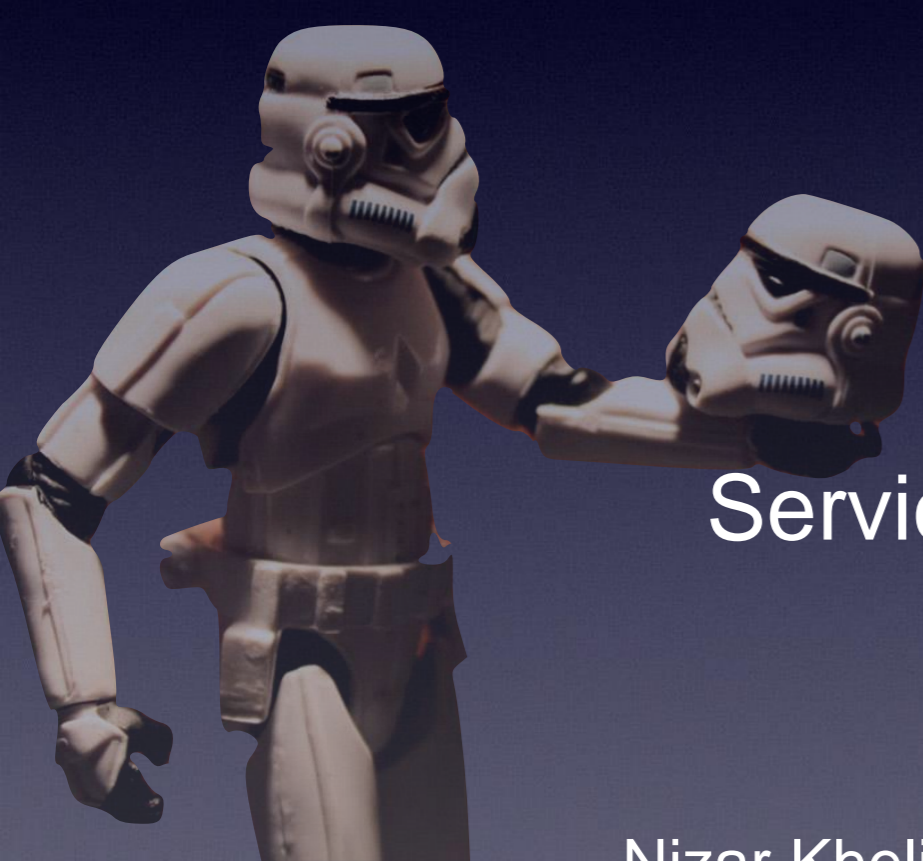


Indication de la chirurgie dans la fuite Tricuspide

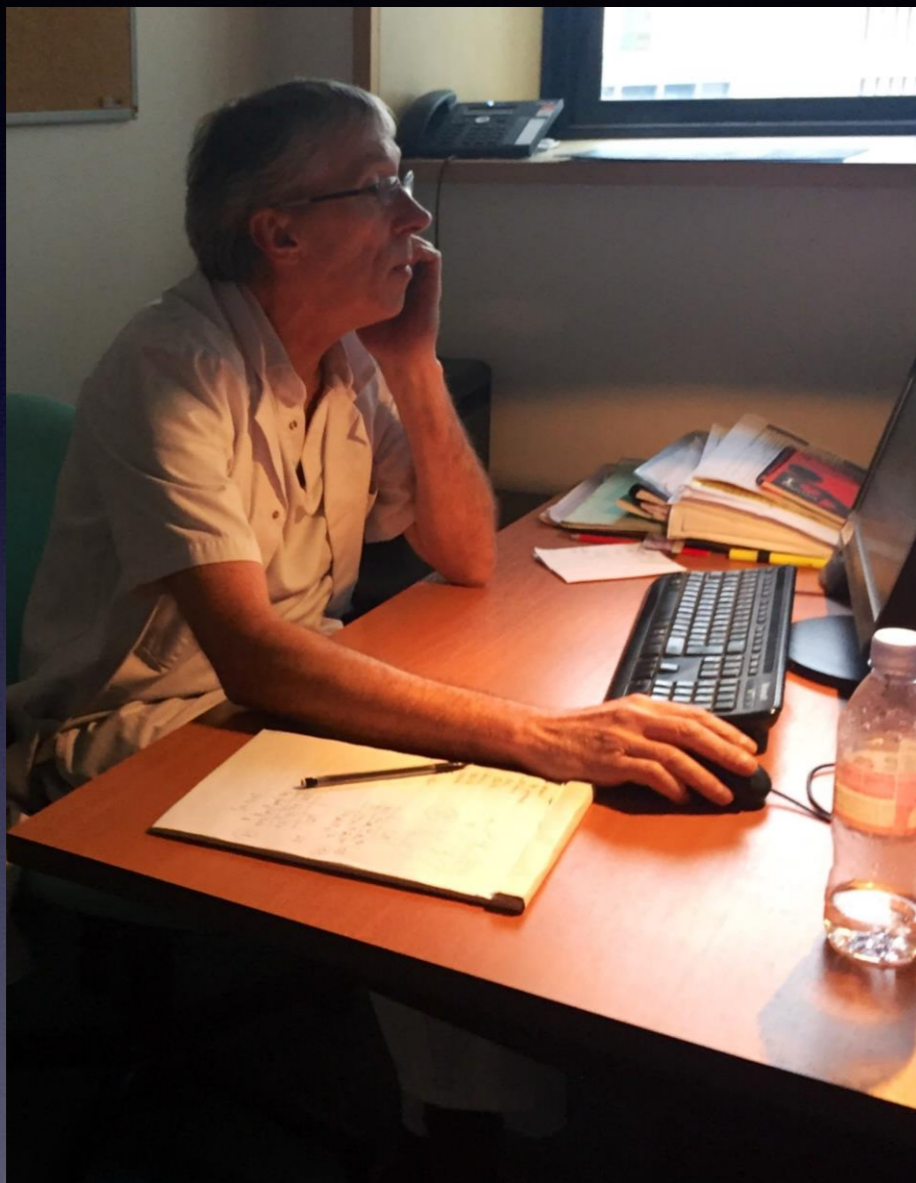


Service de Pathologie Cardiaque

Konstantinos Zannis

Nizar Khelil, Mathieu Debauchez, Patrice Dervanian,
Emmanuel Lansac, Susanna Salvi



