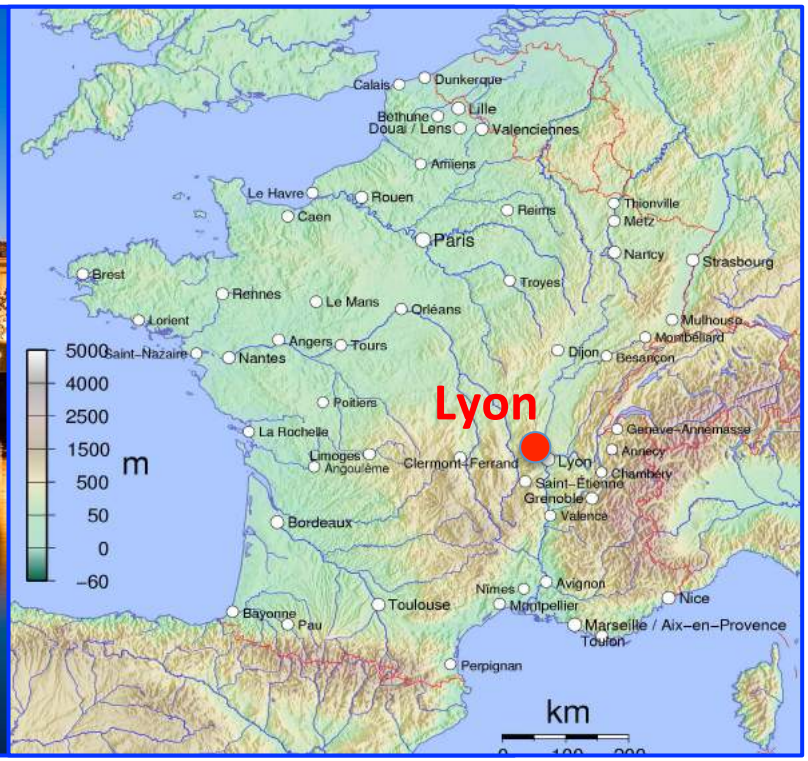
Hospices Civils de Lyon

"Acute Mitral Valve Regurgitation…"



Cardiothoracic and Vascular Surgery Department
Hôpital Louis Pradel
LYON - France

Hospices Civils de Lyon

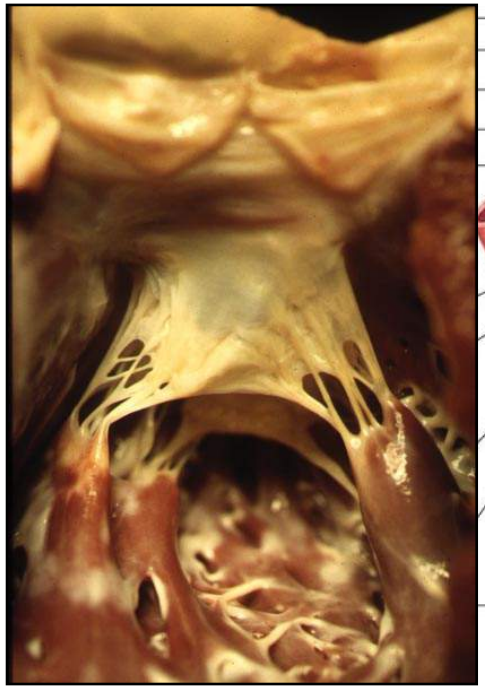
Affiliation/Financial Relationship	List of companies
> Grant/Research Support	Boeringher, Saint Jude Medical, Abbott, Medtronic, Edwards
> Consulting Fees/Honoraria	Edwards, Saint Jude Medical, Medtronic, Servier, Novartis
> Major Stock Shareholder/ Equity	
> Royalty Income	Landanger, Delacroix-Chevalier
> Ownership/Founder	
> Intellectual Property Rights	Landanger, Delacroix-Chevalier
> Other Financial Benefit	Medtronic, Sorin, Thoratec, Astra Zeneca

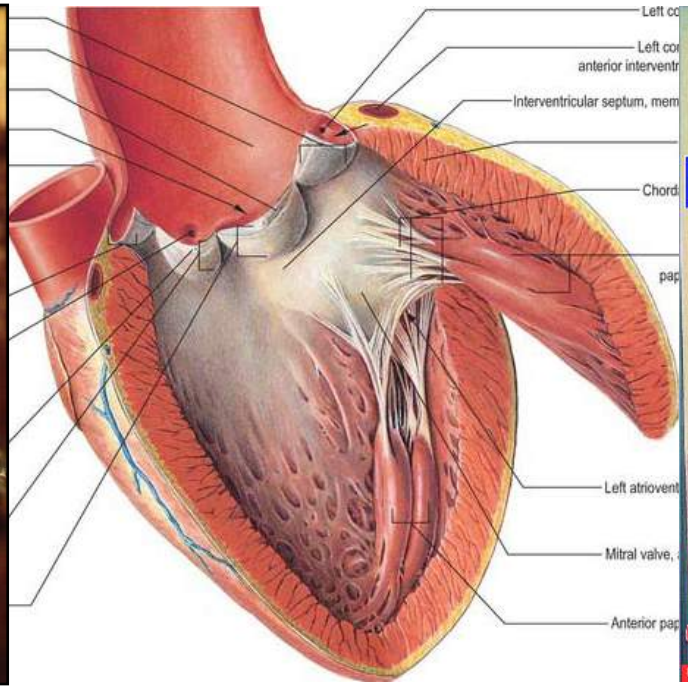
"Acute Mitral Valve Regurgitation…"

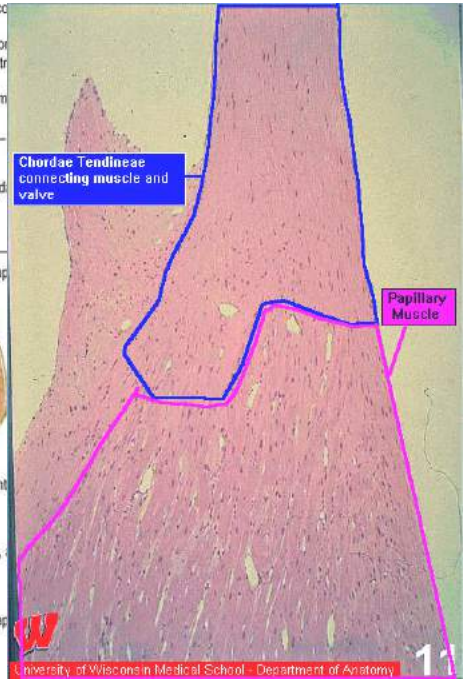
1) Ischemic Papillary Muscle Rupture

2) Mechanical Chordae Rupture

3) Traumatic (indirect or direct…)

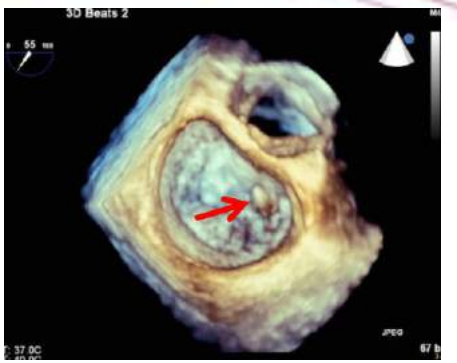






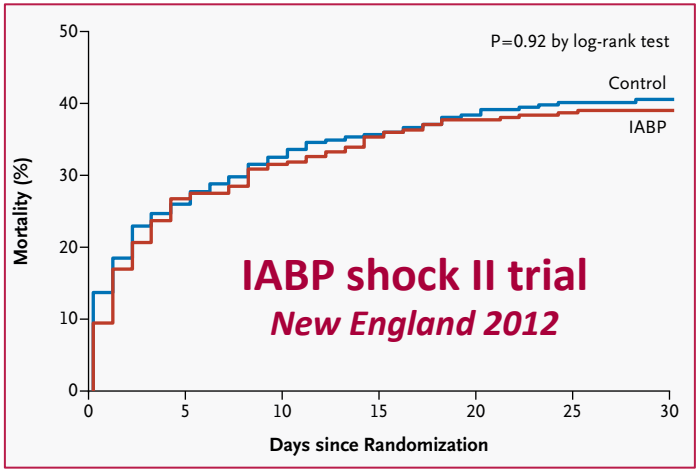
Complications mécanique de l'Infarctus

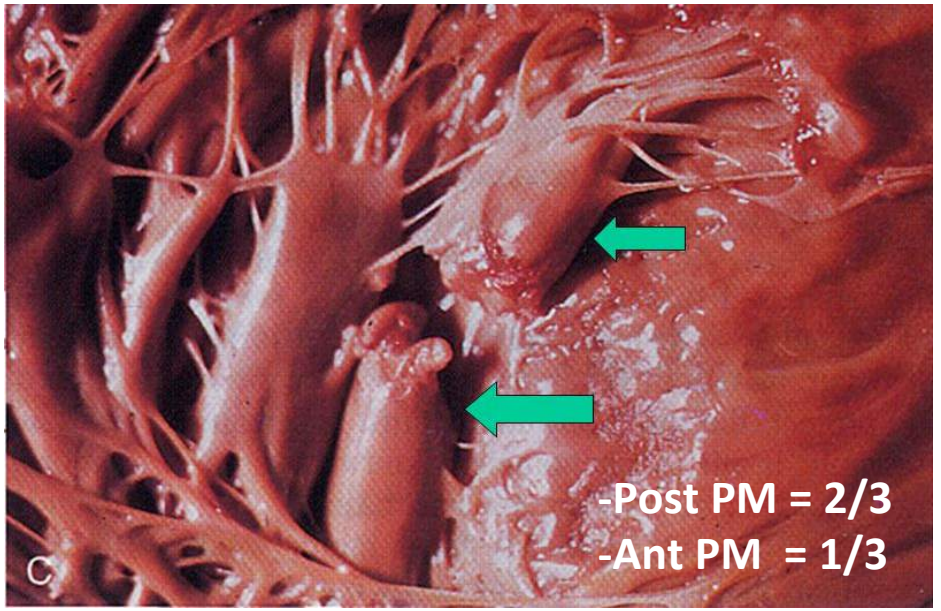
1) CIV
2) Rupture Paroi libre
3) Rupture Pilier Mitral



