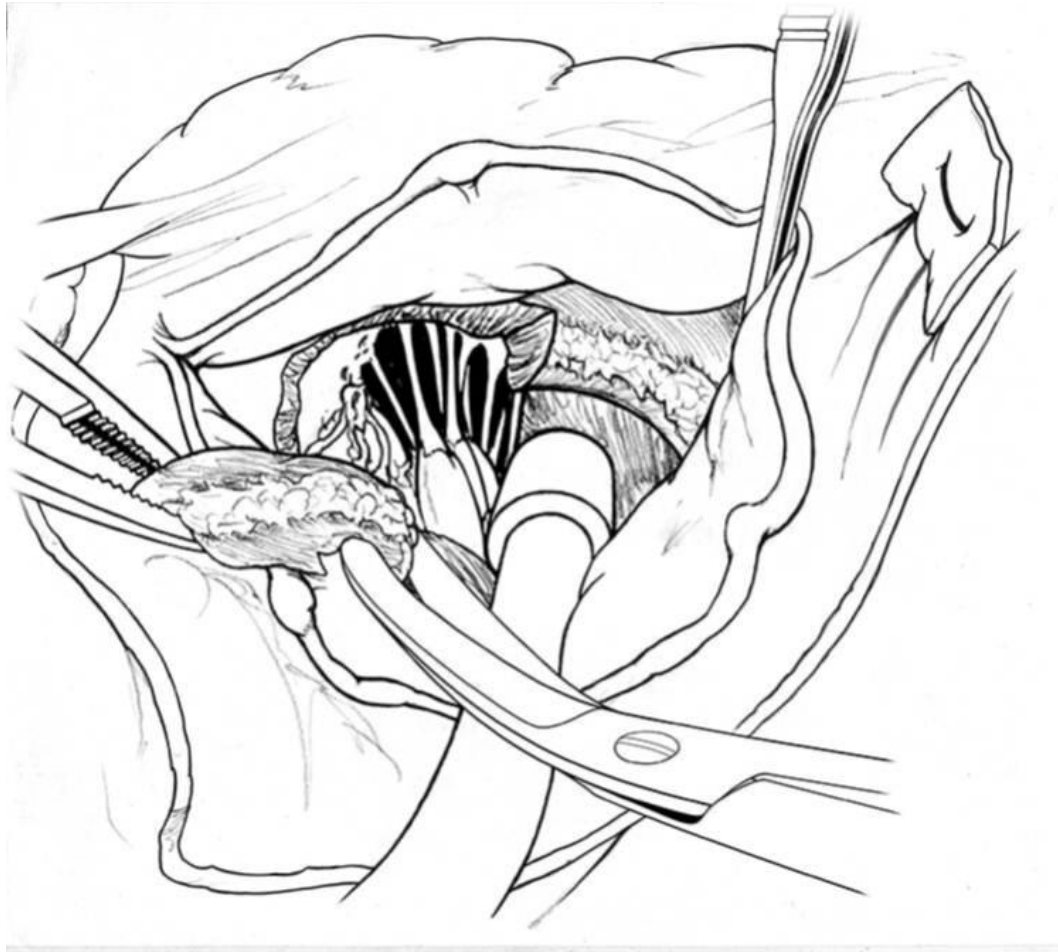
Mitral Valve Surgery in Hypertrophic Obstructive Cardiomyopathy

Joonhwa Hong, M.D., Ph.D.

Department of Cardiovascular Surgery

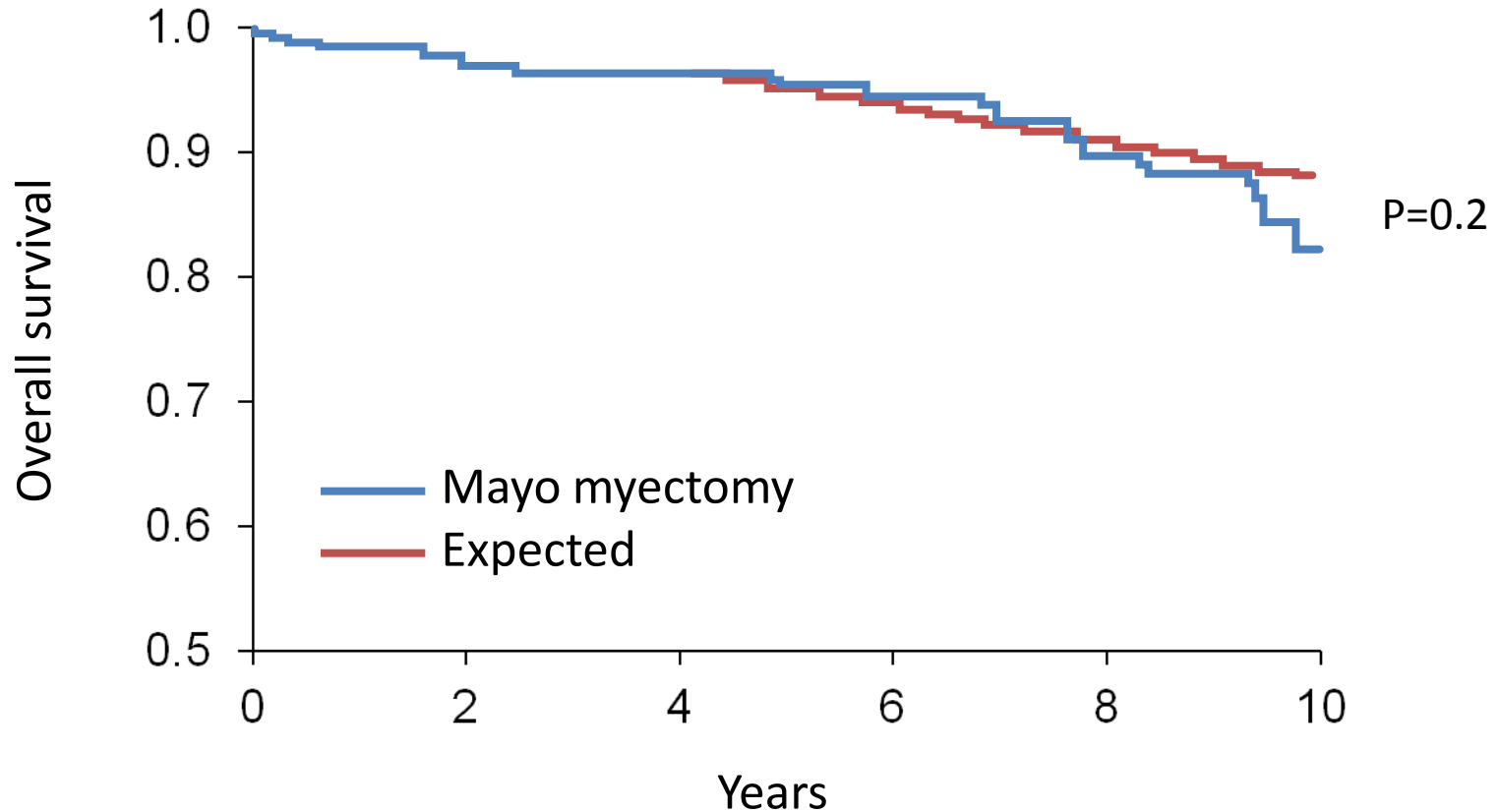
Chung-Ang University, Seoul, Korea

Myectomy



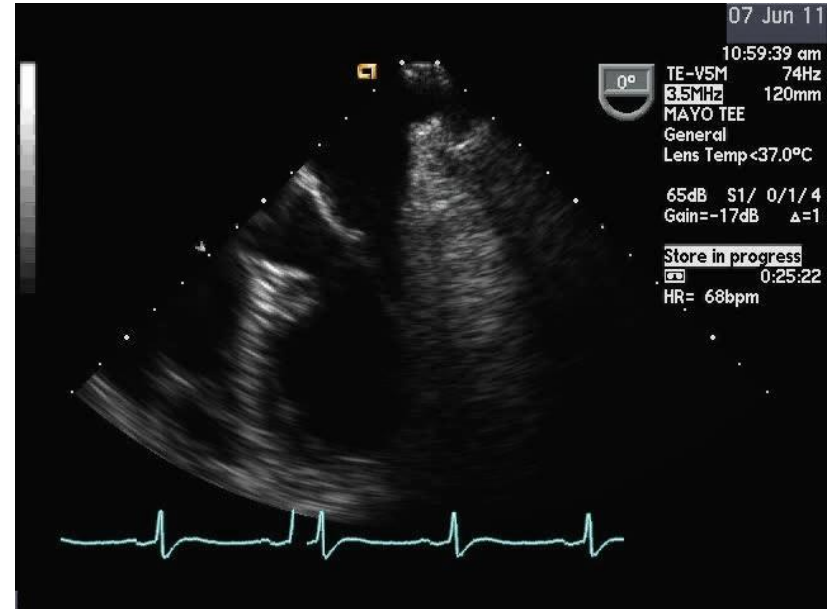


Survival after Myectomy

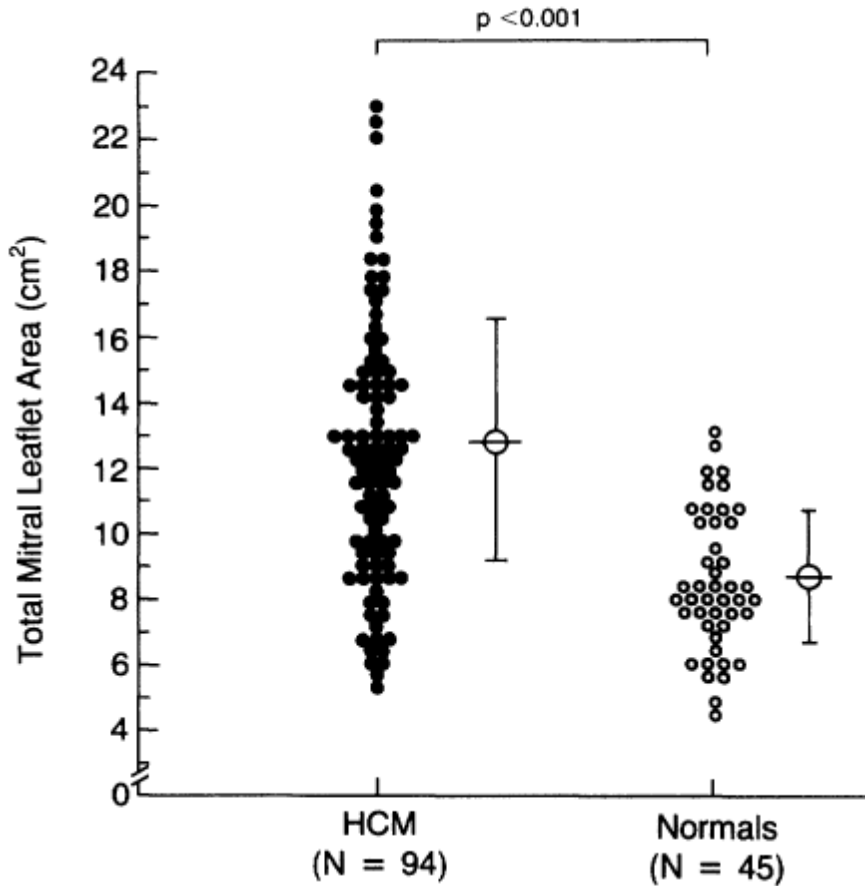


Relation to MR

- Venturi effect
 - LVOT narrowing
 - increased flow velocity
 - decreased pressure
 - SAM
 - MR