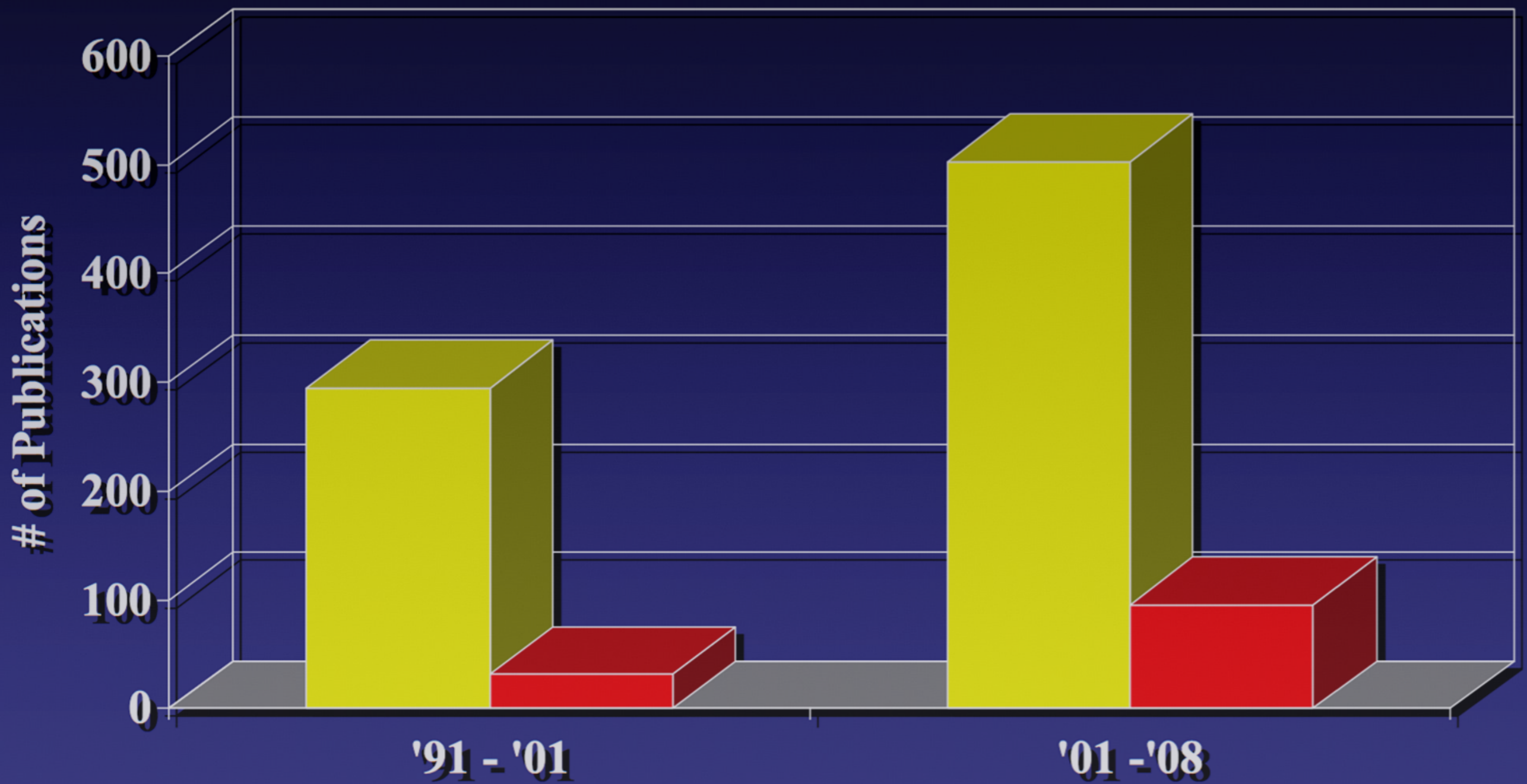


- 3 re-operations
- 14 re-operations

Docteur N.AMABILE

Docteur A.BERREBI

Docteur K.ZANNIS



■ Mitral

■ Tricuspid

PRACTICE GUIDELINE

2014 AHA/ACC Guideline for the Management of Patients With Valvular Heart Disease



A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines

Developed in Collaboration With the American Association for Thoracic Surgery, American Society of Echocardiography, Society for Cardiovascular Angiography and Interventions, Society of Cardiova.



