

EuroValve

November 8-9, 2013



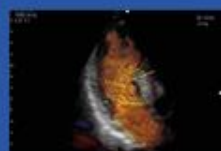
Early surgery for asymptomatic severe organic mitral regurgitation: *the best option for all !*

Agnès Pasquet, MD, PhD

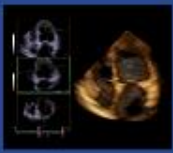
Pôle de Recherche Cardiovasculaire

Institut de Recherche Expérimentale et Clinique

Université catholique de Louvain



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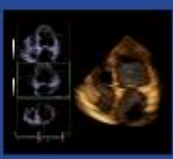


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No relationship to disclose



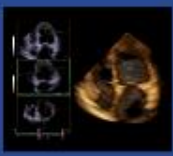
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Case...

24 y o man, with Marfan disease

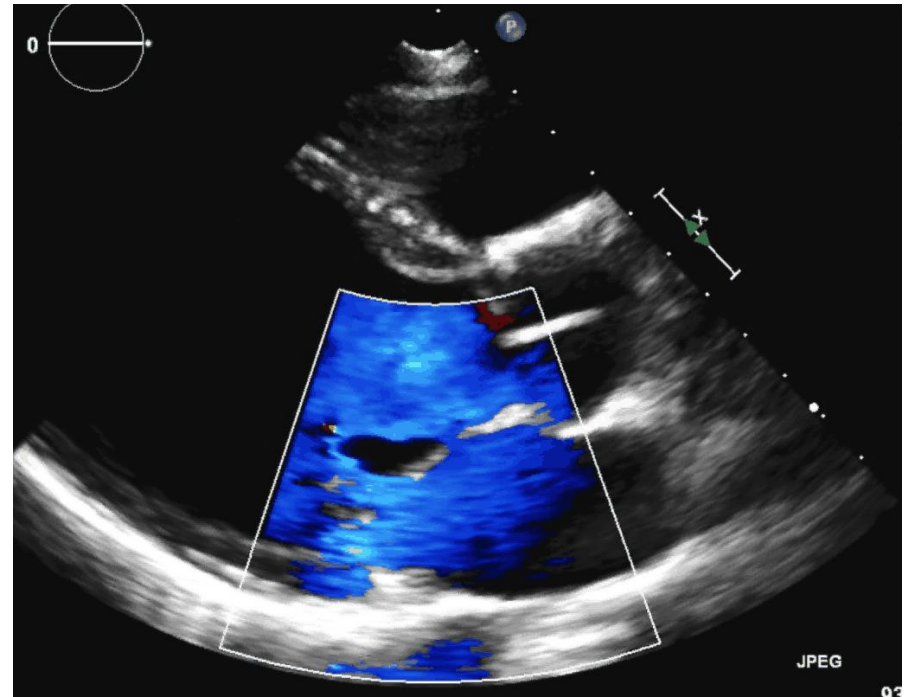
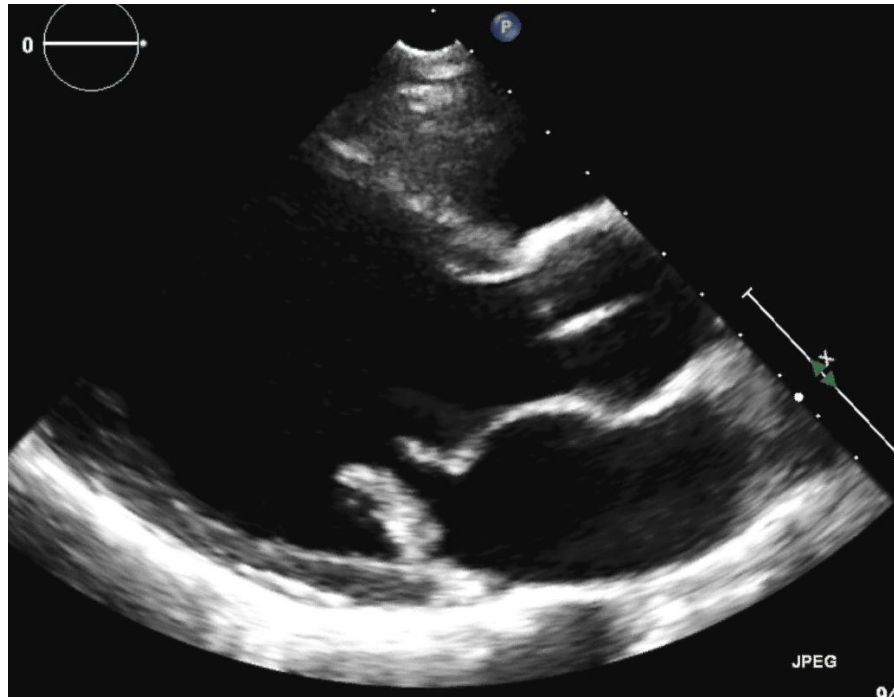
- 190 cm, 61kg
- During his genetic consult, 3/6 mitral murmur
- Totally asymptomatic.

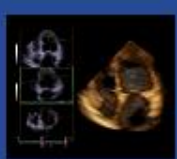


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Case...

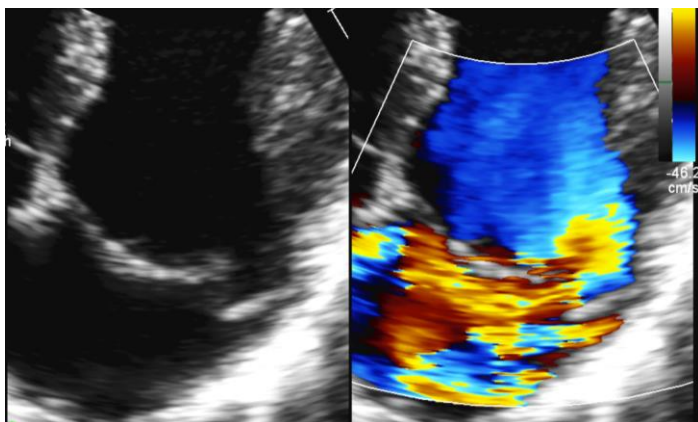
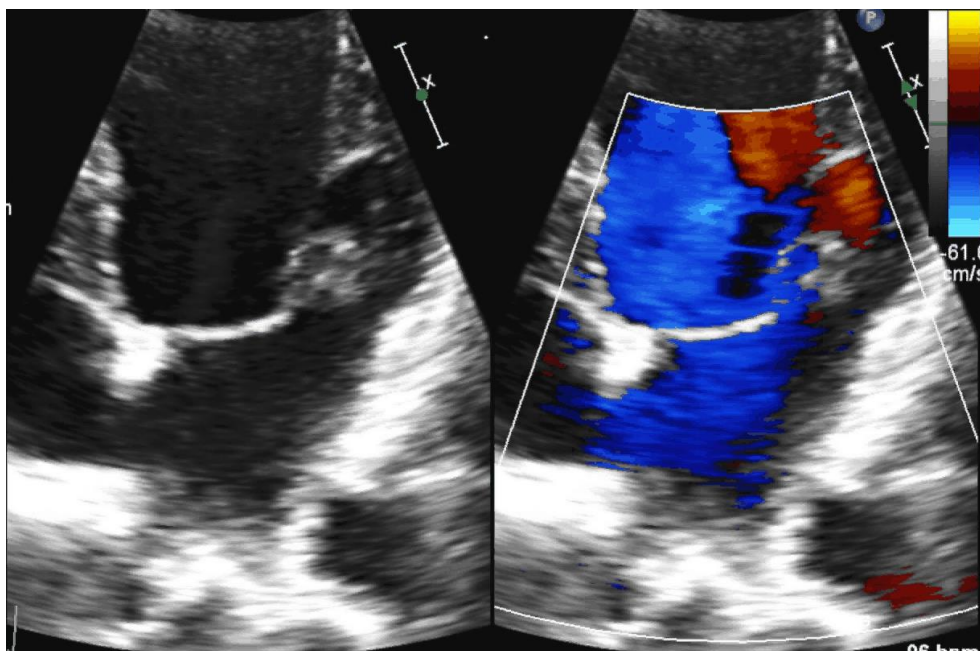
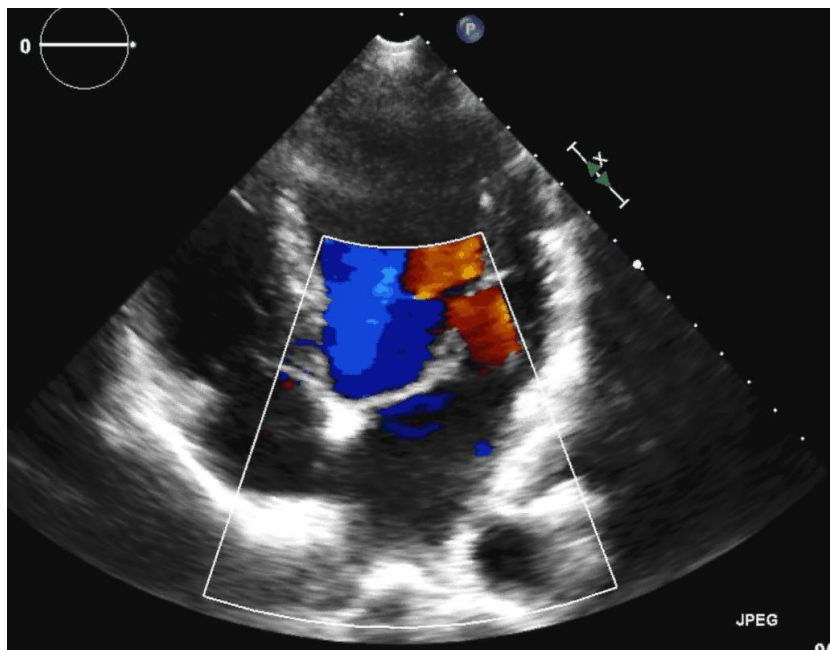




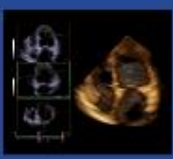
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Case...



ERO: 47 mm², VR:70 ml

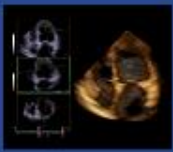


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Case...