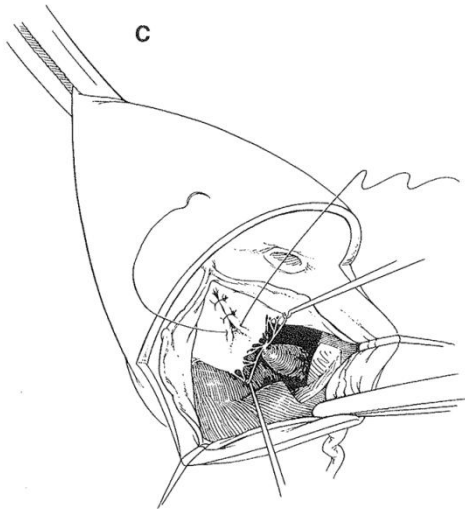
Relation to MR



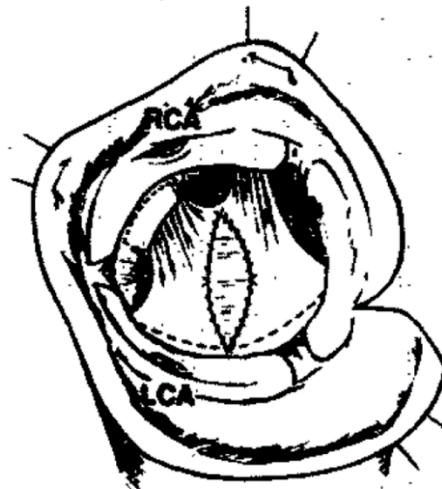
- Anatomic alterations of MV
 - Increased MV leaflet area, length and laxity
 - SAM
 - MR

Concomitant Mitral Valve Repair

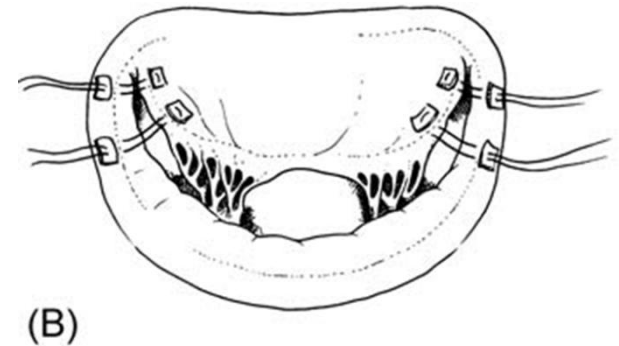
Plication



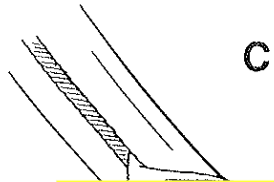
Extension



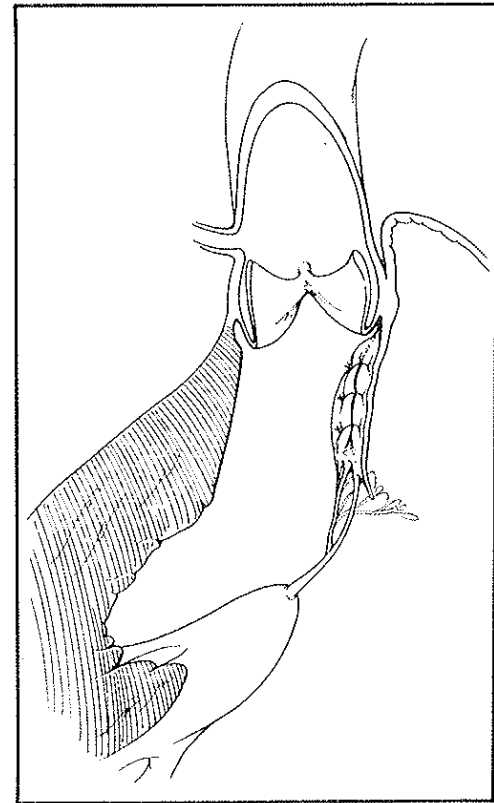
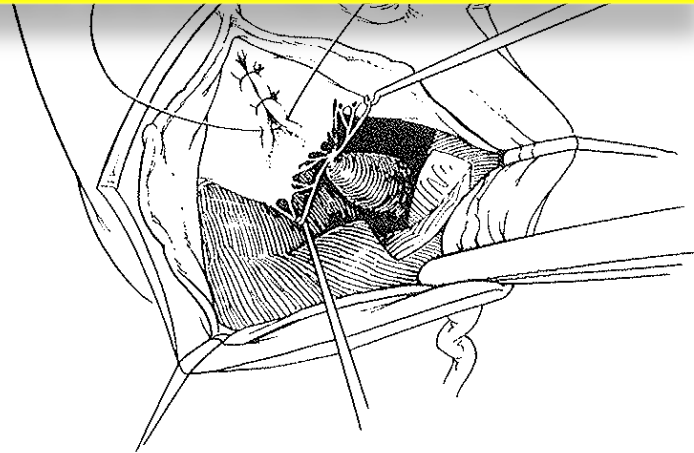
Retension



Plication

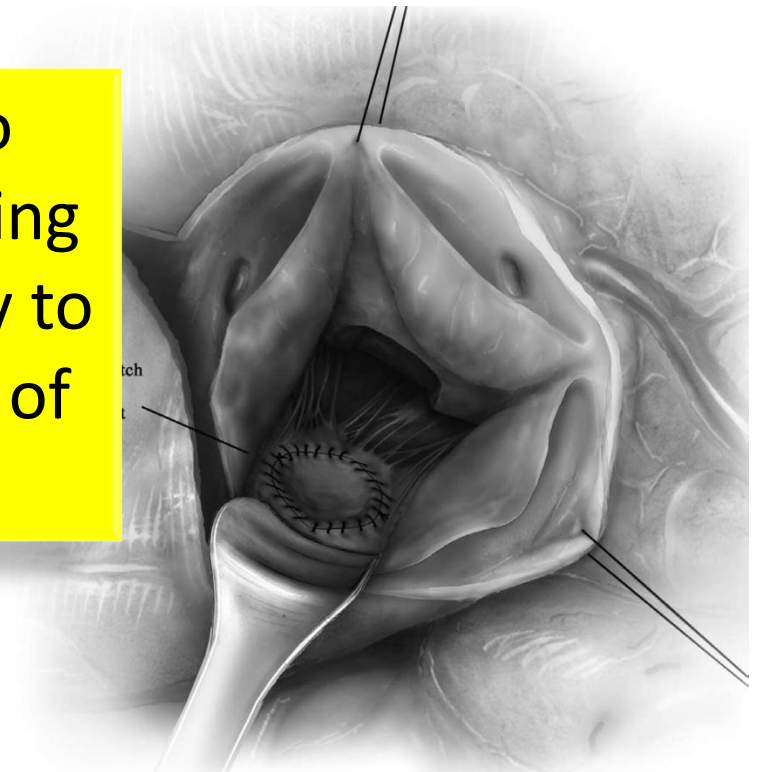
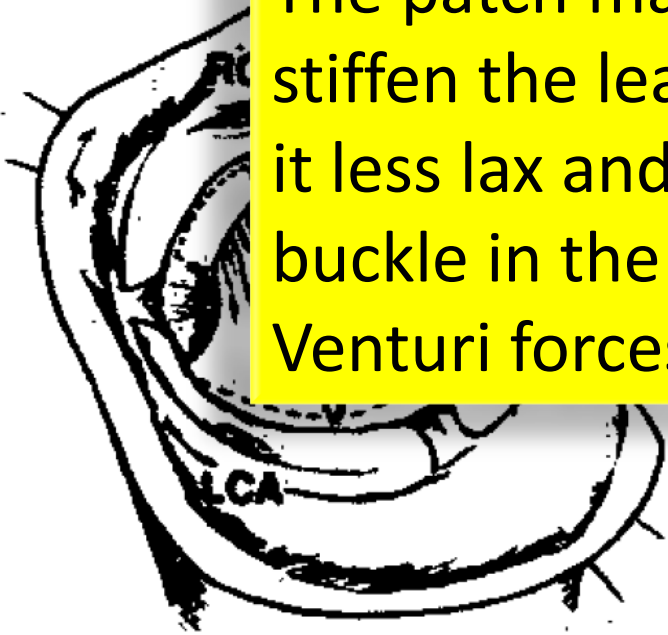


