

# ECOCARDIOCHIRURGIA 2014



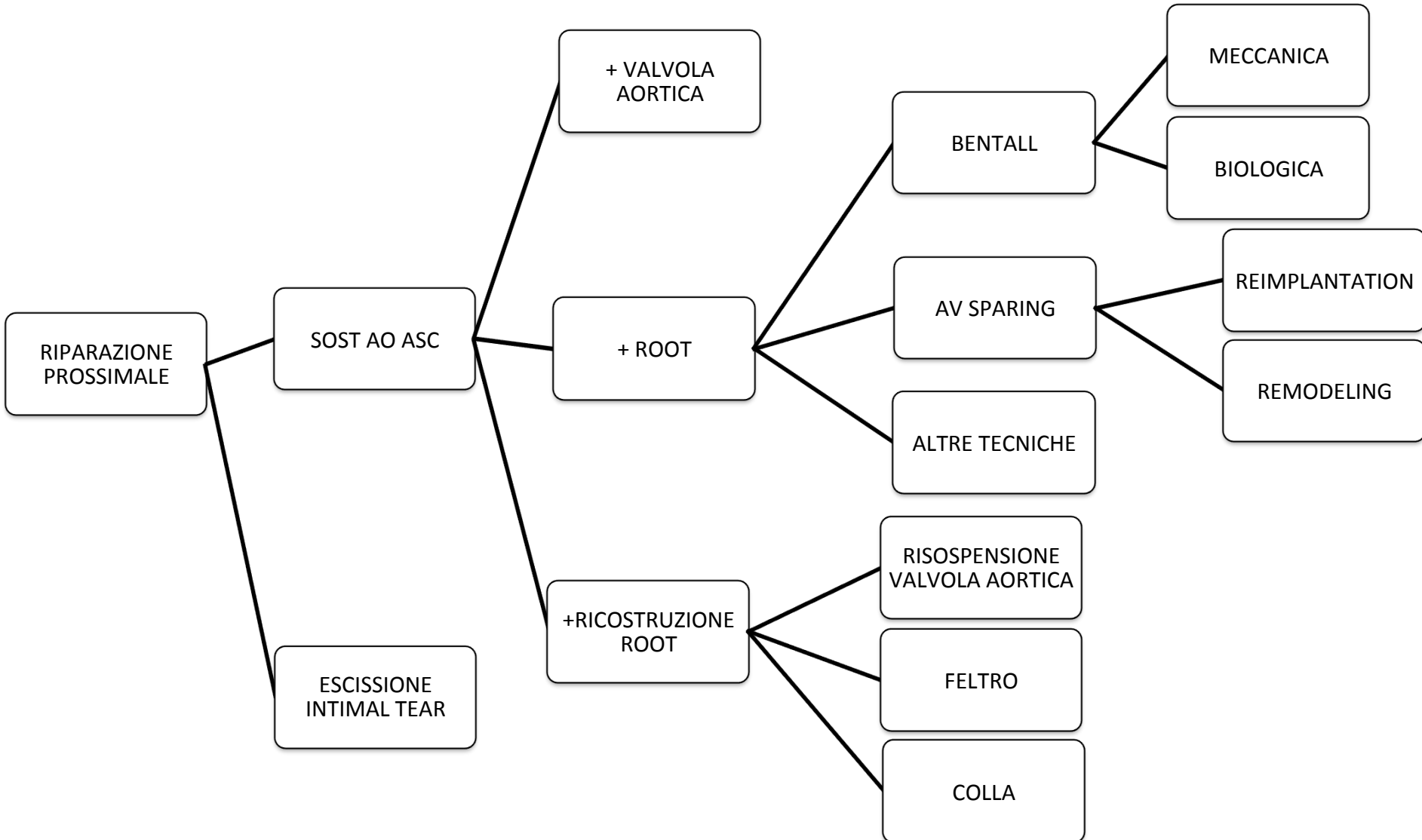
## I CARDIOCHIRURGHICI SI CONFRONTANO DISSECAZIONE AORTICA