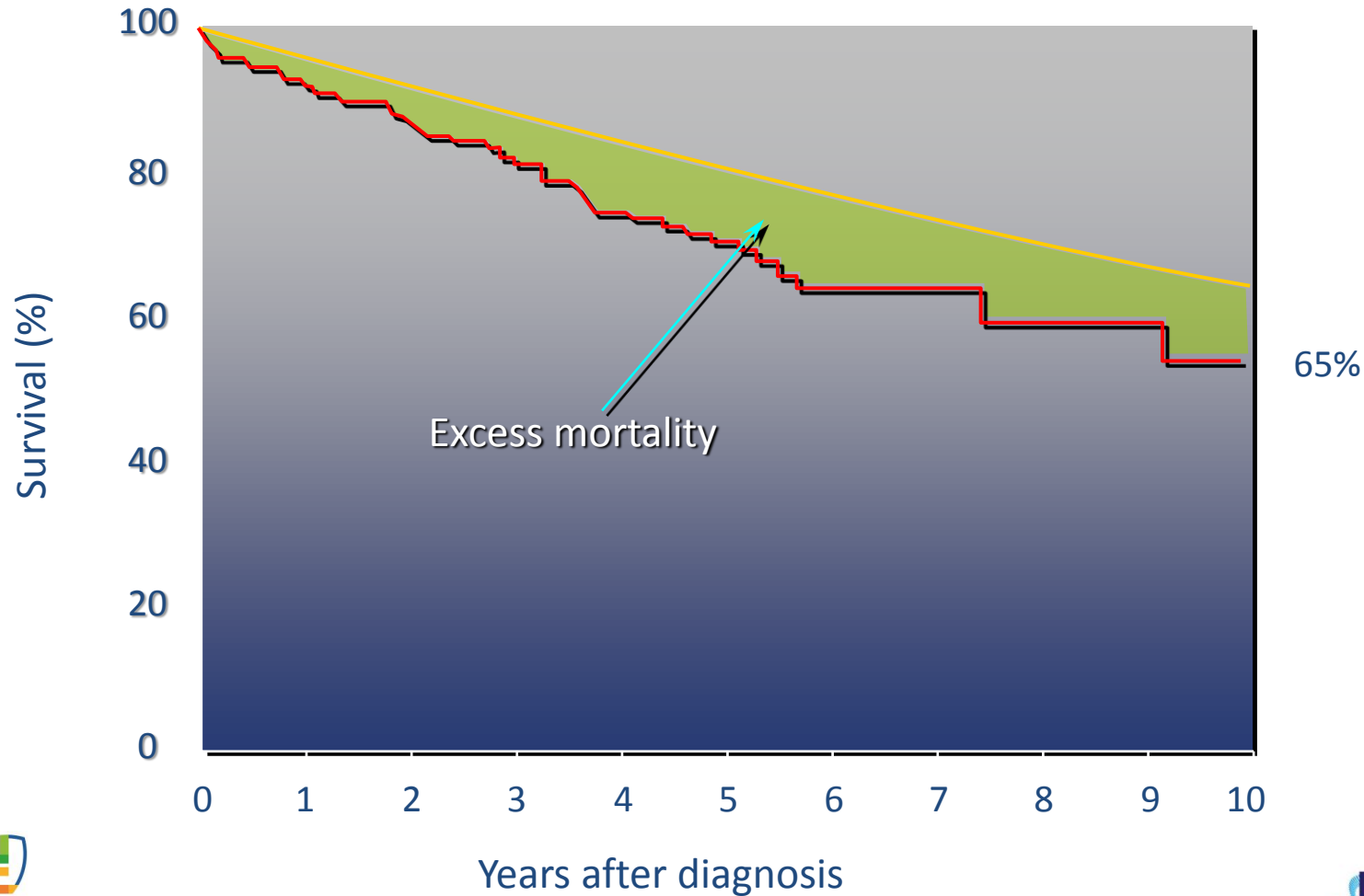
- Young man asymptomatic with severe MR
- What should I do ?
- No class I trigger for surgery: no symptoms, no LV dysfunction,
- What is the risk for this patient ?

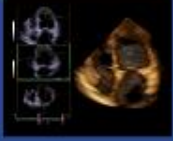


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Survival with severe MR ?

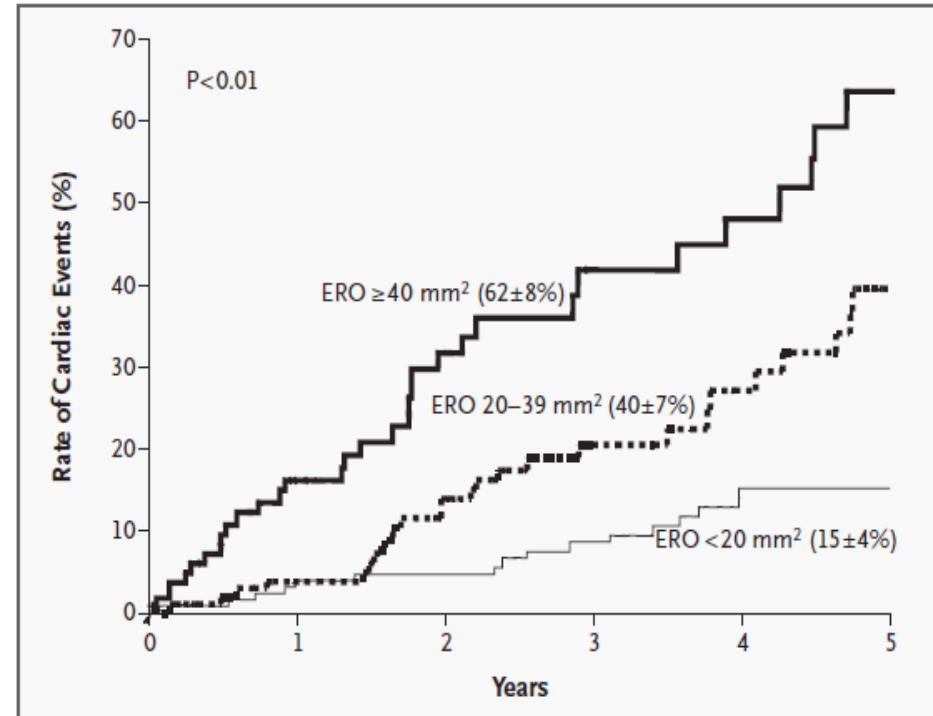
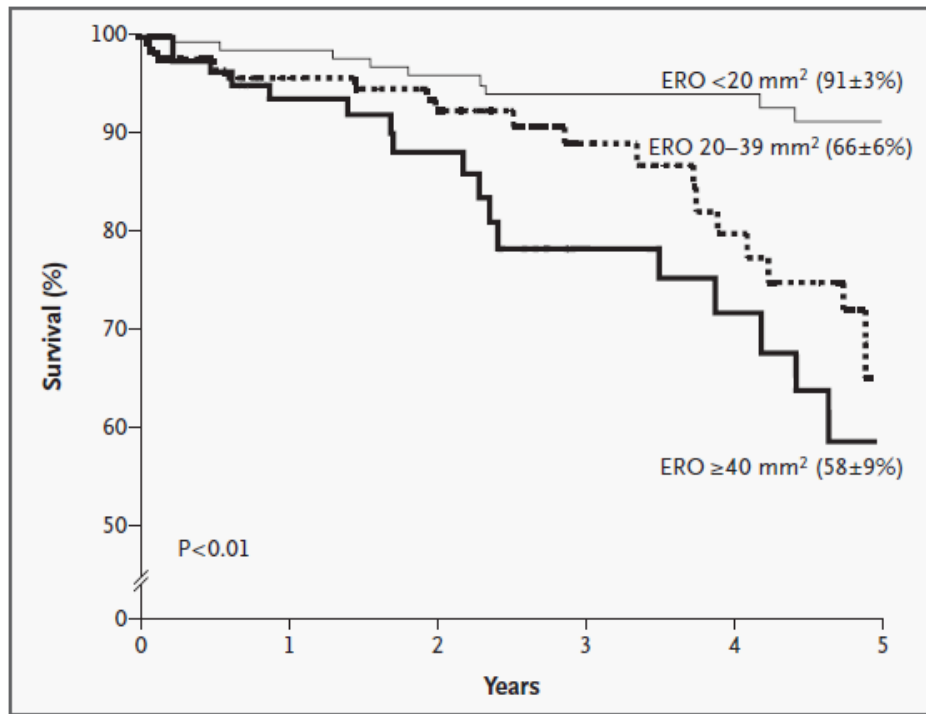




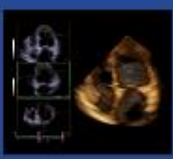
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Survival in asymptomatic patients



Cardiac events were defined as death from cardiac causes, congestive heart failure, or new atrial fibrillation. Values in parentheses are survival rates at five years.



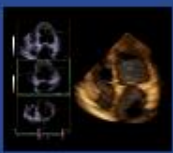
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Risk of severe mitral regurgitation

- Symptoms
- Heart failure
- LV dysfunction
- Atrial fibrillation
- Pulmonary hypertension

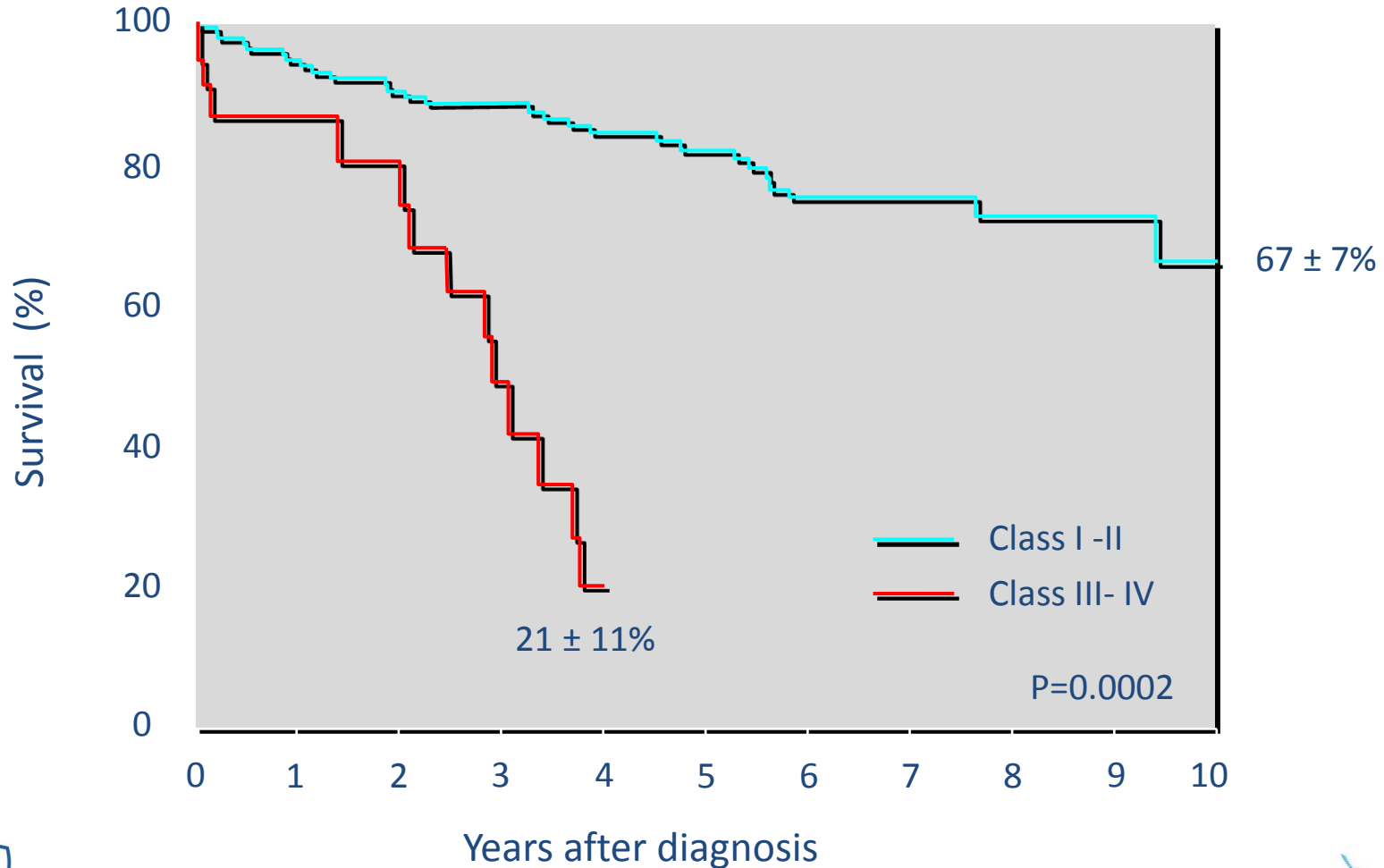
Arguments for surgery before complications ?

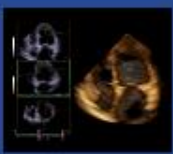


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Impact of symptoms on survival.