The action of the valve encroaching upon the outlet becomes limited

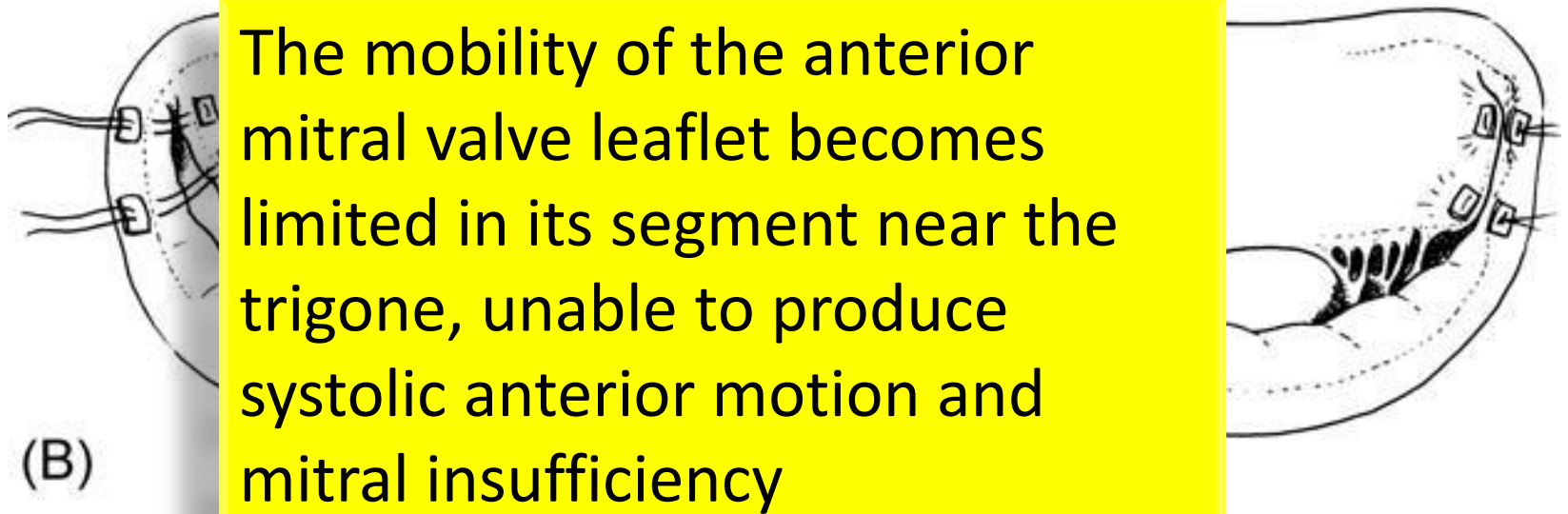


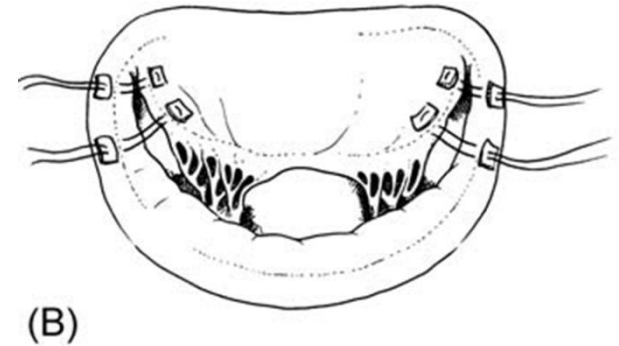
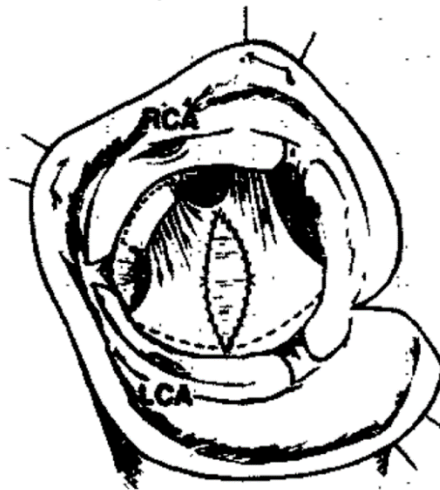
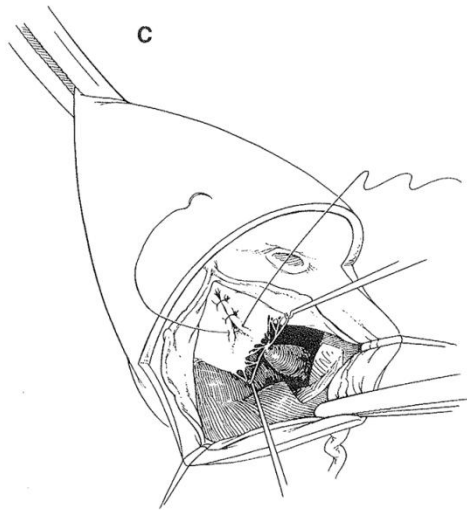
Extension

The patch may serve to stiffen the leaflet, making it less lax and less likely to buckle in the presence of Venturi forces



Retention





MV repair type	Year and Author	Patients number	Follow up period
Plication	Cooley, 1991		
	McIntosh, 1992	36	2.2 y
Extension	Kofflard, 1996	8	Up to 4 y
	van der Lee, 2003	29	3.4 ± 2.1 y (3 m – 7.7 y)
Retention	Delmo Walter, 2009	12 children	11.87 ± 1.22 y
	Nasseri, 2011	25 adults	Median 2.5 y (0.8 – 14 y)

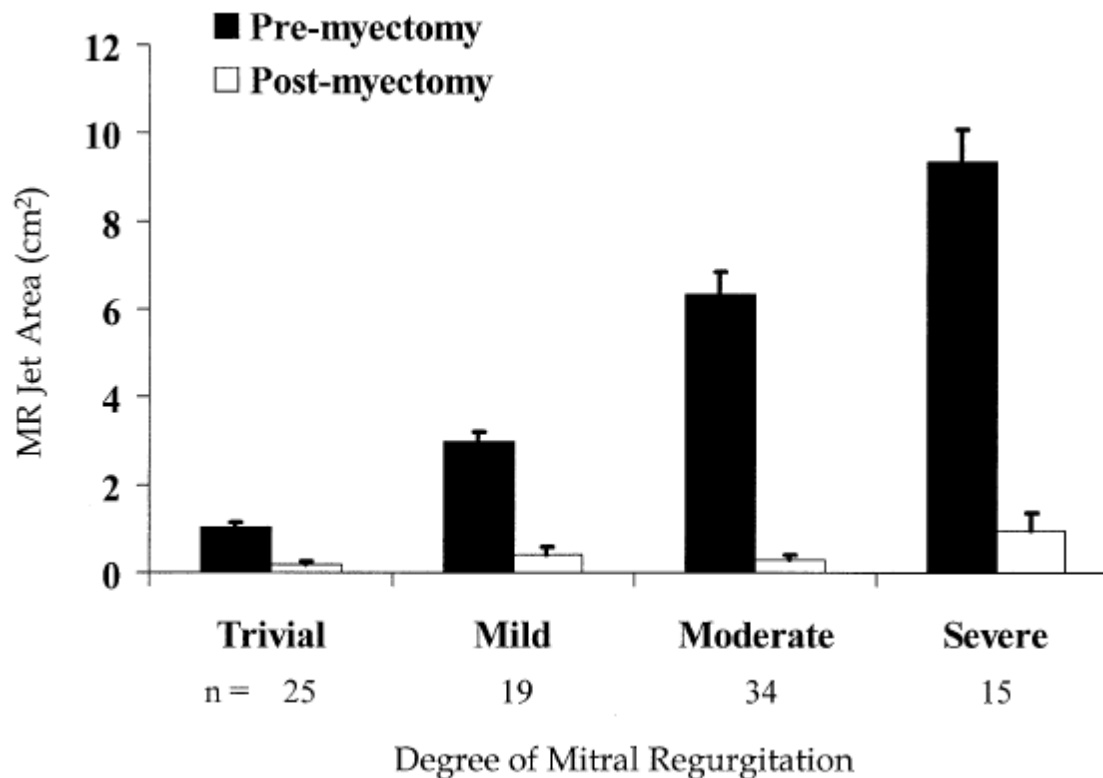
Concomitant MV repair

- Relatively small volume
- Short follow up period
- No clear indication

MV repair type	Year and Author	Patients number	Follow up period
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Mitral Regurgitation in Hypertrophic Obstructive Cardiomyopathy: Relationship to Obstruction and Relief With Myectomy

Eric H. C. Yu, MD, FACC, Ahmad S. Omran, MD, E. Douglas Wigle, MD, FACC, William G. Williams, MD, FACC, Samuel C. Siu, MD, FACC, Harry Rakowski, MD, FACC
Toronto, Canada



Controversies

- When is MVS indicated in patient with HOCCM?
- What is appropriate strategy for MR in patients with HOCCM?

Mayo Data

- 2107 myectomies
 - From 1993 – 2014
 - Age ≥ 18
 - Exclusion, 103 patients
 - s/p mitral valve surgery, 15 patients
 - Non-obstructive physiology, 88 patients

Myectomy

2107

2004 included

(88 Apical + 15 s/p MVS = 103 excluded)

Known IMVD

99

No known IMVD

1905

Myectomy + MVS

99

Myectomy + MVS

75 (3.9% of 1905)

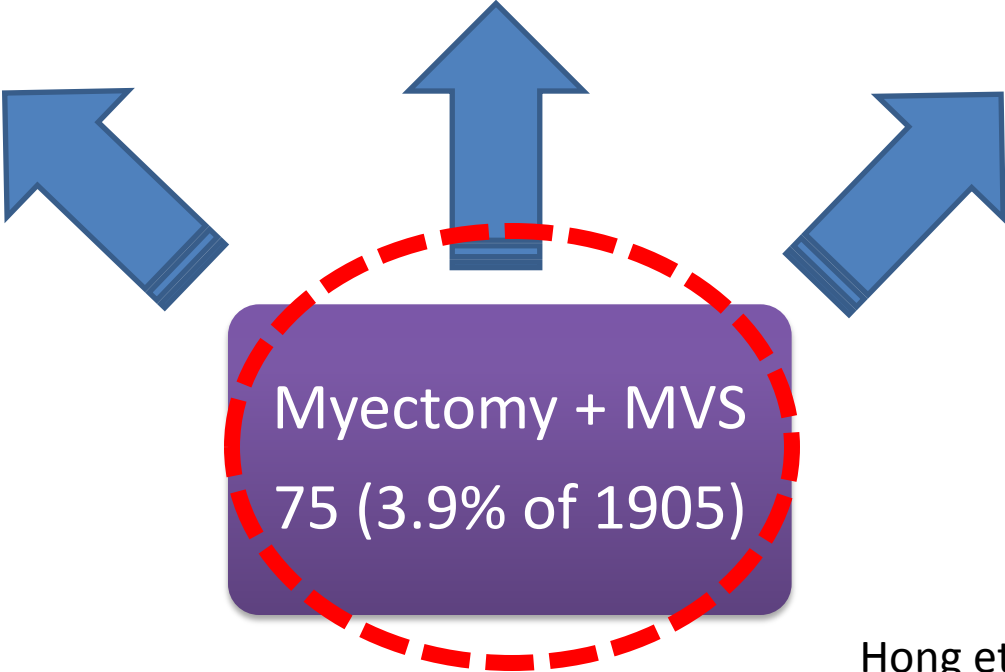
Myectomy Alone

1830

Intraop Dx of
IMVD
33

Inadvertent
injury to the
MV
12

Minimal or no
IMVD
30 (2.1 % of
1905)



Hong et al, unpublished data

Myectomy

2107

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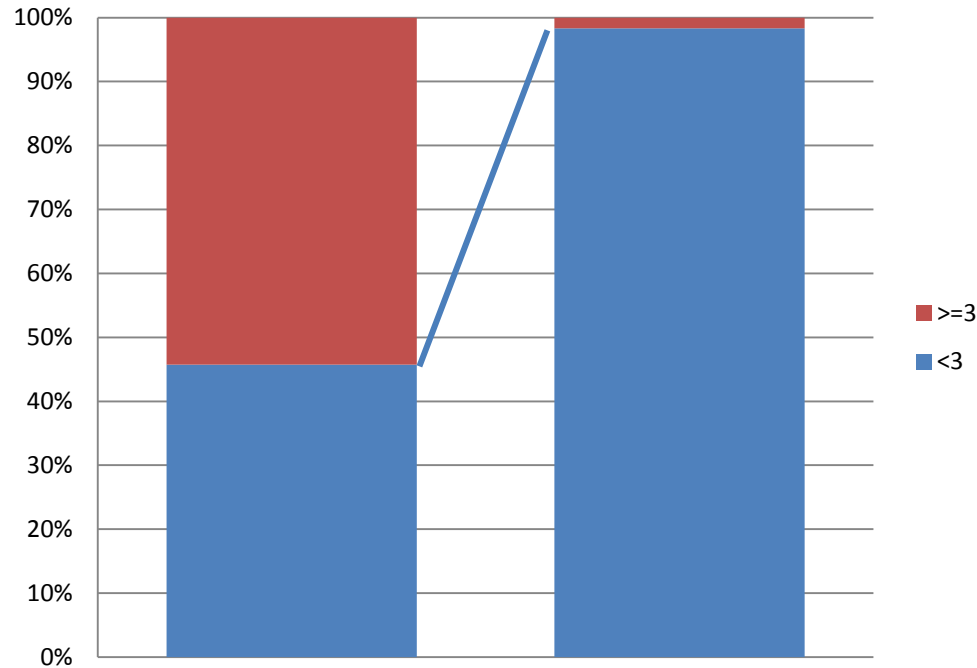
33