STEMI with PMR (1% to 5% in the eighties) ➔ (<0.5% in recent years)

- Medical ttt ➔ 70 to 80 % mortality
- Surgery ➔ 19% to 53%
- Male + Correct LV
- Day 5





Clinical Outcome After Mitral Valve Surgery Due to Ischemic Papillary Muscle Rupture

Leipzig ***T Schroter et al. Ann Thorac Surg 2013;95:820–4***

2002 to 2010 : 28 pts ➔ **3 to 4 / y**

- Male=79% ,
- EF= 50%

- MI < 48 h ➔ 15 (**54%**)
- 48h < MI < 21 days ➔ 10 (**36%**)
- MI > 21 d ➔ 3 (**10%**)

- Ant PM = Post PM (40%) ➔ 20% 2 PM

- **25 RVM 89 %**
- **3 Repairs 11 %**

30d Mortality

39,3 %

11 ECMO postcardiotomy

8 deaths

1 severe stoke

1 Healthy survivor

Clinical Outcome After Mitral Valve Surgery Due to Ischemic Papillary Muscle Rupture

Leipzig ***T Schroter et al. Ann Thorac Surg 2013;95:820–4***

Time Between Admission and Operation	Overall (n = 28)	Survivor (n = 17)
Same day	12	8 (66.7%)
Next day	7	3 (42.6%)
Later	9	6 (66.7%)

Variable	Overall (n = 28)	Survivor (n = 17)	Nonsurvivor (n = 11)	*p* Value
Coronary artery bypass graft surgery; n (%)	19 (67.9)	13 (76.5)	6 (54.4)	0.245
Prosthesis diameter; mean ± SD	28.9 ± 1.6	29.2 ± 1.8	28.5 ± 1.3	0.395
Operative time, minutes; mean ± SD	220 ± 81	203 ± 55	247 ± 107	0.170
Cardiopulmonary bypass time, minutes; mean ± SD	151 ± 61	139 ± 43	169 ± 81	0.211
Cross-clamp time, minutes; mean ± SD	66 ± 35	70 ± 27	60 ± 46	0.485

Clinical Outcome After Mitral Valve Surgery Due to Ischemic Papillary Muscle Rupture

Leipzig ***T Schroter et al. Ann Thorac Surg 2013;95:820–4***

Variable	Overall (n = 28)	Survivor (n = 17)	Nonsurvivor (n = 11)	*p* Valu
Age, years; mean ± SD	63.4 ± 10.3	63.1 ± 9.0	63.8 ± 12.1	0.856
Male sex; n (%)	22 (78.6)	12 (80.0)	10 (76.9)	0.871
Arterial hypertension; n (%)	14 (50.0)	8 (53.3)	6 (46.2)	0.730
Weight, kg; mean ± SD	85.3 ± 14.7	82.7 ± 13.3	88.3 ± 16.1	0.320
Body mass index; mean ± SD	28.1 ± 4,8	26.9 ± 3.7	29.5 ± 5.7	0.143
Ejection fraction; mean + SD	0.502 ± 0.191	0.525 ± 0.146	0.533 ± 0.167	0.889
NYHA class; mean + SD	2.8 ± 1.6	3.5 ± 0.8	3.2 ± 0.8	0.385
Myocardial infarction < 48 hours; n (%)	15 (53.6)	9 (60.0)	6 (46.2)	0.488
Myocardial infarction 48 hours–21 days; n (%)	10 (35.7)	7 (46.7)	3 (23.1)	0.212
Myocardial infarction > 21 days; n (%)	3 (10.7)	1 (6.7)	2 (15.4)	0.492
Mechanical ventilation, preoperative; n (%)	8 (28.6)	4 (26.7)	4 (30.8)	0.837
Cardiogenic shock; n (%)	15 (53.6)	8 (53.3)	7 (53.8)	0.221
Renal failure, preoperative (dialysis); n (%)	3 (10.7)	2 (13.3)	1 (7.7)	0.684
PCI, preoperative; n (%)	9 (32.1)	6 (40.0)	3 (23.1)	0.490
Intraaortic balloon pump, preoperative; n (%)	12 (42.9)	7 (46.7)	5 (38.5)	0.514

[a]Values of $p < 0.05$ were considered significant.

Pronostic ➔ post-op ECMO and post-op dialysis

Long-term survival after mitral valve surgery for post-myocardial infarction papillary muscle rupture *Groeningen* *Bouma et al. J of Cardiothoracic Surgery (2015) 10:11*

1990 to 2014 : 50 pts ➔ **2 patients / y**

age 64.7 ± 10.8 years

10 repairs 20%
40 replacements 80%

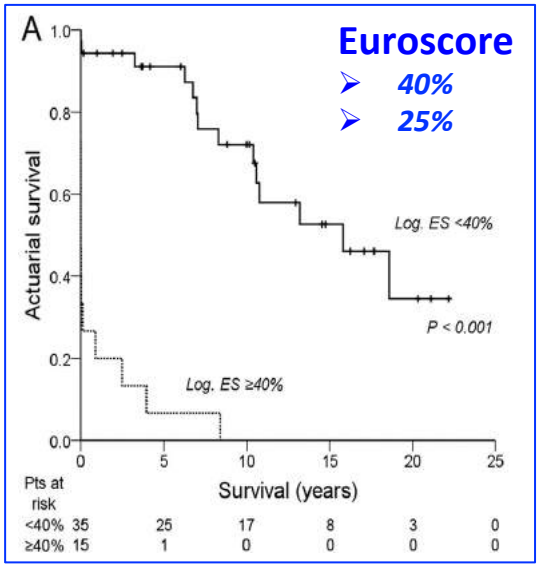
(EF >50%)	34 (68)
(EF 30-50%)	11 (22)
(EF <30%)	5 (10)

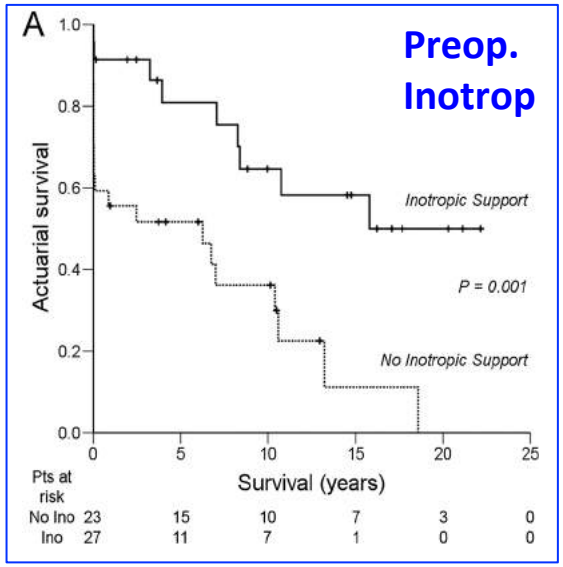
Table 3 Postoperative patient data (n = 50)

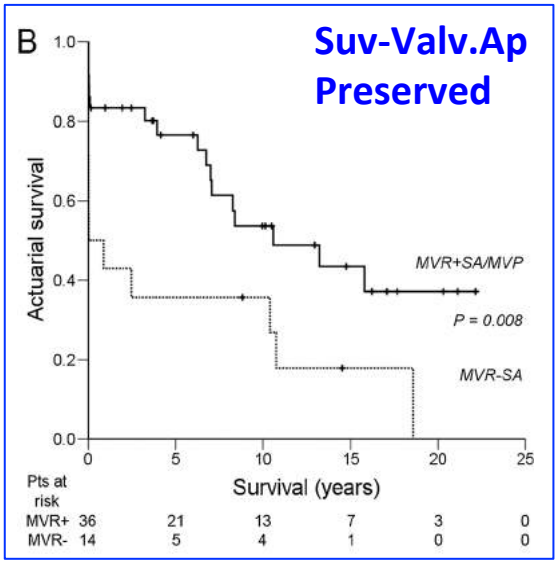
Variable/Condition[a]	Value
Reoperation for recurrent MR	1 (2)
Causes of death (n = 29) **58%** **Mean FU 7.1 (0-22y)**	
(End-stage) heart failure	9 (31)
Refractory cardiogenic shock	3 (10)
Haemorrhagic shock (massive bleeding)	2 (7)
Acute myocardial infarction	1 (3)
Arrhythmic sudden death	1 (3)
Septal rupture	1 (3)
Left ventricular rupture	1 (3)
Ruptured aortic aneurysm	1 (3)
Non-cardiac	3 (10)
Unknown	7 (24)