La tecnica operatoria  
Quando lasciare la valvola “intatta”  
Quando la T. David, la Bentall  
I risultati ospedalieri

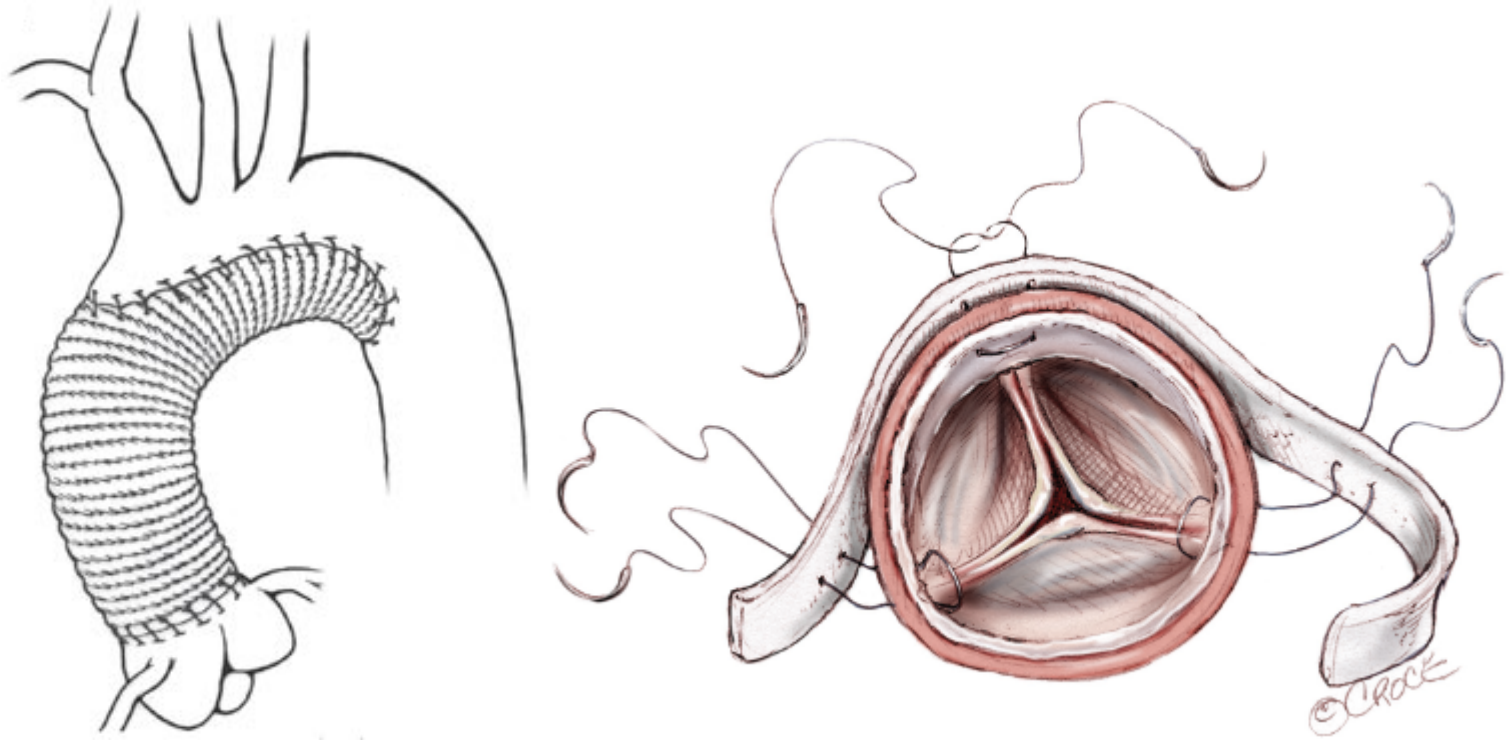
*PG Malvindi*