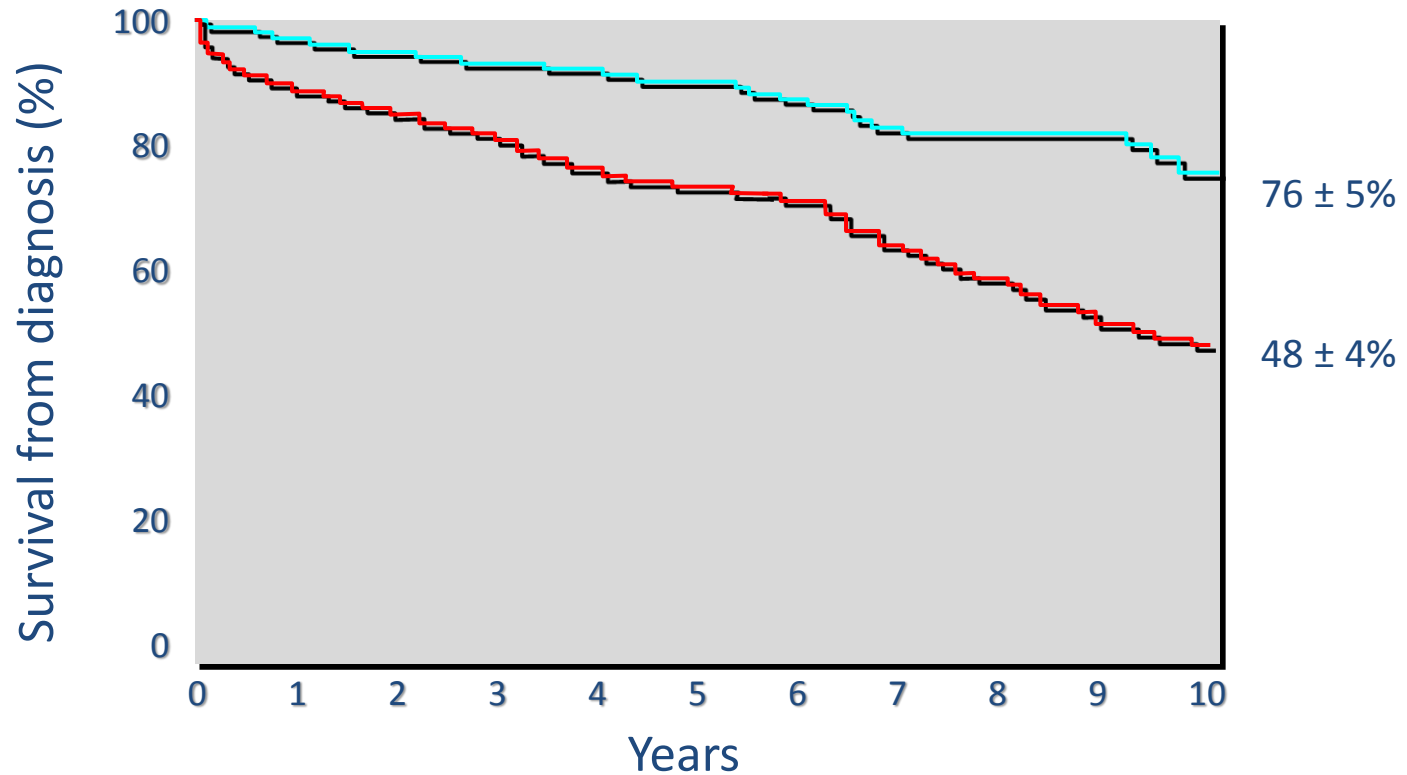




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Impact of symptoms on post operative survival

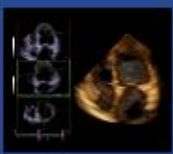


NYHA I - II

n= 199 192 187 184 181 169 125 95 63 42 34

NYHA III - IV

n= 279 249 236 227 211 201 174 133 103 74 51

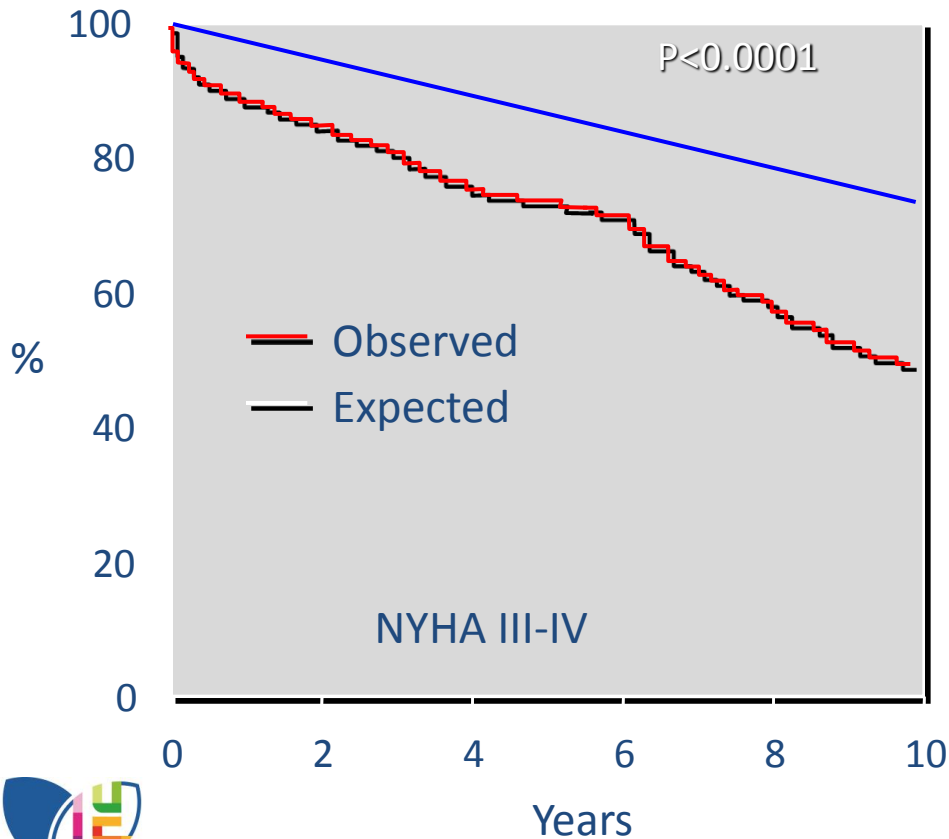


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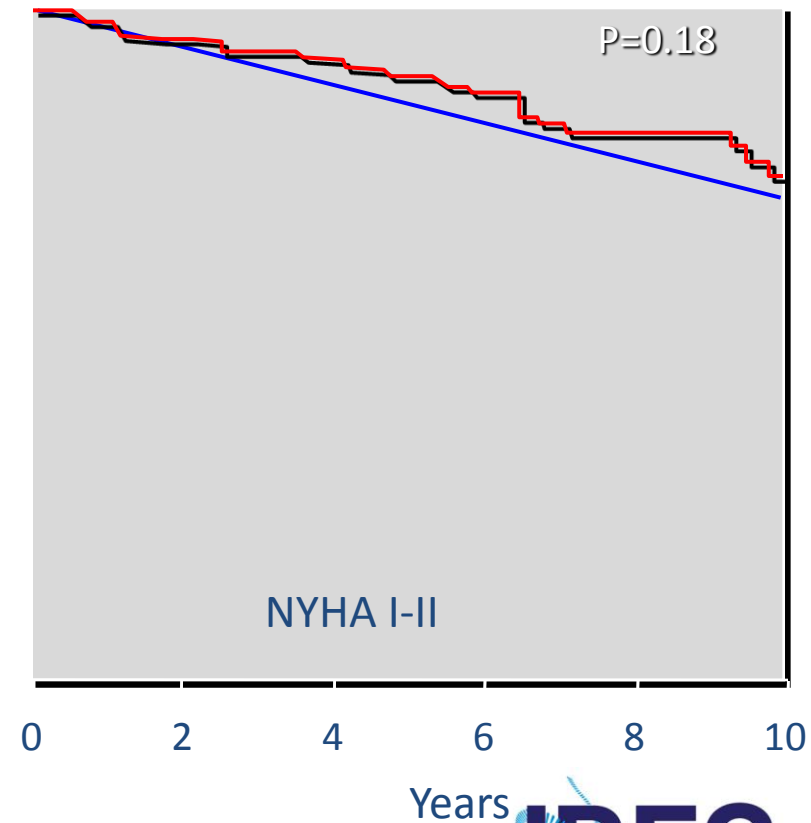


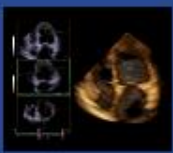
Impact of symptoms on post operative survival

Persistent consequences



Disease suppressed

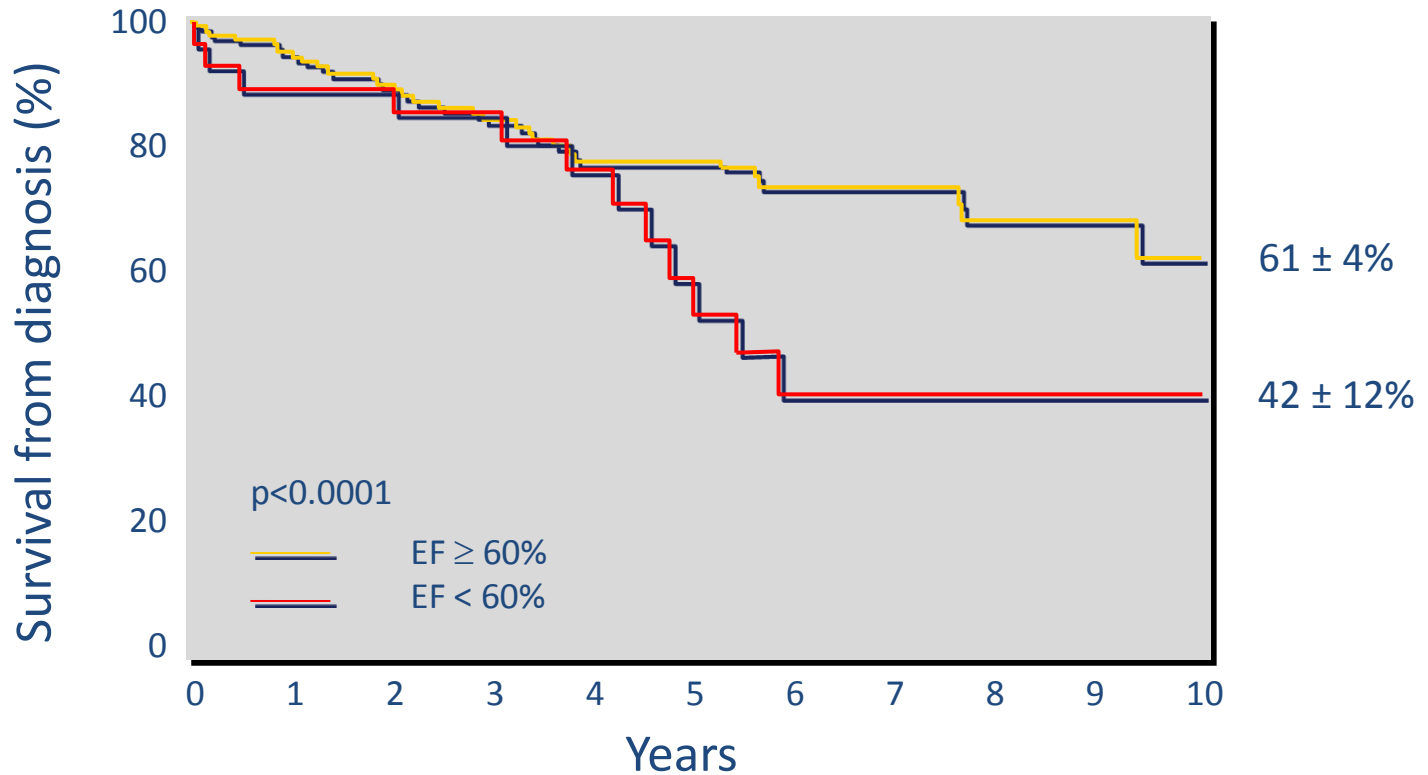




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Impact on LV function on survival

