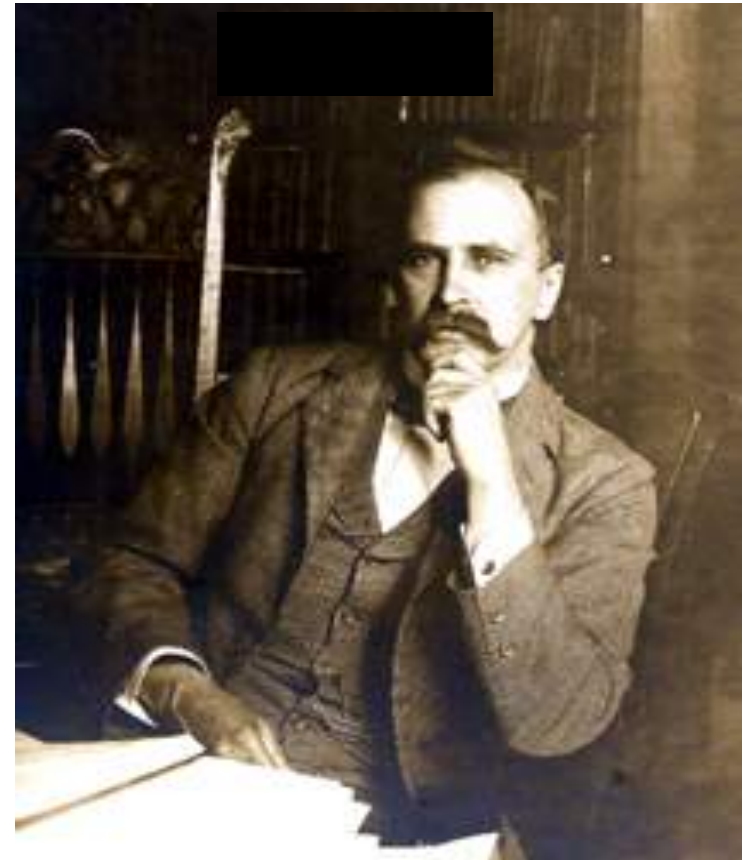


# Replacement or Repair in Mitral Valve Endocarditis



**William Osler 1849-1919**

# Replacement or Repair in Mitral Valve Endocarditis

## **CONCLUSION** :

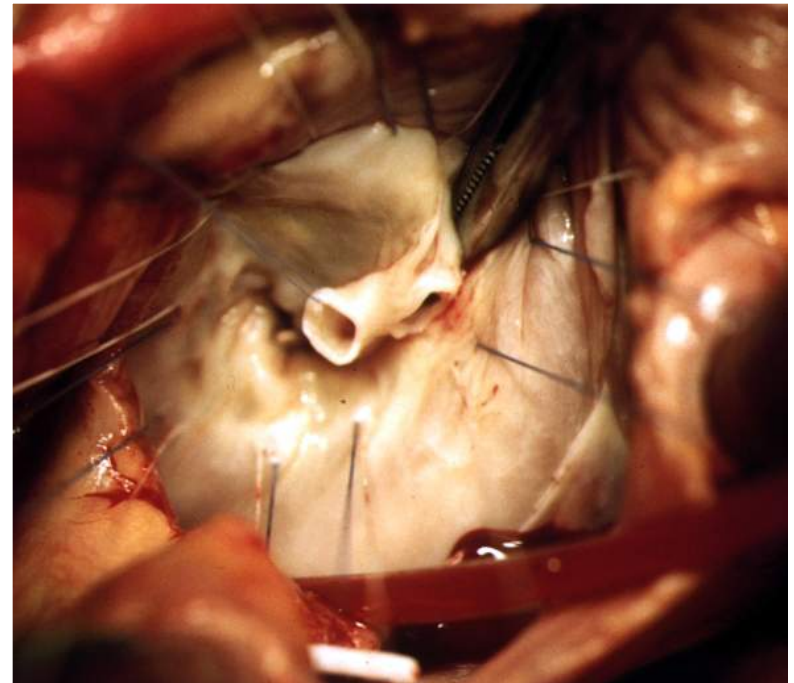
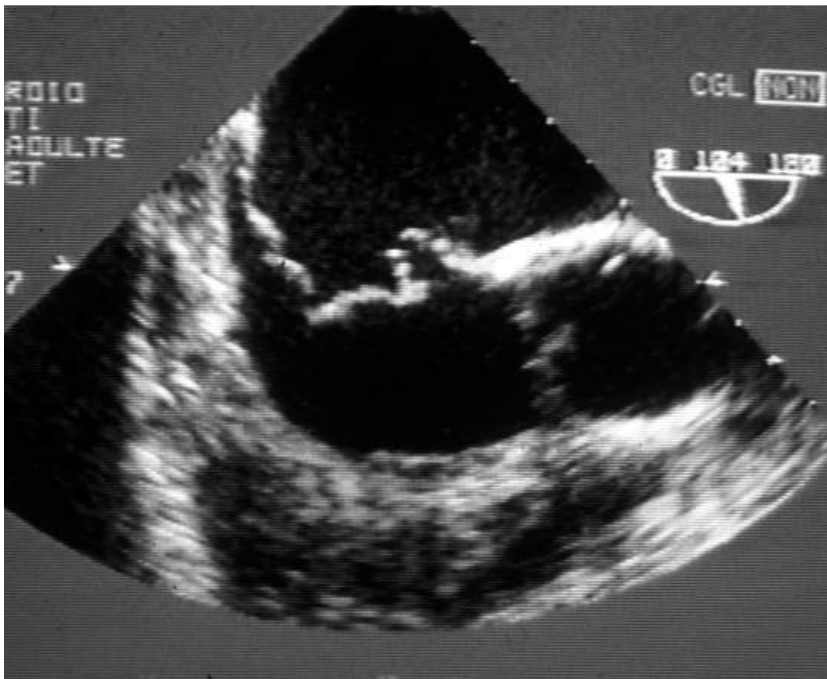
*« We all know that feasibility depends not on the lesion but on the experience of the surgeon, and it is more true in endocarditis than for any other lesion ...*

