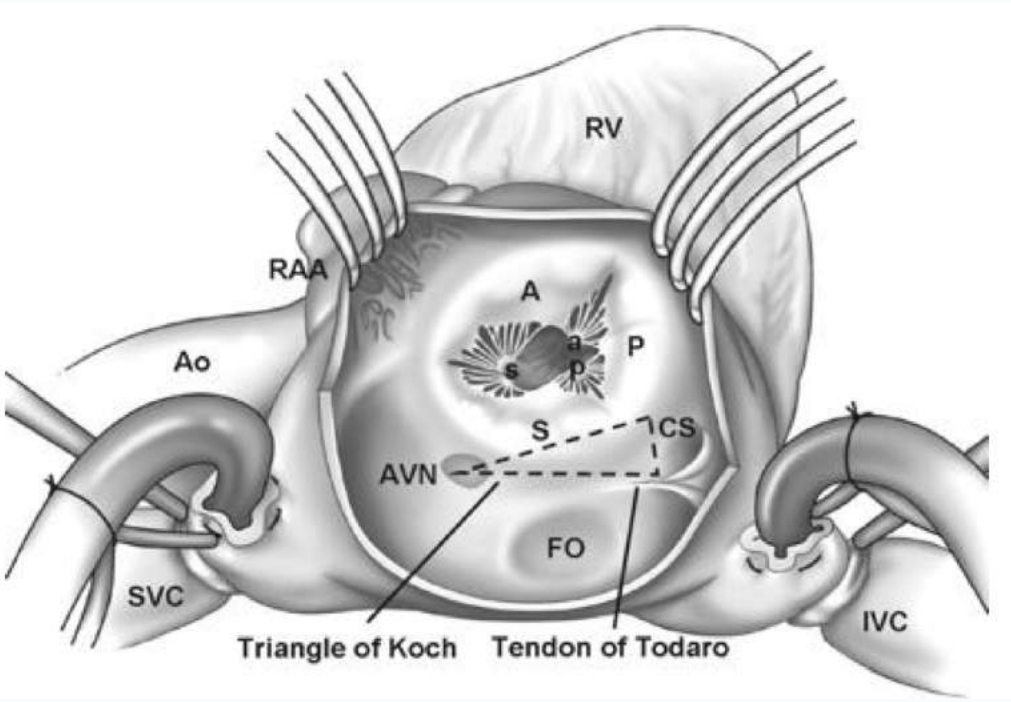
IT à distance de la chirurgie mitrale : quand intervenir ?

Jean-François OBADIA

Cardiothoracique Surgery and Transplantation
Hôpital Louis Pradel
- Lyon - France -

Nina S. BRAUNWALD Circulation. 1967; 35: I-63-I-69

About 100 Pts ➔ Mortality 14%
"tricuspid regurgitation will improve or disappear after mitral replacement and tricuspid valve replacement is seldom necessary"



Tricuspid ➔ The forgotten valve
Orphan disease

CARDIO VALVES
www.cardiovalves.fr
HEART and Education in Heart
Aug 2001; 86(2): 144.
Current TOC | Instructions for authors

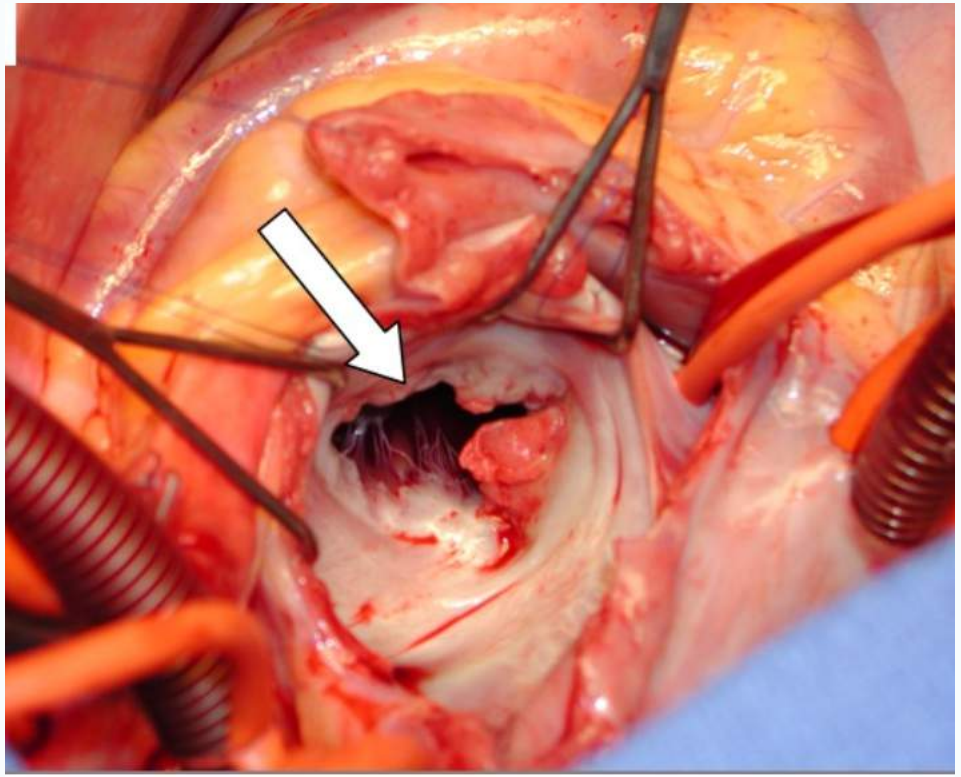
Tricuspid valvectomy following tricuspid valve endocarditis on an intravenous drug addict