ESC

European Society
of Cardiology

European Heart Journal (2017) **38**, 2739–2791
doi:10.1093/eurheartj/ehx391

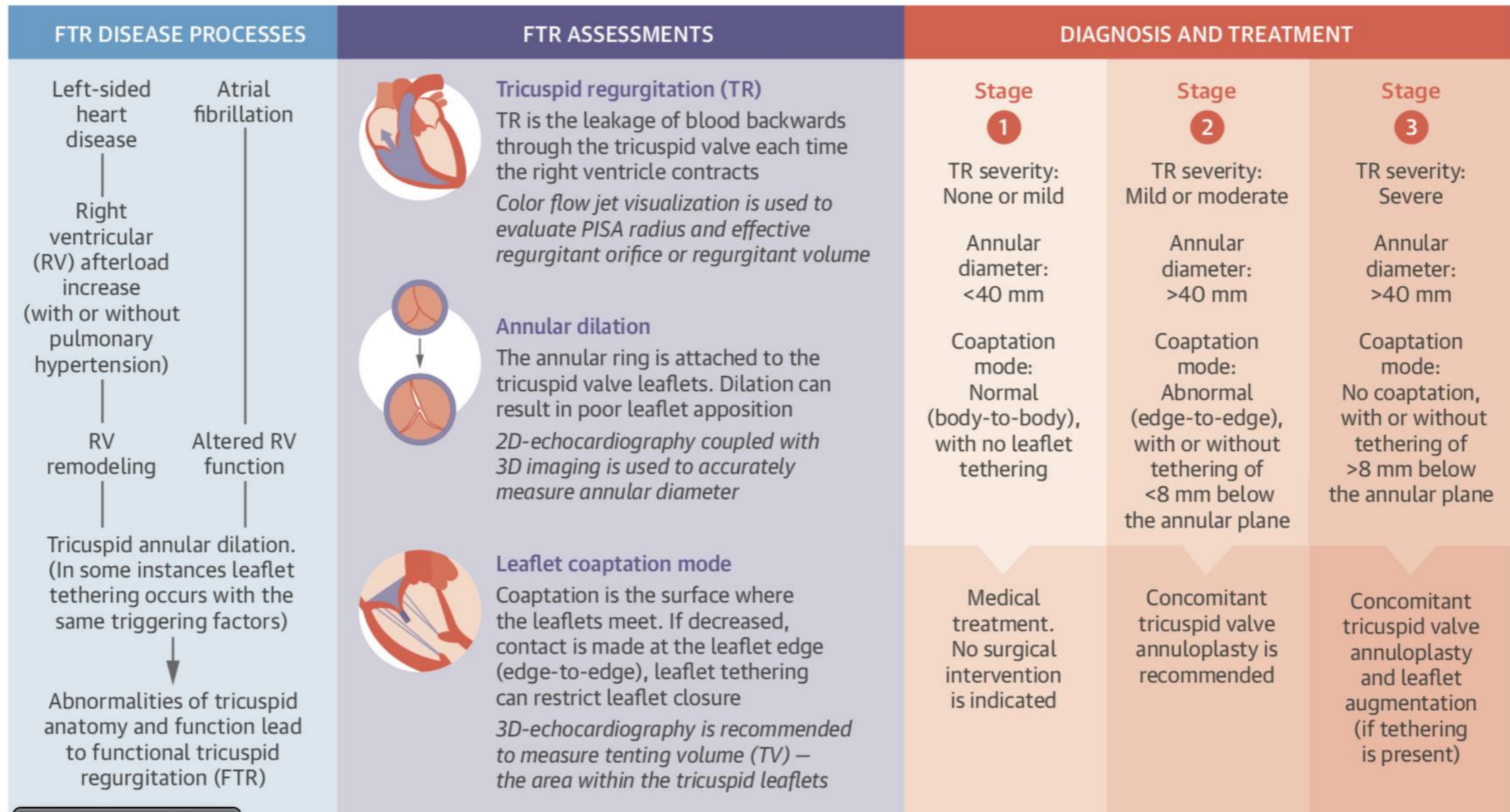
ESC/EACTS GUIDELINES

2017 ESC/EACTS Guidelines for the management of valvular heart disease

The Task Force for the Management of Valvular Heart Disease of the European Society of Cardiology (ESC) and the European Association for Cardio-Thoracic Surgery (EACTS)

- Approximately 80% of TR functional
- Due to RV overload
- Tricuspid annulus changes from saddle shape to plan and circular
- Once the process engaged doesn't regress

CENTRAL ILLUSTRATION Functional Tricuspid Regurgitation Development, Assessment, Diagnosis, and Treatment



Capture d'écran

Tricuspid regurgitation secondary to mitral valve disease: Tricuspid annulus function as guide to tricuspid valve repair

Tiziano Colombo  , Claudio Russo, Guglielma Rita Ciliberto, Marco Lanfranconi, Giuseppe Bruschi, Salvatore Agati, Ettore Vitali

Tricuspid annuloplasty prevents right ventricular dilatation and progression of tricuspid regurgitation in patients with tricuspid annular dilatation undergoing mitral valve repair

Nico R. Van de Veire, MD, PhD,^a Jerry Braun, MD,^b Victoria Delgado, MD,^a Michel I. M. Versteegh, MD,^b Robert A. Dion, MD, PhD,^b Robert J. M. Klautz, MD, PhD,^b and Jeroen J. Bax, MD, PhD^a

Secondary Tricuspid Regurgitation or Dilatation: Which Should Be the Criteria for Surgical Repair?

Gilles D. Dreyfus, MD, Pierre J. Corbi, MD, K. M. John Chan, AFRCs, and Toufan Bahrami, MD

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Impact of Concomitant Tricuspid Annuloplasty on Tricuspid Regurgitation, Right Ventricular Function, and Pulmonary Artery Hypertension After Repair of Mitral Valve Prolapse

Joanna Chikwe, MD, Shinobu Itagaki, MD, Anelechi Anyanwu, MD, David H. Adams, MD



Recommendations on primary tricuspid regurgitation

Surgery is indicated in patients with severe primary tricuspid regurgitation undergoing left-sided valve surgery.	I	C
Surgery is indicated in symptomatic patients with severe isolated primary tricuspid regurgitation without severe RV dysfunction.	I	C
Surgery should be considered in patients with moderate primary tricuspid regurgitation undergoing left-sided valve surgery.	IIa	C
Surgery should be considered in asymptomatic or mildly symptomatic patients with severe isolated primary tricuspid regurgitation and progressive RV dilatation or deterioration of RV function.	IIa	C

Recommendations on secondary tricuspid regurgitation

Surgery is indicated in patients with severe secondary tricuspid regurgitation undergoing left-sided valve surgery.	I	C
Surgery should be considered in patients with mild or moderate secondary tricuspid regurgitation with a dilated annulus (≥ 40 mm or > 21 mm ² by 2D echocardiography) undergoing left-sided valve surgery.	IIa	C
Surgery may be considered in patients undergoing left-sided valve surgery with mild or moderate secondary tricuspid regurgitation even in the absence of annular dilatation when previous recent right-heart failure has been documented.	IIb	C
After previous left-sided surgery and in absence of recurrent left-sided valve dysfunction, surgery should be considered in patients with severe tricuspid regurgitation who are symptomatic or have progressive RV dilatation/dysfunction, in the absence of severe RV or LV dysfunction and severe pulmonary vascular disease/hypertension.	IIa	C

Tricuspid regurgitation secondary to mitral valve disease: Tricuspid annulus function as guide to tricuspid valve repair

Tiziano Colombo  , Claudio Russo, Guglielma Rita Ciliberto, Marco Lanfranconi, Giuseppe Bruschi, Salvatore Agati, Ettore Vitali

50 Patients

Tricuspid annuloplasty prevents right ventricular dilatation and progression of tricuspid regurgitation in patients with tricuspid annular dilatation undergoing mitral valve repair

Nico R. Van de Veire, MD, PhD,^a Jerry Braun, MD,^b Victoria Delgado, MD,^a Michel I. M. Versteegh, MD,^b Robert A. Dion, MD, PhD,^b Robert J. M. Klautz, MD, PhD,^b and Jeroen J. Bax, MD, PhD^a

80 Patients

Secondary Tricuspid Regurgitation or Dilatation: Which Should Be the Criteria for Surgical Repair?