Long-term survival after mitral valve surgery for post-myocardial infarction papillary muscle rupture *Groeningen* *Bouma et al. J of Cardiothoracic Surgery (2015) 10:11*

Global Survival ➔ 40% at 10 years





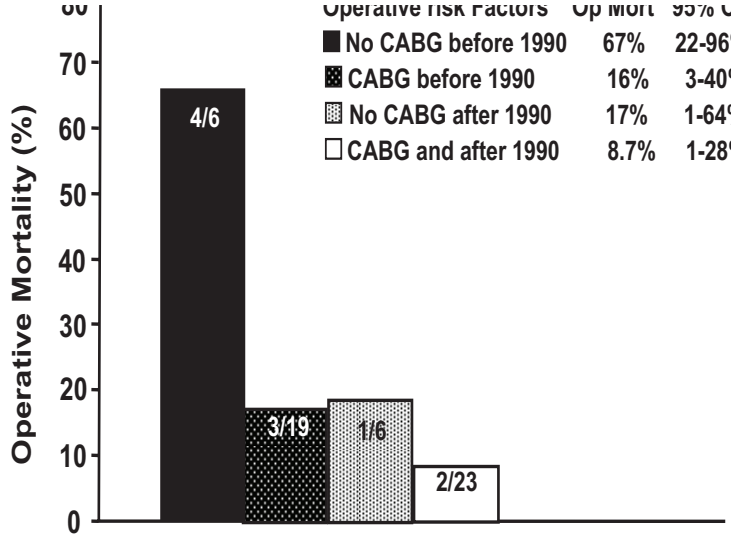


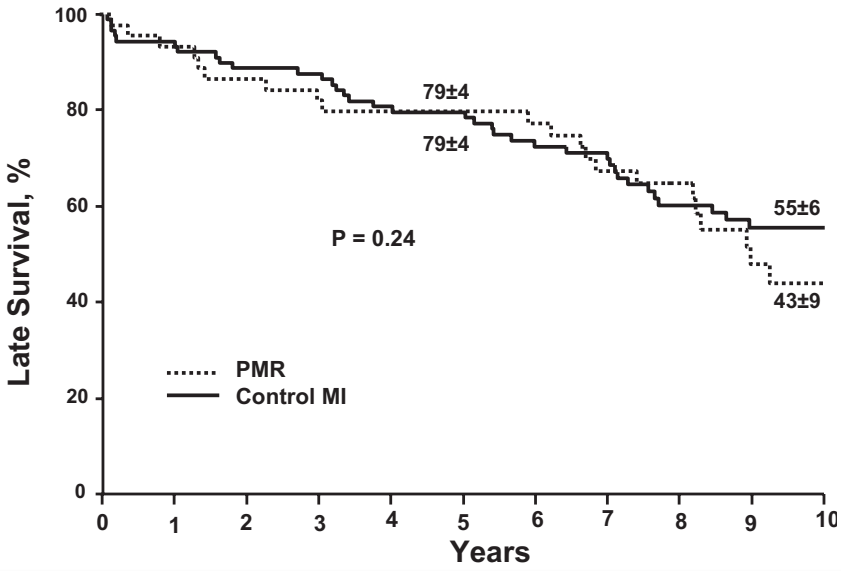
Clinical Outcome After Surgical Correction of Mitral Regurgitation Due to Papillary Muscle Rupture

Mayo *A Russo et al. Circulation. 2008;118:1528-1534.*

1980 to 2000 : 54 pts ➔ **2.7 patients / y**

- age = 71 years
- Post PM = 90%
- 13 Repairs (24%) from 4 % < 1990 < 41%
- Mortality from 29 % < 1990 <10 %

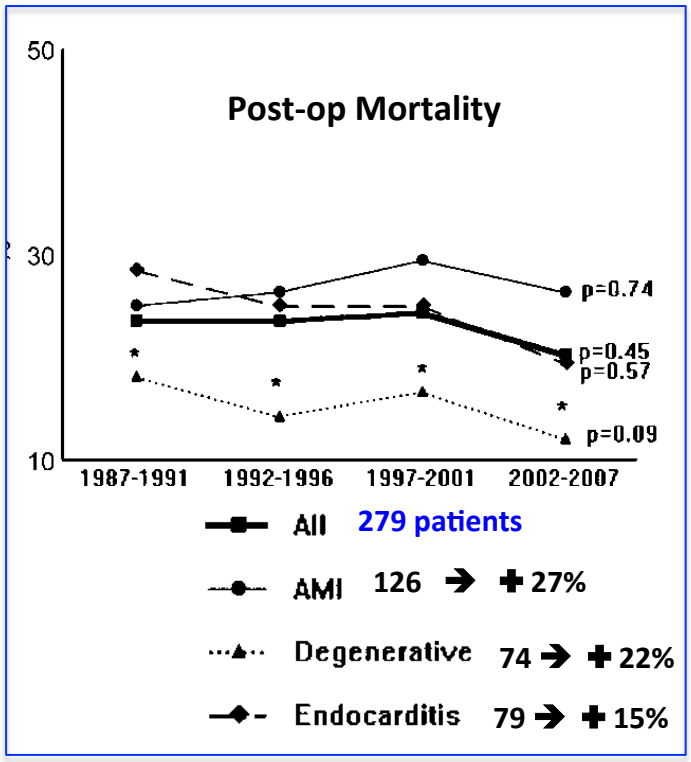


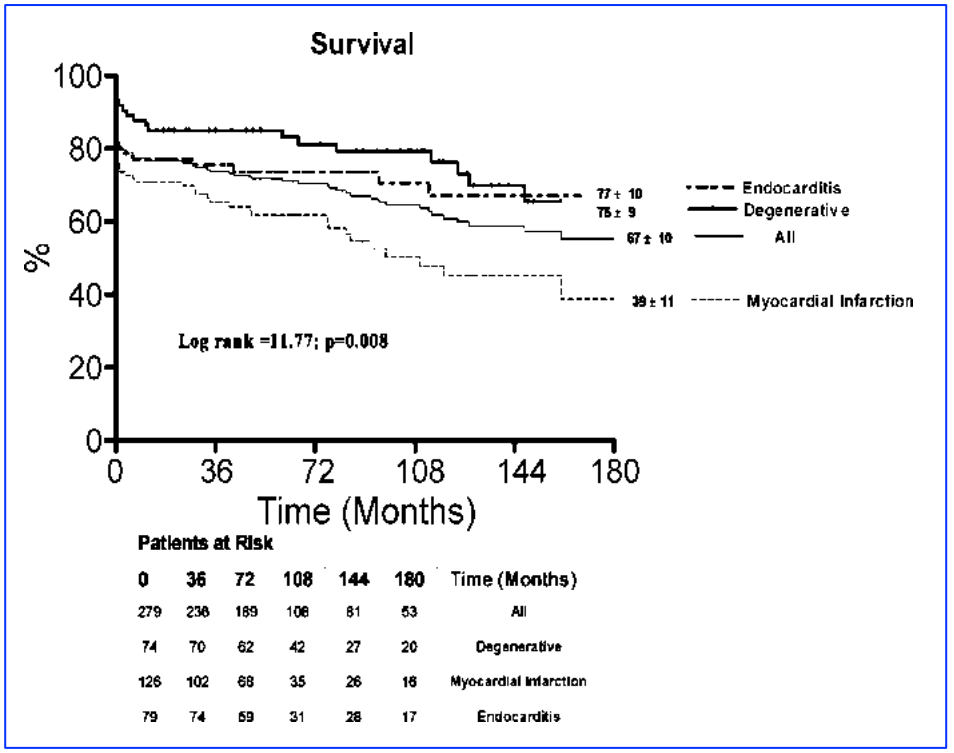


Mitral valve surgery in emergency for severe acute regurgitation: analysis of postoperative results from a multicentre study☆

Italy / Spain ***Lorusso R et al. / European J of Cardio-thoracic Surgery 33 (2008) 573-582***

6 centres, 279 patients (mean age 62 14 years, 62% female)





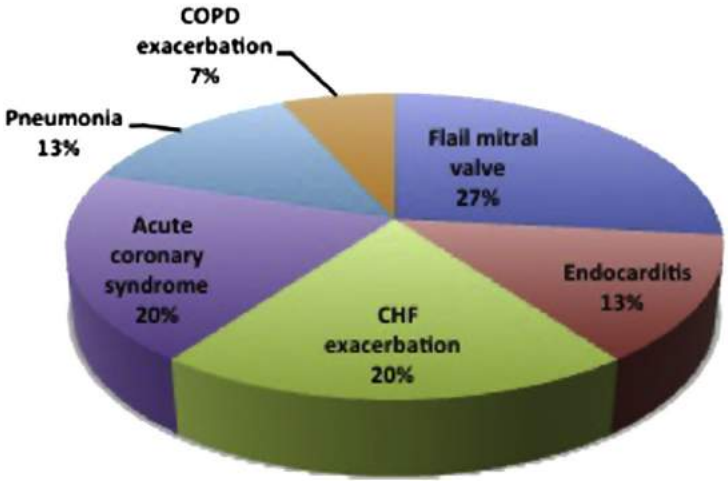
Initial misdiagnosis of acute flail mitral valve is not infrequent: The role of echocardiography