*...So, I mean, it is not the debate today » G Dreyfus*

- ➔ MV Rep possible in the majority of cases
- ➔ Low Mortality
- ➔ Very good long-term results
- ➔ Few Reoperations and few Recurrence of EI

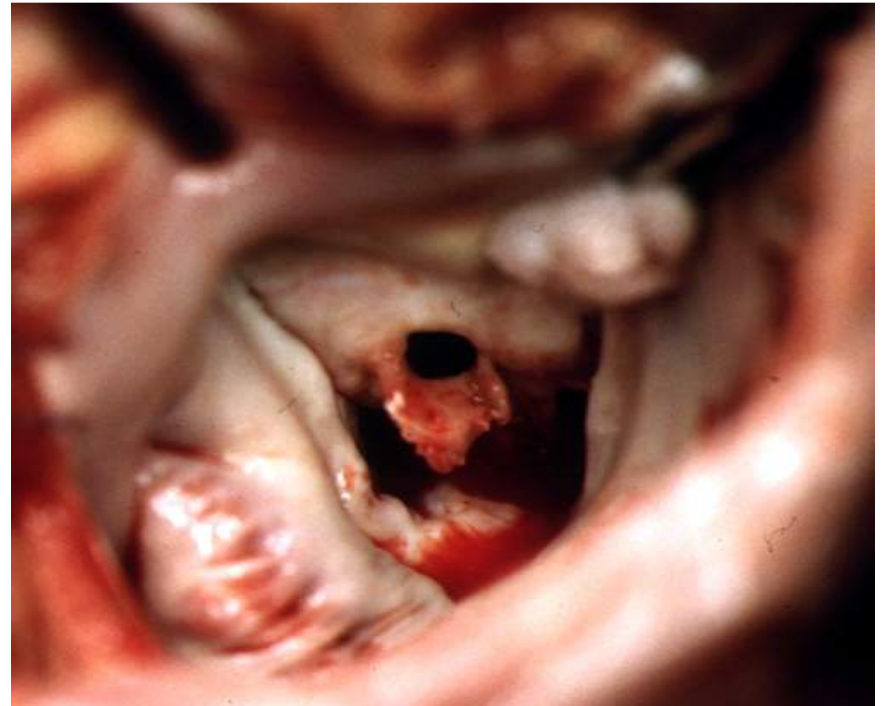
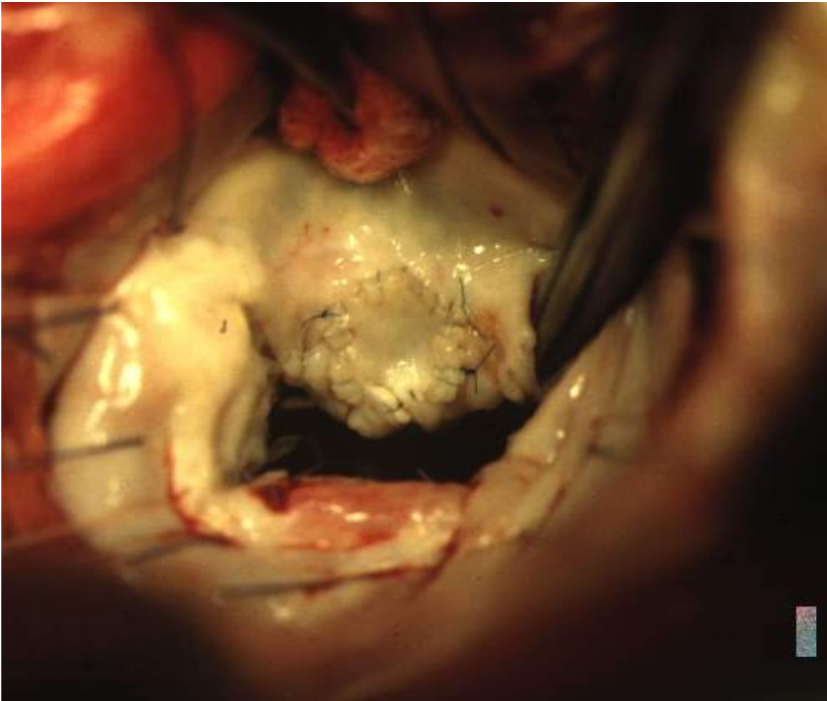
# Replacement or Repair in Mitral Valve Endocarditis