P. NIHOYANNOPOULOS

50 years old male
drug abuser

↓

Survival > 10 years

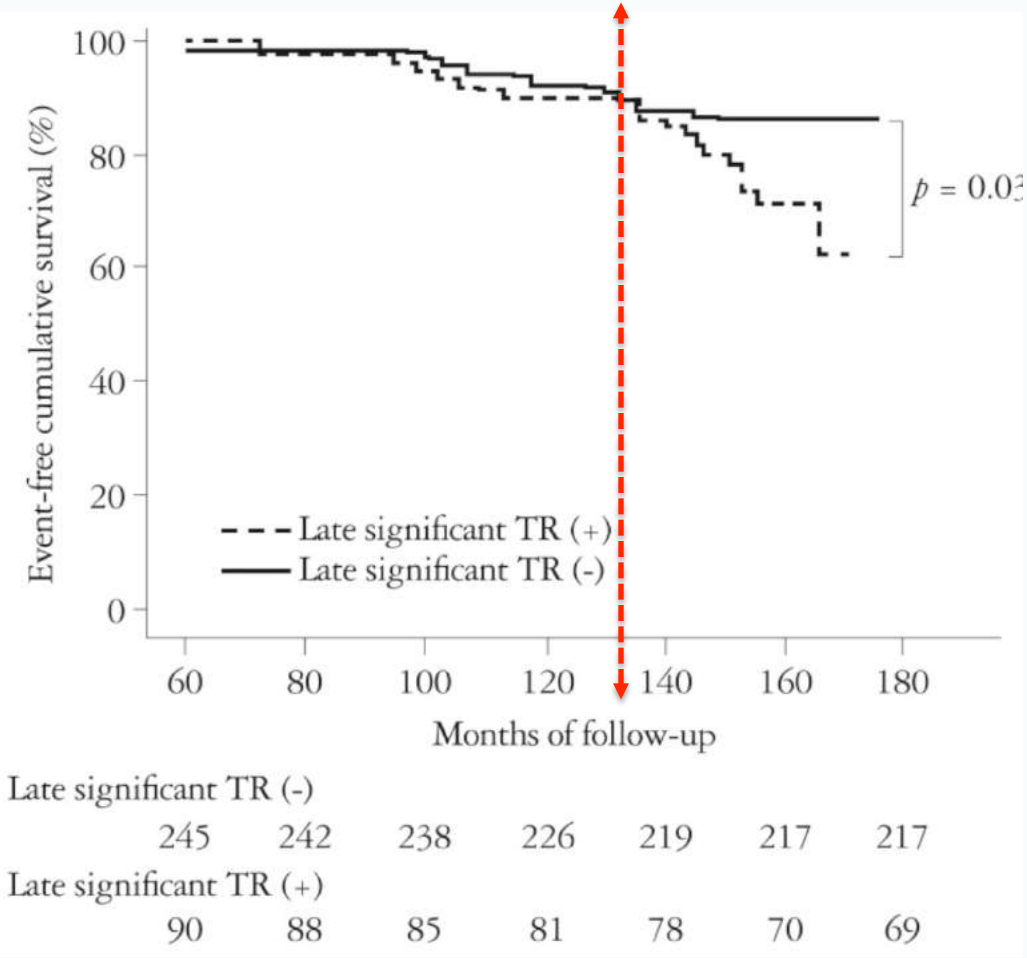


Tricuspid Regurgitation: Clinical Importance and Its Optimal Surgical Timing Kim HK. Seoul Korea.

Pubmed 1900 to 2012

- **mitral regurgitation**
  ➔ 24013 papers

- **tricuspid regurgitation**
  ➔ 4294 papers



CARDIO VALVES
www.cardiovalves.fr

Incidence of Valve diseases

Estimated structural heart valve disease

(USA)

Valve lesion *	Population	Currently treated
Mitral regurgitation	2,520,000	48,000 (2%)
Aortic stenosis	749,000	79,000 (10%)
Tricuspid regurgitation	1,600,000	< 8,000

"The Forgoten Valve"

* Moderate to severe & severe valvular lesions

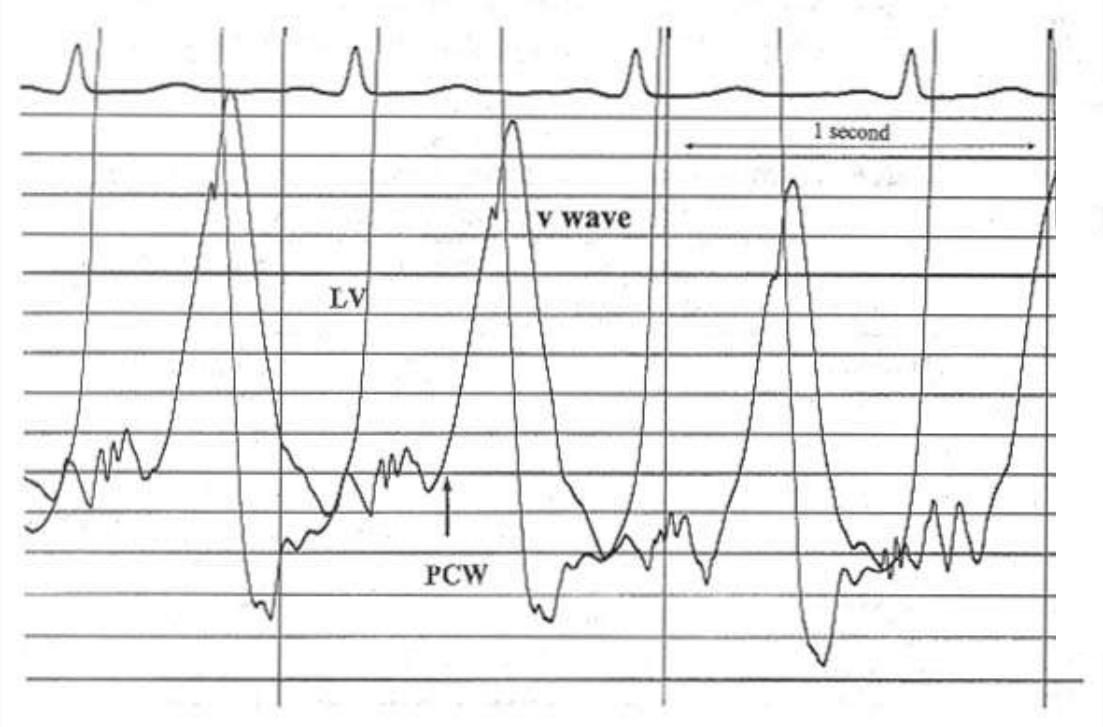
Less than 0.5% of cases

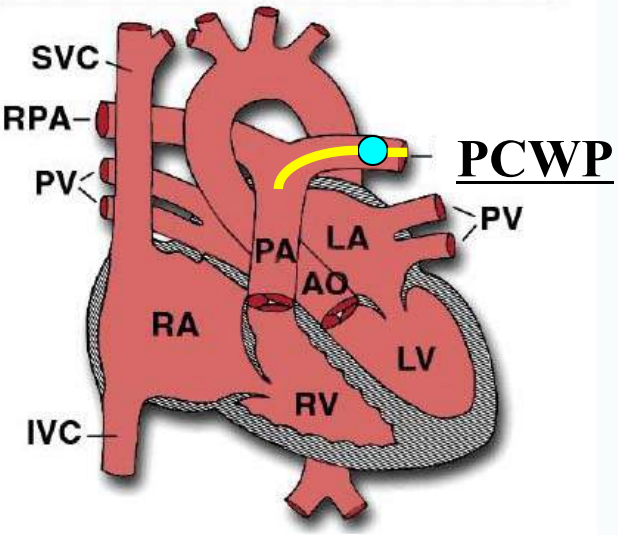
- ***70% of Normal Subjects Have Trivial TR***
- ***90% of Cardiac Patients Have TR***

Stuge O. et al. JTCS 2006:132:1258-61

Tricuspid Regurgitation depends on:

- Tricuspid Diameter
- Preload: Blood Volume
- RV Function
- Afterload (the only factor corrected by mitral repair): PVR



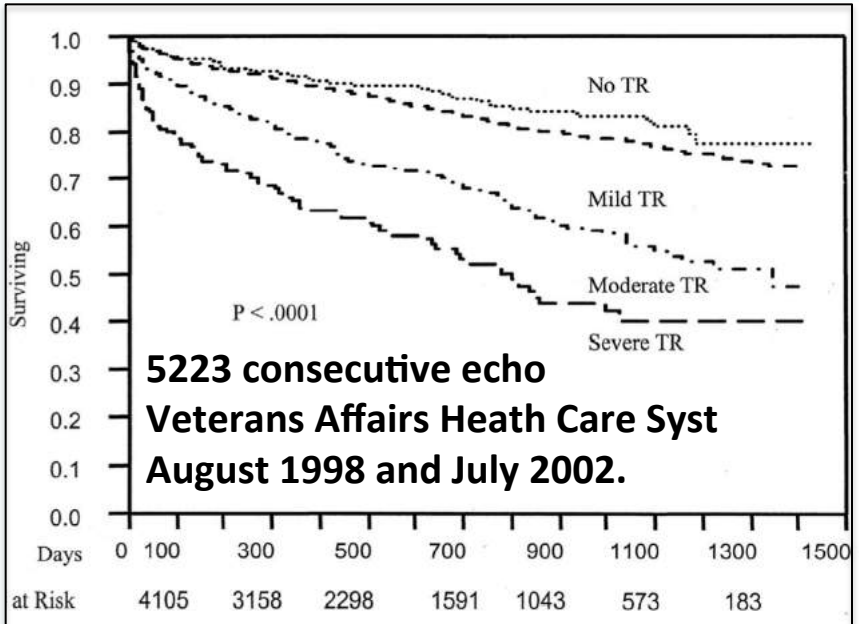


Impact on the follow-up

1967 → **2004**

Circulation. 1967; 35: I-63-I-69

100 Pts
No impact after Mitral valve surg



5223 consecutive echo
Veterans Affairs Heath Care Syst
August 1998 and July 2002.