Wessex Cardiac Centre – Southampton General Hospital  
Southampton – UK

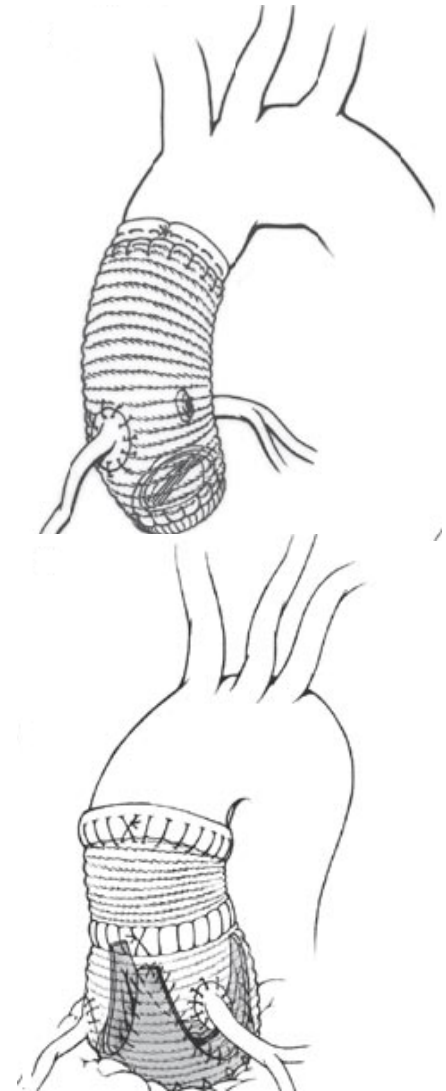
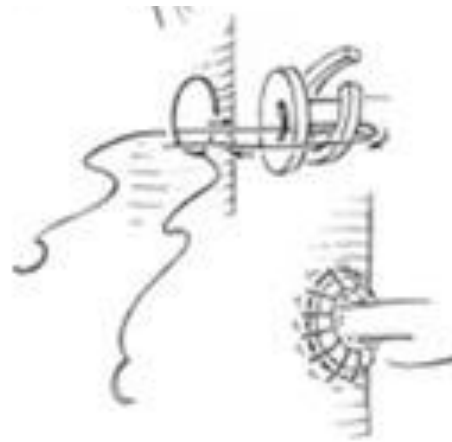
# TECNICHE