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148 Patients

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Impact of Concomitant Tricuspid Annuloplasty on Tricuspid Regurgitation, Right Ventricular Function, and Pulmonary Artery Hypertension After Repair of Mitral Valve Prolapse



Joanna Chikwe, MD, Shinobu Itagaki, MD, Anelechi Anyanwu, MD, David H. Adams, MD

419 Patients

697

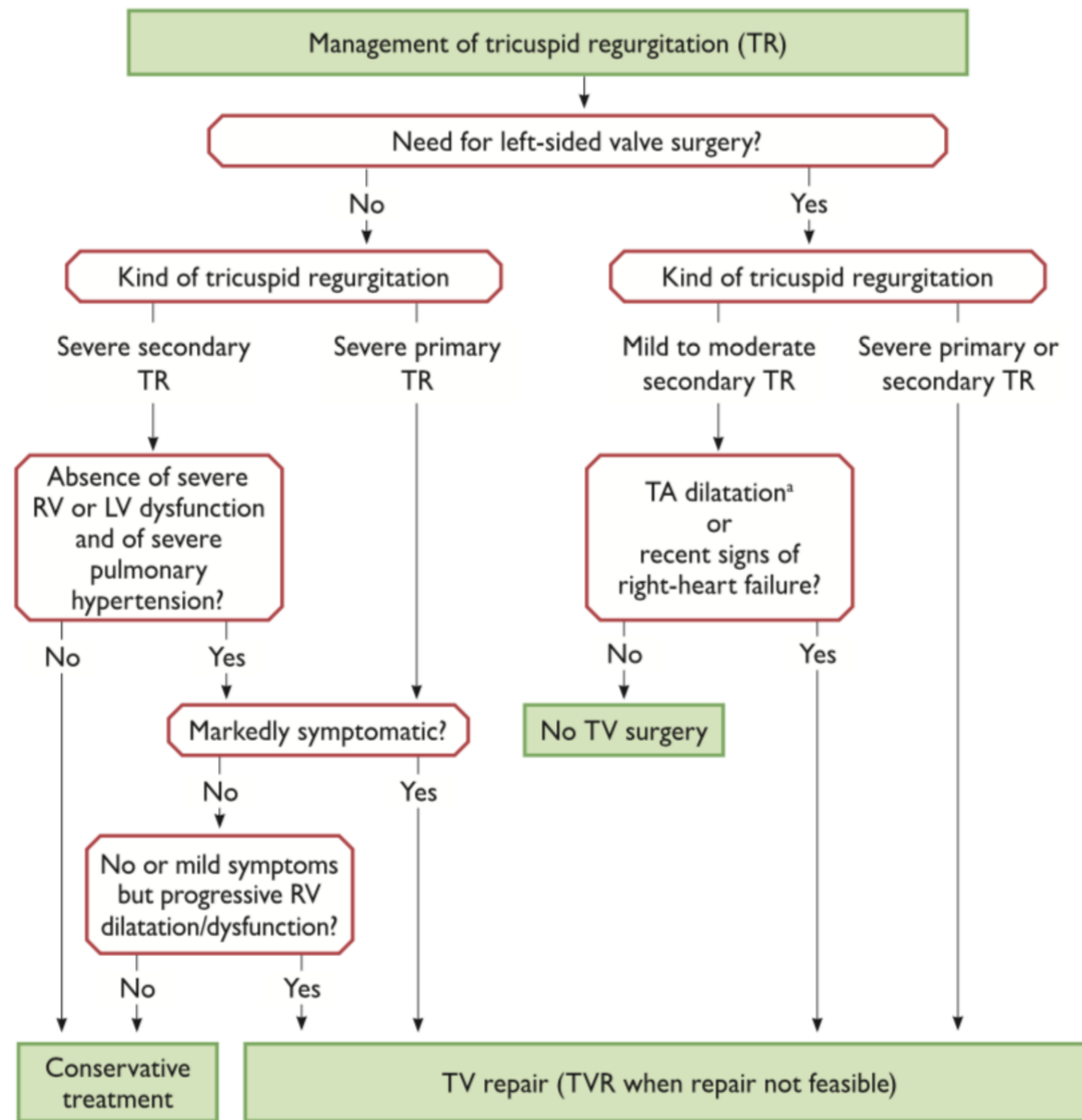


Figure 6 Indications for surgery in tricuspid regurgitation. LV = left ventricular; RV = right ventricular; TA = tricuspid annulus; TR = tricuspid regurgitation; TV = tricuspid valve; TVR = tricuspid valve replacement.
^aTA \geq 40 mm or $>$ 21 mm/m².

The Society of Thoracic Surgeons Risk Model for Operative Mortality After Multiple Valve Surgery

J. Scott Rankin, MD, Xia He, MS, Sean M. O'Brien, PhD, Jeffrey P. Jacobs, MD, Karl F. Welke, MD, Giovanni Filardo, PhD, MPH, and David M. Shahian, MD

Centennial Medical Center, Vanderbilt University, Nashville, Tennessee; Duke Clinical Research Institute, Durham, North Carolina; Congenital Heart Institute of Florida, All Children's Hospital, University of South Florida, Tampa, Florida; Seattle Children's Hospital and University of Washington School of Medicine, Seattle, Washington; Institute for Health Care Research and Improvement, Baylor Health Care System, Dallas, Texas; and Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts

Background. This study was undertaken to develop The Society of Thoracic Surgeons (STS) mortality risk models for multiple valve procedures, which comprise 12% of total valve operations.

Methods. Data were obtained from the STS Adult Cardiac Surgery Database for 50,231 patients undergoing combinations of aortic (A), mitral (M), and tricuspid (T) surgery between January 1, 2004, and December 31, 2010, divided into developmental (2004 to 2009) and validation (2010) samples. Pulmonary valve operations, aortic root replacements, and dissection procedures were excluded, and insufficient AT procedures were available to model. Using stepwise logistic regression, the risk of operative mortality was estimated for each valve surgery type: AM, $n = 27,035$; MT, $n = 18,686$; and AMT, $n = 4,510$. Two separate models were estimated, one that included only patient characteristics and status at presentation, and thereby would be suitable for performance profiling; and another that added discretionary operative variables such as arrhythmia ablation or valve repair.

Results. Unadjusted operative mortality was 7.6% for MT, 9.4% for AM, and 13.1% for AMT procedures. Significant risk factors for mortality included emergency presentation, advanced age, renal failure, reoperation, endocarditis, diabetes mellitus, severe chronic lung disease, peripheral vascular disease, coronary artery disease, and female sex. In models containing intraoperative variables, performance of arrhythmia ablation and atrioventricular valve repair were protective for mortality. In the validation sample, the model exhibited acceptable discrimination in each of the three procedural subgroups ($C = 0.711$ to 0.727).

Conclusions. Risk models were developed to predict operative mortality for patients having multiple valve procedures. These models may be useful for outcome assessment, quality improvement, patient counseling, shared decision making, and research.