JACC 2004;43:405-9

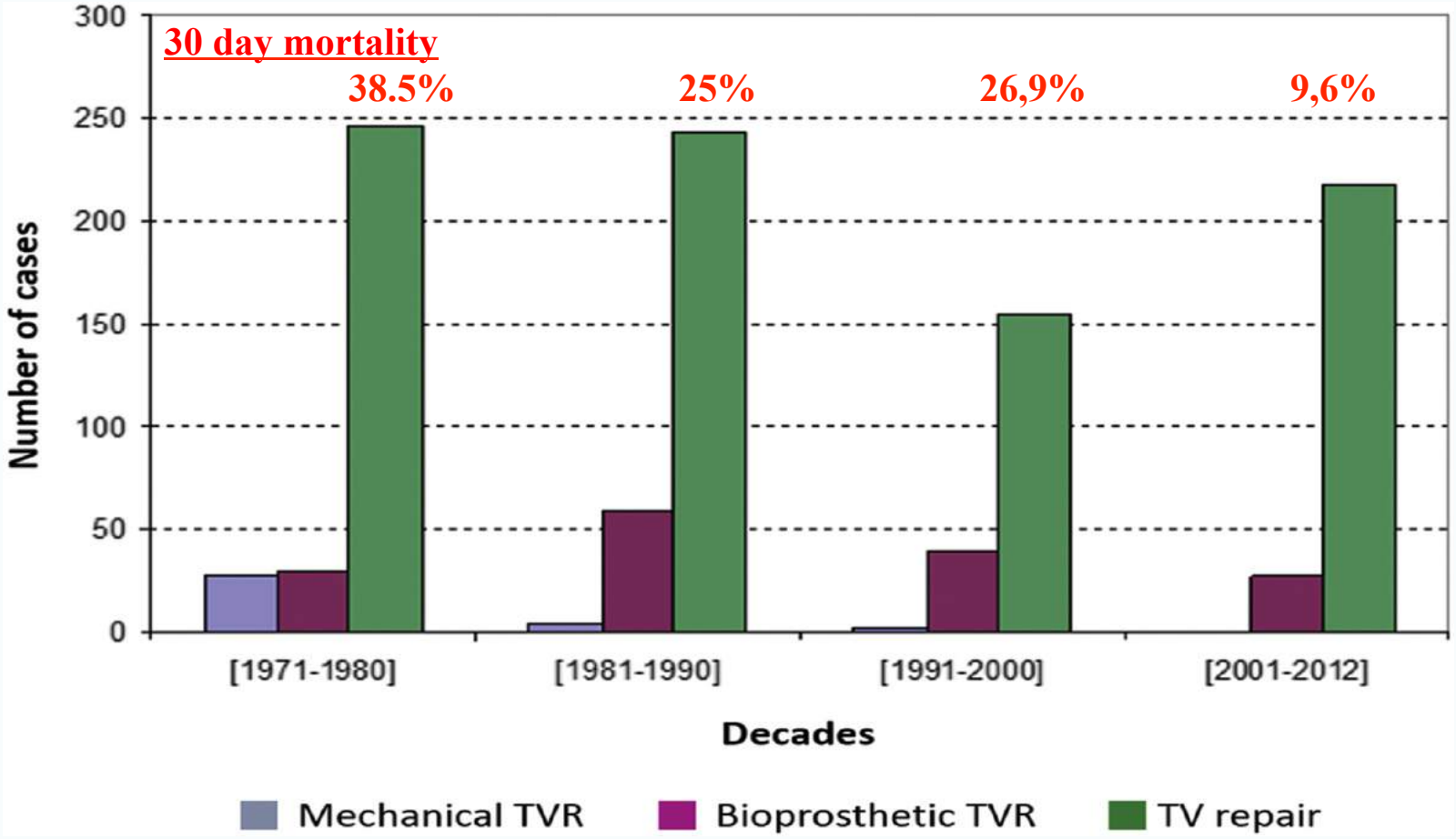
5223 pts
independent of age, EF, PAP

Appraisal of Long-Term Outcomes of TVR…Current Perspective

A Anselmi, A Leguerrier Ann Thorac Surg 2016;101:863–71

188 TV replacements

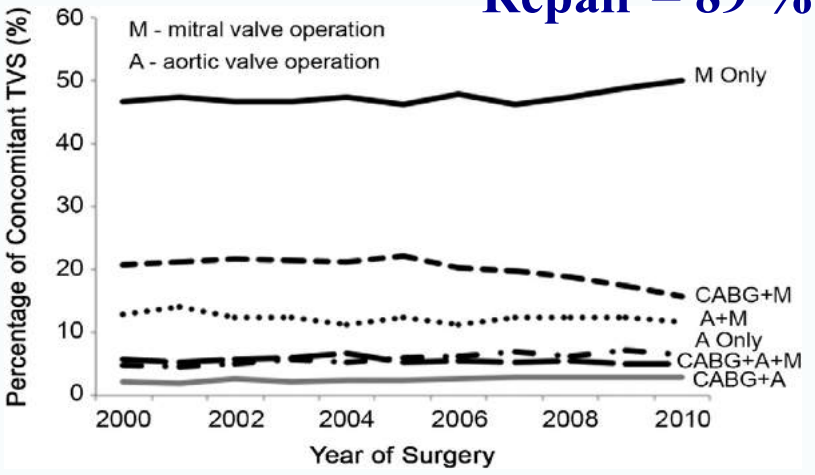
- reoperations 48.1%
- associated procedures 71.3%