Inadvertent injury
to the MV

12

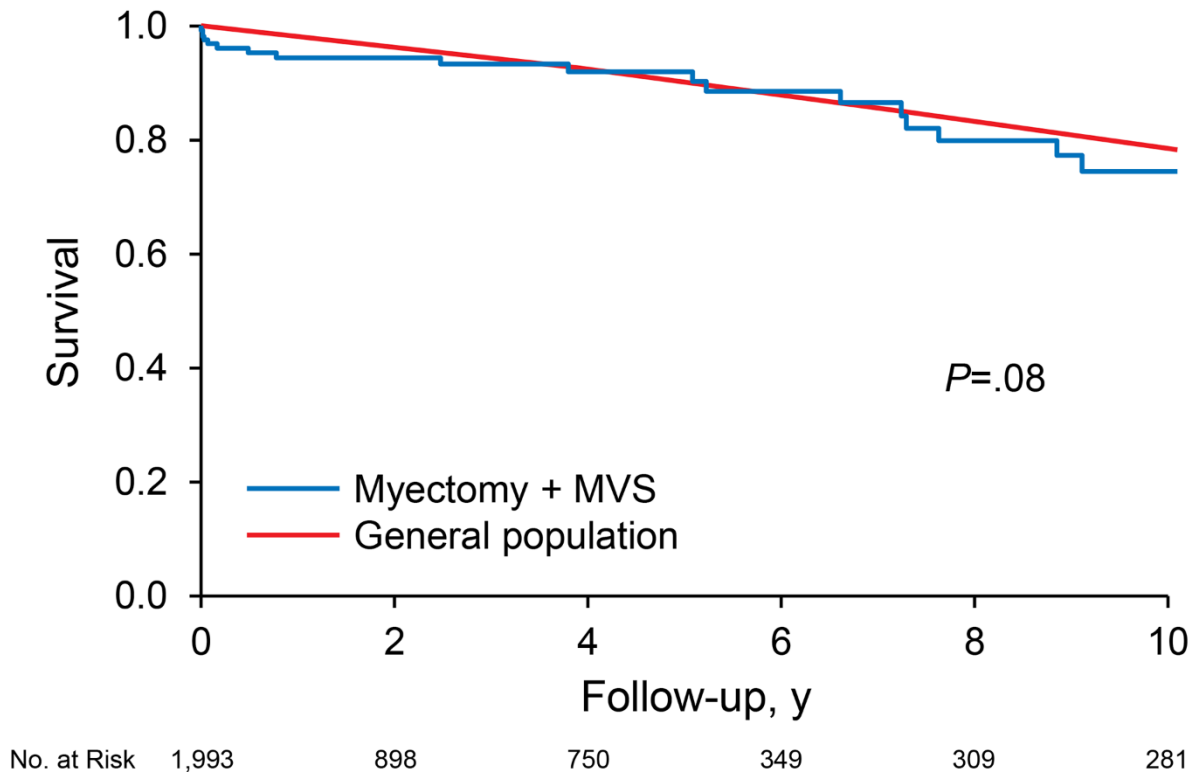
Minimal or No
IMVD
30 (2.1 % of 1905)