(Ann Thorac Surg 2013;95:1484–90)

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Secondary Tricuspid Regurgitation or Dilatation: Which Should Be the Criteria for Surgical Repair?

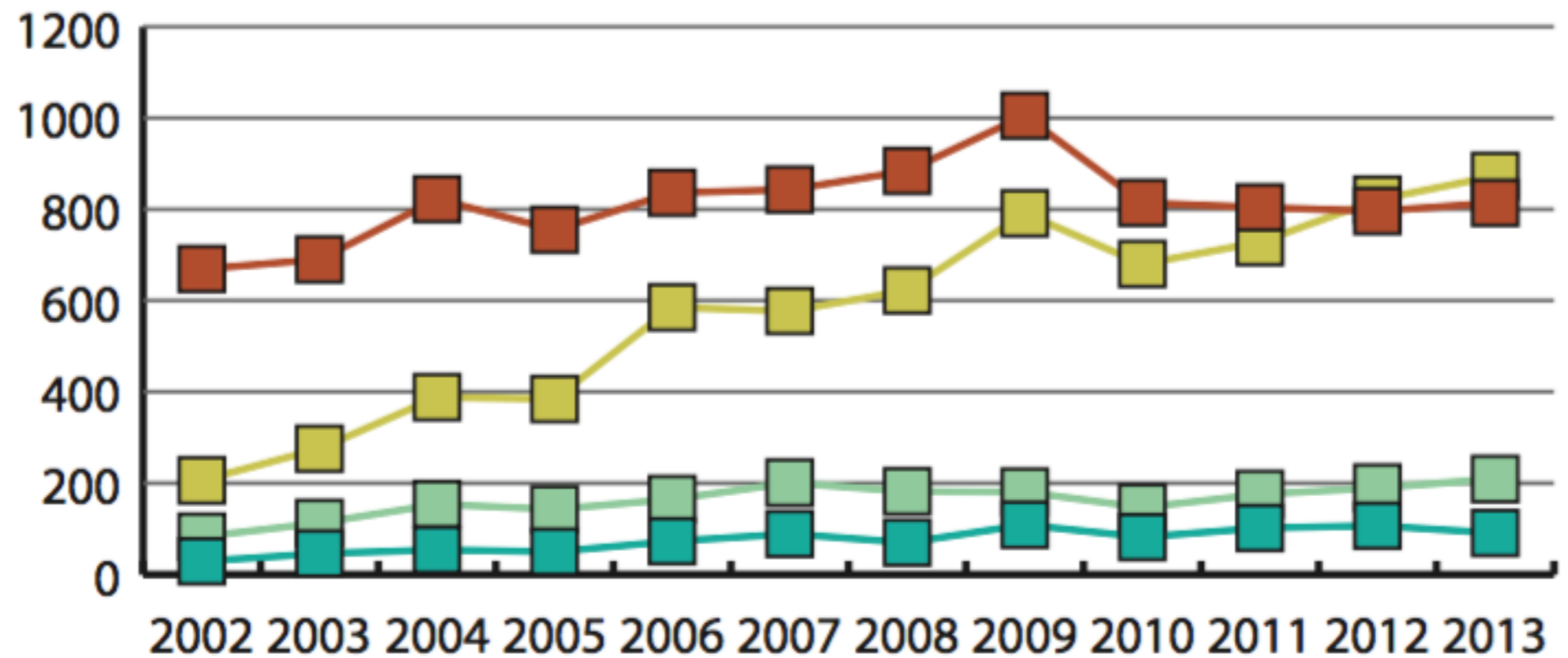
Gilles D. Dreyfus, MD, Pierre J. Corbi, MD, K. M. John Chan, AFRCs, and Toufan Bahrami, MD

Table 4. Comparison of In-Hospital Morbidity

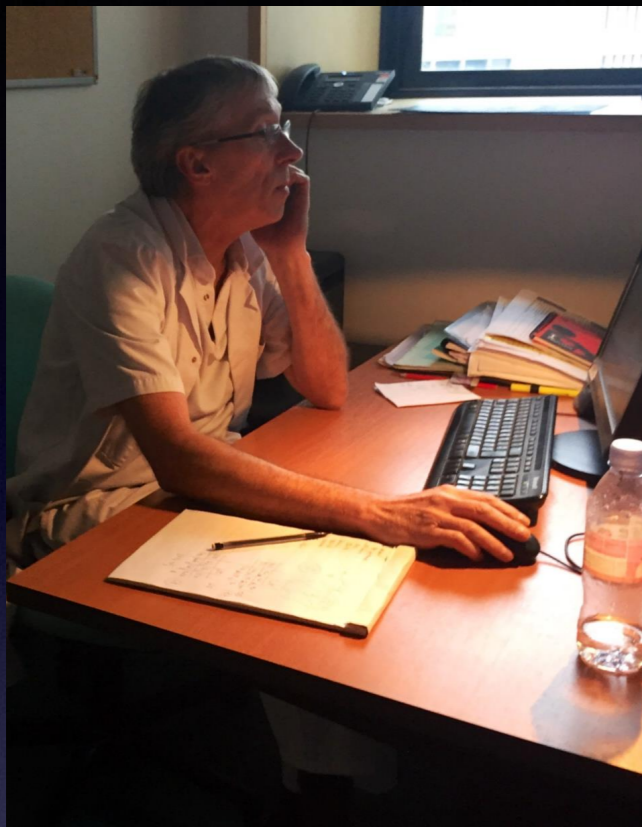
	Group 1 (MVR)	Group 2 (MVR + TVR)	Test	<i>p</i> Value
Pacemaker	5 (3.1%)	8 (5.4%)	χ^2	0.33
Myocardial infarction	4 (2.5%)	1 (0.6%)	χ^2	0.21
Hemofiltration	4 (2.5%)	2 (1.4%)	χ^2	0.48
Sternitis	3 (1.8%)	4 (2.7%)	χ^2	0.61
Bleeding	5 (3.1%)	1 (0.6%)	χ^2	0.13
Stroke	1 (0.6%)	1 (0.6%)	χ^2	0.94

MVR = mitral valve repair; TVR = tricuspid valve repair.