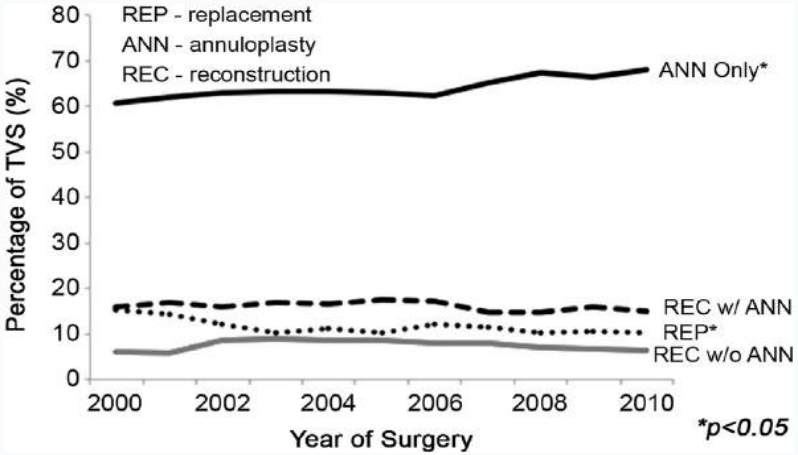


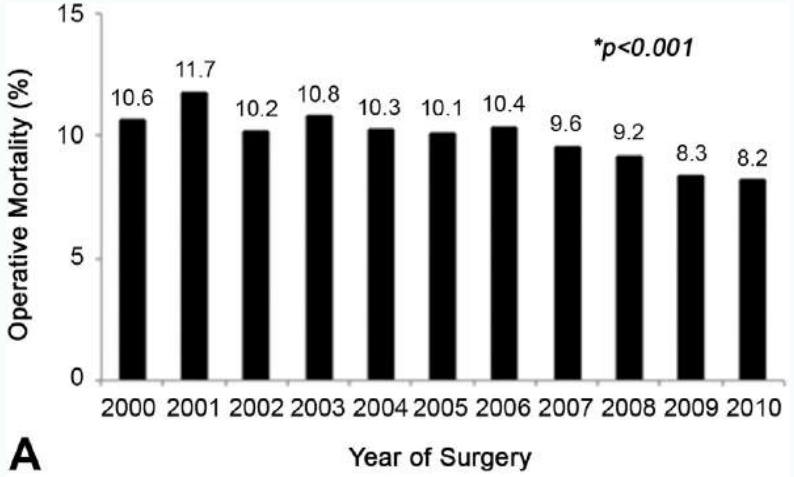
Trends and Outcomes of TV Surgery in North America: An Analysis of More Than 50,000 pts From The STS Database.

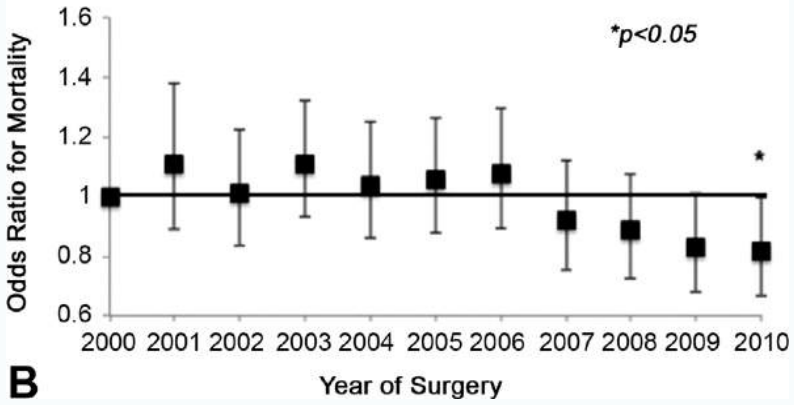
A Killic et al. Ann Thorac Surg 2013;96:1546–52

N = 54375 pts
Concomitant Procedure = 86%
Repair = 89 % (75% ring)









Fatal Paradox

MANAGEMENT OF TRICUSPID VALVE REGURGITATION

Manuel J Antunes, John B Barlow. Heart 2007;93:271–276

1) Hospital mortality for repeat tricuspid valve surgery may reach 50%.

➔ Surgery should, therefore, be delayed.

2) High functional class, severe right heart failure, low right ventricular ejection fraction, high pulmonary pressure and pulmonary arterial resistance are additional risk factors when repeating tricuspid surgery.

➔ Surgery should be done early

TR repair should be prophylactic associated with the left side surgery

IT à distance de la chirurgie mitrale : quand intervenir ?
Jamais !!!

Secondary TR or dilatation ?

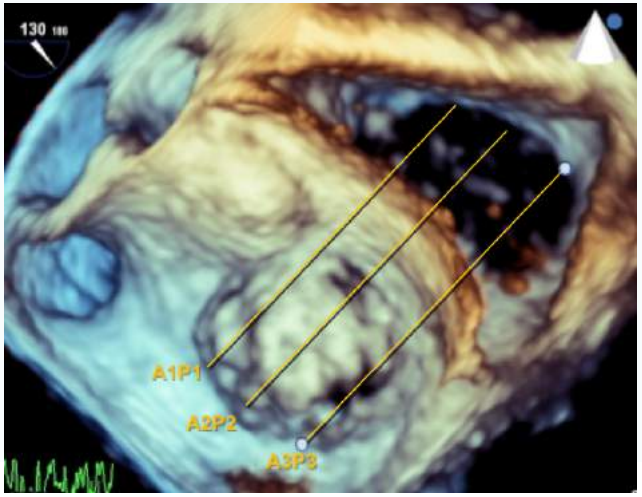
« Dreyfus G et al. Ann Thorac Surg 2005 ; 79 : 127-32 »

311 MV Repair Annulus>70mm	163 MVR no	148 MVR + Tric yes
Mortality	1,8 %	0,7 %
Survival 3 years 10 years	97 % 85 %	98 % 90 %
NYHA	1,59	1,11
TR recurrence	48 %	2 %
Pace Maker	3,1 %	5,4 %

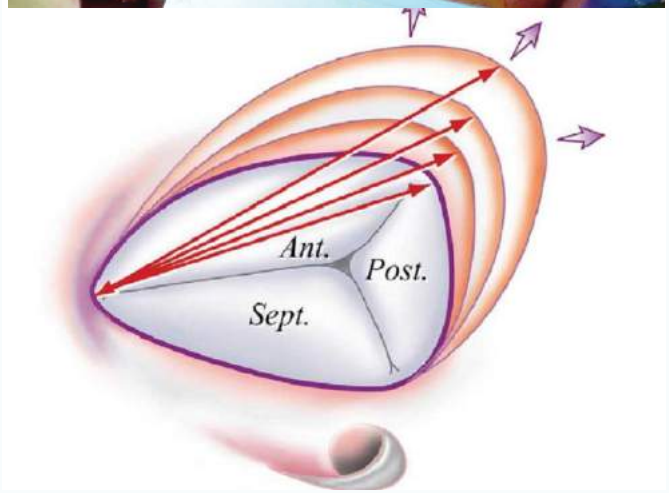
1) Considerable tricuspid dilatation present in the absence of substantial TR.
2) Annuloplasty based on dilation improvement irrespective of the TI grade

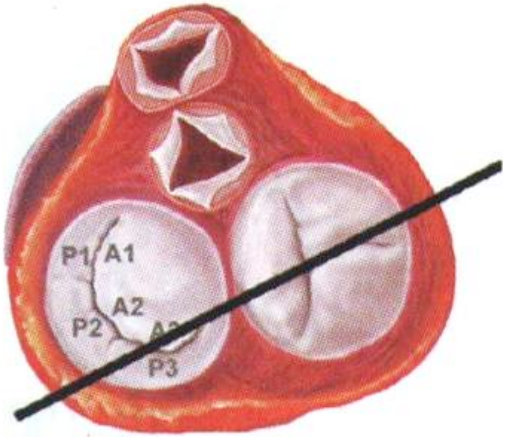
Secondary TR or dilatation ?

« Dreyfus G et al. Ann Thorac Surg 2005 ; 79 : 127-32 »



Courtesy of A Berrebi





1) Considerable tricuspid dilatation present in the absence of substantial TR.