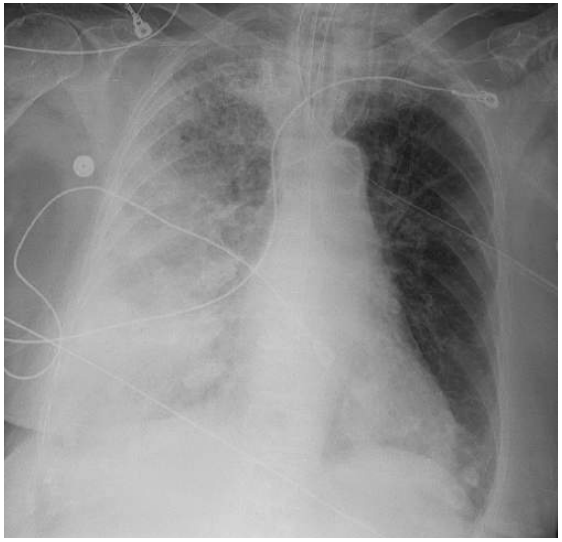
New York ***J of Cardiovascular Disease Research 4 (2013) 123e126***

262 Severe MR 2005 to 2010 Jack D. Weiler Hospital (Bronx, New York, USA)

15 acute flail mitral valve in elderly male

- 1/2 sudden onset of dyspnea.
- 1/3 murmur was appreciated in.
- chest X-ray ➔ 5 Normal, whereas, 2 unilateral pulmonary edema.
- *60% misdiagnosed on admission*





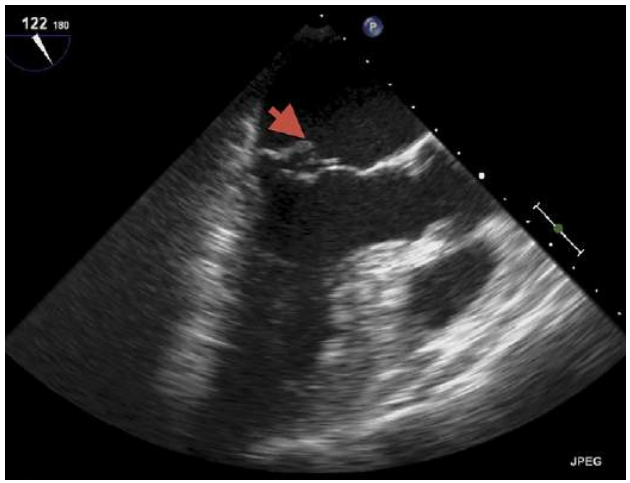
Initial misdiagnosis of acute flail mitral valve is not infrequent: The role of echocardiography

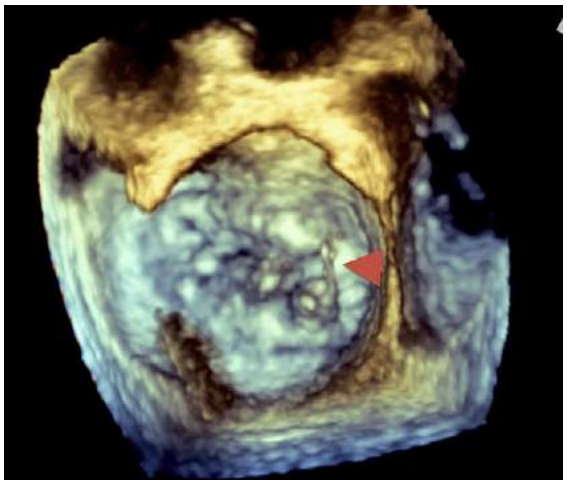
New York ***J of Cardiovascular Disease Research 4 (2013) 123e126***

Echocardiogram ➔ correct diagnosis of flail mitral (degenerative disease)

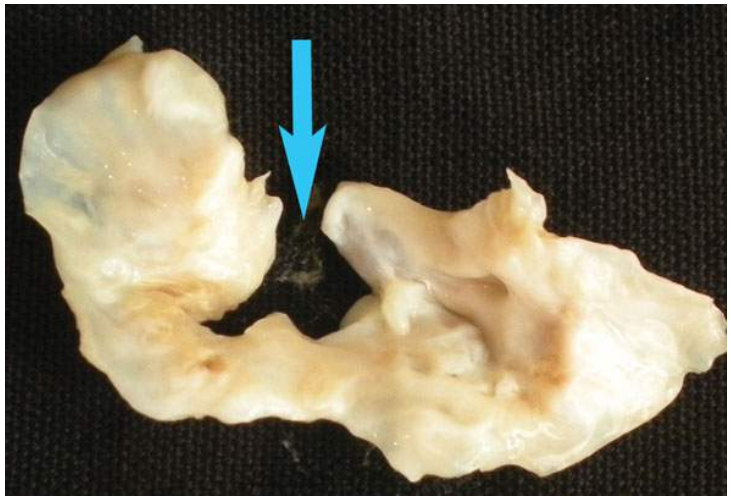
- 40% on the day of presentation.
- up to 4 days
- 7 patients were managed surgically
- 1 in-hospital death

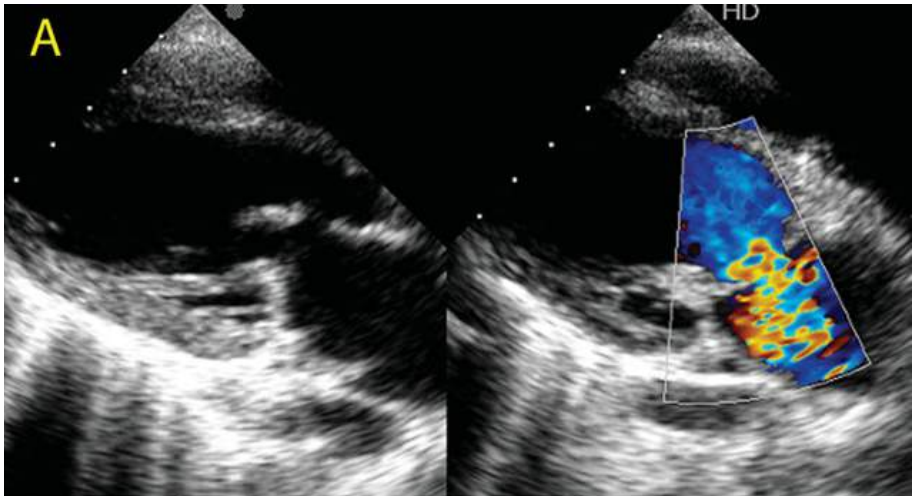
➔ ***Les than 50% of Acute Flail***
➔ ***2.6 % of severe sympt MR***





Acute Severe Mitral Regurgitation Following Balloon Mitral Valvotomy:
Echocardiographic Features, Operative Findings, and Outcome in 50 Surgical Cases
Bangalore India
MC Nanjappa et al. Catheterization and Cardiovascular Interventions 81:603–608 (2013)





<u>3855 BMV</u> ➔ 50 cases Acute severe MR (1.3%)

-Hypotension (72%),
- hypoxia (64%),
- orthopnea (14%),
-pulmonary edema (12%)

Acute Severe Mitral Regurgitation Following Balloon Mitral Valvotomy:
Echocardiographic Features, Operative Findings, and Outcome in 50 Surgical Cases
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Anterior mitral leaflet tear in 36 cases (72%)
paracommisural tear with annular involvement in seven cases (14%),
posterior mitral leaflet tear in five cases (10%)
chordal tear in two cases (4%).

The correlation between and operative finding :

- mitral valve calcification = strong (r 5 0.862),
- submitral fusion, = moderate (r 5 0.536).