Nombre de gestes portant sur plusieurs valves



—■— Mit + Ao	669	690	822	755	836	843	884	1005	814	804	796	814
—■— Ao + Tric	29	46	54	50	73	89	70	109	82	102	107	91
—■— Mit + Tric	206	275	388	384	585	577	622	791	680	728	821	873
—■— Mit + Ao + Tric	83	113	154	143	165	201	182	181	147	176	190	209



- Database of 11444 patients
- From 1993- today
- Mortality of:
 - RVM
 - RVM + PT
 - MP
 - MP+PT
- Mortality of Redux tricuspid surgery

	Patients	Mortality	%
RVM	66	3	4,5
PM	206	2	1
RVM+PT	44	1	2,3
PM+PT	101	2	2

2016-17

Mortality of mitral vs Mitral+tricuspid

1,8% to 2%

Tricuspid redux surgery

- 39, out of 11444 patients
- 0.34% patients reoperated

Clinical data

Variables	(%)
Mean age	59 ±13
Male gender	15 (38)
NYHA	
II	10 (26)
III	27 (69)
IV	2 (5)
HTA	6 (15)
Diabetes	4 (10)
HTAP ≥ 55mHg	2 (5)
BMI	24± 3

Clinical data

Variables	(%)
N° operations	
I	24 (61)
II	12 (31)
III	3 (8)
Dysfunction Type	
Functional	17 (44)
Reumatic	8 (21)
Dysfunction-dettachment	7 (18)
Endocarditis	3 (8)
Iatrogenic	3 (8)
Thrombosis	1(2.5)
Re-operation proposed	
Annuloplasty	20 (51)
Replacement	19 (49)

Post-operative course

Variables	(%)
Mortality	4 (10)
Annuloplastie	2 (5)
Replacement	2 (5)
Mortality causes	
Cardiogenic shock	2 (5)
Stroke	1 (3)
Digestive ischemia	1 (3)
Morbidity	
Inotropic+ Nora+ NO	29 (75)
Re-op. bleeding	7 (18)
Transfusions	32 (82)
Renal Dysfunction	11 (28)
Dialysis	4 (10)

Conclusions

- We are getting better, patient preparation, myocardial protection, post-operative management ecc
- Extra risk for tricuspid anuloplasty probably zero
- Risk of redux tricuspide valve surgery=10%
- Heart team approach to improve operative indications