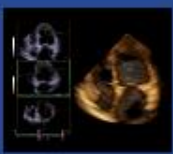


EF $\geq 60\%$

n= 249 237 219 179 148 125 100 79 54 34 24

EF $< 60\%$

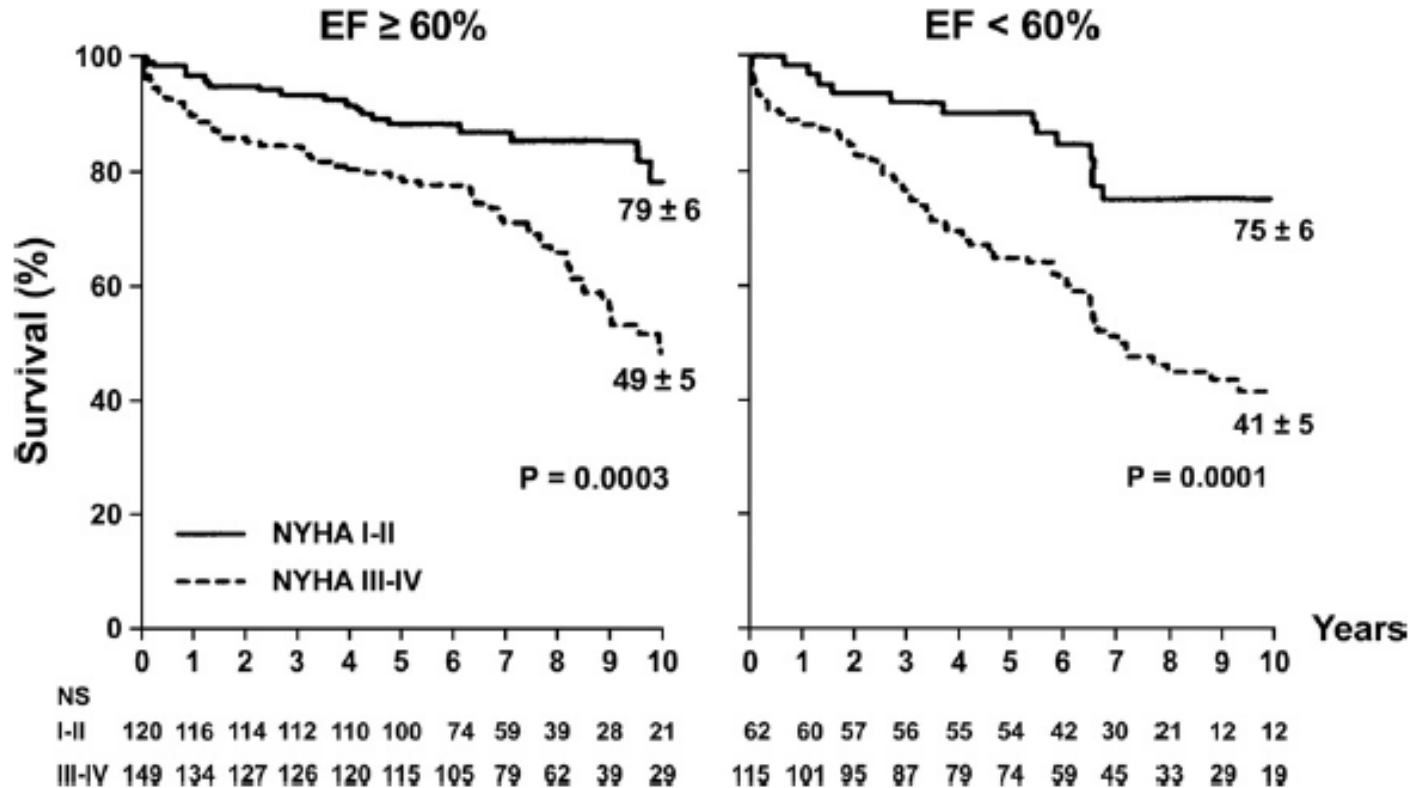
n= 77 74 71 58 39 33 19 18 11 8 6

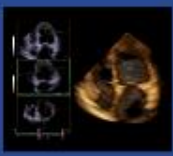


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Impact of LV function and symptoms on post op





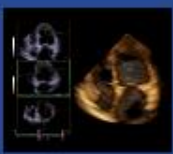
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Atrial fibrillation and severe MR

Risk to develop AF ?

5% per year

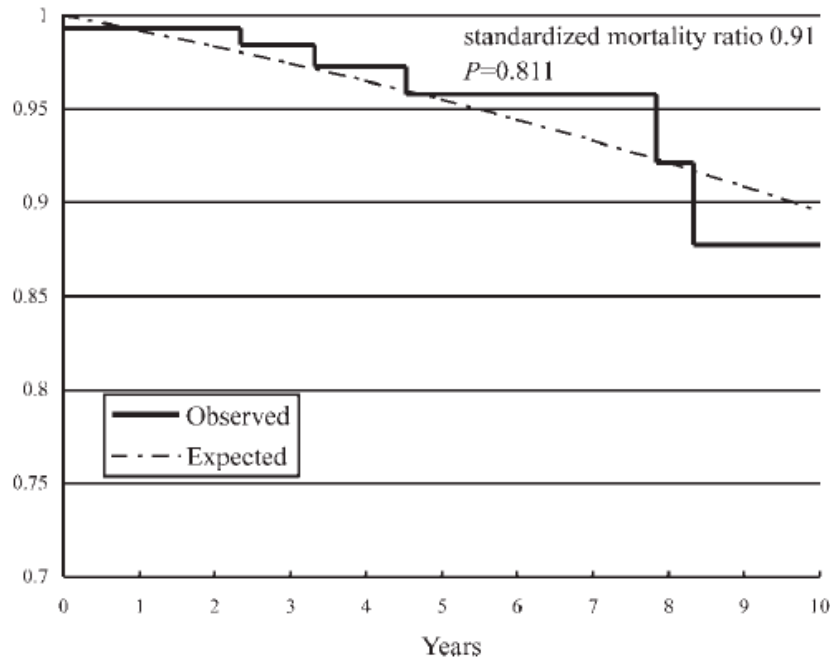


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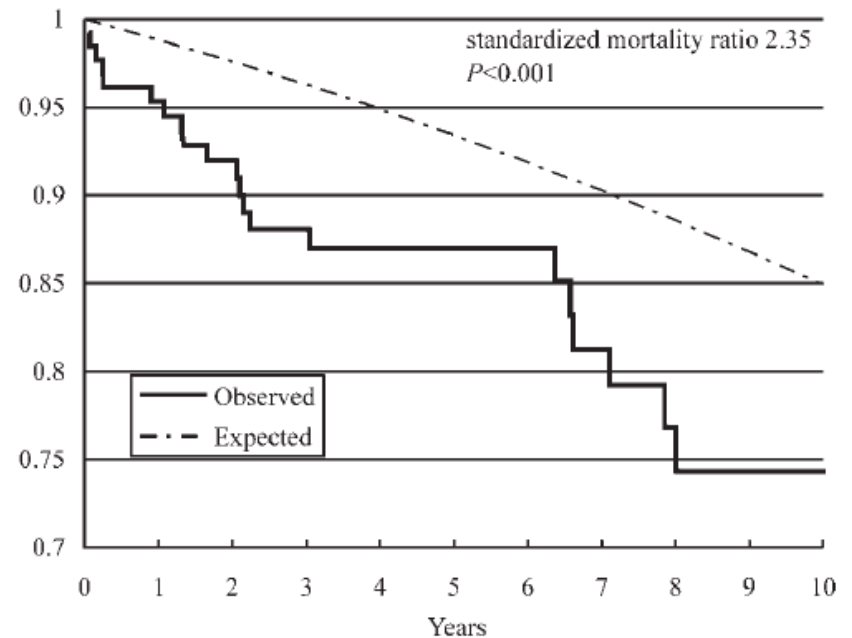


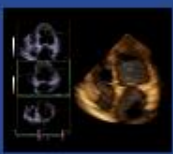
Atrial fibrillation and post op survival

Sinus rhythm



Atrial fibrillation

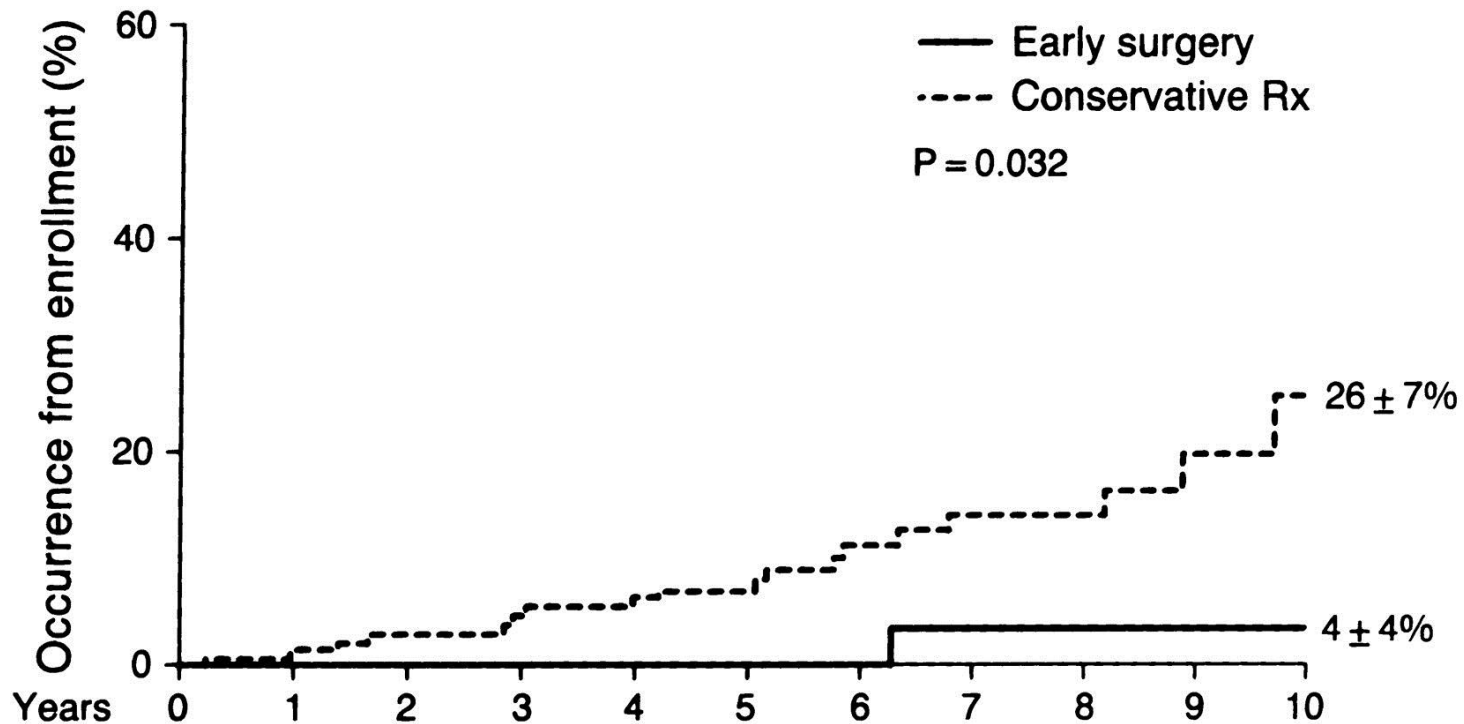




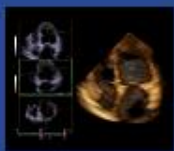
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Atrial fibrillation according to treatment