Healed IE → Easy repair



# Replacement or Repair in Mitral Valve Endocarditis

Active IE → More complexe



# Replacement or Repair in Mitral Valve Endocarditis

*'Long term Results of Mitral Valve Repair in Active Endocarditis, Rachid Zegdi, et al. Circulation. 2005;111:2532-2536 - HEGP'*

- From 1987 to 1994 : 49 Mitral IE → 37 repair

Reparability  
75%

**Def. = Surgery during the 6 weeks of antibiotherapy**

- \* *prosthetic annuloplasty* → 31 patients (84%),
- \* *valve resection* → 31 patients (84%),
- \* *chord. Shorten. or transpo.* → 19 Patients (51%)
- \* *pericardial patch* → 16 Patients (43%),
- \* *leaflet perforation suture* → 4 Patients (11%).

***Secondarily, to improve the feasibility of MVRep, paucisymptomatic patients (NYHA I to II) with severe mitral regurgitation (grade 3 to 4) were also included in the hemodynamic deterioration group (12 patients, 32%).***

# Replacement or Repair in Mitral Valve Endocarditis

*'Long term Results of Mitral Valve Repair in Active Endocarditis, Rachid Zegdi, et al. Circulation. 2005;111:2532-2536 "*

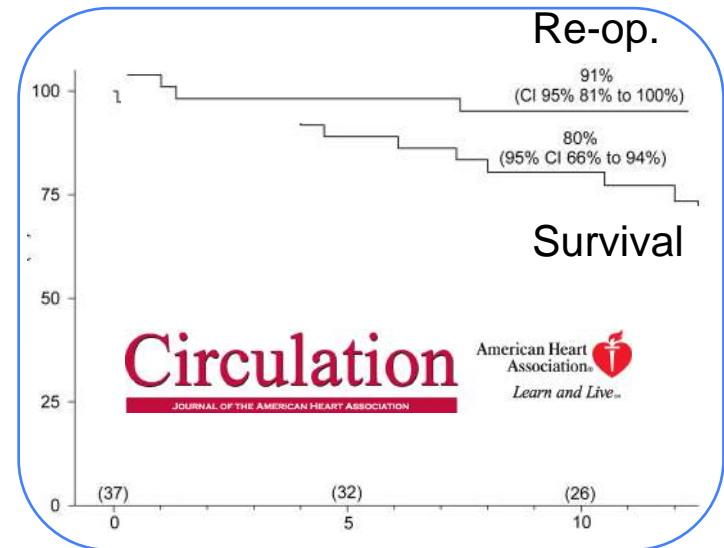
- **37 Repairs 1987-1994**

Mortality (3%)

Very good long-term results.

Recurrence of endocarditis → 3%

Reoperation at 10-year → 9%



	Population, n	Operative Mortality, %	Follow-Up,* mo	Reoperation/Recurrence of Endocarditis	Late Survival, % (y)
Dreyfus et al <sup>3</sup> (1990)	35	2.5	30 (6–94)	0/0	NA
Fuzellier et al <sup>9</sup> (1994)	35	5.7	23 (1–63)	1/0	NA
Podesser et al <sup>11</sup> (2000)	22	9	45 (1–90)	2/0	87±12.5 (5)
Senni et al <sup>12</sup> (2001)	13	0	73 (31–110)	1/0	100 (5)
Sternik et al <sup>6</sup> (2002)	12	0	38	0/0	NA

# Replacement or Repair in Mitral Valve Endocarditis

68 mitral endocarditis. → 34 repair  
→ 34 replacement.

Reparability  
50%

	Mitral valve repair (n = 34)	Mitral valve replacement (n = 34)	P value
Age, y	51.5 ± 17.0*	53.2 ± 13.1	.840
Male sex	22 (64.7%)	17 (50.0%)	.383
Obesity, BMI ≥30 kg/m <sup>2</sup>	3 (8.8%)	4 (11.8%)	.721
Diabetes	6 (17.6%)	6 (17.6%)	.954
Chronic obstructive pulmonary disease	6 (17.6%)	5 (14.7%)	.701
Impaired renal function (creatinine >2 mg/dL)	10 (29.4%)	12 (35.3%)	.479
Preoperative kidney failure	6 (17.6%)	3 (8.8%)	.476
Ejection fraction	49% ± 12%	53% ± 12%	.197
NYHA stage (mean)	2.80 ± 0.87	2.76 ± 0.55	.968
NYHA stage IV (%)	7 (20.6%)	2 (5.9%)	.121
Previous septic embolization	15 (44.2%)	6 (17.6%)	.027
Preexisting degenerative valvular disease	15 (44.2%)	12 (35.3%)	.840
EuroSCORE (mean)	9.8 ± 4.2	9.7 ± 3.8	.760
Main indication for surgical intervention			
Persistent sepsis	17 (50%)	6 (26.1%)	.005
Proceeded or imminent septic embolism	10 (29.4%)	15 (44.1%)	.2
Congestive heart failure	7 (20.6%)	13 (38.2%)	.11