FIGURA 17-3

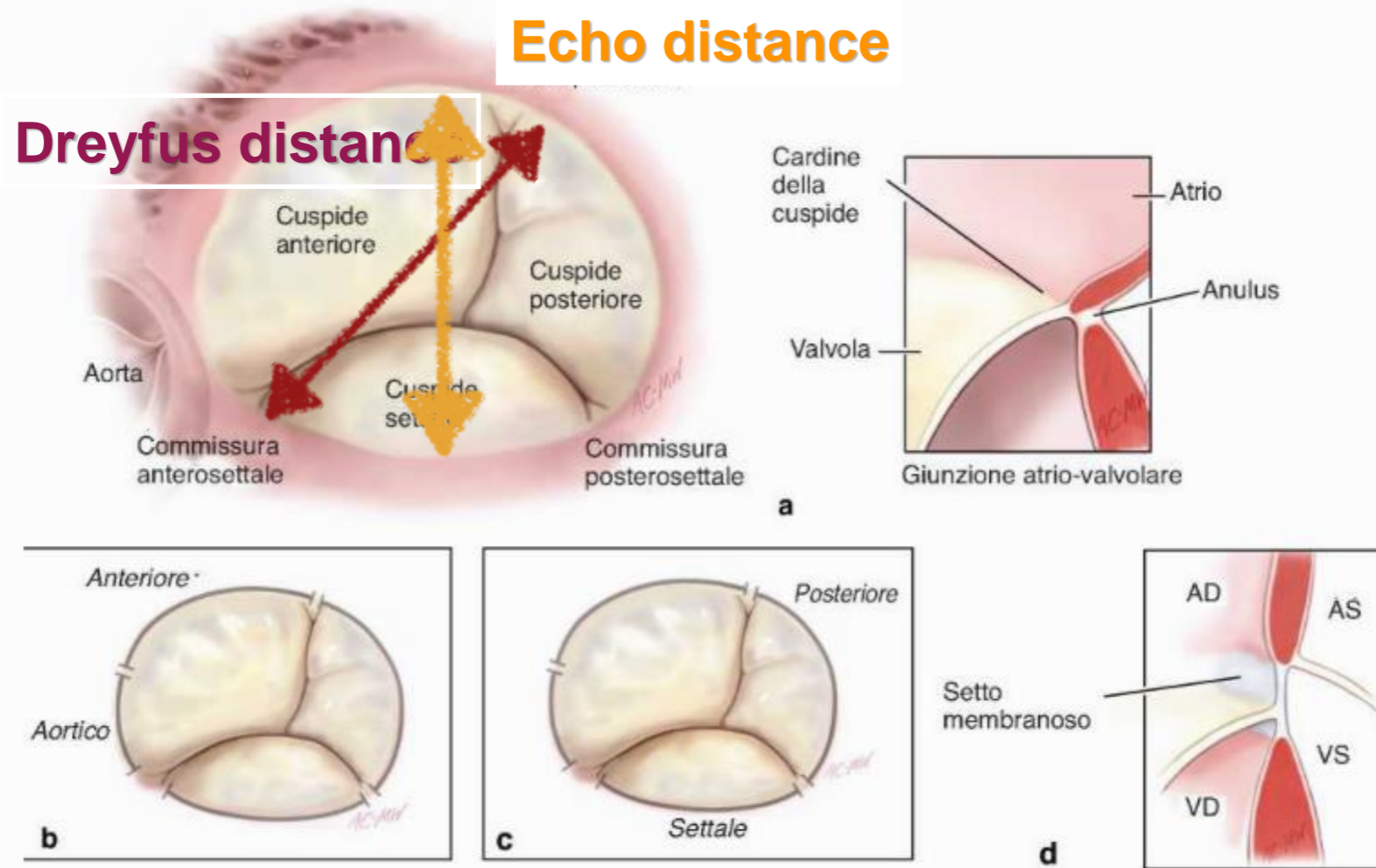


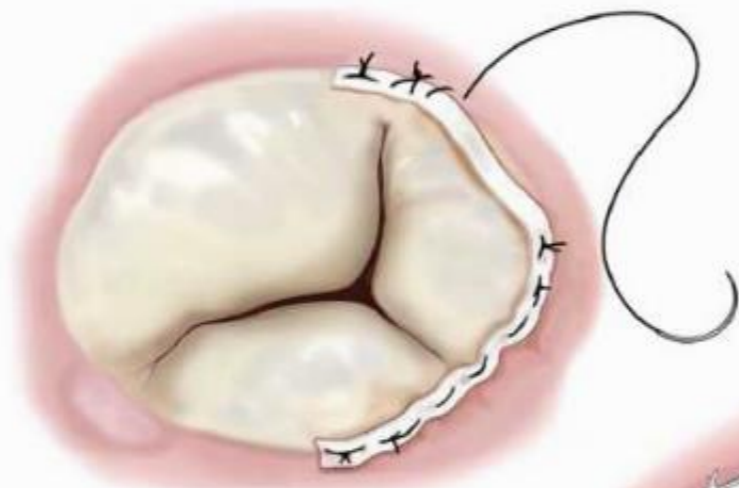
FIGURA 17-2



a J. Kay 1965



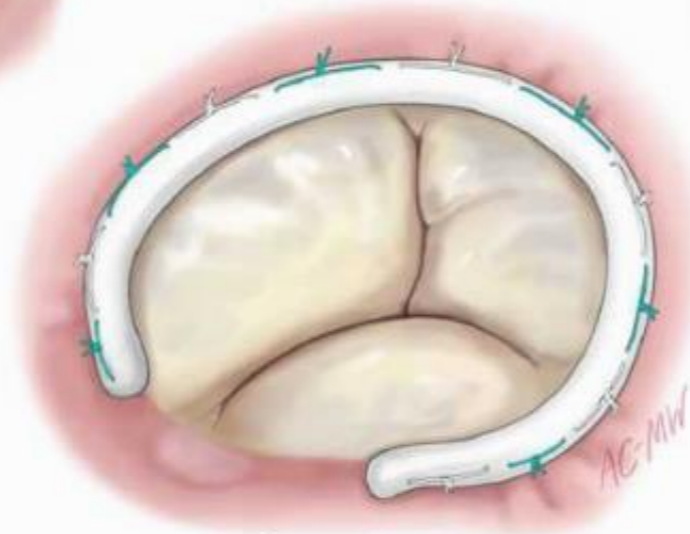
b Kay modificata



c Dubost 1967



d DeVega 1972



e Carpentier 1971

Tricuspid Valve Repair With an Annuloplasty Ring Results in Improved Long-Term Outcomes

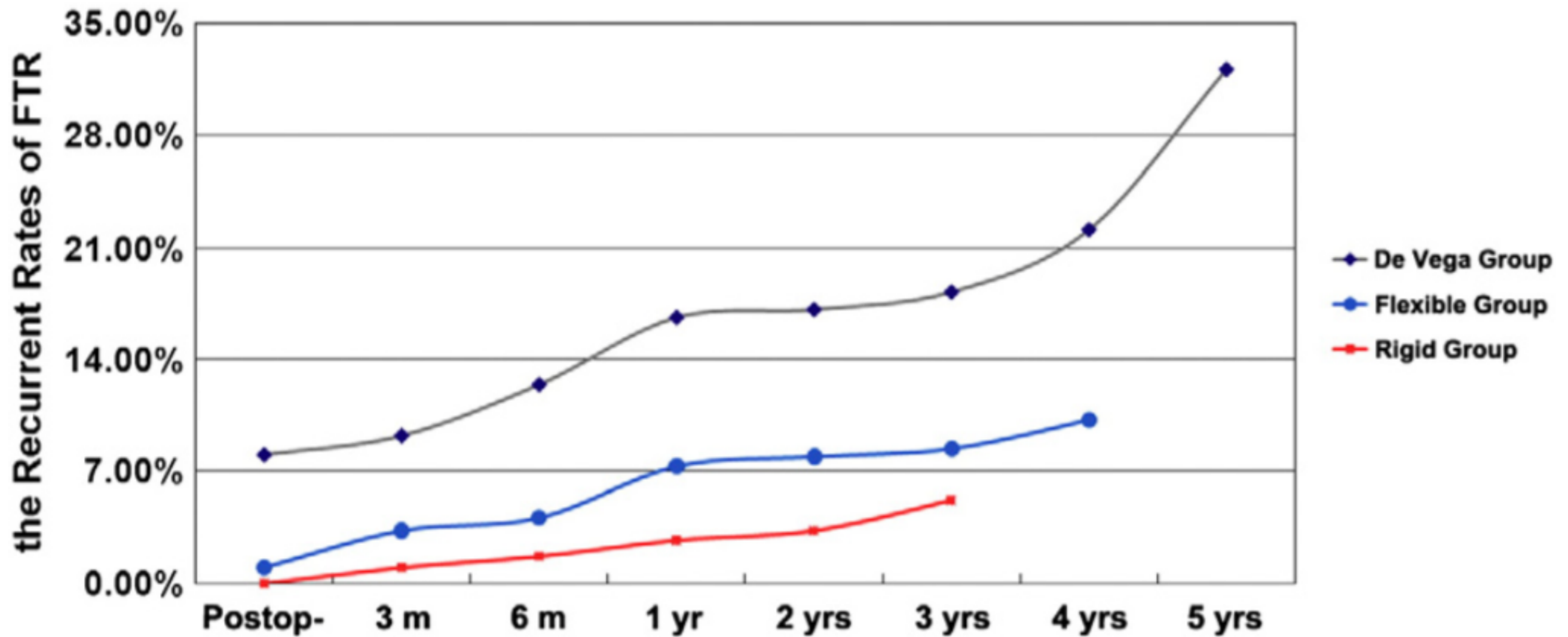
Gilbert H. L. Tang, MD; Tirone E. David, MD; Steve K. Singh, MD; Manjula D. Maganti, MSc; Susan Armstrong, MSc; Michael A. Borger, MD, PhD

Background—The purpose of this study was to compare the long-term results of tricuspid valve (TV) repair with or without an annuloplasty ring.

Methods and Results—702 patients underwent TV repair at our institution (1978 to 2003), of which 493 had, predominantly, a De Vega procedure (no ring) and 209 had an annuloplasty ring (ring). TV pathology was functional (secondary) in 74% of patients. Concomitant procedures consisted of mitral valve surgery in 80% of patients, aortic valve surgery in 33%, and coronary bypass in 14%. Clinical and echocardiographic follow-up data were obtained. Follow-up was 99% complete and was 5.9 ± 4.9 (mean \pm SD) years long. Ring patients were younger (55 ± 14 versus 59 ± 14 years; $P=0.001$) and less likely to have coronary artery disease (10% versus 17%; $P=0.02$), more likely to be female (75% versus 65%; $P=0.01$) and having had previous cardiac surgery (56% versus 42%; $P=0.001$). Operative times were similar between the 2 groups. Long-term survival, event-free survival and freedom from recurrent TR were significantly better in the ring group, and there was a trend toward fewer TV reoperations. Multivariable analysis demonstrated that the use of an annuloplasty ring was an independent predictor of long-term survival (hazard ratio [HR], 0.7; 95% confidence interval [CI], 0.5 to 1.0; $P=0.03$) and event-free survival (HR, 0.8, CI, 0.6 to 1.0; $P=0.04$).