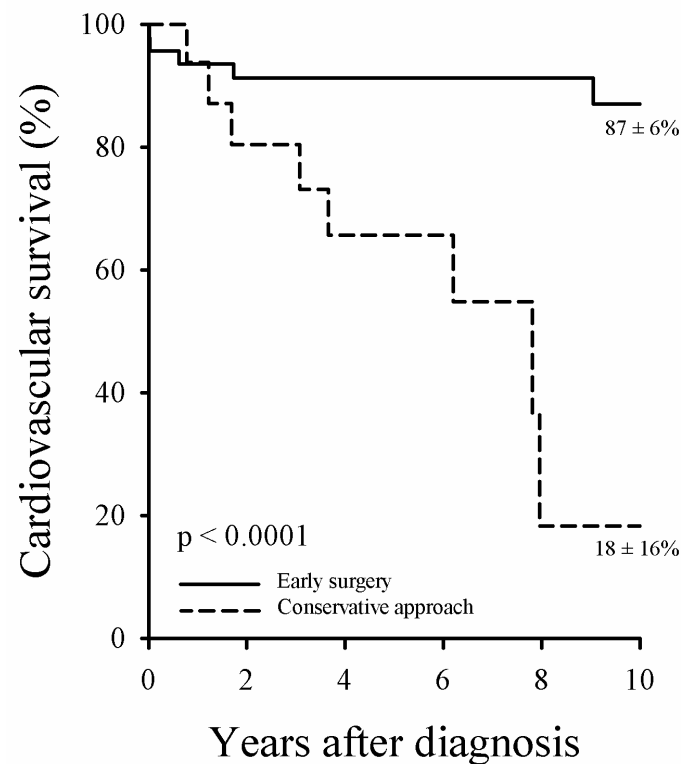
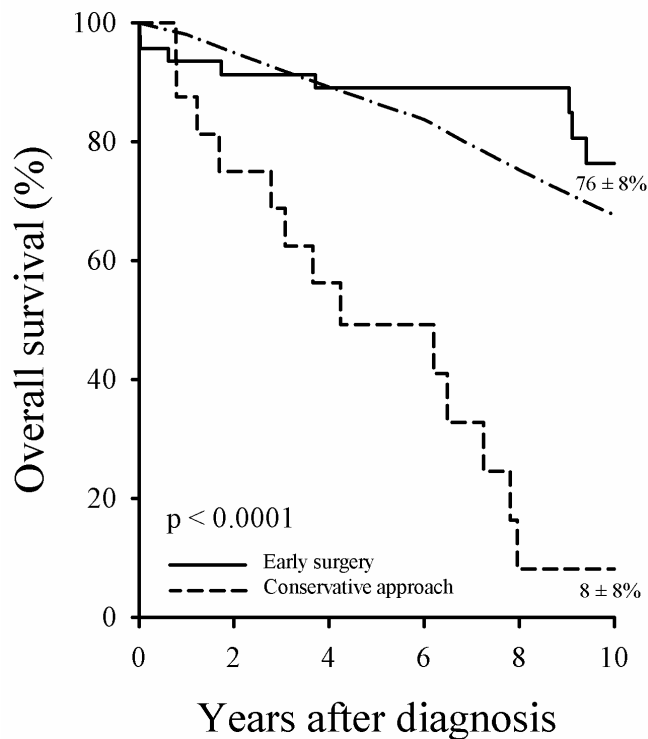
E surg	n =	43	43	43	43	42	38	25	19	16	9	3
Cons	n =	128	121	113	109	103	99	74	49	38	19	9



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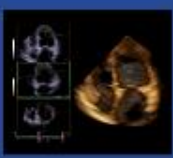


Atrial fibrillation and pulmonary hypertension impact on survival



—	46	42	41	37	28	17
- - -	16	12	8	6	1	1

—	46	42	41	37	28	17
- - -	16	12	8	6	1	1

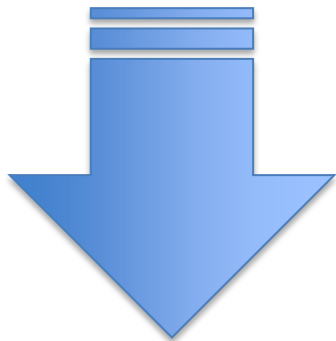


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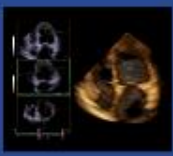
When to operate mitral regurgitation ?

- Before symptoms
NYHA I-II
- Before LV dysfunction/Heart failure
EF >60%, LVESD < 45 mm
- Before atrial fibrillation
AF, pulm hypertension



Patient Prognosis

Patient Survival

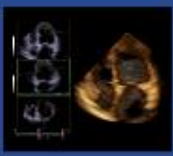


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Early surgery question ?

- Repair the valve ?
- Surgical risk ?
- Benefit of early surgery ?



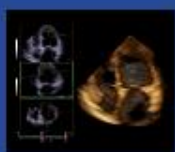
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Repair the valve ?

- Experienced centers:

> 93% valve repair

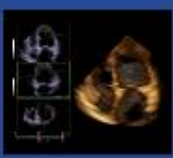


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Surgical risk ?

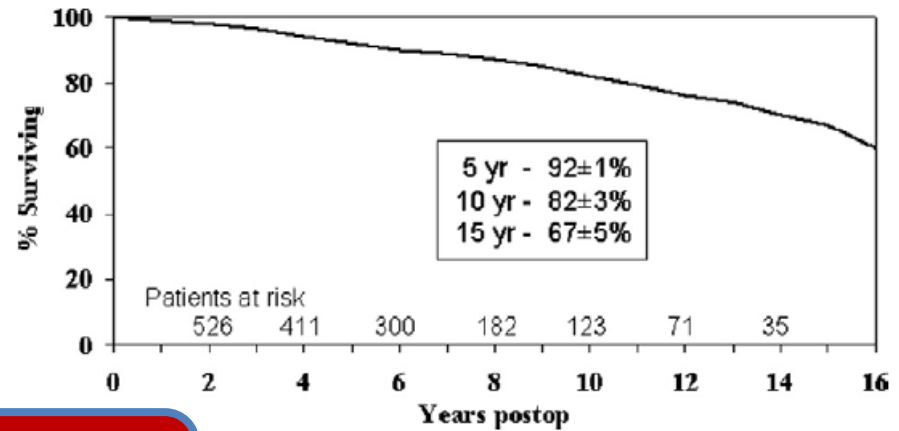
	EACTS (2010)	STS (2010)	UK (2004–2008)	Germany (2009)
Aortic valve replacement, no CABG (%)	2.9 (40 662)	3.7 (25 515)	2.8 (17 636)	2.9 (11 981)
Aortic valve replacement + CABG (%)	5.5 (24 890)	4.5 (18 227)	5.3 (12 491)	6.1 (9 113)
Mitral valve repair, no CABG (%)	2.1 (3231)	1.6 (7293)	2 (3283)	2 (3335)
Mitral valve replacement, no CABG (%)	4.3 (6838)	6.0 (5448)	6.1 (3614)	7.8 (1855)
Mitral valve repair/replacement +CABG (%)	6.8/11.4 (2515/1612)	4.6/11.1 (4721/2427)	8.3/11.1 (2021/1337)	6.5/14.5 (1785/837)



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Surgical risk ?

Surgical pathology	
Leaflet prolapse	
Posterior	341 (52)
Anterior	78 (12)
Both	230 (35)
Degree of myxomatous degeneration	
Mild	138 (21)
Moderate	286 (44)
Severe	225 (35)
Repair of leaflet prolapse	
Posterior leaflet	
Resection alone	408 (71)
Resection + Gore-Tex chords	111 (19)
Gore-Tex chords alone	52 (9)
Anterior leaflet:	
Resection	12 (4)
Chordal shortening	39 (13)
Chordal transfer	40 (13)
Gore-Tex chords	217 (70)
Type of mitral anuloplasty	
None	33 (5)
Carpentier ring	96 (15)
Duran ring	141 (22)
Cosgrove or other posterior band	379 (58)
Reconstruction of the mitral annulus	13 (2)
Maze procedure for atrial fibrillation	40 (6)
Tricuspid valve anuloplasty	24 (4)
Coronary artery bypass	95 (24)
Crossclamp time, min (mean ± standard abbreviation)	64 ± 21
Cardiopulmonary bypass time, min (mean ± standard abbreviation)	79 ± 24



0.6 %

Long-term survival after mitral valve repair.

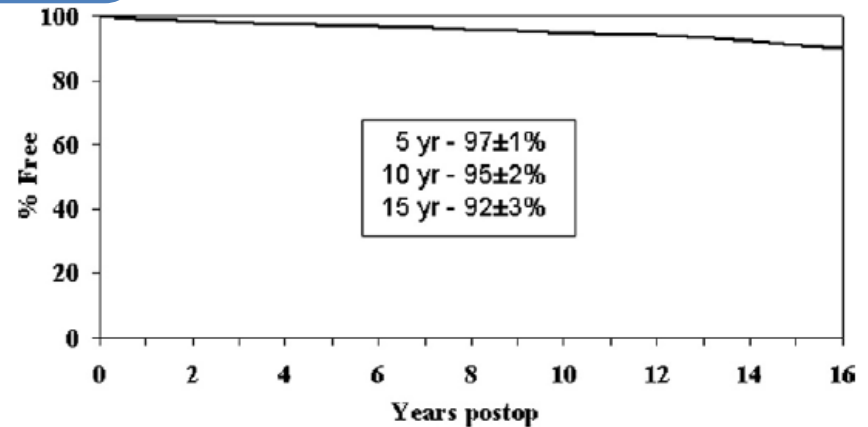
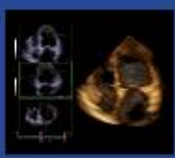


Figure 2 Freedom from reoperation in the mitral valve.



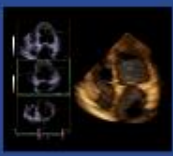
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Benefit of early surgery ?

MIDA study

- 6 tertiary centers (France, Italy, Belgium, United States)
- 2097 consecutive patients with flail MR (1980-2004)
- 1021 patients with MR without the ACC/AHA guideline class I triggers
- 575 patients medically managed and 446 underwent mitral valve surgery within 3 months following detection.
- FU: 10.3 years (98% complete)



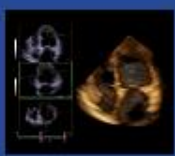
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Benefit of early surgery ?

MIDA study: Aim

- Association between treatment strategy and survival, heart failure, and new-onset atrial fibrillation.



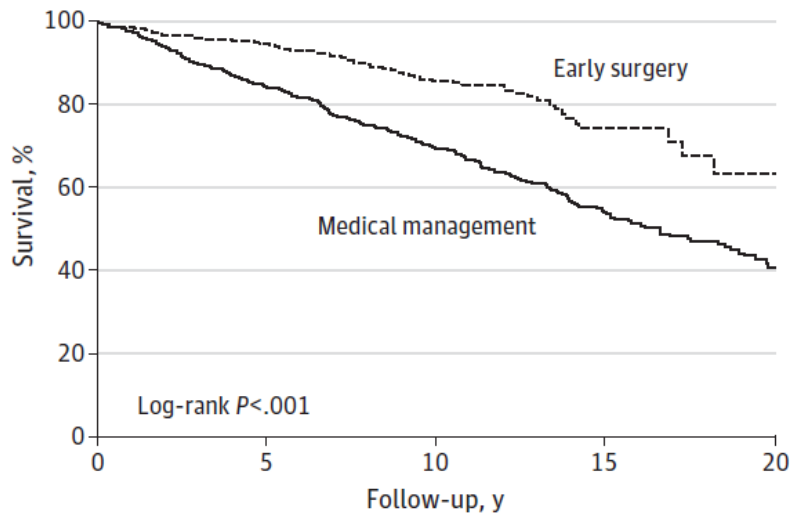
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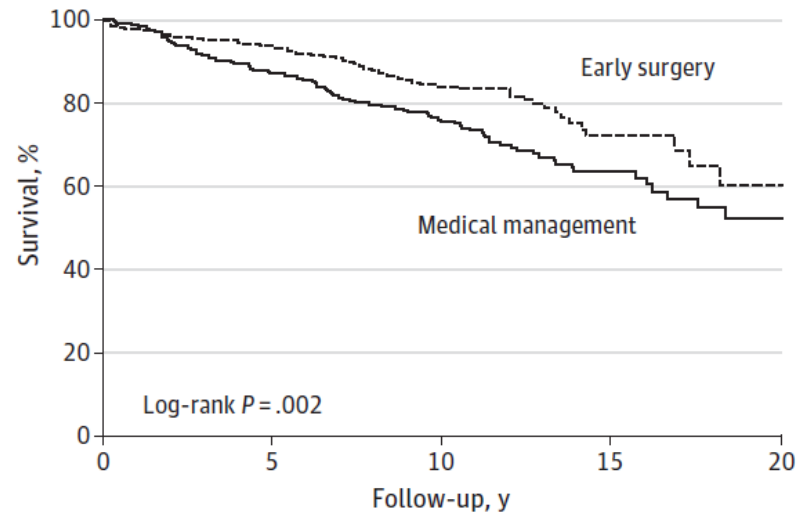
MIDA: results

Long term survival

A Overall population

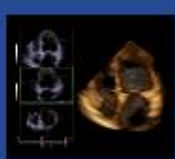


B Propensity score-matched cohort



No. at risk	0	5	10	15	20
Medical management	575	477	296	126	42
Early surgery	446	412	203	41	10

No. at risk	0	5	10	15	20
Medical management	324	276	157	53	8
Early surgery	324	295	160	35	10

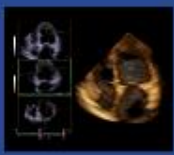


MIDA: results

Table 3. Incidence Rates of Mortality During Different Periods Following Detection in the Overall Study Population