« Mitral Valve Repair Provides improved Outcome over Replacement in active IE. E Rutmann et al. JTCVS 2005 ; 130 : 765-71 - Innsbruck, Austria. »

# Replacement or Repair in Mitral Valve Endocarditis

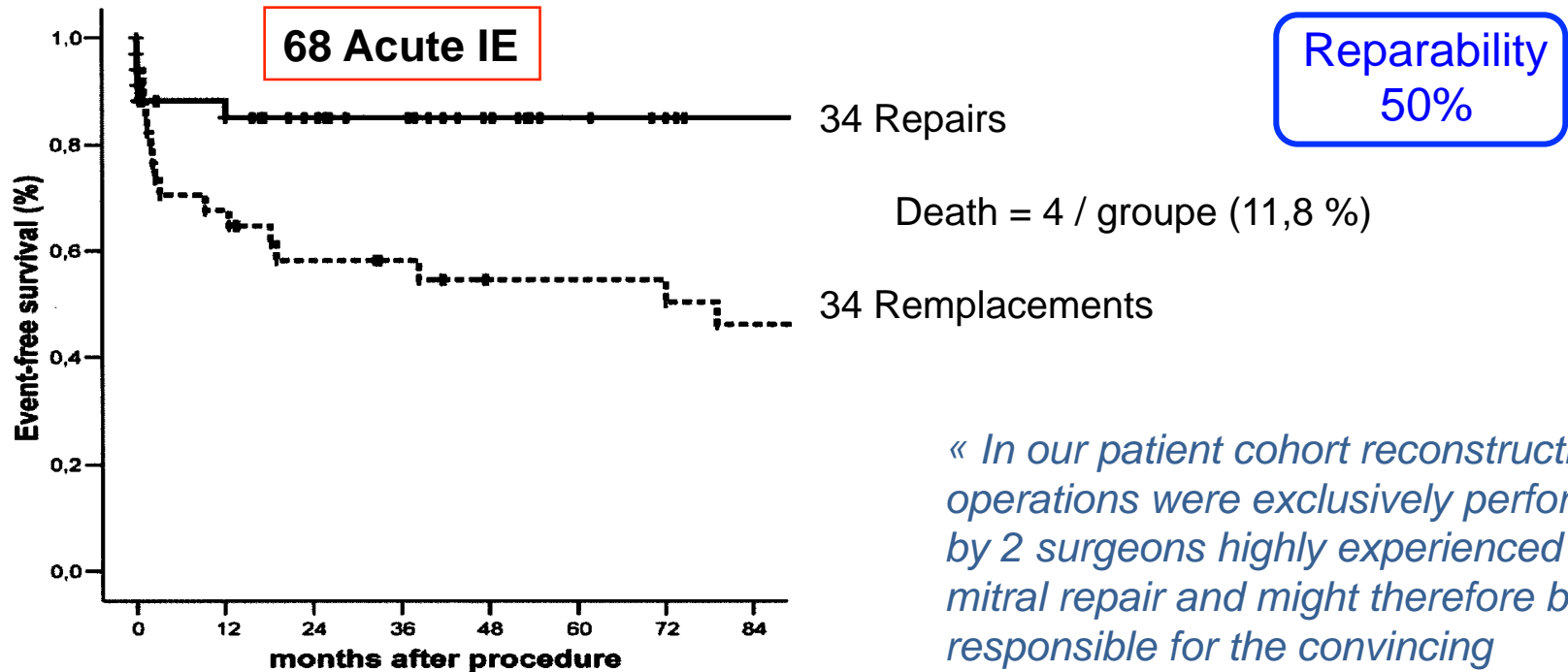


Figure 1. Kaplan-Meier event-free survival (freedom from death, valvular reoperation, and/or recurrence of endocarditis) for patients undergoing either mitral repair (solid line) or replacement (dashed line) for acute mitral endocarditis ( $P = .015$ , log-rank test).

« In our patient cohort reconstructive operations were exclusively performed by 2 surgeons highly experienced in mitral repair and might therefore be responsible for the convincing results ».

« Mitral Valve Repair Provides improved Outcome over Replacement in active IE. E Rutmann et al. JTCVS 2005 ; 130 : 765-71 »



# Replacement or Repair in Mitral Valve Endocarditis

« Surgical results of active infective native mitral valve endocarditis: repair versus replacement. Sung-Ho Jung et Al. Europ J Cardiovasc Surg 2011 Seoul St. Mary's Hospital South Korea »