In-hospital mortality = 12%. Mortality depending on delay > 24 H (P < 0.001)

<u>Conclusions</u>: Hypotension and hypoxia ➔ TTE underestimated the severity of submitral disease. Early MVR (<24 hr) is recommended for optimal outcome. VC

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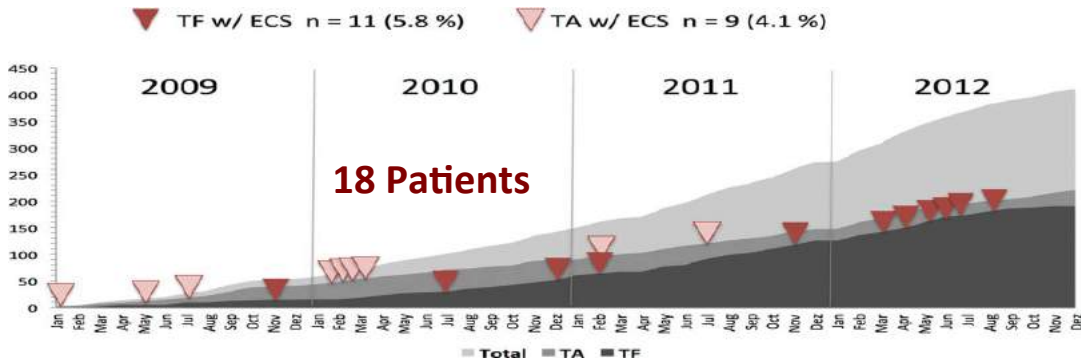
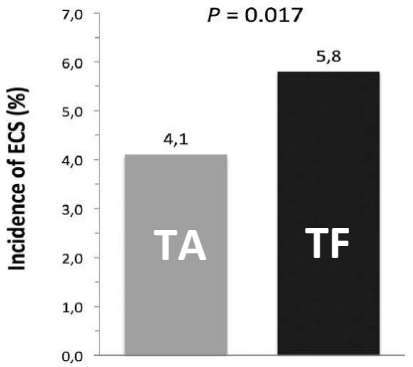
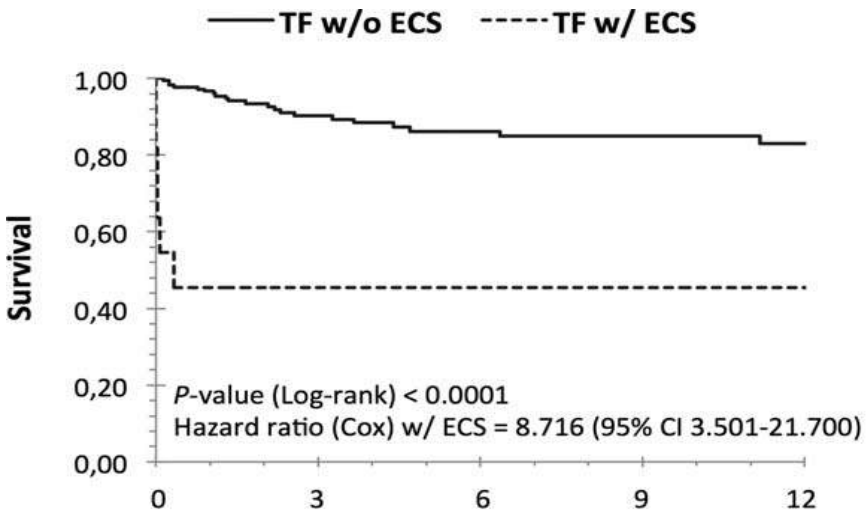
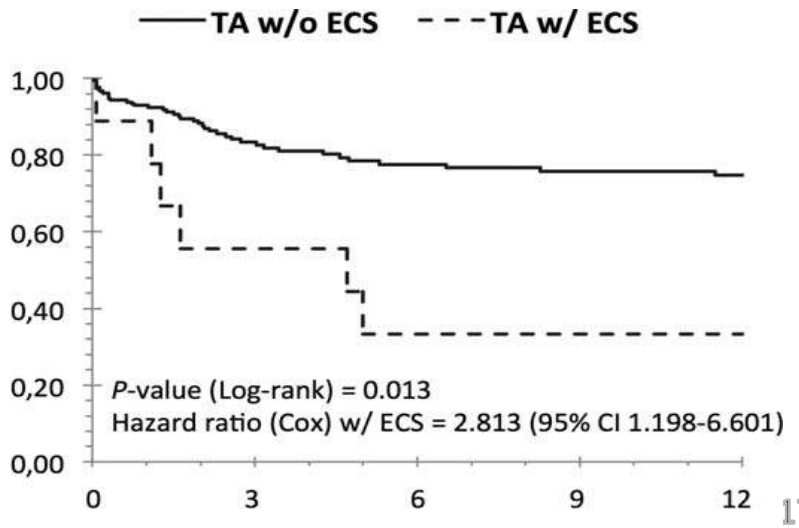
Emergency Cardiac Surgery During TAVI : Incidence, Reasons, Management, and Outcome of 411 Patients From a Single Center Bad Neustadt

Daniel P. Griese, Catheterization and Cardiovascular Interventions 82:E726–E733 (2013)









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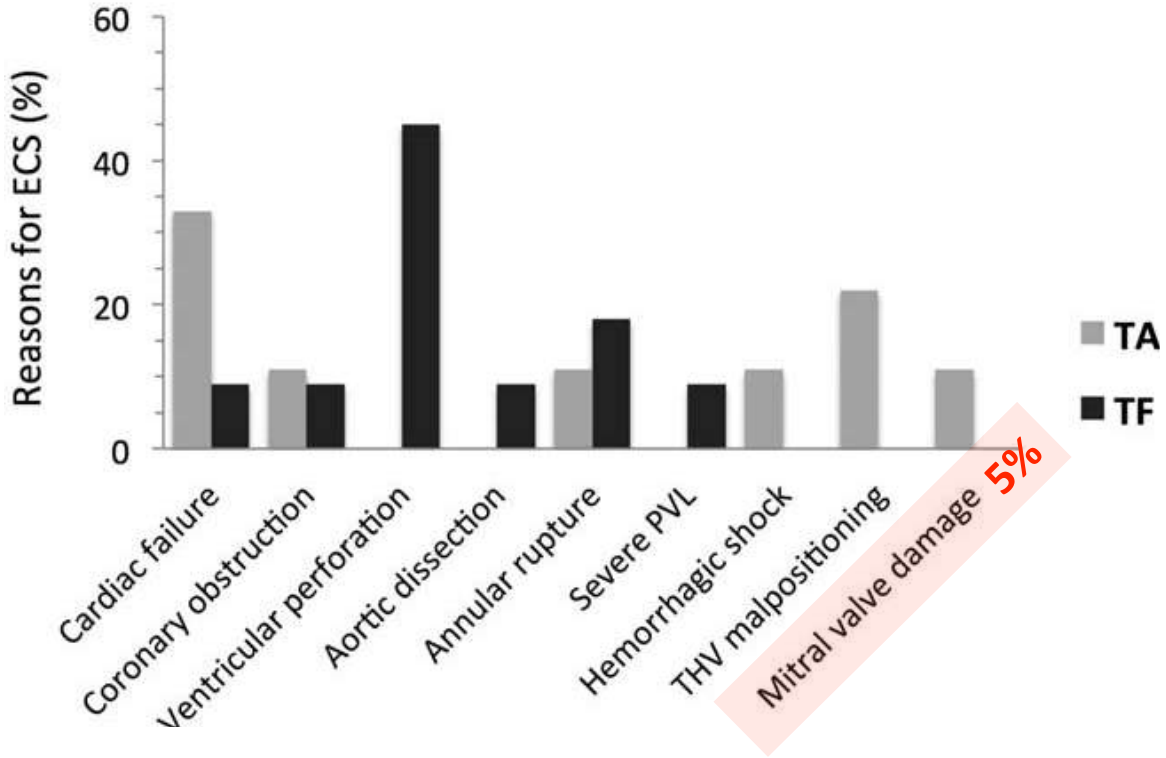
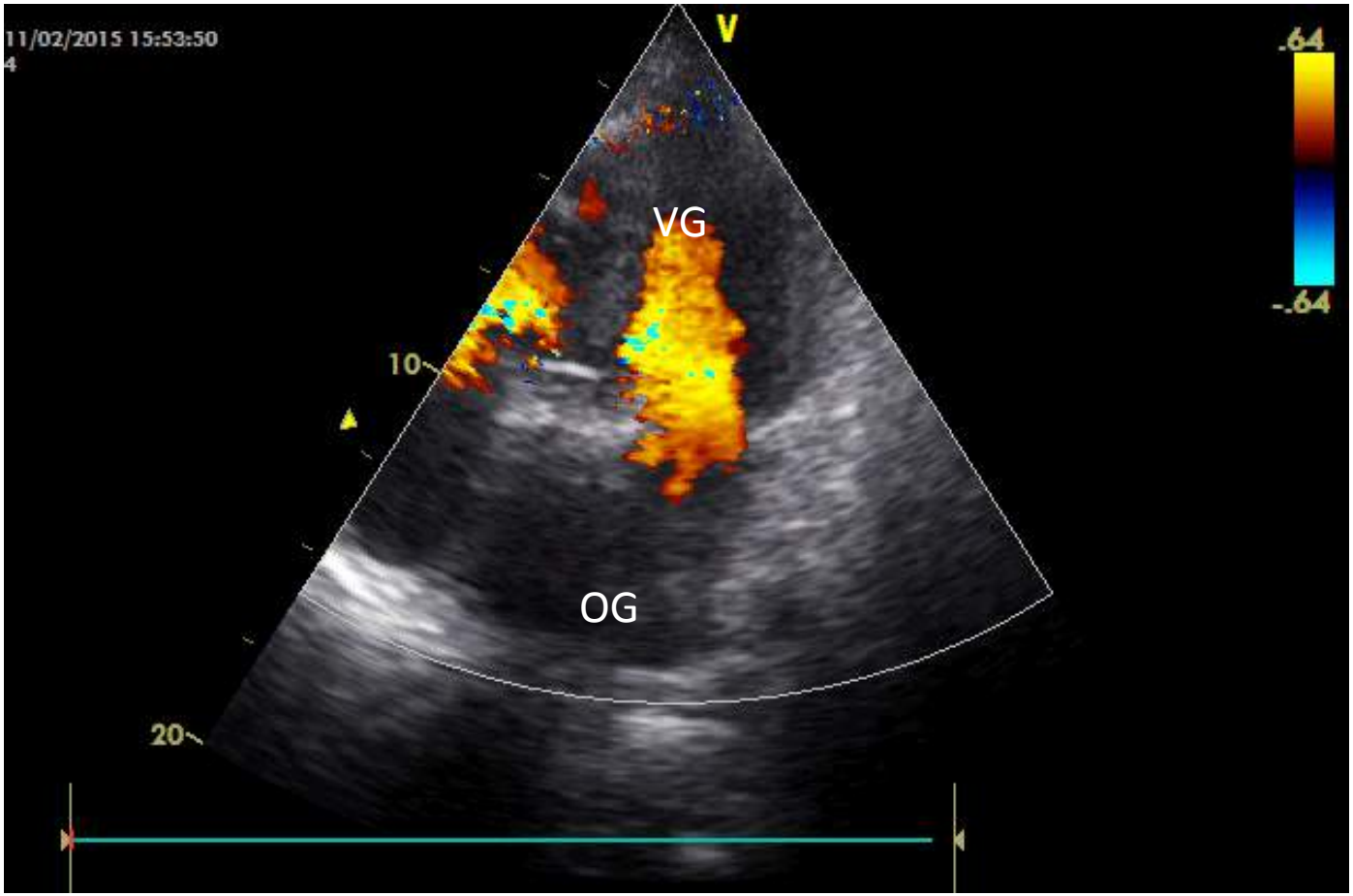