# TECNICHE – SOST AO ASC + RICOSTRUZIONE ROOT



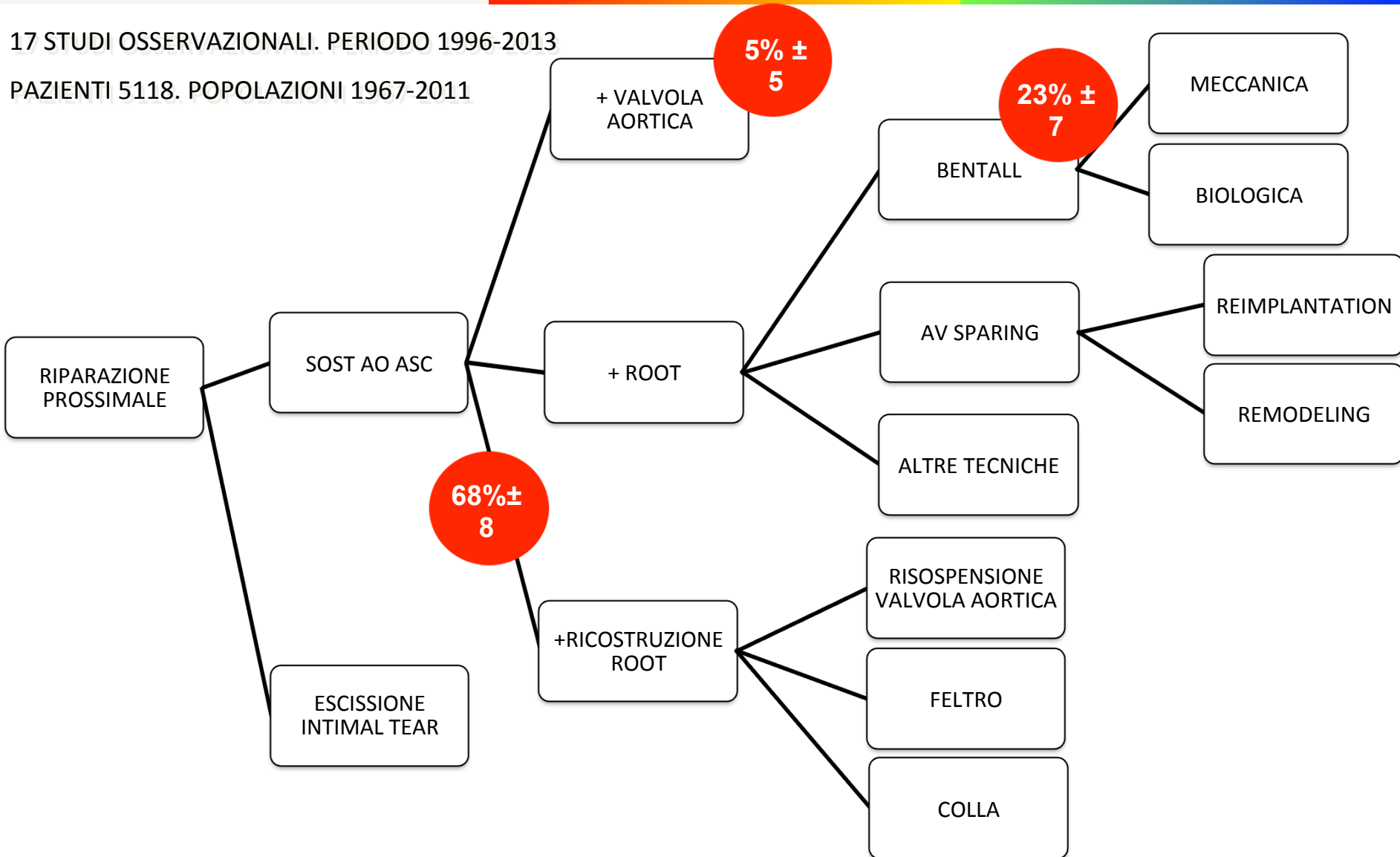
# TECNICHE – SOST ROOT BENTALL/DAVID



# TECNICHE - DATI REALI

17 STUDI OSSERVAZIONALI. PERIODO 1996-2013