102 Active IE from 1994 to 2009 (24 mini-thoracotomy)

- 41 Repairs → 16.3 days of ATB

- 61 Replacements → 9.8 days of ATB

reparability  
40,2 %

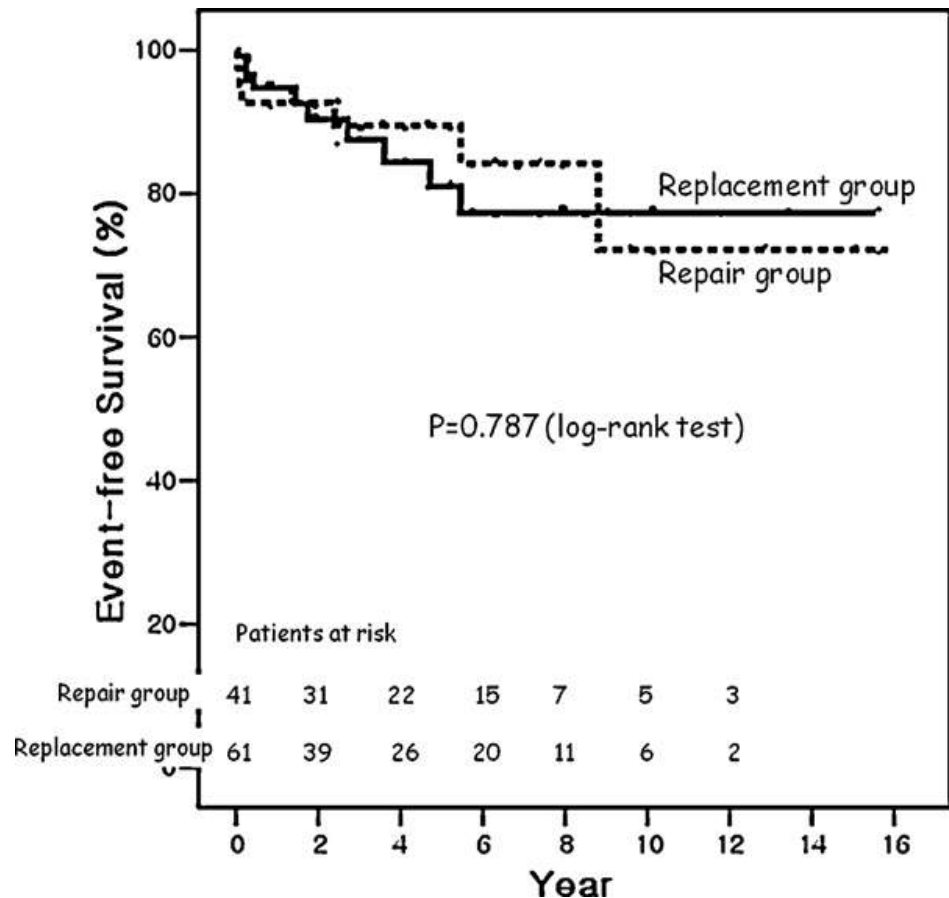
	Mitral valve repair (n = 41)	Mitral valve replacement (n = 61)	p-value
Age (years)	34.4 ± 16.9	43.1 ± 14.9	0.007
Sex (male)	19 (46.3%)	33 (54.1%)	0.442
DM	5 (12.2%)	8 (13.1%)	0.891
Hypertension	4 (9.8%)	9 (14.8%)	0.554
NYHA FC ≥ III	8 (19.5%)	20 (32.8%)	0.141
Preop Cr level	0.9 ± 0.5	1.3 ± 1.3	0.056
Dialysis dependent CRF	0	2	0.514
Impaired renal function (creatinine >2 mg/dl)	2 (4.9%)	7 (11.7%)	0.305
Preoperative septic embolization	19 (46.3%)	29 (47.5%)	0.905
LV EF (%)	64.1 ± 4.2	62.7 ± 6.2	0.216
Severe MR	34 (82.9%)	53 (86.9%)	0.583
Preop blood culture (+)	29 (70.7%)	47 (77.0%)	0.600

# Replacement or Repair in Mitral Valve Endocarditis

« Surgical results of active infective native mitral valve endocarditis: repair versus replacement. Sung-Ho Jung et Al. *Europ J Cardiovasc Surg* 2011  
Seoul St. Mary's Hospital South Korea»

	MVP (n = 41)	MVR (n = 61)	p-value
Mitral valve repair			
Ring annuloplasty	29		
Leaflet resection	18		
Pericardial patch closure	10		
New chordae formation	11		
Chordae transfer	2		
Mitral valve replacement			
Mechanical valve		55	
Tissue valve		6	
Valve or ring size (mm)	28.9 ± 2.4	28.8 ± 2.3	
Annulus reconstruction	1	2	
Concomitant procedure			
ASD/PFO closure	4	4	
Coronary bypass surgery	1	1	
TV repair		3	
Septal myectomy		1	
PDA ligation		1	
Coronary bypass surgery		1	
CPB time	111.4 ± 34.7	101.1 ± 42.9	0.204
ACC time	72.7 ± 23.7	62.9 ± 26.9	0.062
Right minithoracotomy approach	21 (51.2%)	3 (4.9%)	<0.001

ASD: atrial septal defect; PFO: patent foramen ovale; TV: tricuspid valve; PDA: patent ductus arteriosus; CPB: cardiopulmonary bypass; ACC: aorta cross clamp.