Time After Diagnosis	Initial Medical Management		Early Surgery		Rate Ratio (95% CI)	P Value	Relative Reduction of Mortality With Early Surgery, % ^b
	No. of Patients	Rate ^a	No. of Patients	Rate ^a			
Overall							
3-12 mo	12	2.8 (1.3-4.4)	2	0.6 (0-1.4)	0.3 (0.03-0.8)	.03	78.6
>1-5 y	75	3.6 (2.8-4.5)	17	1.0 (0.5-1.5)	0.3 (0.2-0.5)	<.001	72.6
>5 y	158	4.4 (3.8-5.1)	47	2.1 (1.5-2.7)	0.5 (0.4-0.7)	<.001	52.6
Without class II triggers for surgery^c							
3-12 mo	7	2.0 (0.5-3.5)	0	0.0 (0-0)		.02	
>1-5 y	39	2.3 (1.6-3.0)	10	0.8 (0.3-1.3)	0.4 (0.2-0.7)	.001	64.9
>5 y	124	3.9 (3.2-4.6)	30	1.7 (1.1-2.3)	0.4 (0.3-0.6)	<.001	56.1
With class II triggers for surgery^c							
3-12 mo	5	6.4 (1.0-11.8)	2	2.3 (0-5.5)	0.3 (0.04-1.8)	.23	64
>1-5 y	36	10.9 (2.1-3.9)	7	1.6 (0.4-2.8)	0.2 (0.1-0.3)	<.001	85.2
>5 y	34	8.2 (3.1-10.8)	17	3.3 (1.8-4.9)	0.4 (0.2-0.7)	.002	59.3
Without subjective manifestations^d							
3-12 mo	8	2.9 (0.9-4.9)	0	0.0 (0-3.0)		.04	
>1-5 y	42	3.1 (2.2-4.1)	7	0.9 (0.2-1.6)	0.3 (0.1-0.6)	.001	70.5
>5 y	102	4.4 (3.5-5.2)	18	1.9 (1.0-2.7)	0.4 (0.3-0.7)	<.001	57.1
With subjective manifestations^d							
3-12 mo	4	2.7 (0.1-5.2)	2	1.1 (0-2.6)	0.4 (0.1-2.3)	.09	58.8
>1-5 y	33	4.6 (3.1-6.1)	10	1.1 (0.4-1.8)	0.2 (0.4-1.7)	<.001	76.9
>5 y	49	4.6 (3.3-5.9)	29	2.3 (1.5-3.3)	0.5 (1.4-3.1)	.002	50.8





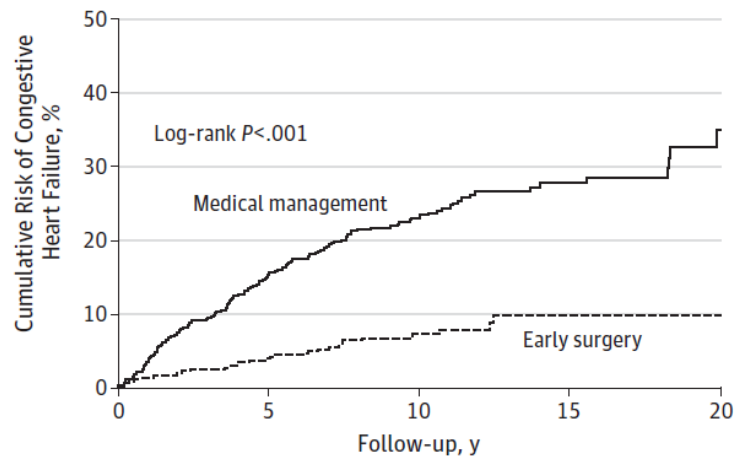
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MIDA: results

Heart failure incidence

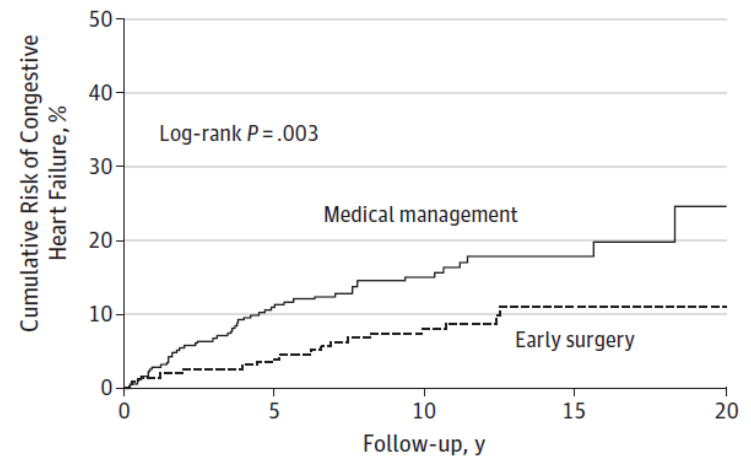
A Overall population



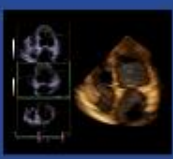
No. at risk

Medical management	575	419	249	100	27
Early surgery	446	399	189	37	9

B Propensity score-matched cohort



Medical management	324	253	142	48	3
Early surgery	324	289	149	31	9

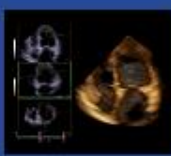


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MIDA: conclusions

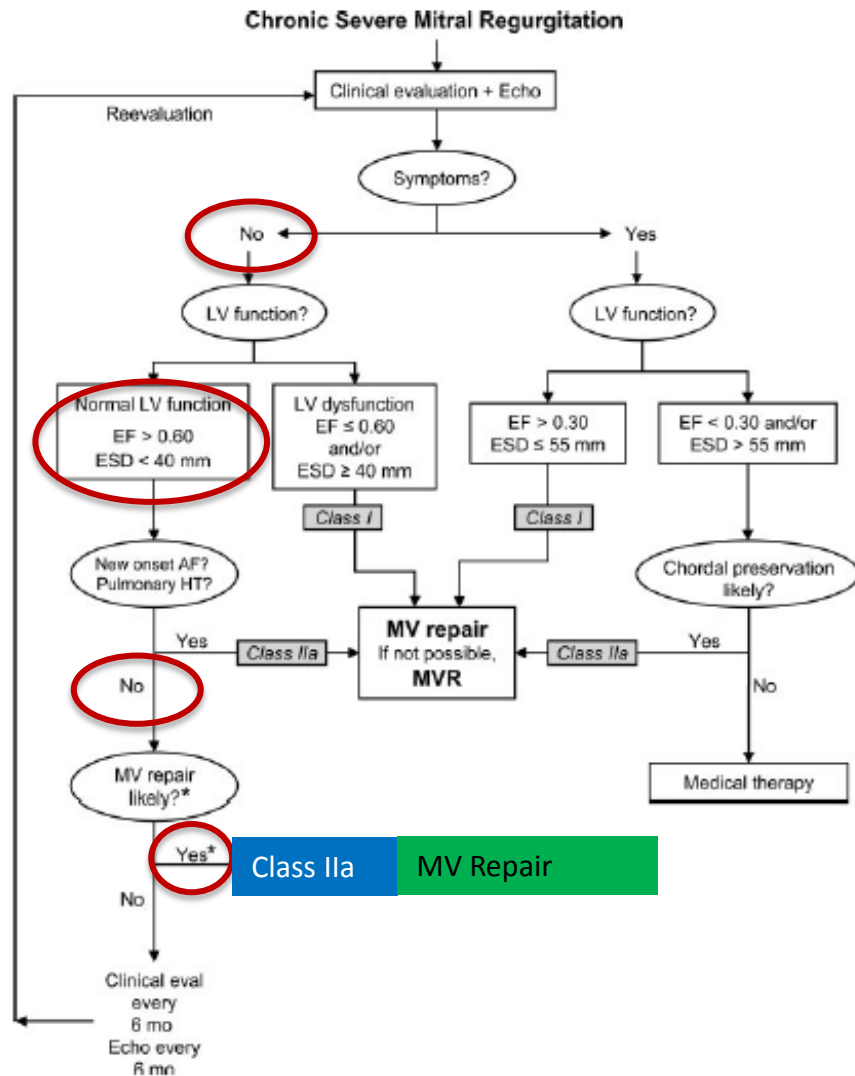
- *“The advantages associated with early surgical correction of mitral valve regurgitation were confirmed in both unmatched and matched populations.*
- *Among patients with mitral valve regurgitation due to flail mitral leaflets, prompt surgical intervention within 3 months following detection was associated with greater long-term survival and lower heart failure risk, even in the absence of traditional class I triggers for surgery ».*

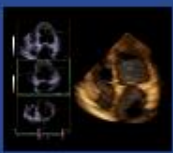


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What says the guidelines ?

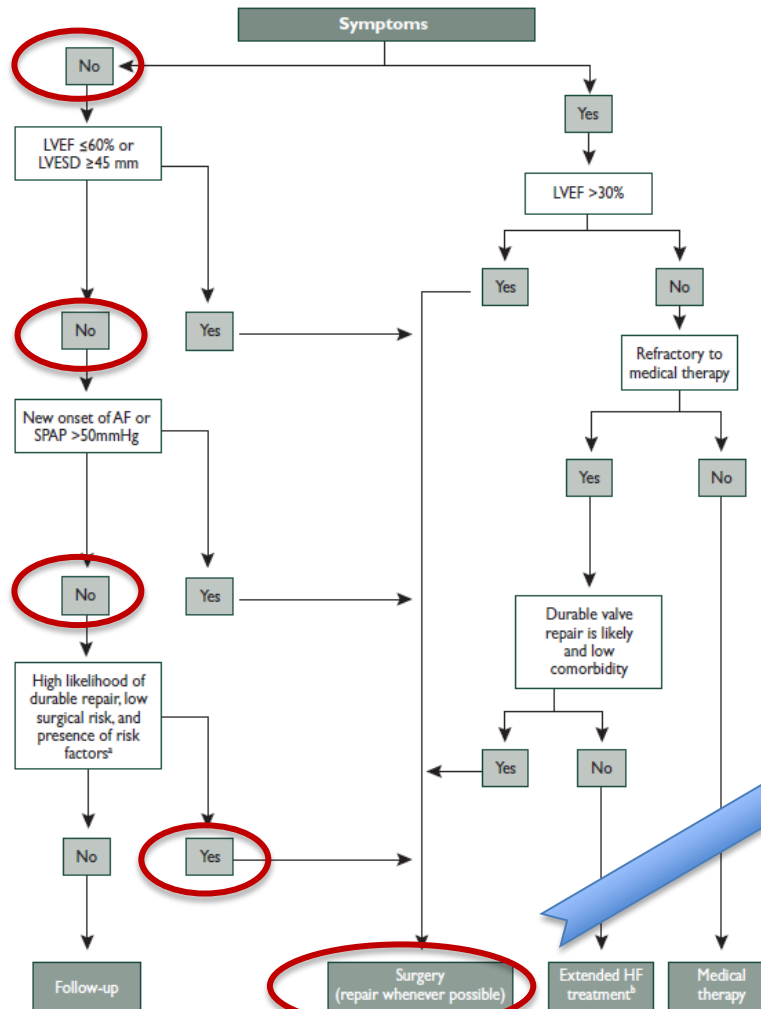




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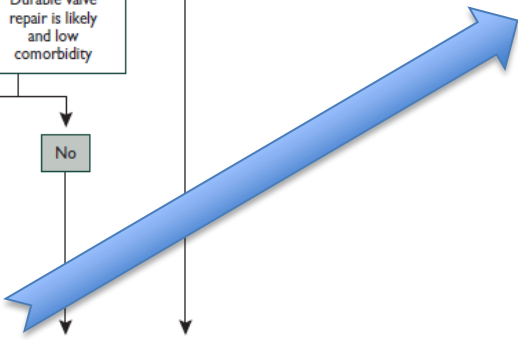
What says the guidelines ?