MR change after myectomy

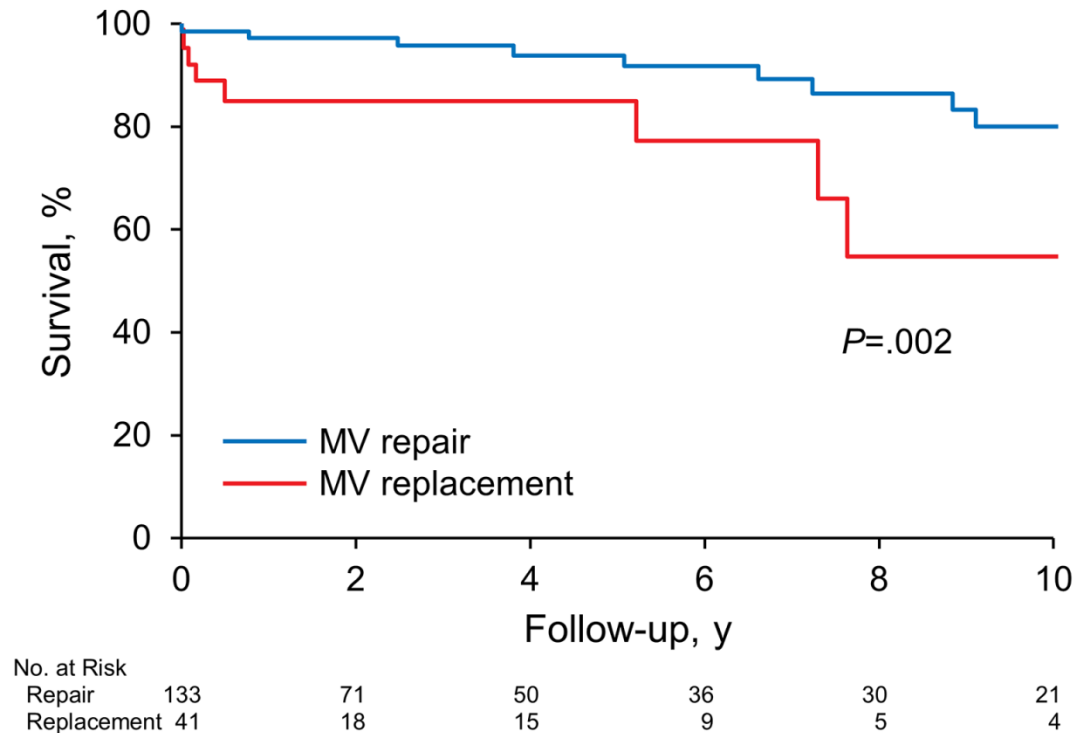


	Preop	Discharge	p
MR 3-4	54.3	1.7	< 0.001
MR 0-2	45.7	98.3	

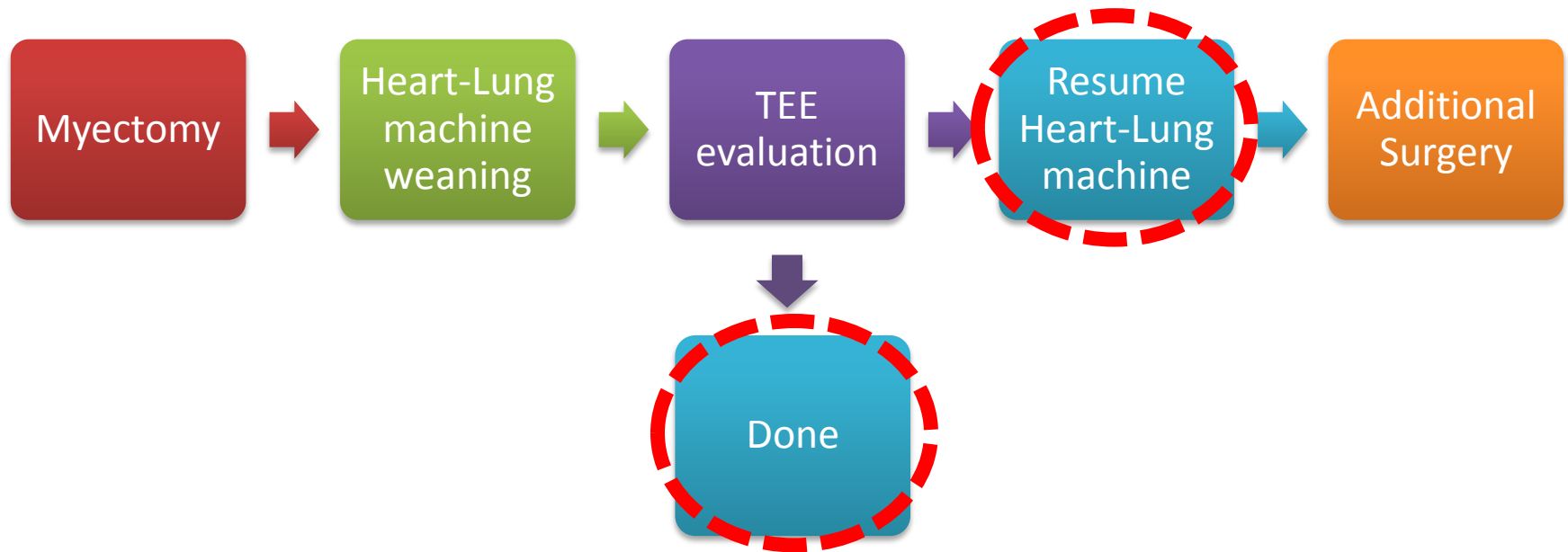
Survival of Concomitant MVS



Survival Comparison



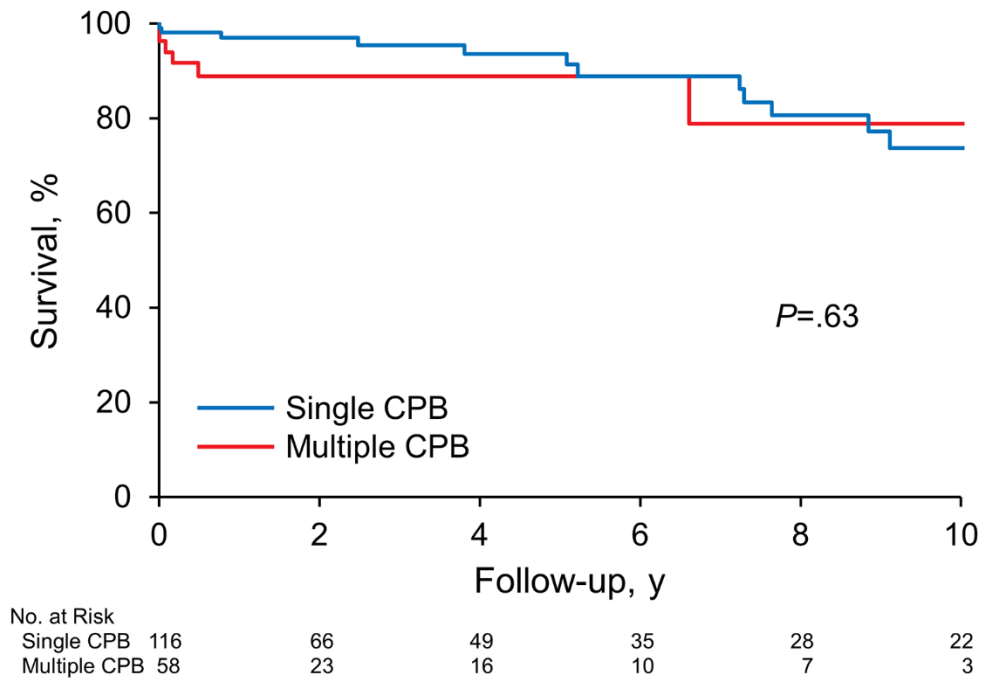
Chung-Ang Strategy

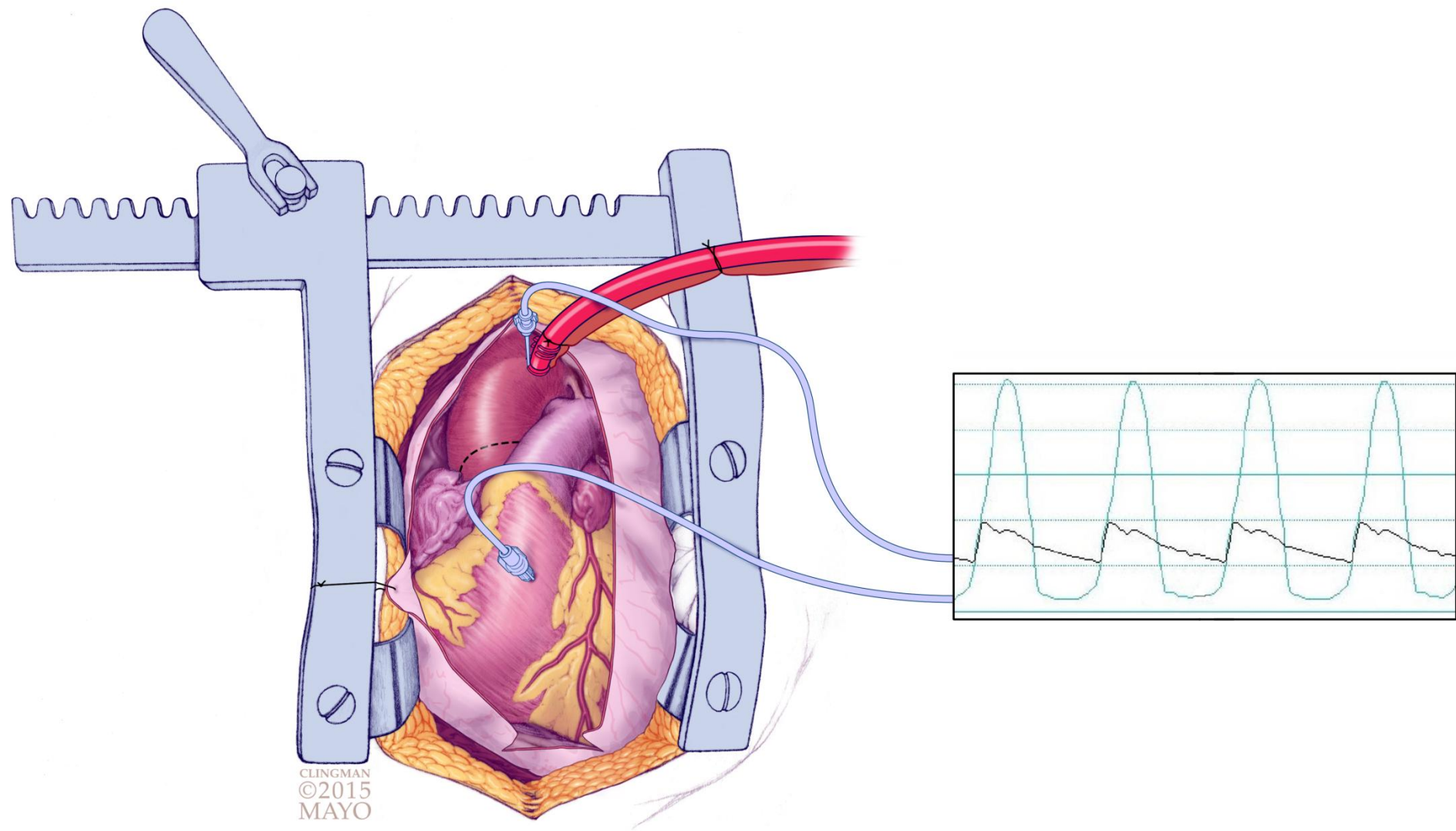


1st vs \geq 2nd Cardiopulmonary Bypass

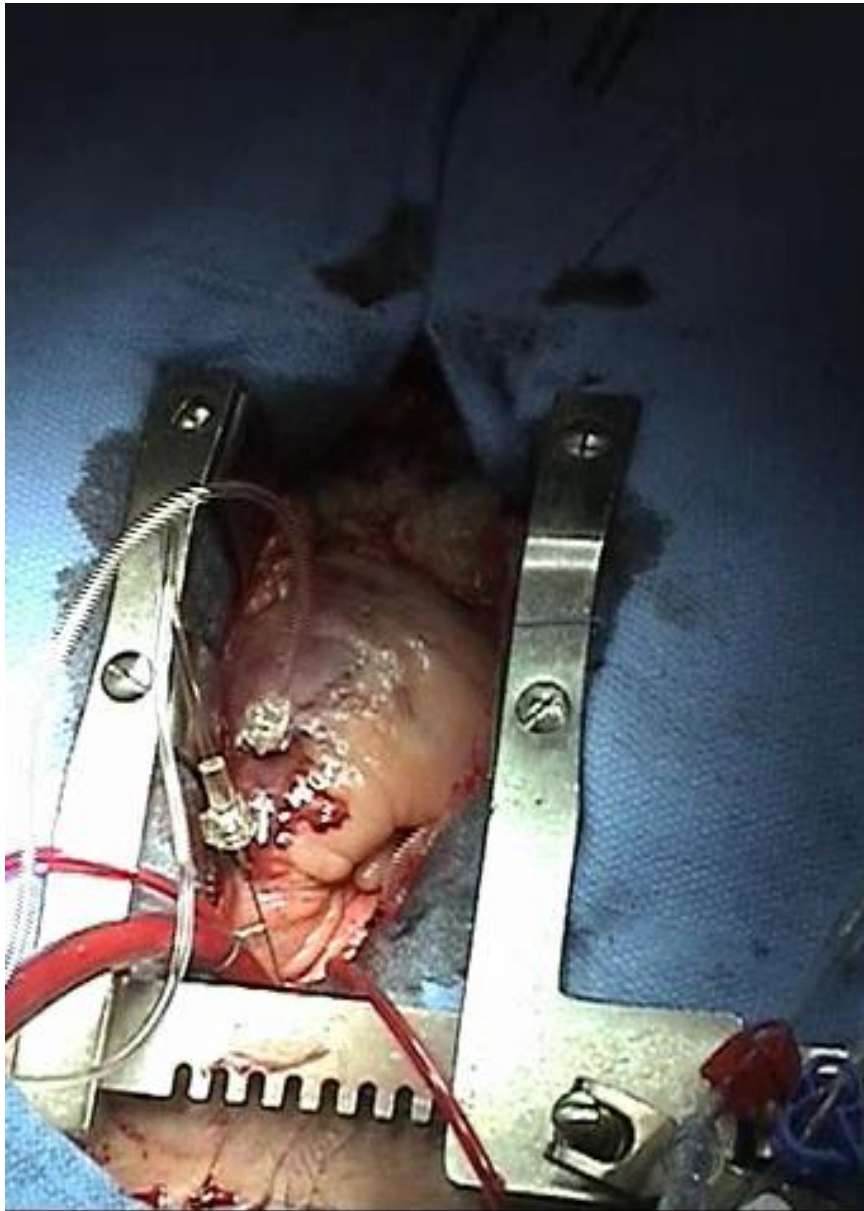
	1st CPB	\geq 2nd CPB	p Value
Patients Number	116 (66.7)	58 (33.3)	
Age	61.3 \pm 14.0	54.6 \pm 13.9	0.0017
Male, %	59.5	53.4	0.45
MR grade (%)			
0-2	10 (8.6)	5 (8.6)	1.00
3-4	107 (91.4)	53 (91.4)	
Preop MVD known, %	69.0	32.8	<0.001
Operative Data			
CPB time (min)	84.7 \pm 42.0	79.8 \pm 40.3	0.45
ACC time (min)	65.3 \pm 33.3	58.9 \pm 30.2	0.26
MV repair (%)	85 (73.3)	48 (82.8)	0.16
MV replacement (%)	31 (26.7)	10 (17.2)	
Postoperative Data			
Ventilator time, hours	13.9 \pm 21.6	26.2 \pm 82.4	0.11
ICU stay, hours	42.8 \pm 48.5	56.7 \pm 121.4	0.63
Hospital stay, days	7.8 \pm 7.8	7.5 \pm 7.8	0.05
30-day mortality (%)	2.0	6.1	0.18

1st CPB vs $\geq 2^{\text{nd}}$ CPB

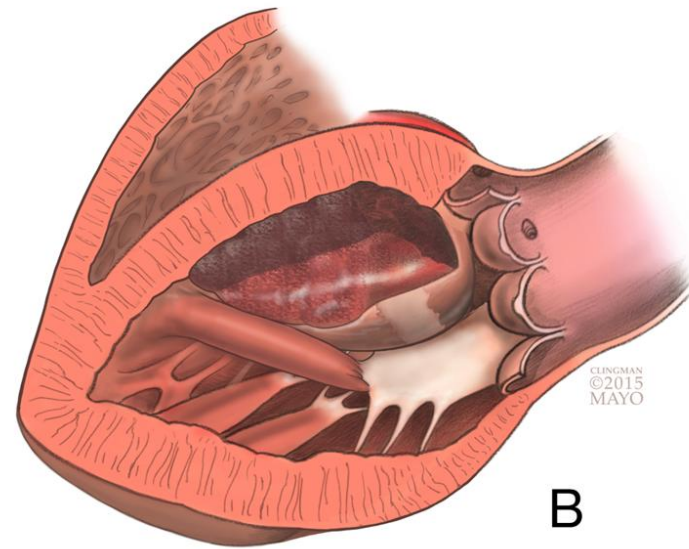
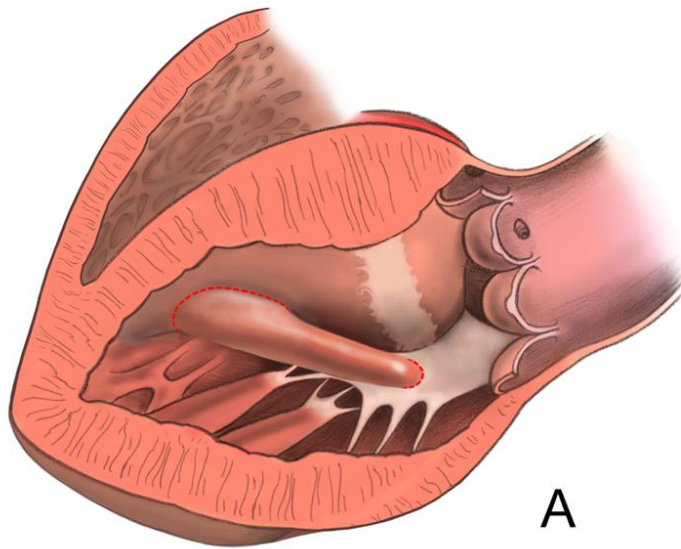