Conclusions—Placement of an annuloplasty ring in patients undergoing tricuspid valve repair is associated with improved survival and event-free survival. (*Circulation*. 2006;114[suppl I]:I-577–I-581.)

Y. Lin et al. / IJC Heart & Vasculature 5 (2014) 15–19



Is a rigid tricuspid annuloplasty ring superior to a flexible band when correcting secondary tricuspid regurgitation?

Tie-Yuan Zhu, Jian-Gang Wang and Xu Meng*

Department of Cardiac Surgery, Beijing Anzhen Hospital, Capital Medical University, Beijing, China

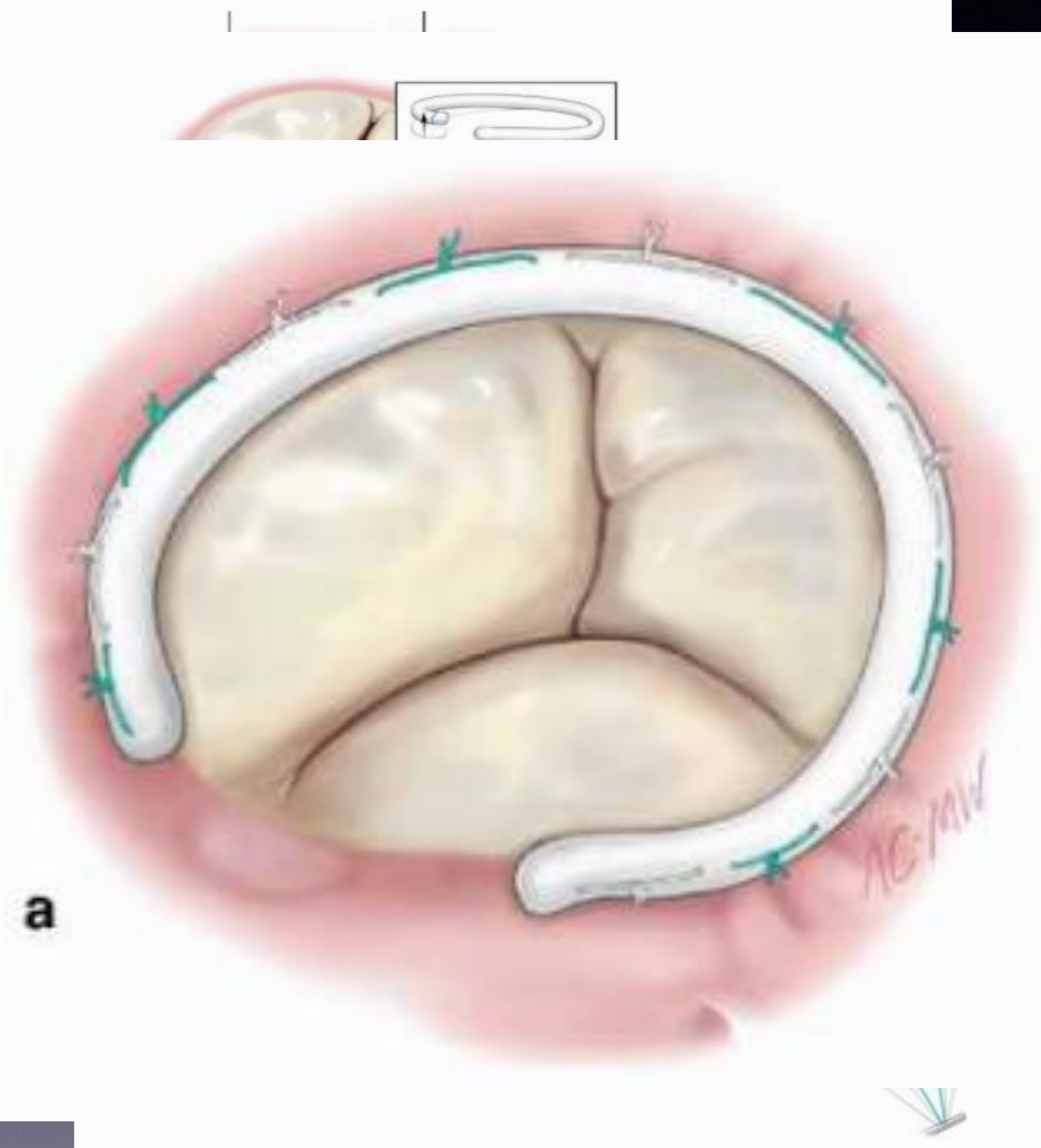
* Corresponding author. Division of Cardiac Surgery, Beijing Anzhen Hospital, No. 2 Anzhen Road, Chaoyang District, Beijing 100029, China. Tel: +86-10-64456984; fax: +86-10-64453010; e-mail: mxu@263.net (X. Meng).

Received 26 March 2013; received in revised form 21 June 2013; accepted 24 July 2013

Abstract

A best evidence topic in adult valvular surgery was written according to a structured protocol. The question addressed was 'Is a rigid tricuspid annuloplasty ring superior to a flexible band when correcting secondary tricuspid regurgitation (TR)?' A total of 166 papers were found using the reported search, of which, 13 presented the best evidence to answer the clinical question. The authors, country, journal, date of publication, patient group studied, study type, relevant outcomes and results of these papers are tabulated. All the 13 papers were retrospective studies, from which 4 were case-control studies comparing the rigid ring annuloplasty approach with the flexible band technique, eight case series and one case report. From the first three case-control studies, we conclude that more progression to moderate-to-severe TR in the flexible band group than rigid ring group. However, the fourth paper reported that both rigid and flexible systems provide acceptable early tricuspid valve repair results, but the use of a rigid ring increases risk of subsequent ring dehiscence. Another rare complication about the rigid ring was described by *Galiñanes et al.* ~~We conclude that although there are relatively less risk of ring dehiscence or ring fracture in the flexible group, the rigid ring, particularly the new three-dimensional MC3 ring, is inclined to be better than the flexible band in terms of a sustained effect for maintaining stable postoperative regurgitation grade according to the current available evidences.~~ However, due to the limited controlled studies and their retrospective design, the results should be confirmed by prospective studies with a large number of patients.

Keywords: Tricuspid valve • Tricuspid valve insufficiency • Annuloplasty ring





Merci