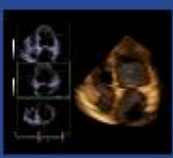
Surgery may be considered in asymptomatic patients with preserved LV function, high likelihood of durable repair, low surgical risk, and:

- left atrial dilatation (volume Index ≥ 60 ml/m² BSA) and sinus rhythm, or
- pulmonary hypertension on exercise (SPAP ≥ 60 mmHg at exercise).

IIb	C
------------	----------



AF = atrial fibrillation; BSA = body surface area; HF = heart failure; FU = follow-up; LA = left atrium; LV = left ventricle; LVEF = left ventricular ejection fraction; LVESD = left ventricular end-systolic diameter; SPAP = systolic pulmonary arterial pressure.
 *When there is a high likelihood of durable valve repair at a low risk, valve repair should be considered (IIbC) in patients with flail leaflet and LVESD ≥ 40 mm; valve repair may be considered (IIbC) if one of the following is present: LA volume ≥ 60 mL/m² BSA and sinus rhythm or pulmonary hypertension on exercise (SPAP ≥ 60 mmHg).
^bExtended HF management includes the following: cardiac resynchronization therapy; ventricular assist devices; cardiac restraint devices; heart transplantation.

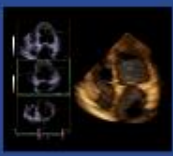


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In summary:

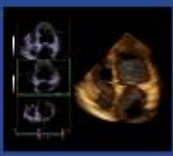
- Asymptomatic patient with severe degenerative severe MV disease **must** be corrected by surgical valve repair in order to improve survival and reduce heart failure incidence
- This **must be Class I** indication in the next valvular guidelines !



EuroValve



Thank you for your attention !

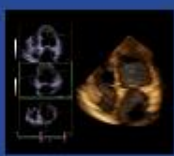


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As physician what do you want for your patient ?

- Avoid disease complication : **Heart Failure**



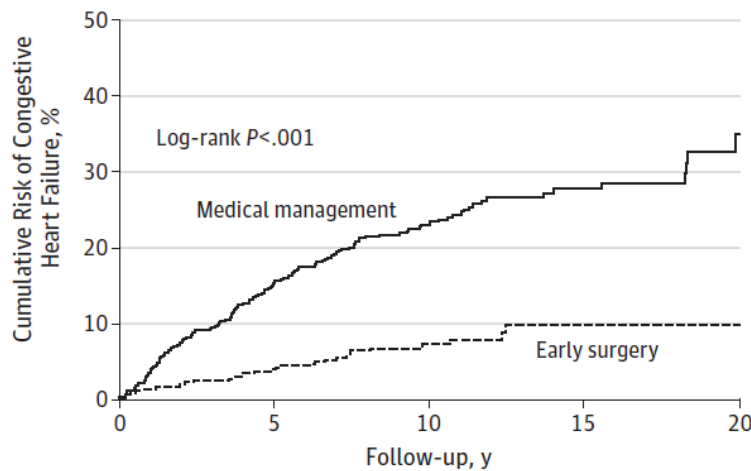
EuroValve



As physician what do you want for your patient ?

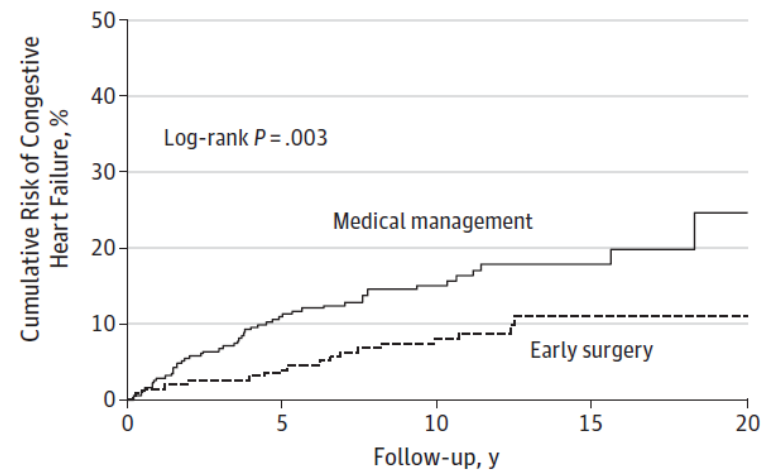
- Avoid disease complication : **Heart Failure**

A Overall population

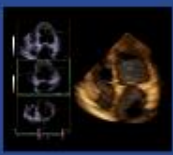


No. at risk	0	5	10	15	20
Medical management	575	419	249	100	27
Early surgery	446	399	189	37	9

B Propensity score-matched cohort



No. at risk	0	5	10	15	20
Medical management	324	253	142	48	3
Early surgery	324	289	149	31	9

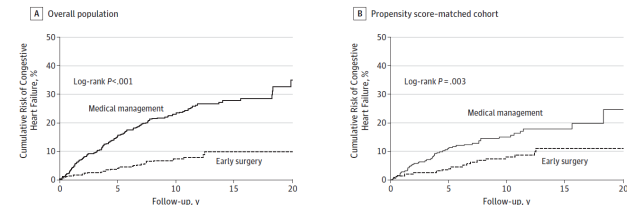


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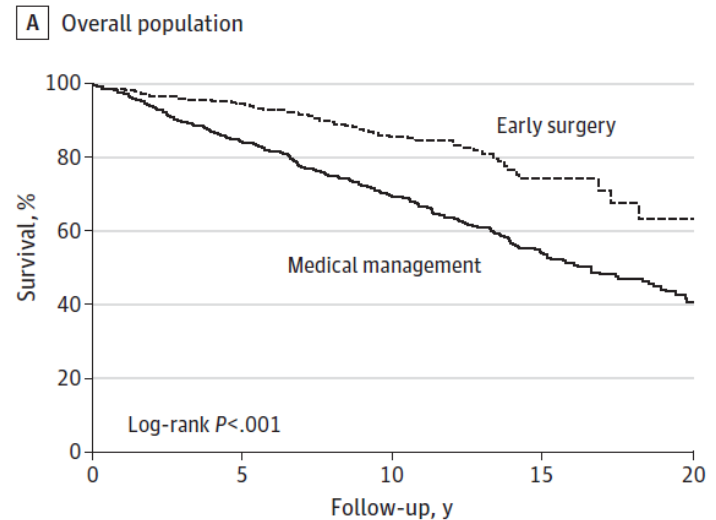


As physician what do you want for your patient ?

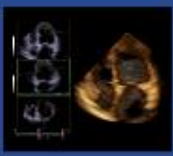
- Avoid disease complication : **Heart Failure**



- Improve his prognosis



No. at risk	0	5	10	15	20
Medical management	575	477	296	126	42
Early surgery	446	412	203	41	10



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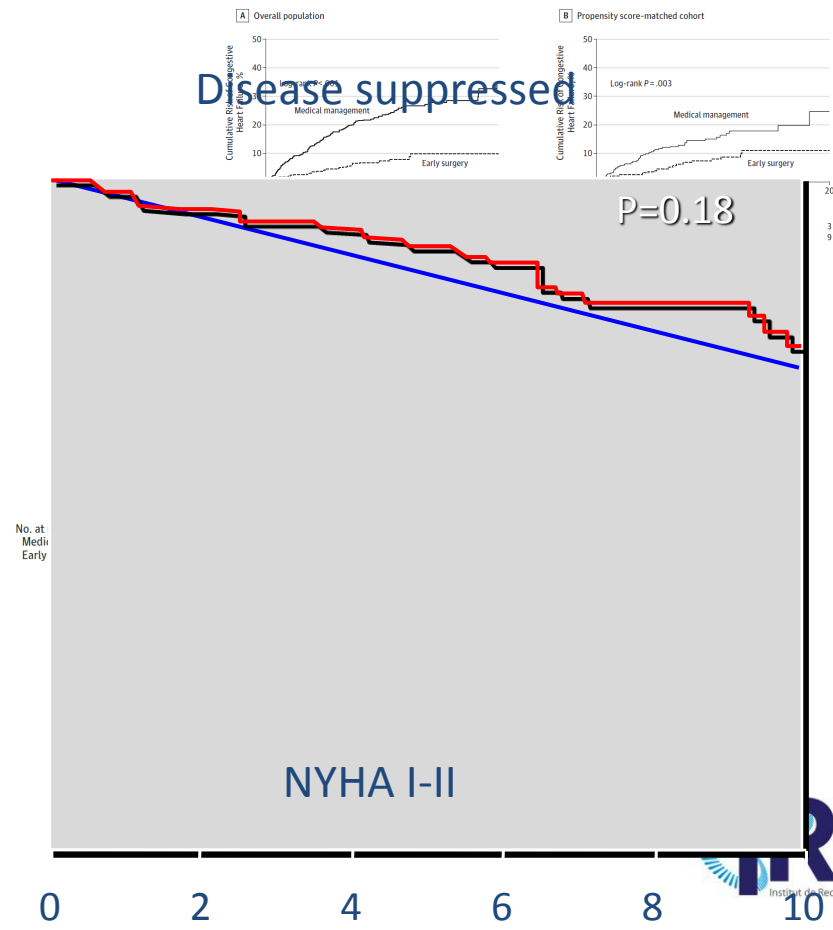


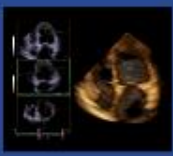
As physician what do you want for your patient ?

- Avoid disease complication : **Heart Failure**

- Improve his prognosis

- Cure the disease



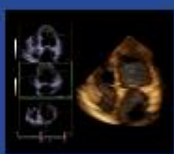


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SO.....

- Go for early mitral surgery.....
- Evidence is growing
- MIDA multicenter study more than 1000 patients



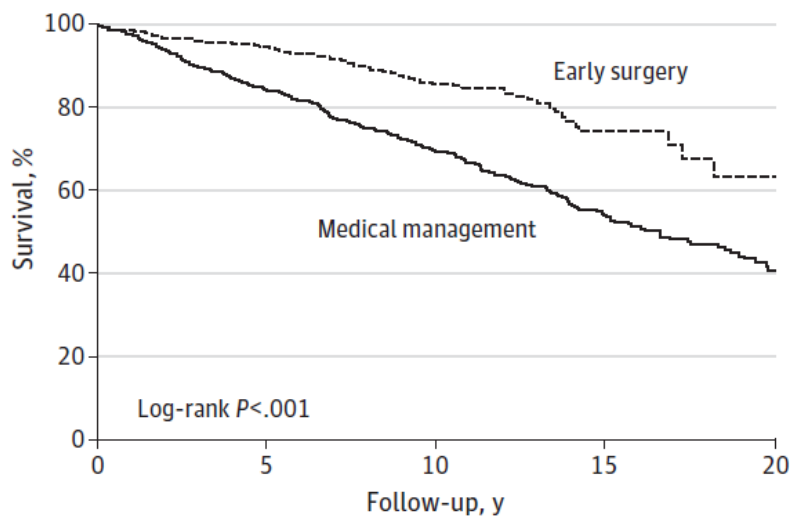
EuroValve



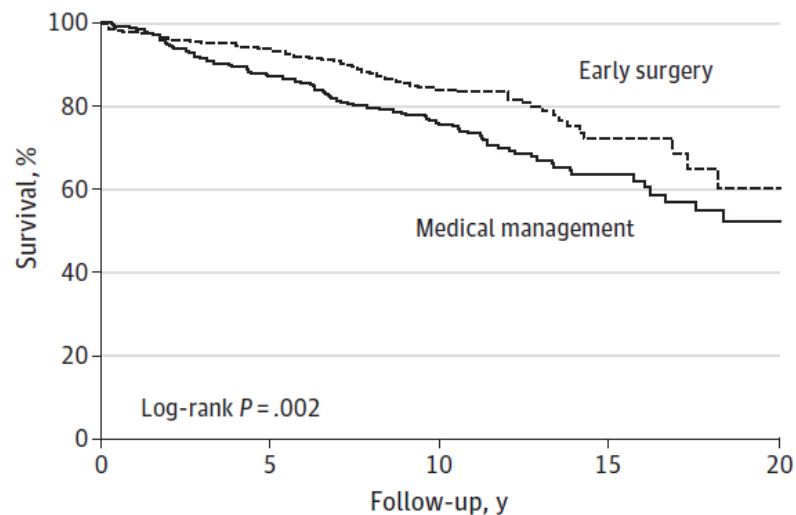
Early surgery better ?