An unexpected diagnostic !!!

- M. P, 94 ans, ancien ingénieur, passionné de fission nucléaire et de jardinage.
- RA serré symptomatique
- FEVG excellente, Gmoy à 70 mmHg, V max à 5 m/s
- HTAP à 45 mmHg, IP à 0,18
- 8/01/2015 ➔ USIC pour un OAP
- 1/02/2015 ➔ Syncope

- 11/02 / 2015 TAVI fémorale Sapiens 3 /26 mm
  - Procédure parfaite sans IA
  - USIC ➔ précaire, Détresse resp, Oligo-anurie

ETT



Severe mitral regurgitation due to anterior mitral leaflet perforation after surgical treatment of discrete subaortic stenosis

BMJ Case Reports **2014**:published online 23 May 2014,

ETO

CARDIOVASCULAR FLASHLIGHT

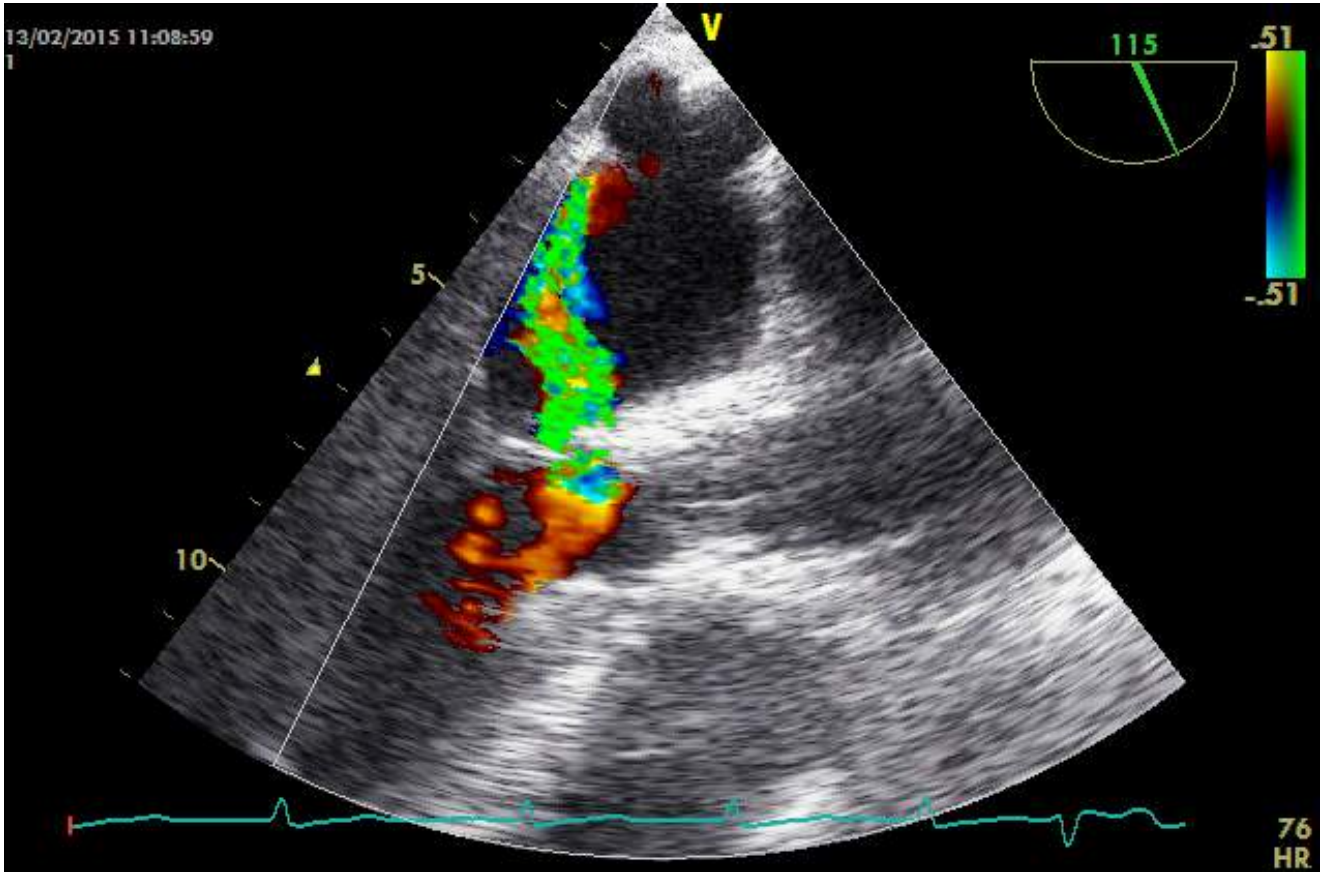
doi:10.1093/eurheartjehit503
Online publish-ahead-of-print 18 December 2013

Corevalve prosthesis causes anterior mitral leaflet perforation resulting in severe mitral regurgitation and subsequent endocarditis

Matthias Raschpichler*, Joerg Seeburger, Ruth H. Strasser, and Martin Misfeld

Cardiac Surgery, Leipzig Heart Centre, Strümpellstrasse 39, Leipzig 04289, Germany

* Corresponding author, Email: mraschpichler@gmail.com



* **Prise en charge médicale initiale:**
  - Diurétisation IVSE
  - CPAP
  - Inotropes
* **Persistance de l'hypotension et anurie**

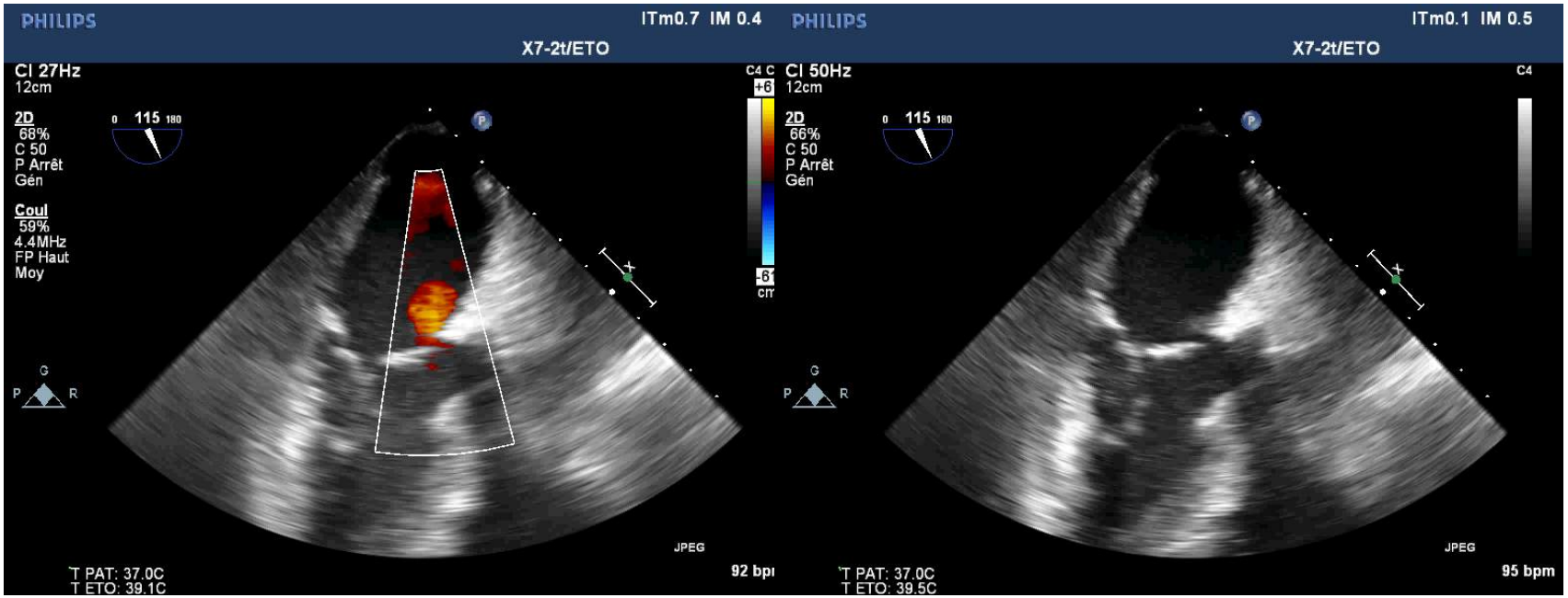
Qu'auriez vous envisagé pour ce patient ?