# Replacement or Repair in Mitral Valve Endocarditis

« *Mitral Valve Repair and Replacement in Endocarditis: A Systematic Review of Literature.* Harm H et al. *Ann Thorac Surg* 2007;83:564–71  
Leiden, Atlanta, Rotterdam »

24 Studies	Mitral Valve Repair (n = 470 patients)	Mitral Valve Replacement (n = 724 patients)	p Value
<b>Mortality</b>			
Early (< 30 days)	11/470 (2.3%) [13]	104/724 (14.4%) [17]	< 0.0001
Late (≥ 30 days)	24/307 (7.8%) [10]	137/338 (40.5%) [8]	< 0.0001
<b>Morbidity</b>			
<b>Early</b>			
Reoperation	7/319 (2.2%) [9]	26/205 (12.7%) [5]	< 0.0001
Recurrent endocarditis	1/217 (0.5%) [8]	3/253 (1.2%) [8]	0.63
Thromboembolism	2/130 (1.5%) [4]	0/17 (0.0%) [2]	0.20
Cerebrovascular event	7/150 (4.7%) [5]	19/165 (11.5%) [4]	0.045
<b>Late</b>			
Reoperation	20/430 (4.7%) [12]	26/298 (8.7%) [9]	0.039
Recurrent endocarditis	6/328 (1.8%) [11]	28/386 (7.3%) [9]	0.0013
Thrombo-embolism	6/185 (3.2%) [6]	0/7 (0.0%) [1]	0.15
Cerebrovascular event	3/188 (1.6%) [5]	11/45 (24.4%) [2]	< 0.0001

# Replacement or Repair in Mitral Valve Endocarditis

*« Mitral Valve Repair and Replacement in Endocarditis: A Systematic Review of Literature. Harm H et al. Ann Thorac Surg 2007;83:564–71  
Leiden, Atlanta, Rotterdam »*

**In conclusion** : This systematic review of literature showed that mitral valve repair is associated with good early and long-term results among patients undergoing surgery for infective endocarditis. *In-hospital and long-term mortality rates were higher after mitral valve replacement.* Mitral valve repair should be considered in patients with endocarditis referred for surgery.

# Replacement or Repair in Mitral Valve Endocarditis

« Unfortunately, a retrospective review like this has many of the problems of outcome reporting for valvular surgery »

	Mitral Valve Repair (n = 13)	Valve Replacement (n = 17)	p Value
Number of patients with mitral valve repair	470		
Number of patients with mitral valve replacement		724	
Men (%)	74.3% [13]	74.2% [17]	0.98
Mean age (years)	50.7 ± 8.4 [13]	49.5 ± 9.1 [17]	0.62
Surgical acuity			
Acute	66.3% [12]	77.8% [14]	< 0.0001
Chronic	33.7% [12]	22.2% [14]	< 0.0001
Time interval between start of antibiotic treatment and surgery in acute cases	21.9 ± 3.8 [9]	20.3 ± 10.6 [12]	0.66
Indications for surgery			
Congestive heart failure	55.2% [9]	62.8% [11]	0.020
Embolization	11.5% [10]	14.3% [13]	0.11
Large/mobile vegetation	32.9% [9]	28.7% [6]	0.24
Uncontrolled sepsis	15.8% [10]	37.4% [11]	< 0.0001
Abscess	0.0% [9]	11.0% [4]	< 0.0001
Microorganism			
Streptococcus sp	42.6% [12]	42.1% [16]	0.89
Staphylococcus sp	24.0% [12]	31.0% [16]	0.0031
Other	12.5% [12]	7.1% [16]	0.00029
Culture negative/unknown	20.9% [11]	19.8% [15]	0.63
Perioperative findings			
Perforation	29.9% [11]	31.4% [6]	0.63
Vegetation	47.3% [11]	65.2% [7]	< 0.0001
Chordal rupture	41.0% [11]	26.7% [5]	< 0.0001
Abscess	15.3% [10]	14.9% [4]	0.83
Complete leaflet destruction	0.0% [1]	22.7% [1]	< 0.0001

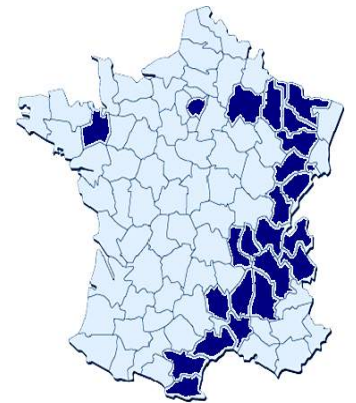
# Replacement or Repair in Mitral Valve Endocarditis

## La vraie vie → 497 EI en 2008



**F Delahaye, C Suty-Selton,  
JF Obadia, V Le Moing,  
JM Frapier, S Chocron, X Duval, B Hoen**

**pour le groupe d'étude de l'AEPEI**



**Financement: PHRC 2007 (CHU Besançon), SFC, ESCMID, Novartis**

# Replacement or Repair in Mitral Valve Endocarditis

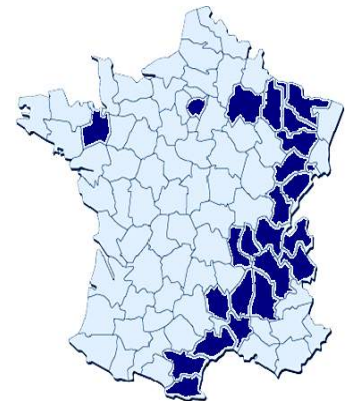
## La vraie vie → 497 EI en 2008

**Mortality**

**19,9 % vs 26.4 %**

F Delahaye, C Suty-Selton,  
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# Replacement or Repair in Mitral Valve Endocarditis