2) Annuloplasty based on dilation improvement irrespective of the TI grade

MV repair for Dystrophy

Mitral Valve Repair > 20 years TR = 11 %

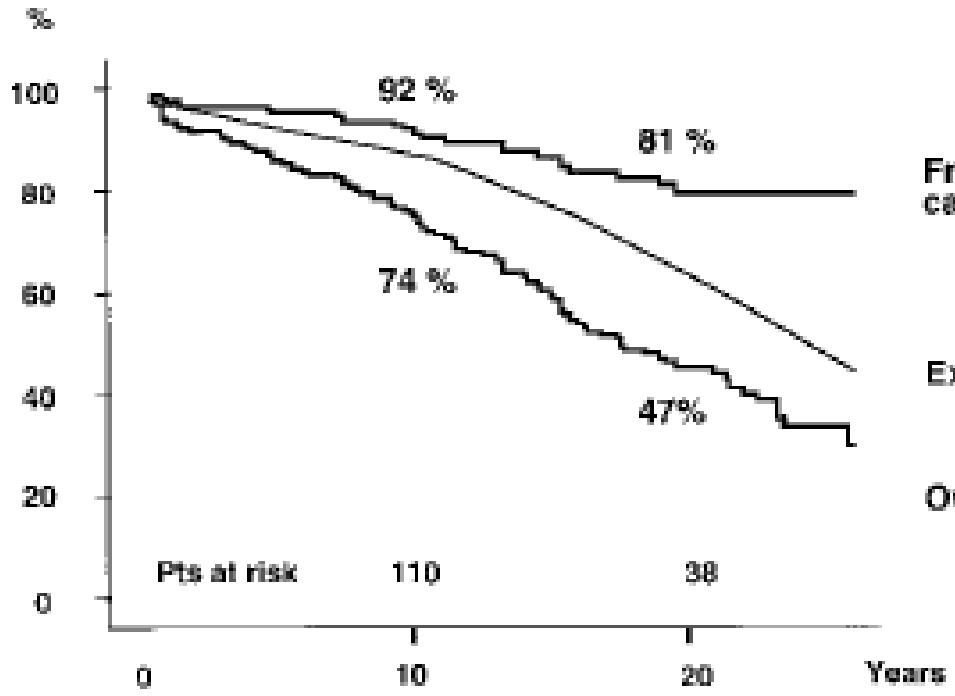


Figure 1. Rates at 10 and 20 years for freedom from cardiac death, expected survival, and overall survival.

« Braunberger Circulation 2001 »

PACEMAKERS and TRICUSPID

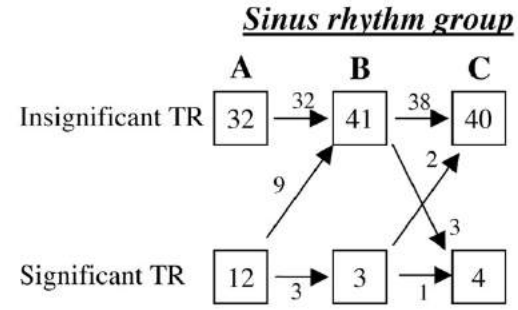
Pacemaker Therapy After Tricuspid Valve Operations: Implications on Mortality, Morbidity, and Quality of Life. Janne J. Jokinen et al.
***Ann Thorac Surg* 2009;87:1806-1814**

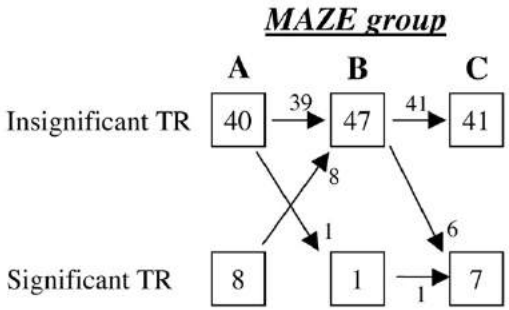
28 / 136 Pts 8 years

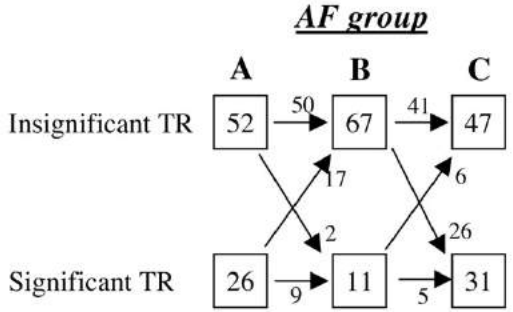
- *11% before discharge*
- *10% after*

Impact of the Maze Operation With Left-Sided Valve Surgery on the Change in TR over Time

Kim HK, Circulation 2005 ; 112(9 suppl):I-14-I-19



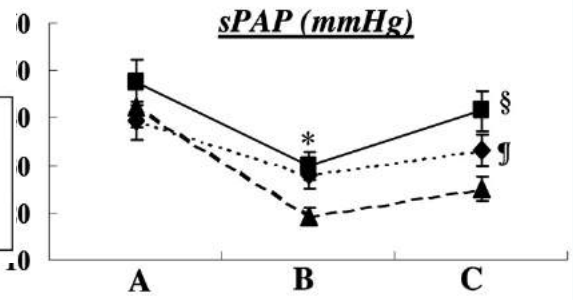


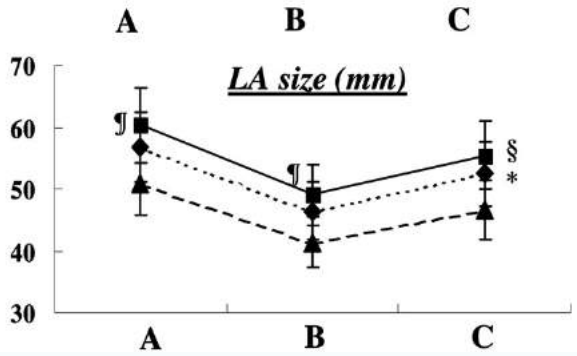


A: Preoperative examination

B: Immediate postoperative examination

C: Last examination





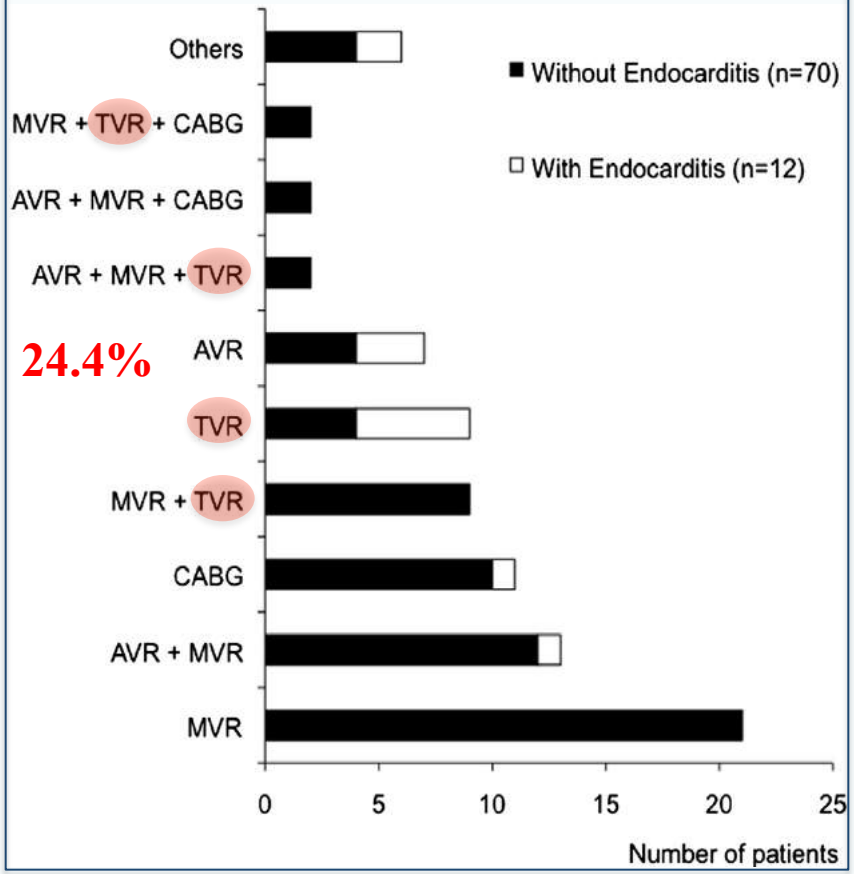
The maze operation reduces the risk of late significant TR by as much as 79%