PAZIENTI 5118. POPOLAZIONI 1967-2011



# TECNICHE

**SOSTITUZIONE  
AORTA  
SOPRASINUSALE**

**SOSTITUZIONE  
ROOT AORTICO**

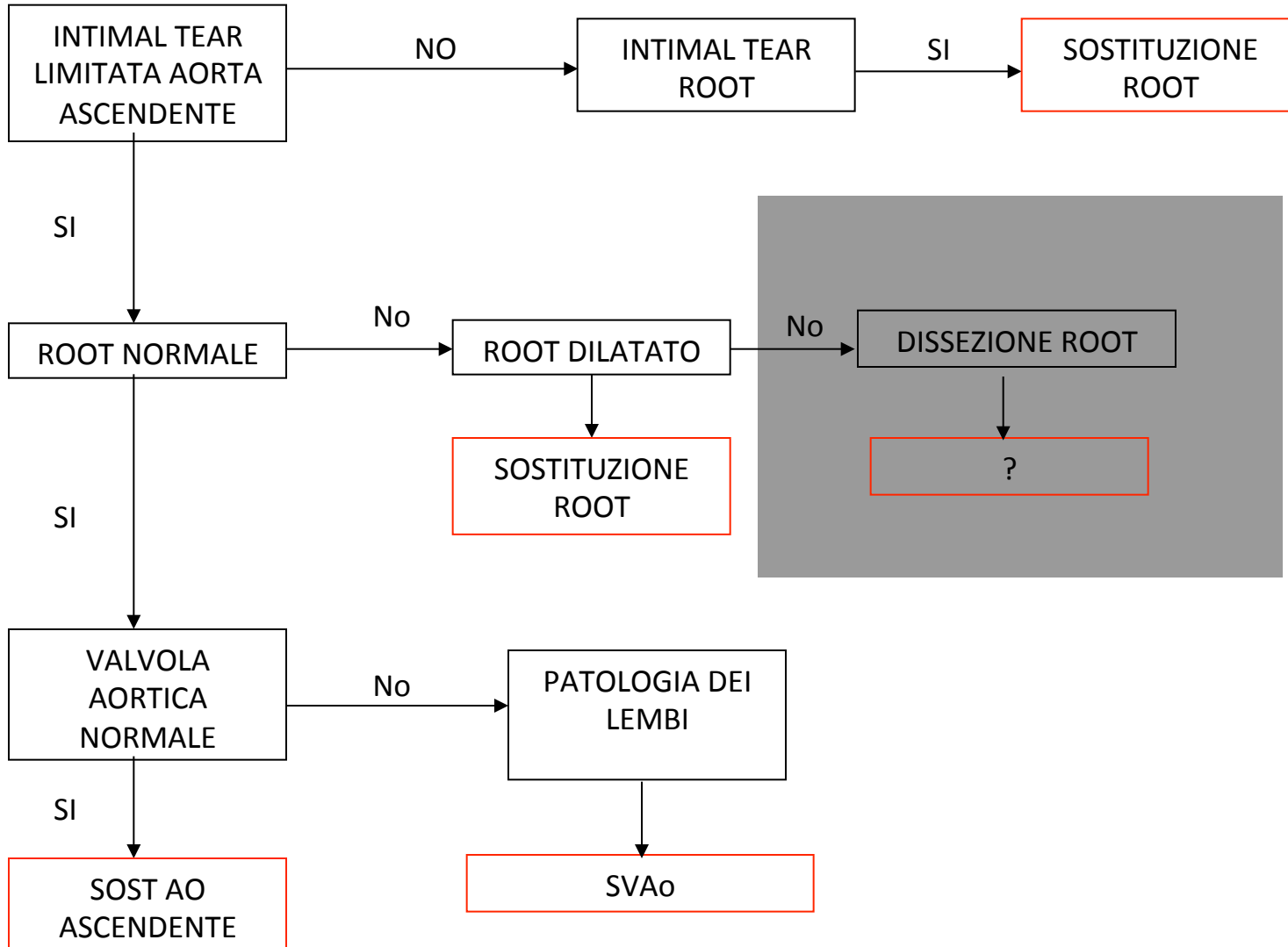
T MINORI  
SEMPlicità'  
POSSIBILE CORREZIONE IA<sub>o</sub>