- Traitement chirurgical en urgence
- Traitement médical sans beaucoup d'espoir
- Stratégie de sauvetage ?

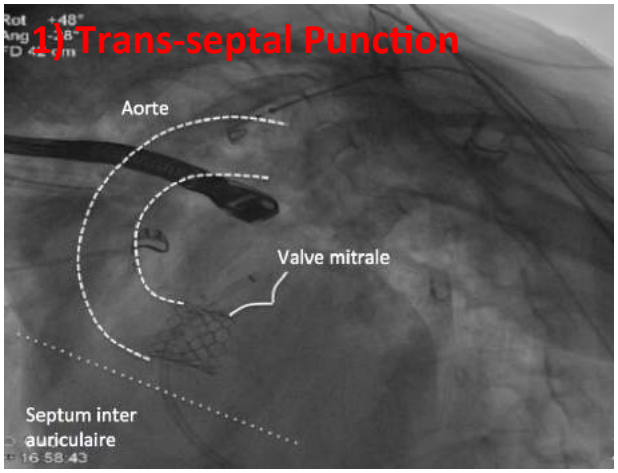
Pediatric Amplatzer

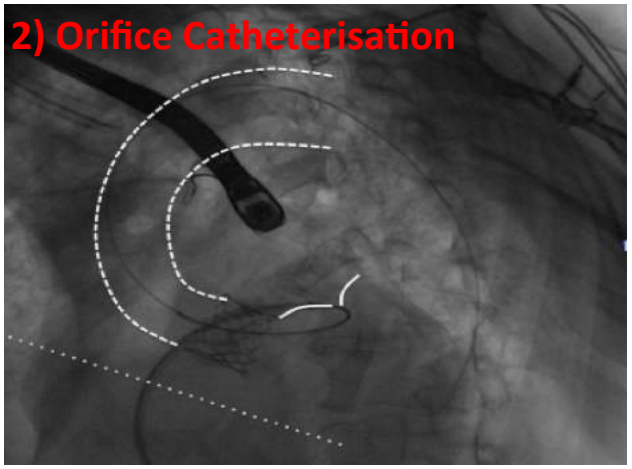
General Anesthesia ➔ TEE

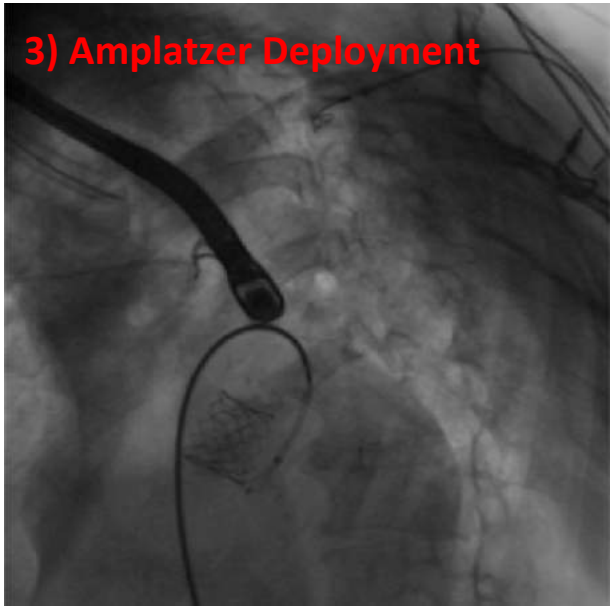
12 fr venous punction

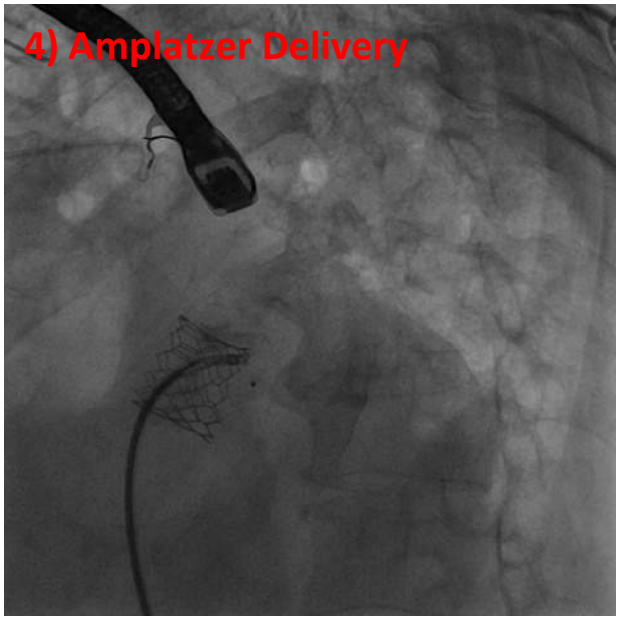


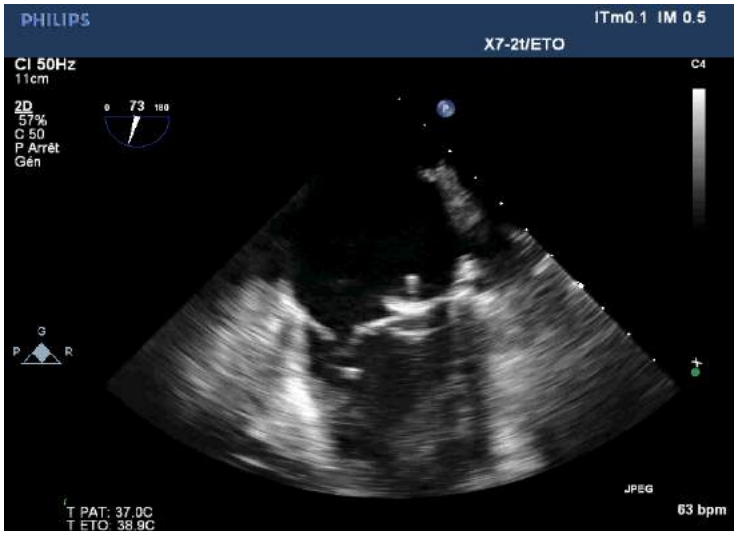

Hôpitaux de Lyon

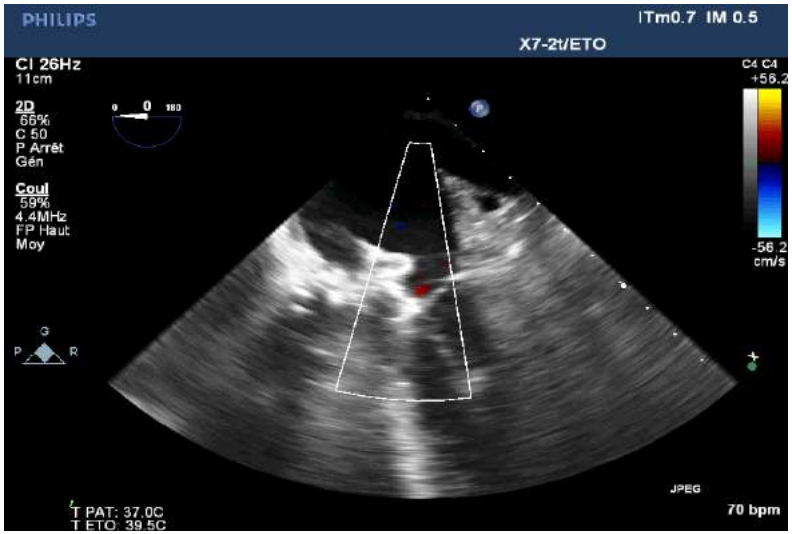

1) Trans-septal Punction
Aorte
Valve mitrale
Septum inter auriculaire

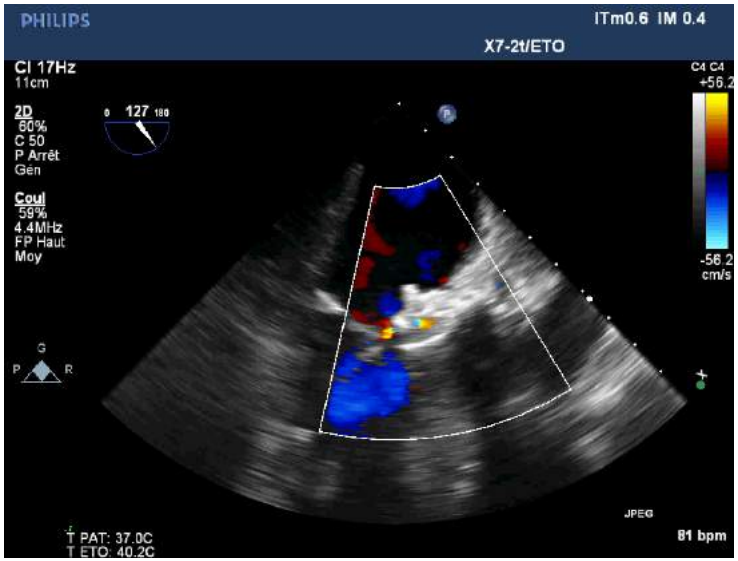

2) Orifice Catheterisation


3) Amplatzer Deployment

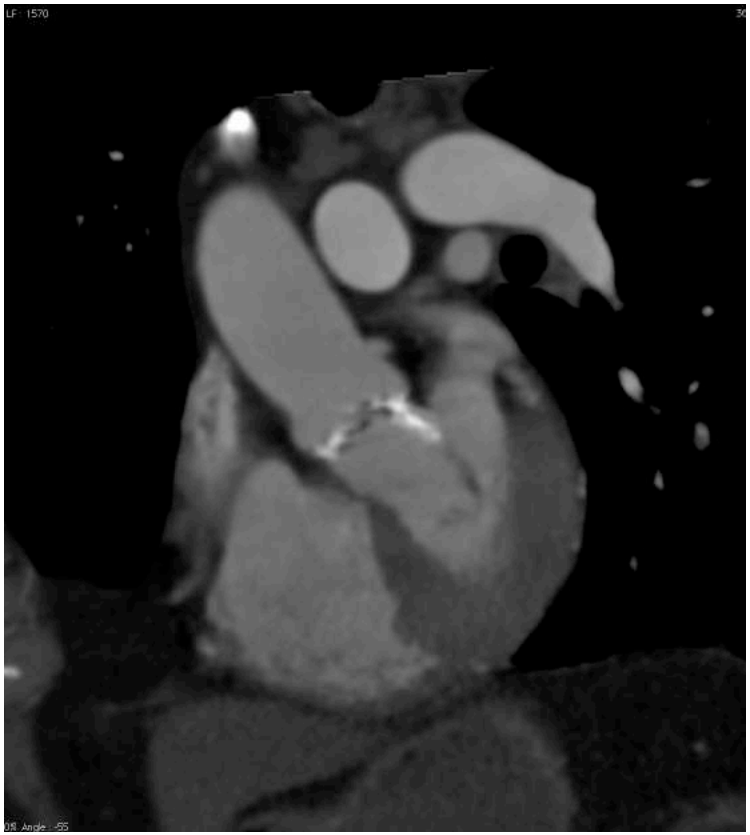

4) Amplatzer Delivery

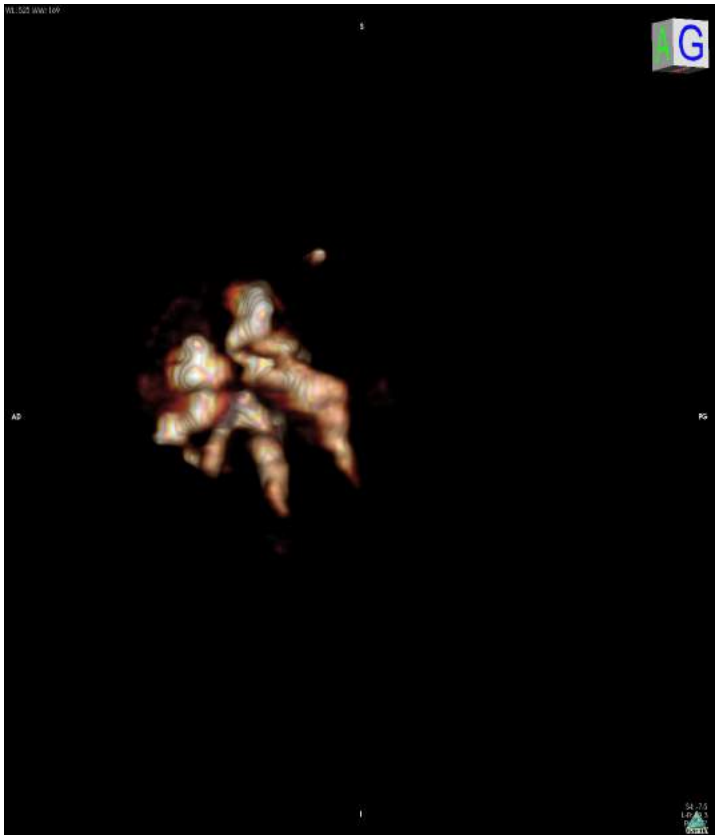

PHILIPS
ITm0.1 IM 0.5
X7-2t/ETO
CI 50Hz
11cm
2D
57%
C 50
P Arrêt
Gén
C4
T PAT: 37.0C
T ETO: 38.9C
JPEG
63 bpm

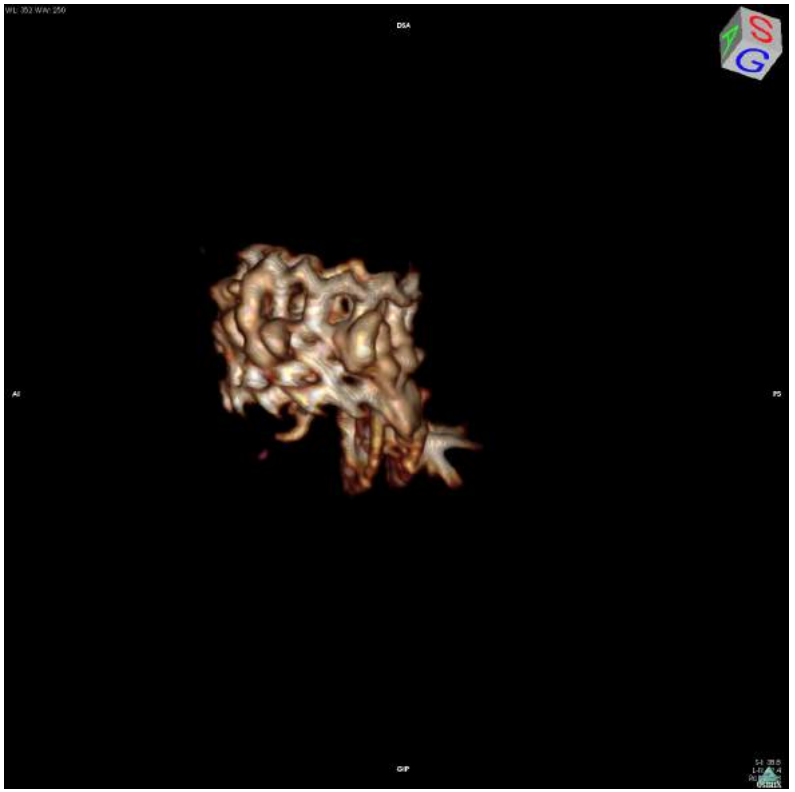

PHILIPS
ITm0.7 IM 0.5
X7-2t/ETO
CI 26Hz
11cm
2D
66%
C 50
P Arrêt
Gén
Coul
59%
4.4MHz