Isolated TV surgery in patients with previous cardiac surgery. Bettina P…Mohr *JTS 2013;146:841-7*

82 Isolated TVRepair/Replac

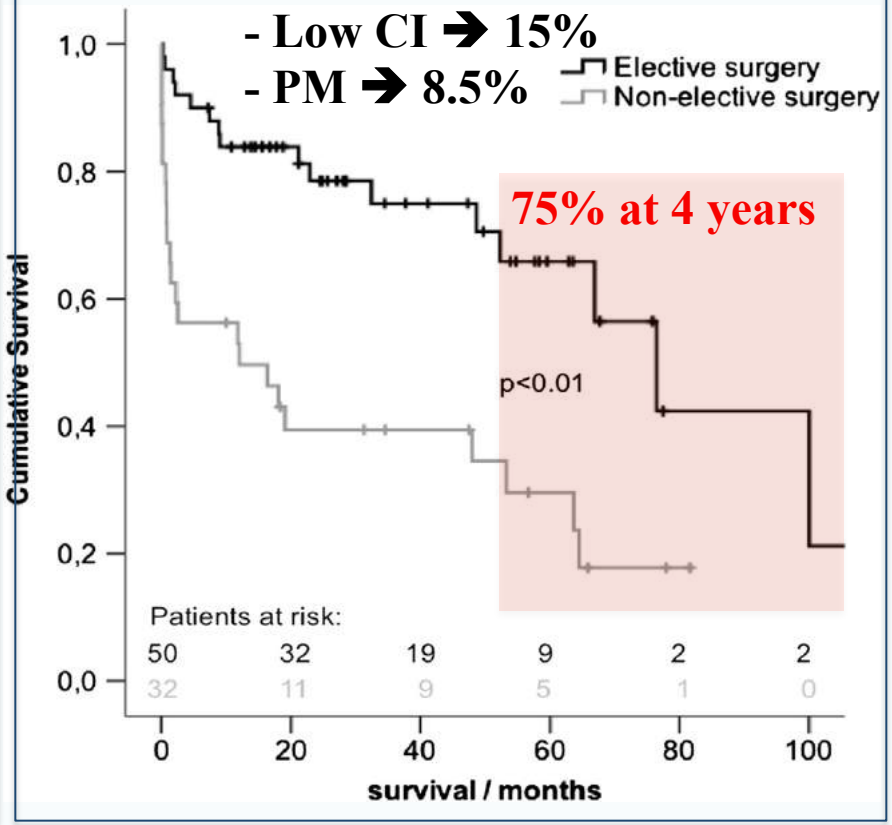
MIS ➔ 60%

Ao Clamping ➔ 20%



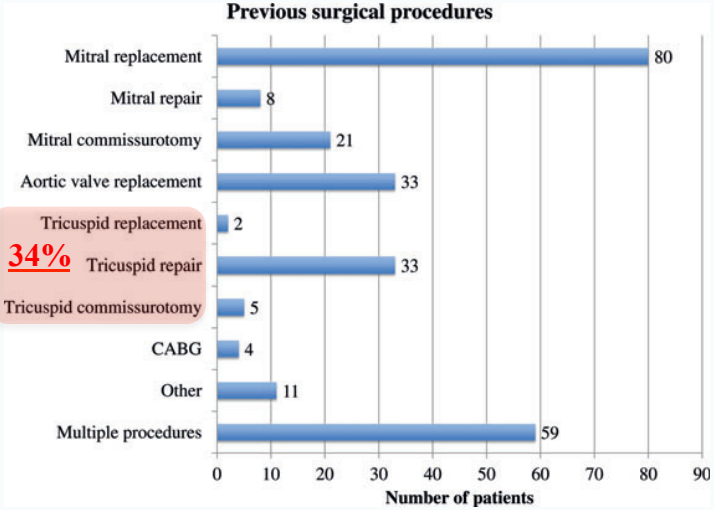
Post-operative :

- ✚ Overall ➔ 14.6%
- ✚ Elective ➔ 4 %
- ✚ MIS ➔ 0%
- Low CI ➔ 15%
- PM ➔ 8.5%



Long-term outcomes of TVR after previous left-side heart surgery†
N Buzzatti et al O Alfieri. European JCTS 46 (2014) 713–719

117 TV Replacement (94.9% Bioprostheses)
52% Isolated TVR ➔ 85% Right T / beating Heart



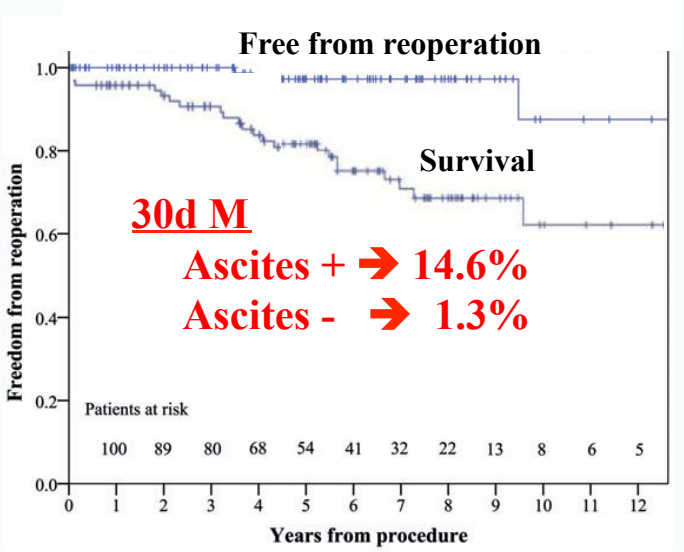
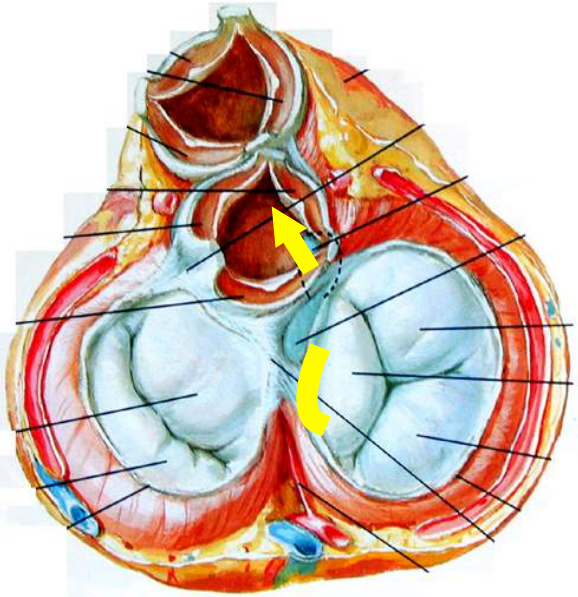
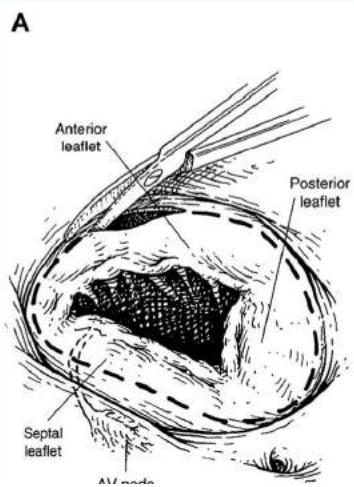