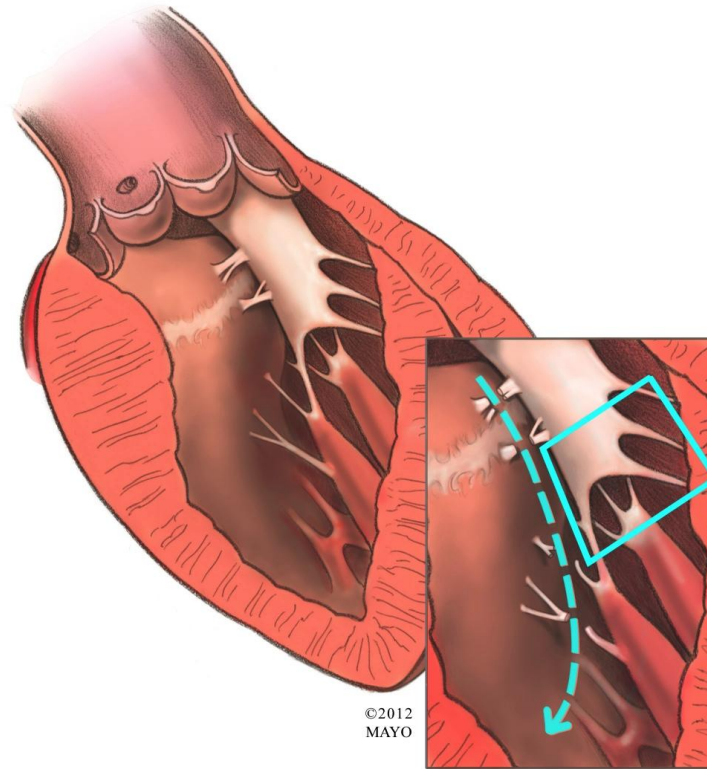
CLINGMAN
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Papillary Muscle !!

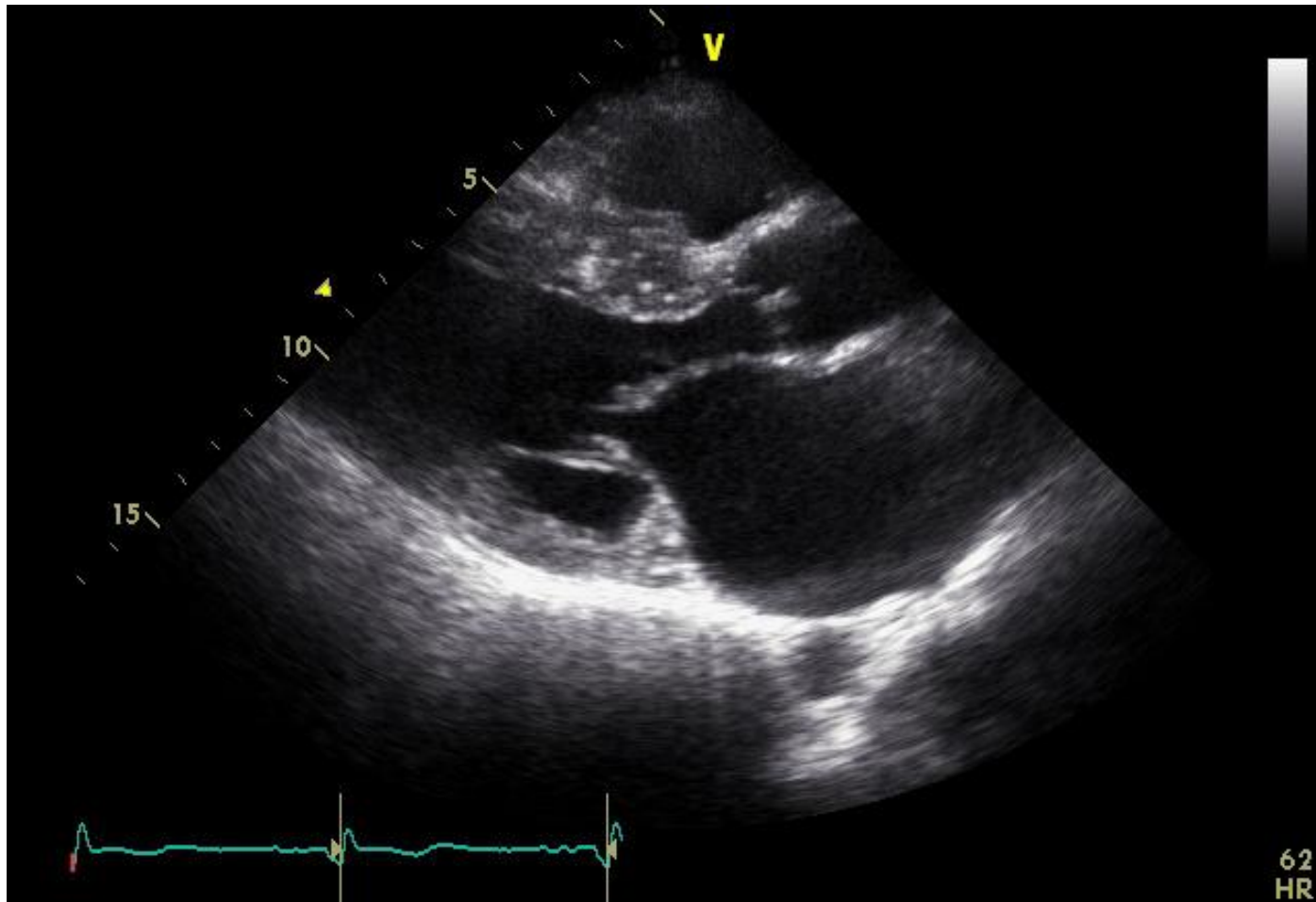


And, Cordae !!