FP Haut
Moy
C4 C4
-56.2
cm/s
T PAT: 37.0C
T ETO: 39.5C
JPEG
70 bpm


PHILIPS
ITm0.6 IM 0.4
X7-2t/ETO
CI 17Hz
11cm
2D
60%
C 50
P Arrêt
Gén
Coul
59%
4.4MHz
FP Haut
Moy
C4 C4
-56.2
cm/s
T PAT: 37.0C
T ETO: 40.2C
JPEG
81 bpm


PHILIPS
ITm0.2 IM 0.5
X7-2t/ETO
CI 10Hz
9.8cm
Battem. 3D 1
3D
3D 42%
3D 40dB
C4
T PAT: 37.0C
T ETO: 39.6C
JPEG
83 bpm







Evolution :

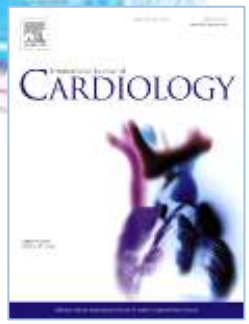
- Sevrage des amines à H 2
- Extubation à H 12
- Correction de l'IRA
- Sortie USIC 48 heures après
- Sortie de l'hôpital à J5
- Revu à 3, 6 et 12 mois en très bon état général.

"Acute Mitral Valve Regurgitation…"

1) Ischemic Papillary Muscle Rupture

2) Mechanical Chordae Rupture

3) Traumatic (indirect or direct…)



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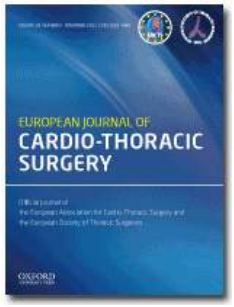

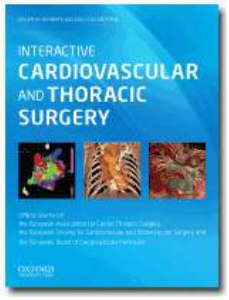

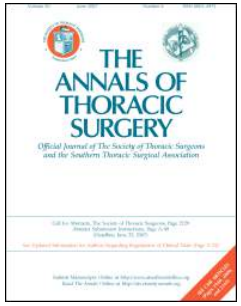

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