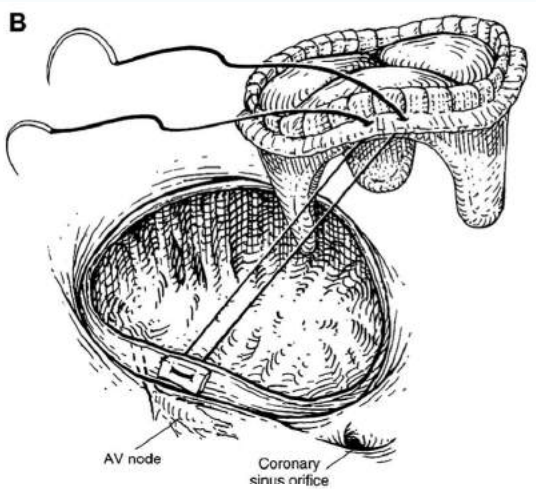
Table 4: Preoperative predictors of 30-day mortality

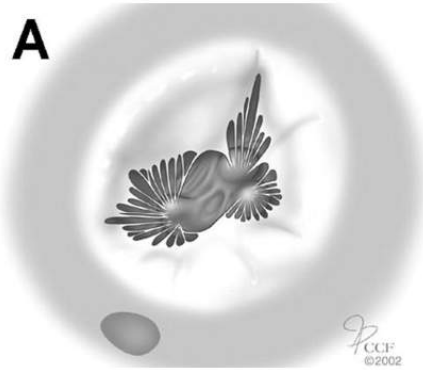
117 patients	Alive (*n* = 110)	Dead (*n* = 7)	*P*-value	OR (95% CI)
Age mean, years	62.8 ± 9.7	58.4 ± 10.9	0.255	0.96 (0.89–1.03)
LES median, %	11.6 (8.1–16.0)	38.7 (13.3–45.9)	0.002*	1.16 (1.06–1.27)
Ascites	35 (31.9%)	6 (85.7%)	0.004*	12.86 (1.49–110.89)
Number of previous operations >1	30 (27.3%)	4 (57.1%)	0.091	3.56 (0.75–16.83)
I-TVR	56 (50.9%)	5 (71.4%)	0.292	2.41 (0.45–12.96)
LVEF mean, %	54.9 ± 8.5	46.2 ± 11.8	0.072	0.92 (0.84–1.01)
RV dysfunction ≥moderate	24 (21.8%)	4 (57.1%)	0.033*	4.78 (1.00–22.82)
sPAP mean, mmHg	47.5 ± 12.9	63.7 ± 24.9	0.046*	1.05 (1.00–1.11)