MIDA

A Overall population

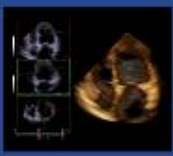


B Propensity score-matched cohort



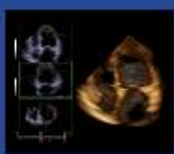
No. at risk	0	5	10	15	20
Medical management	575	477	296	126	42
Early surgery	446	412	203	41	10

No. at risk	0	5	10	15	20
Medical management	324	276	157	53	8
Early surgery	324	295	160	35	10



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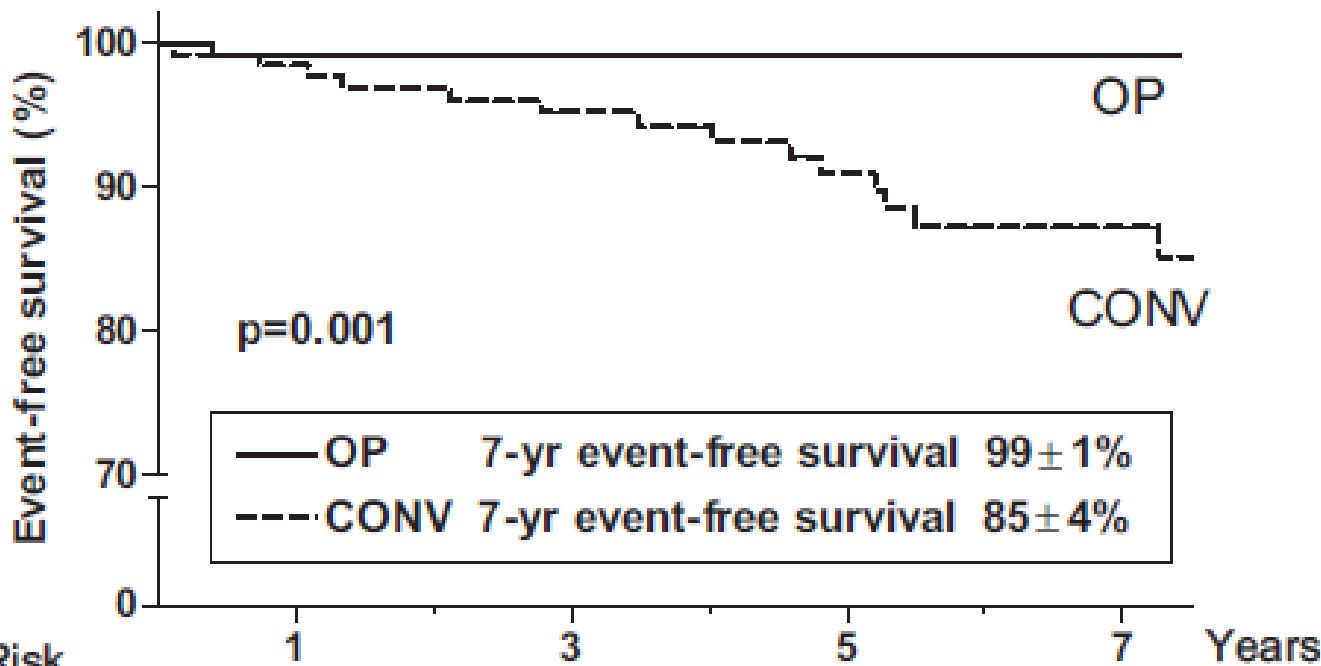




EuroValve

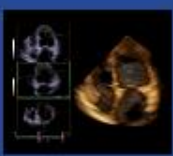


Early surgery better ?



OP	127	125	106	72	43
CONV	127	125	105	78	44

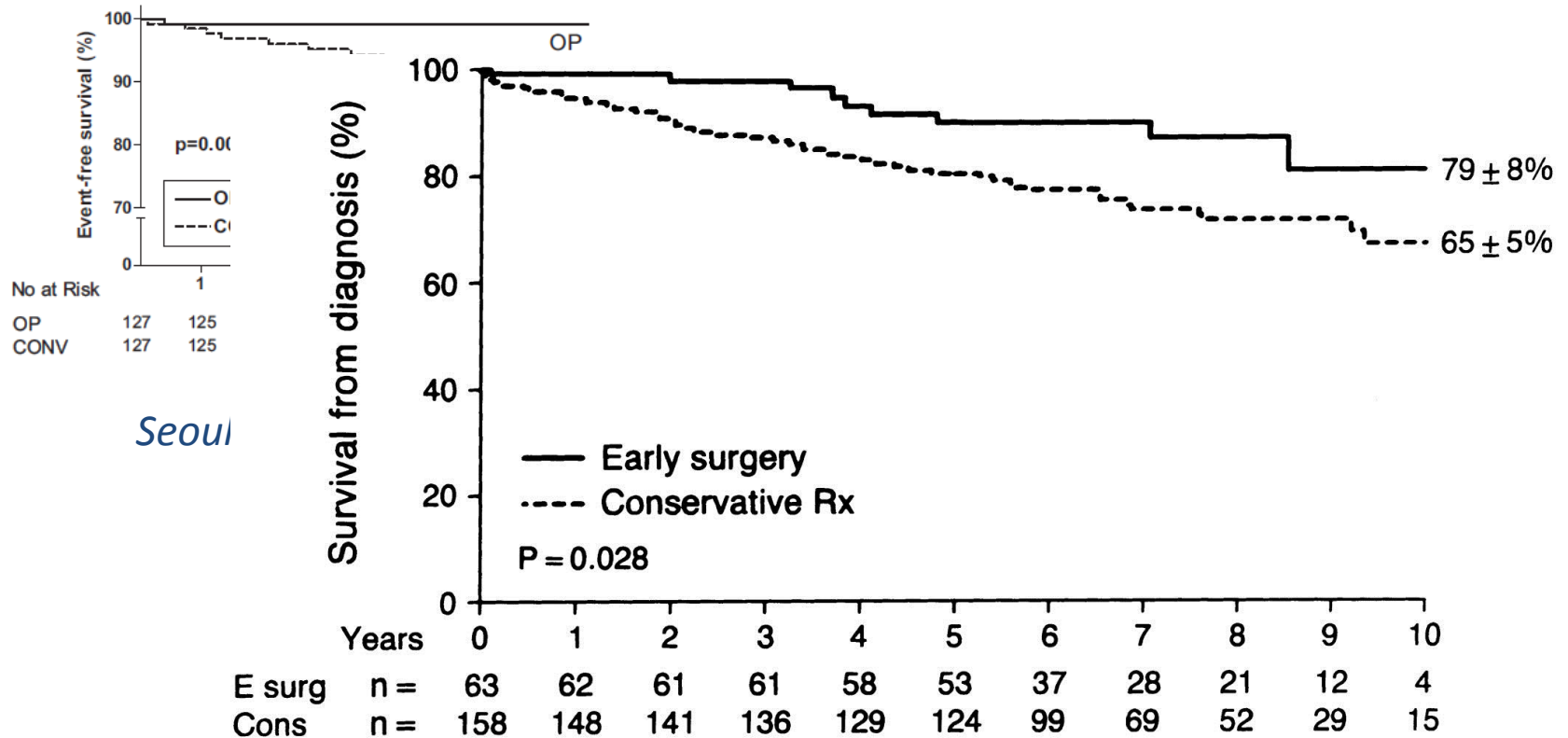
Seoul, Korea

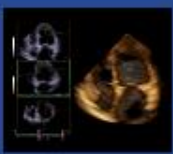


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Early surgery better ?

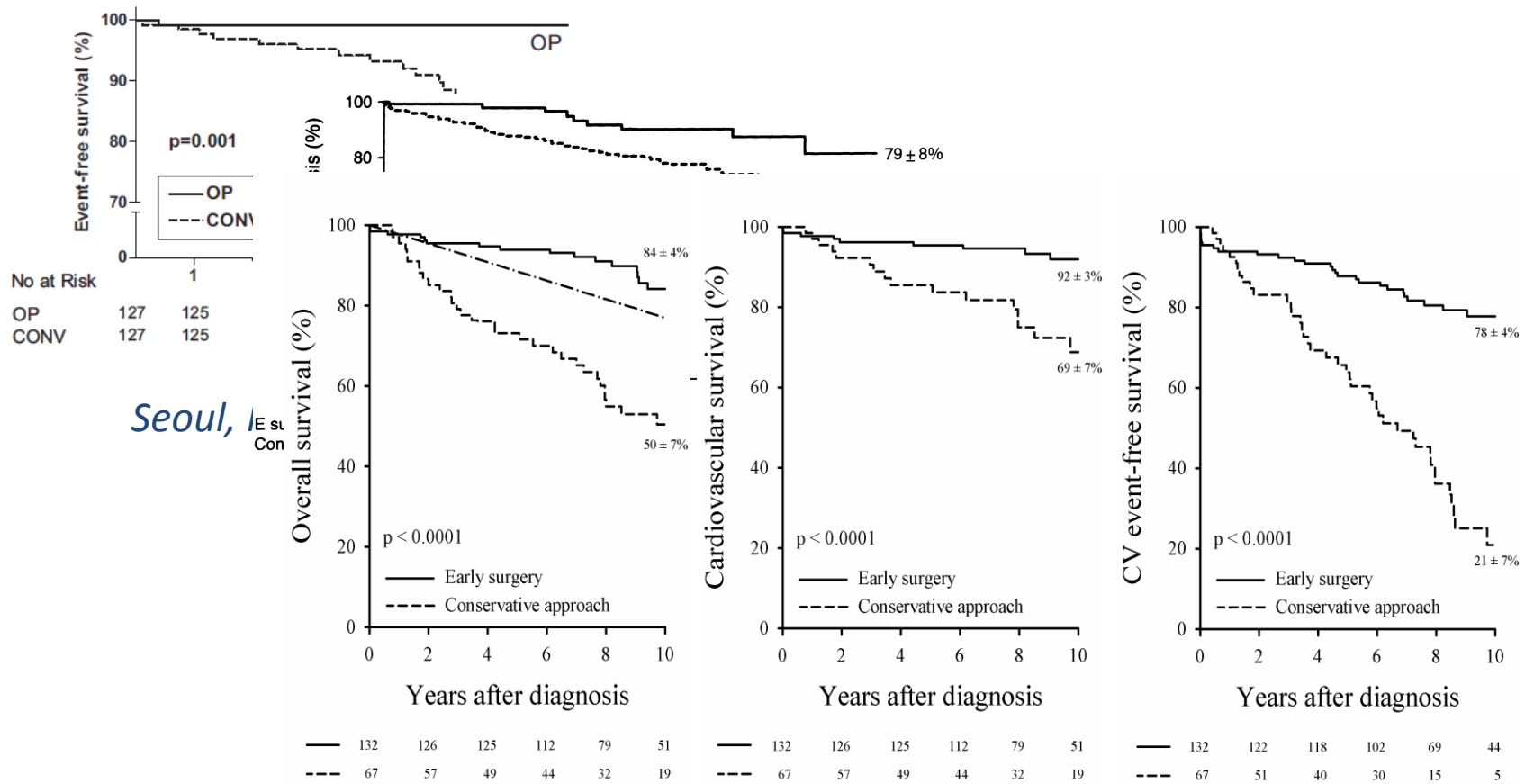


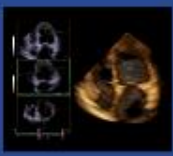


EuroValve



Early surgery better ?



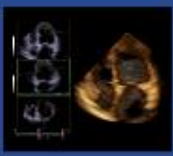


EuroValve



What says the guidelines ?

- ffff

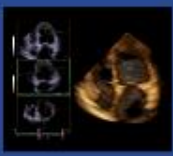


EuroValve



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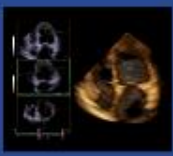


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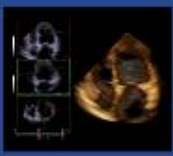


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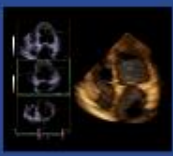


EuroValve



What says the guidelines ?

- ffff



EuroValve



What says the guidelines ?

- ffff