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M/39



jo kyungho, 01227391, 19760301

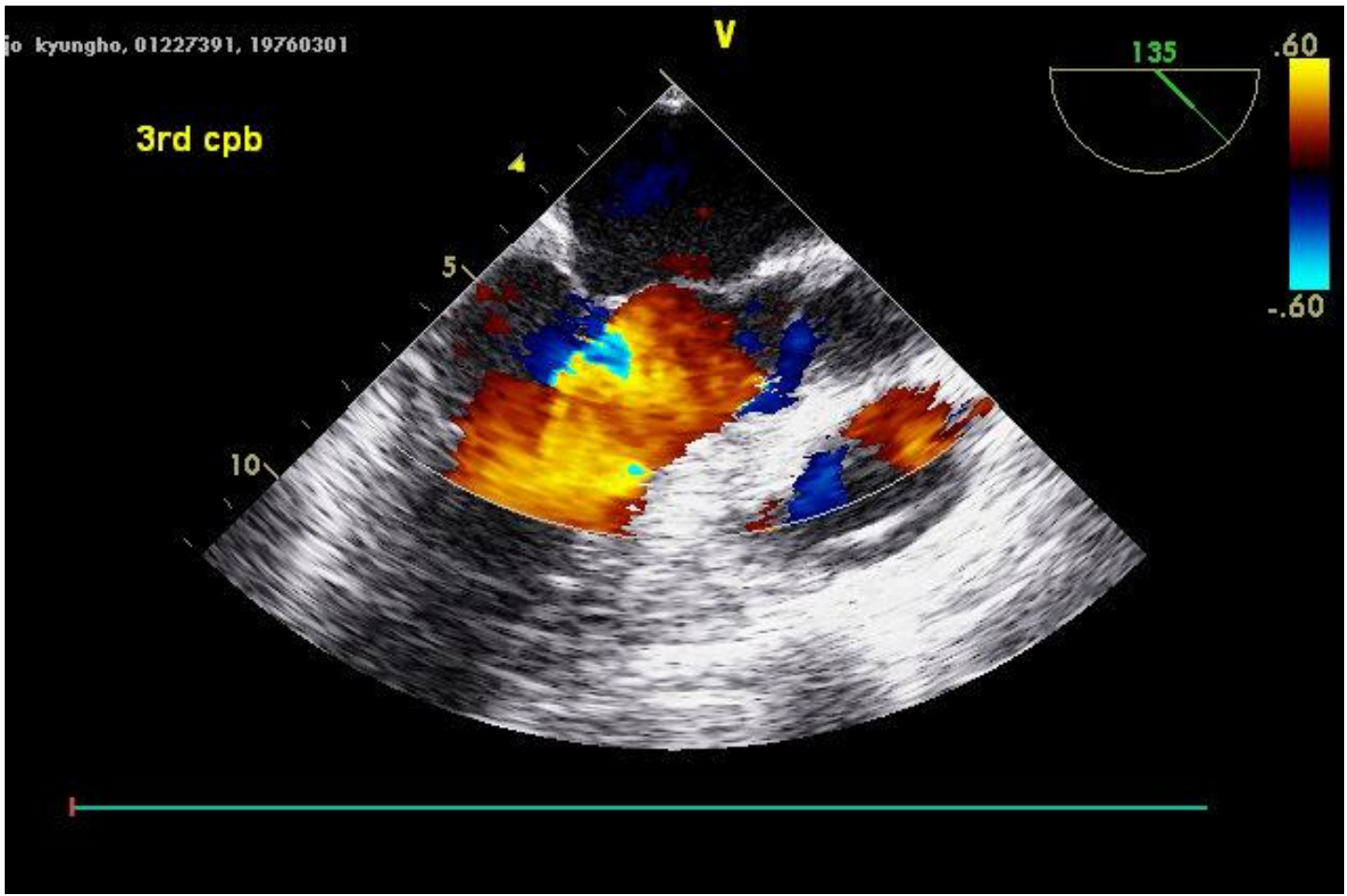
3rd cpb

V

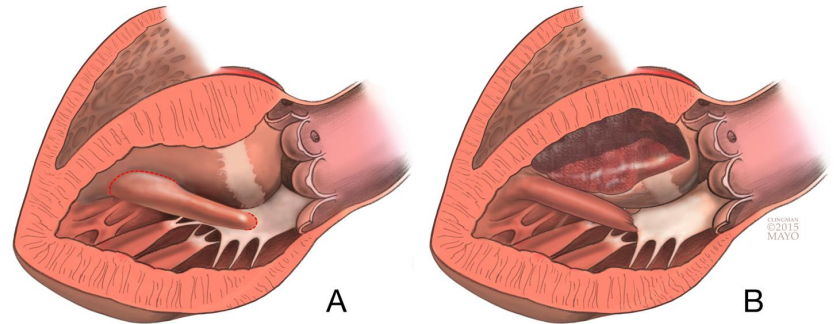
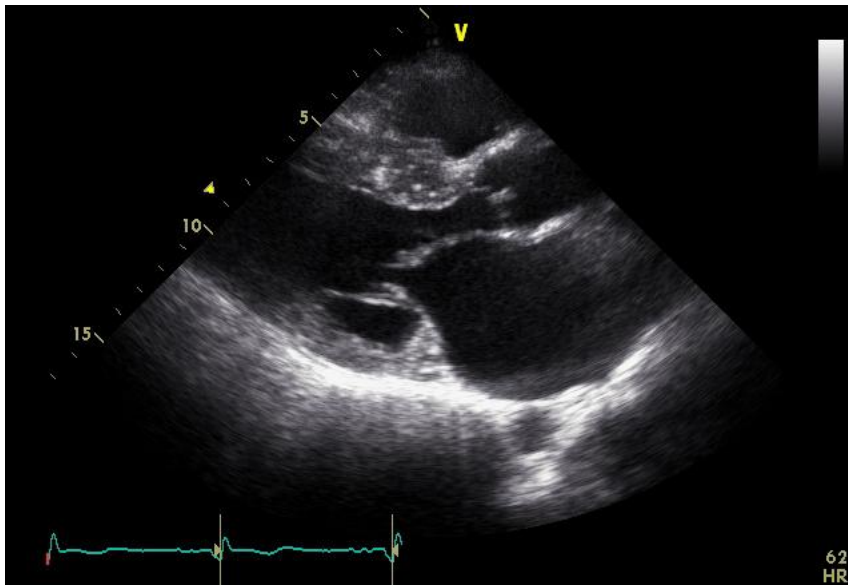
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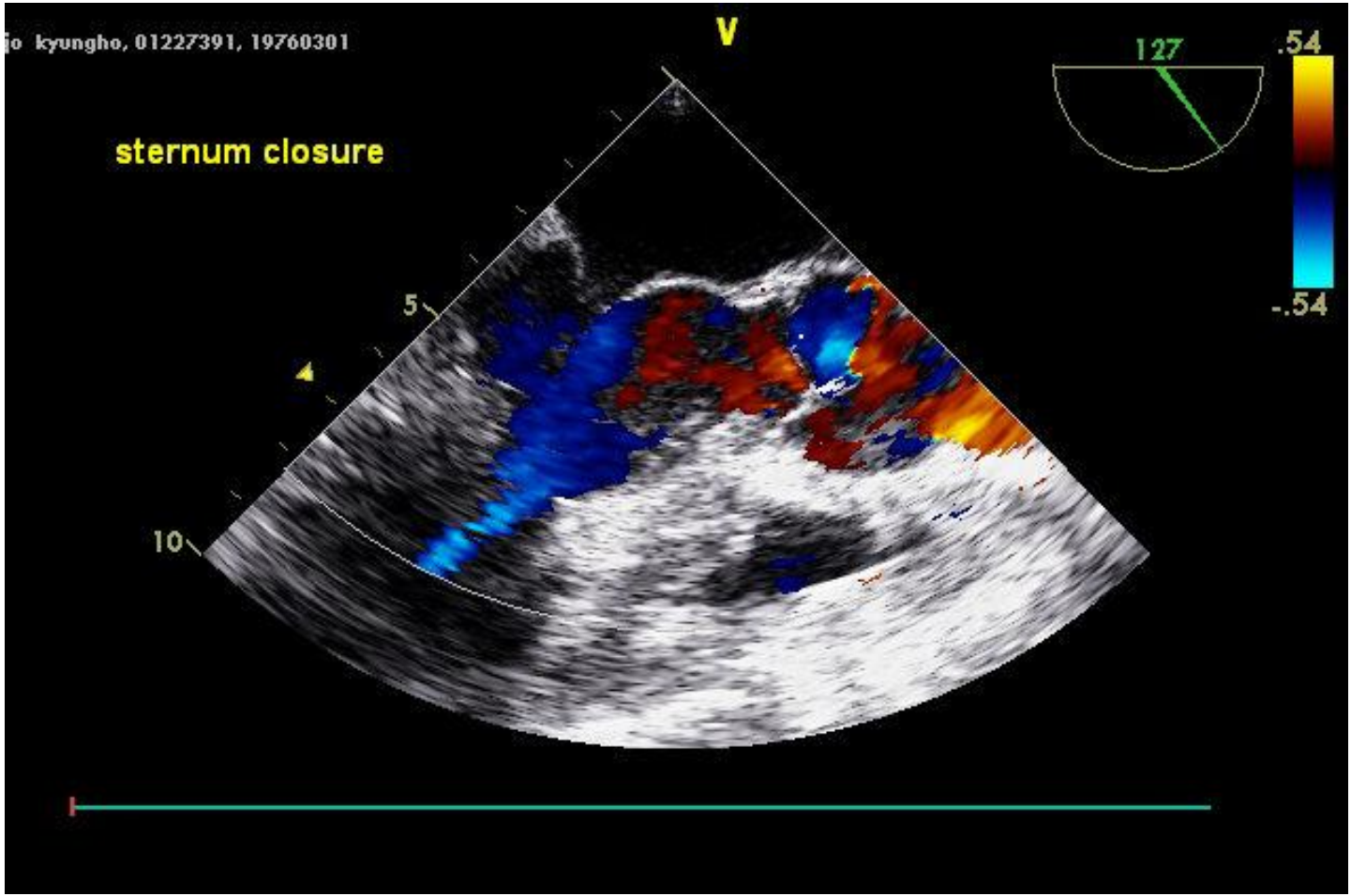
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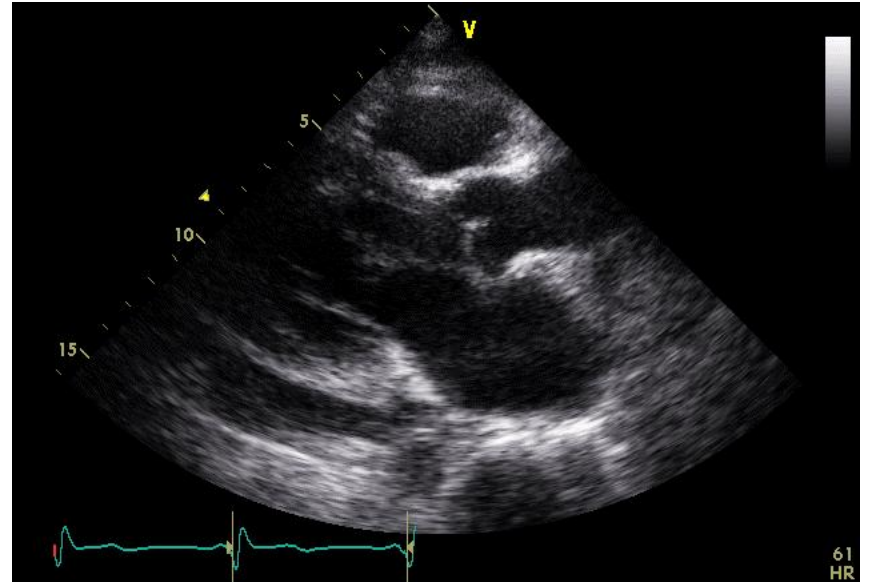
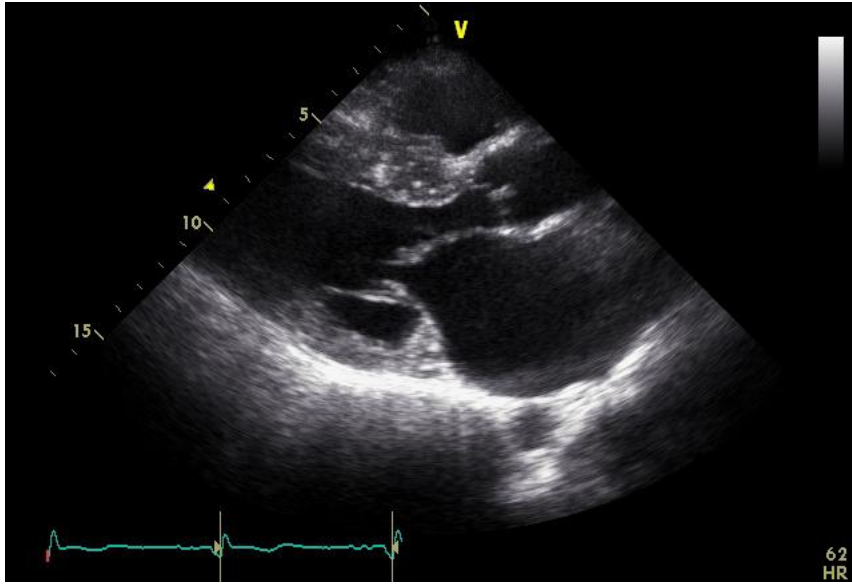
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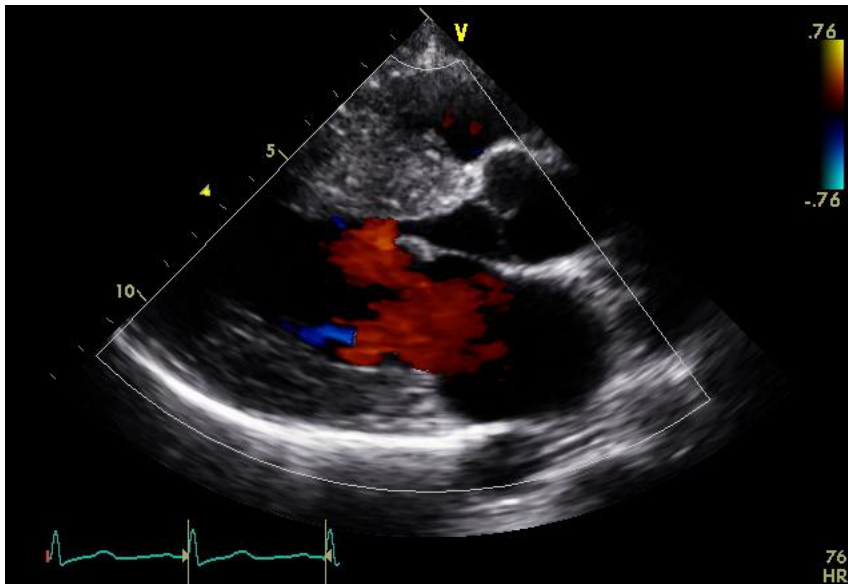
Abnormal Papillary Muscle