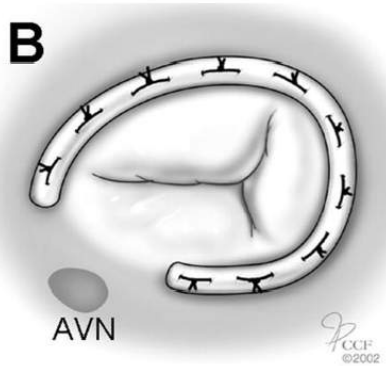
Surgical Techniques

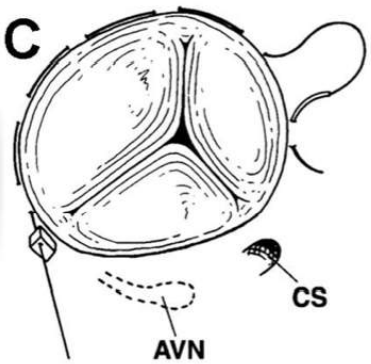


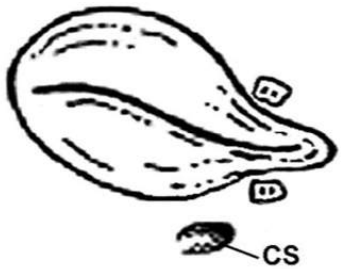








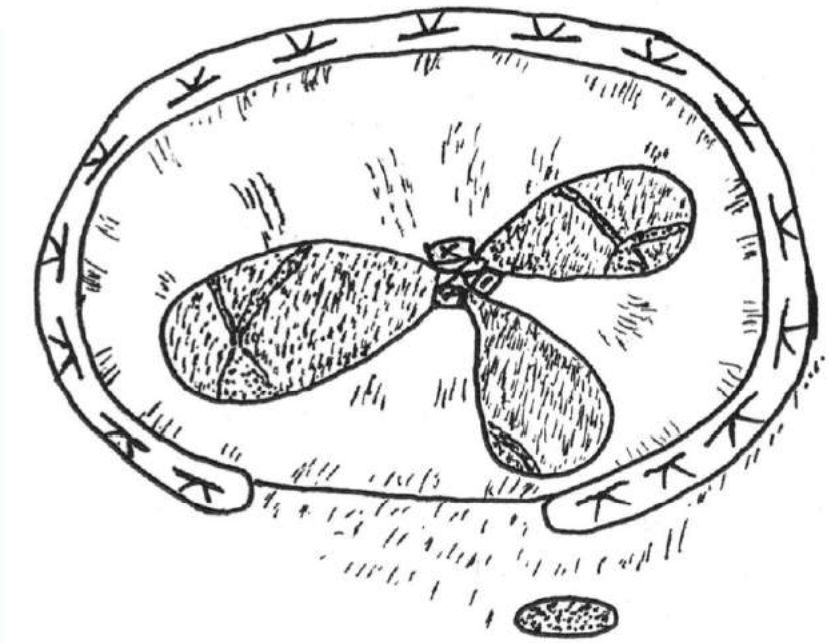


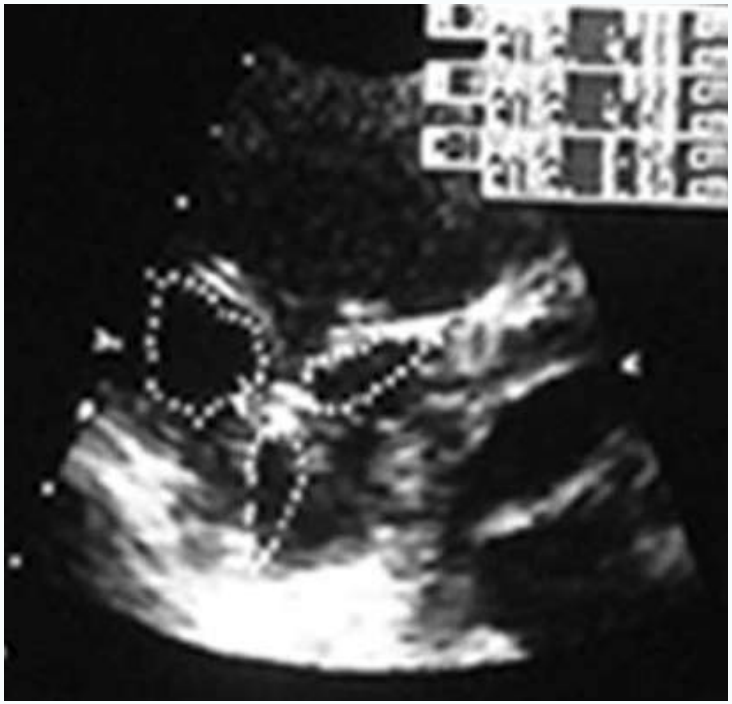


Rigid or flexible annular bands

Suture bicuspidalization

Edge to Edge « *Clover Shape* »





De Bonis.Ann Thor Surg 2004;81:2179-82

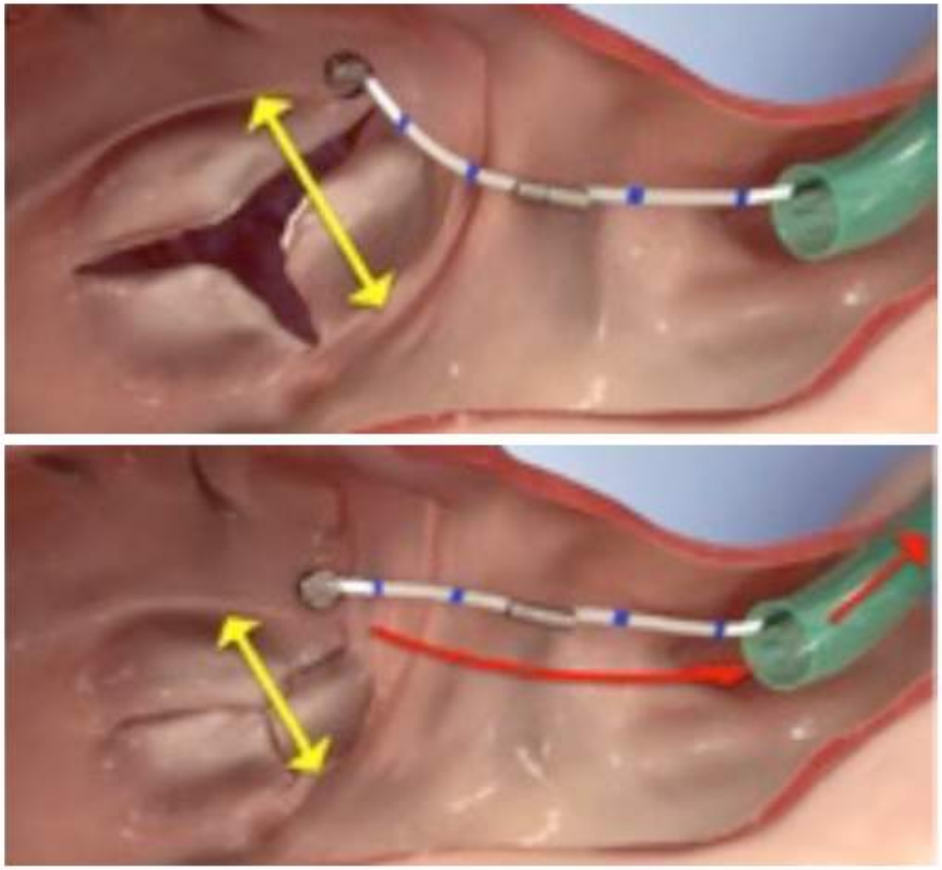
New techniques ➔ Push the limits

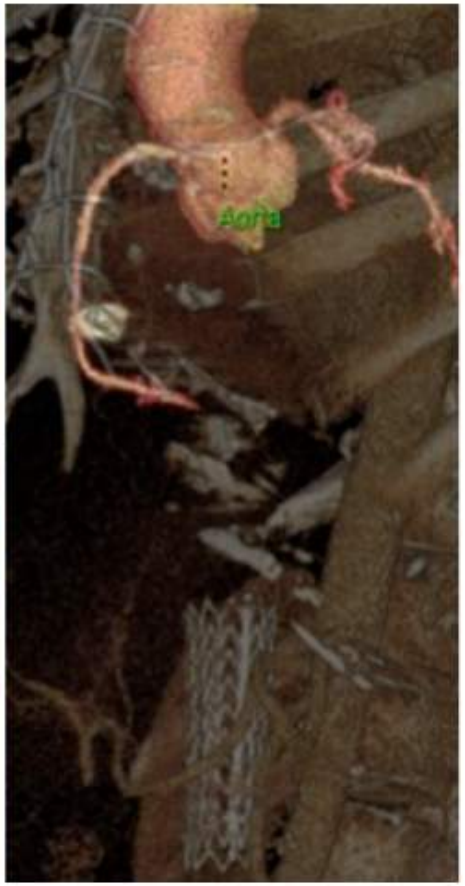
RV Assistance

Mini-Invasive Approaches

Percutaneous Approach

TriCinchTM (4TECH Cardio Ltd, Ireland)





Guidelines on the management of valvular heart disease (version 2012)

ESC/EACTS GUIDELINES

Table 16 Indications for tricuspid valve surgery

	Class [a]	Level [b]
Surgery is indicated in symptomatic patients with severe TS.[c]	I	C
Surgery is indicated in patients with severe TS undergoing left-sided valve intervention.[d]	I	C
Surgery is indicated in patients with severe primary or secondary TR undergoing left-sided valve surgery.	I	C
Surgery is indicated in symptomatic patients with severe isolated primary TR without severe right ventricular dysfunction.	I	C
Surgery should be considered in patients with moderate primary TR undergoing left-sided valve surgery.	IIa	C
Surgery should be considered in patients with mild or moderate secondary TR with dilated annulus (≥40 mm or >21 mm/m²) undergoing left-sided valve surgery.	IIa	C
Surgery should be considered in asymptomatic or mildly symptomatic patients with severe isolated primary TR and progressive right ventricular dilatation or deterioration of right ventricular function.	IIa	C
After left-sided valve surgery, surgery should be considered in patients with severe TR who are symptomatic or have progressive right ventricular dilatation/dysfunction, *in the absence* of left-sided valve dysfunction, severe right or left ventricular dysfunction, and severe pulmonary vascular disease.	IIa	C

Severe symptomatic TR
RV dilatation

no L or R Vent. dysfunction
no severe PHT

IT à distance : quand intervenir ?
Jamais !!!

Seule réponse = Anticiper

Conclusions

IT à distance de la chirurgie mitrale : quand intervenir ?

ANTICIPATION :

-<u>Ring if Ann > 40mm</u>

. Rhum ≠ Dystrophic

. 30% Recurrent TR

- <u>AF ablation</u>

Never too Early

Percutaneous

Never too late