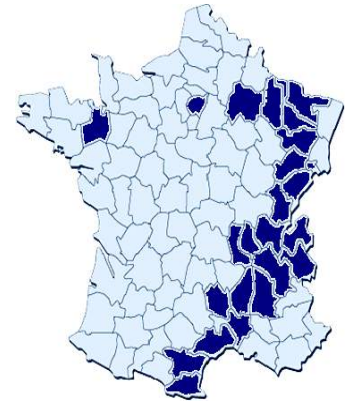
## La vraie vie → 497 EI en 2008

**Mortality**  
**19,9 % vs 26.4 %**

**Reparability**  
**26 %**

F Delahaye, C Suty-Selton,  
JF Obadia, V Le Moing,  
JM Frapier, S Chocron, X Duval, B Hoen

pour le groupe d'étude de l'AEPEI



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# Replacement or Repair in Mitral Valve Endocarditis

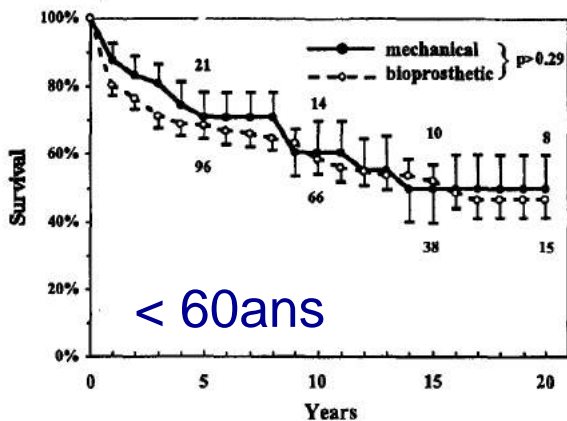
- 398 patients avec EI du cœur gauche

- *Aortique* 40%
- *aorto-mitrale:* 15%
- *Mitrale:* 45%

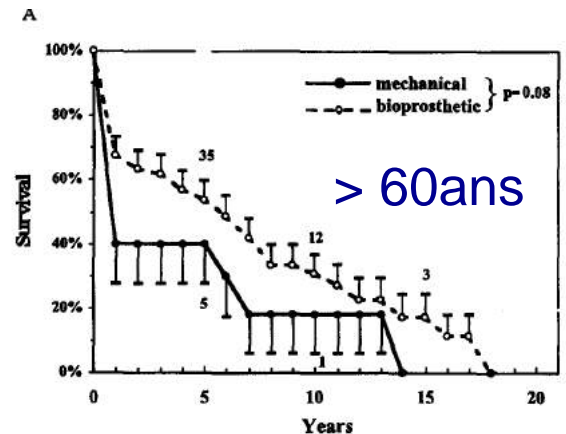
181 opérés

## 95 gestes mitraux isolés ou non

- *Réparation* 26%
- *Mécanique* 41%
- *Bioprothèse* 33%

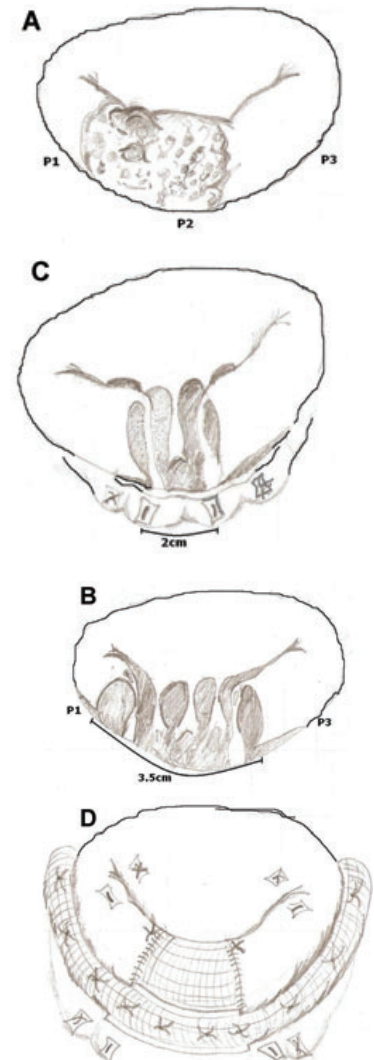


« Treatment of Endocarditis with Valve replacement : Tissue versus Mechanical Prosthesis. 2001 ; 71 : 1164-71 »