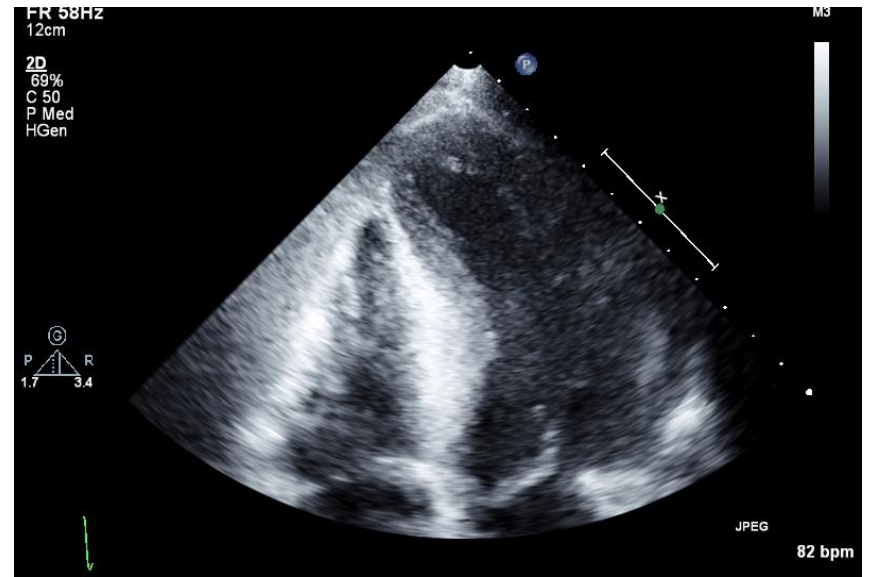
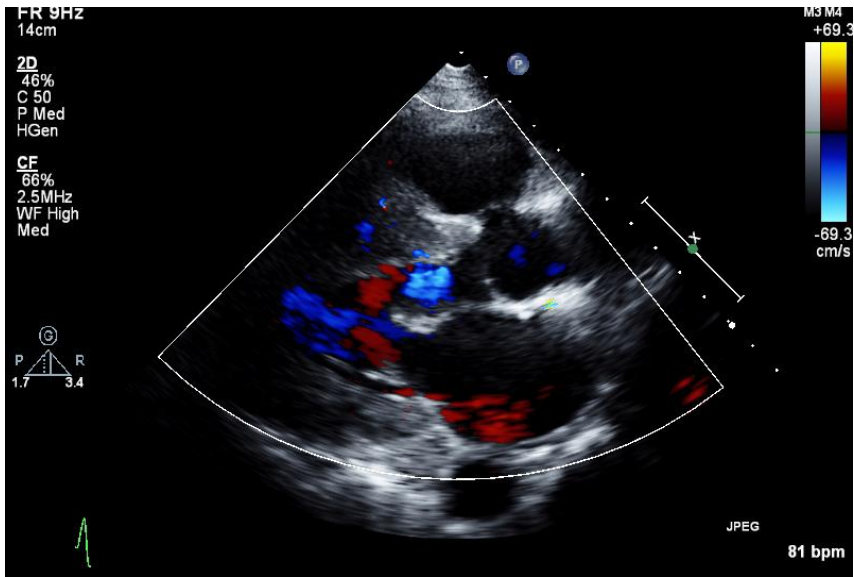




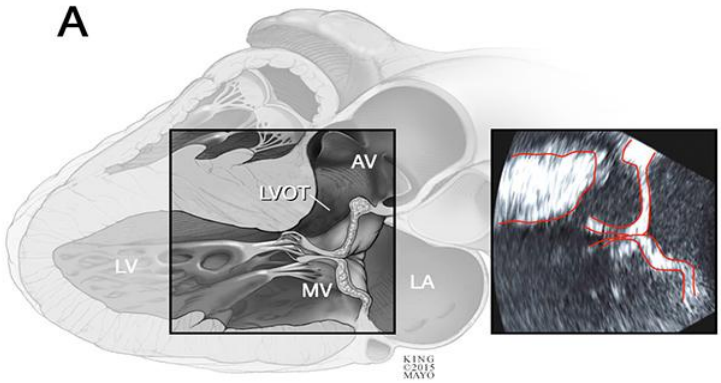
F/35



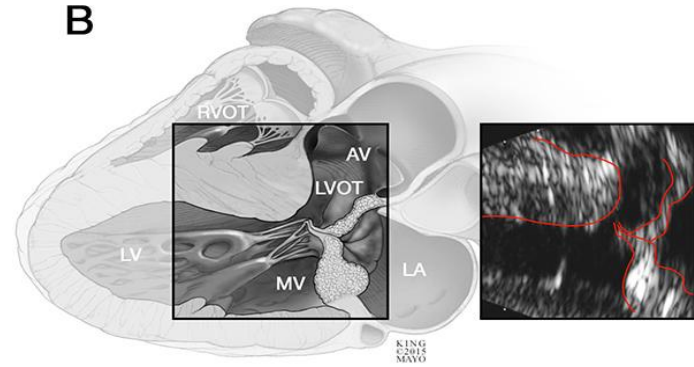




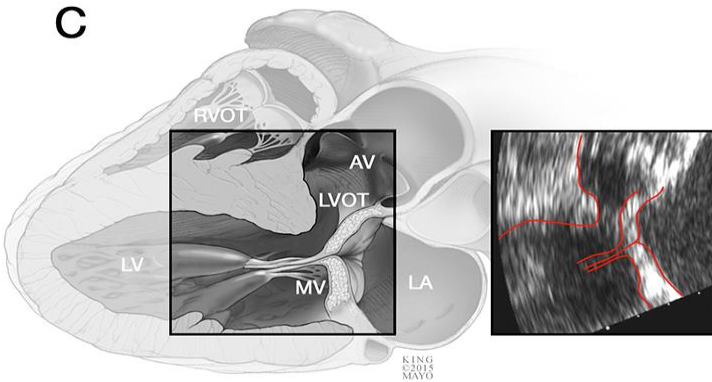
MS & HCMP



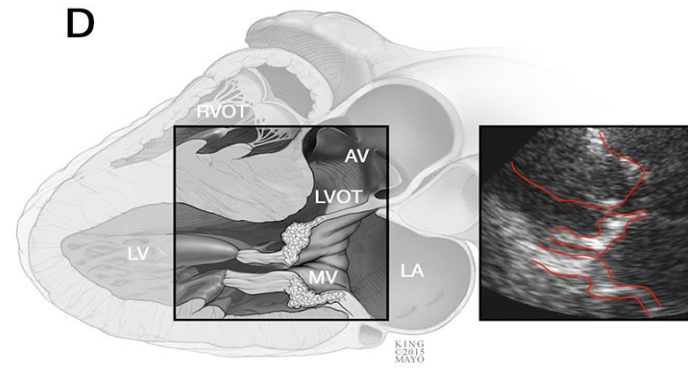
Systolic anterior motion without severe limitation in mitral valve motion



Severe limitation in mitral valve motion with systolic anterior motion at tip of the mitral valve



Septal encroachment toward the left ventricular outflow tract



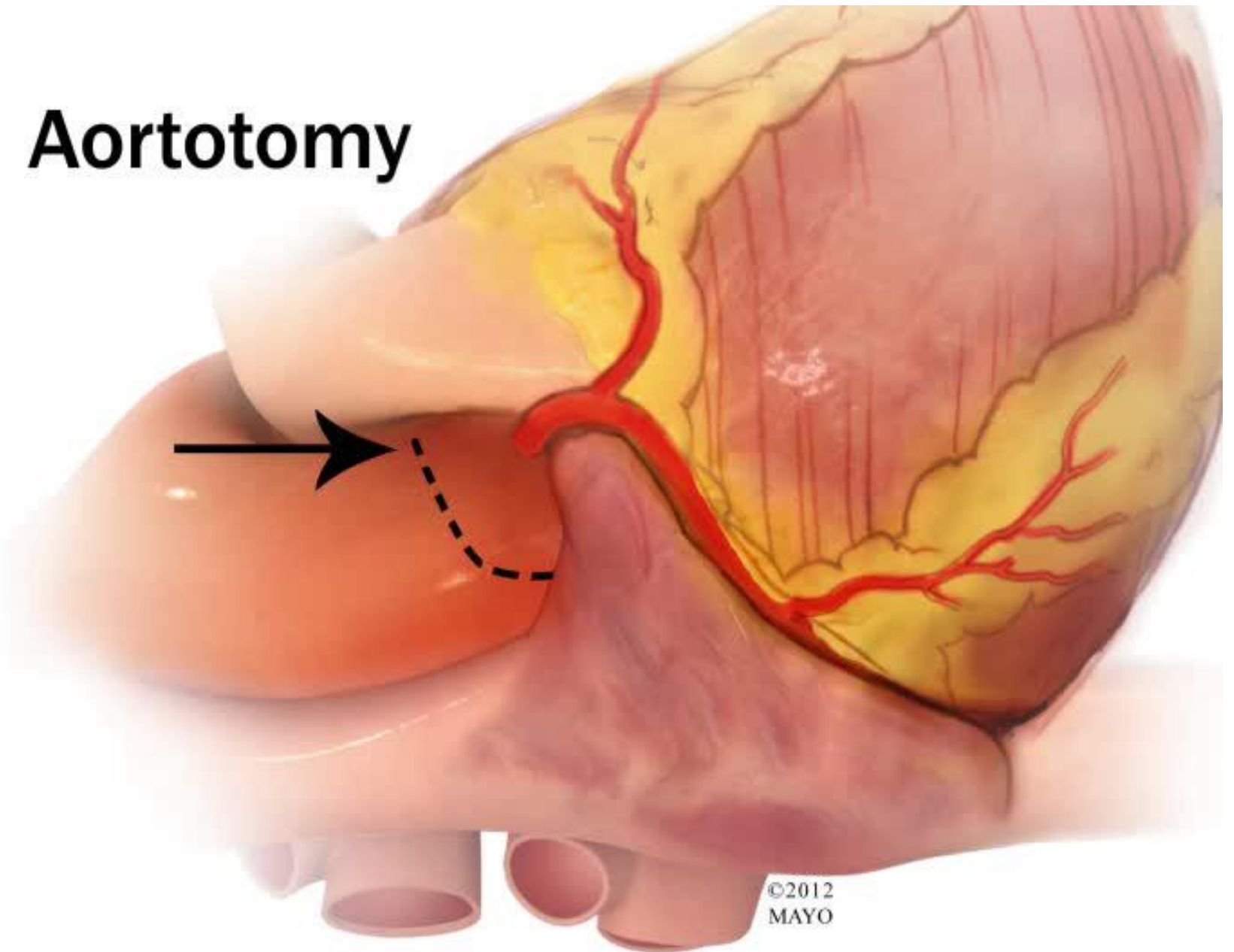
Displacement of the mitral valve toward the left ventricular outflow tract by calcification

Key Points

- MR decreases significantly with isolated myectomy
- Concomitant mitral valve surgery is rarely required unless there is intrinsic mitral valve disease
- Reevaluating the mitral valve after myectomy is safe method to avoid unnecessary mitral valve surgery
- When MVS is needed, mitral valve repair is recommended over replacement
- Papillary muscle abnormality!!!



Aortotomy



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Thank You!