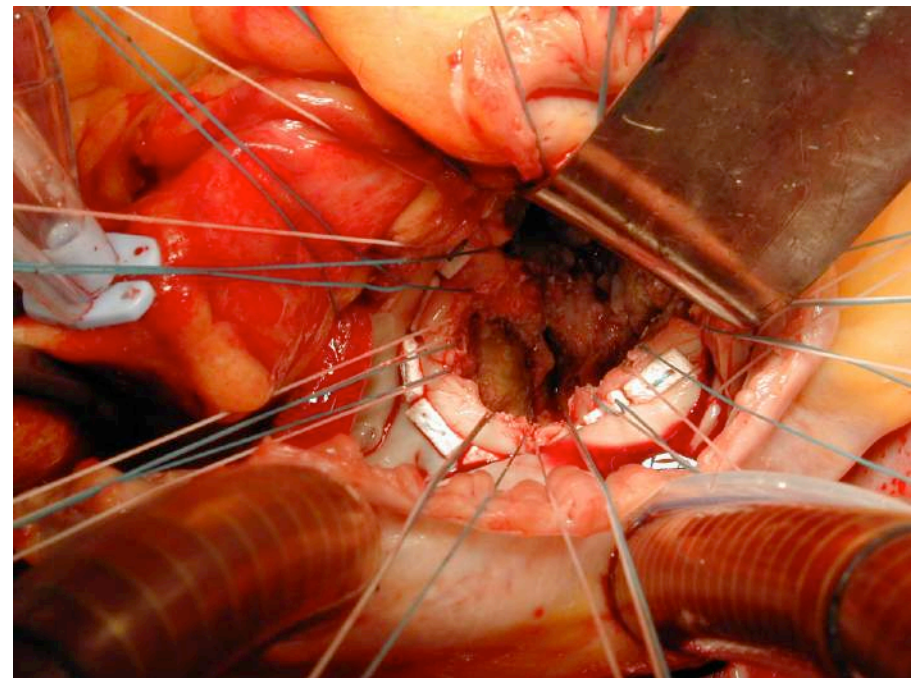
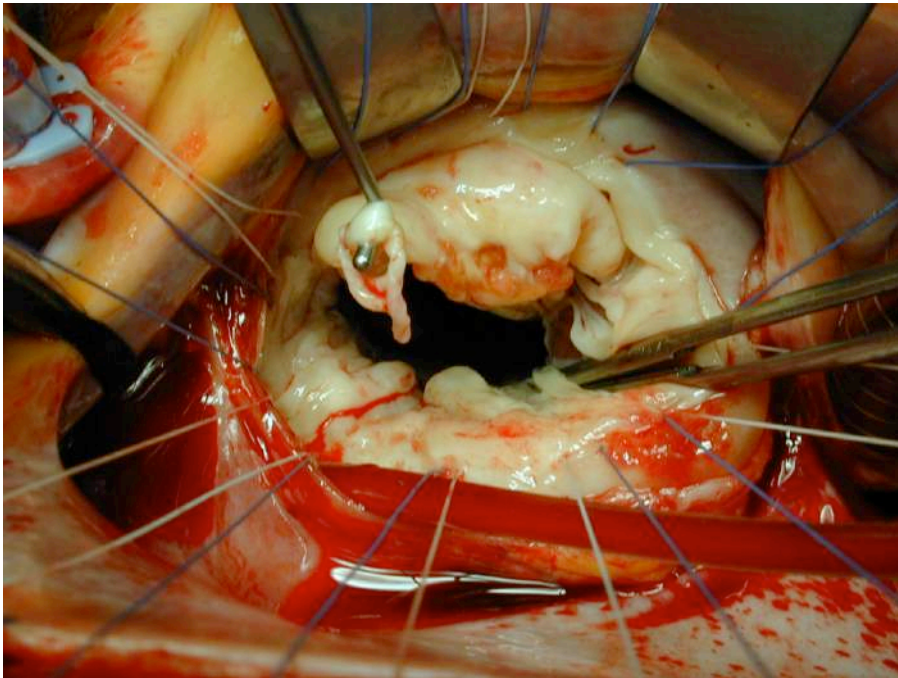
# Replacement or Repair in Mitral Valve Endocarditis

- 1) Chirurgie valvulaire → environ 50 % à la phase aigüe
- 2) Délai avant indication :
  - hospitalisation - intervention chir. → 15 j
- 3) 398 EI du cœur gauche
  - Prothèse valvulaire → 23%
  - Pas de valvulopathie connue +++ → 50%
  - Sur valvulopathie (*Dyst > Rhum*) → 27%
- 4) Opérés par rapport aux non opérés
  - plus jeunes: 58 vs 67 ans ( $p < 0,0001$ )
  - plus d'I. cardiaque: 44% vs 28% ( $p = 0,0006$ )
  - plus de végétations > 10 mm: 82% vs 58% ( $p < 0,0001$ )
  - plus d'abcès: 39% vs 13% ( $p < 0,0001$ )
  - moins d'EI mitrales: 33% vs 55% ( $p < 0,0001$ )
  - mortalité hospitalière plus basse: 20% vs 26% (NS)



# Replacement or Repair in Mitral Valve Endocarditis

## CONCLUSION



# Replacement or Repair in Mitral Valve Endocarditis

**" Il est plus facile d'acheter un livre  
que de le lire, et plus facile de le lire  
que de le comprendre "**

**" On ne demande conseil que pour  
appuyer ses convictions »**

***William OSLER***