PRESERVAZIONE  
TESSUTO PATOLOGICO  
> RISCHIO REDO

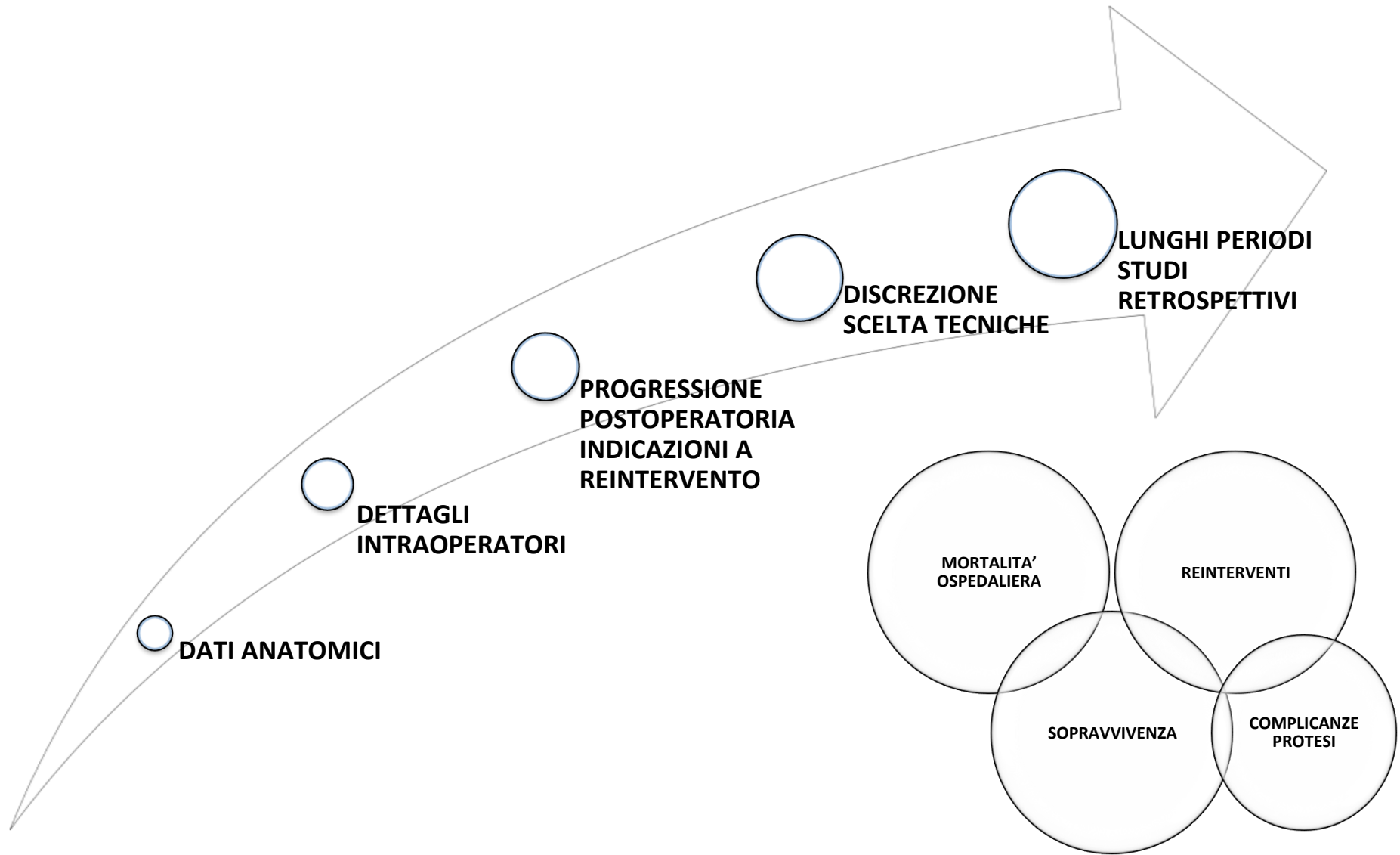
RESEZIONE RADICALE  
> EMOSTASI

T PIU' LUNGH  
> ESPERIENZA  
> RISCHIO OPERATORIO

# ALGORITMO



# INTERPRETARE I RISULTATI





# OUTCOMES – MORTALITA' OSPEDALIERA

MORTALITA'  
ACCETTABILE  
TROPPO VARIABILE

RANGE 4.6% -  
32.5%

- LUNGI PERIODI DI OSSERVAZIONE
- PRESENTAZIONE ETEROGENEA

NON DIFFERENZA  
SIGNIFICATIVA TRA  
TECNICHE

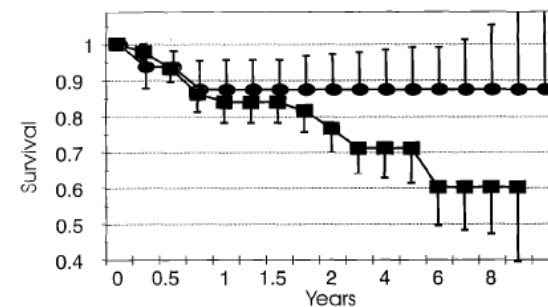
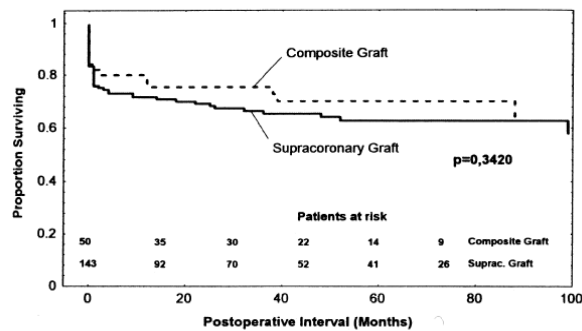
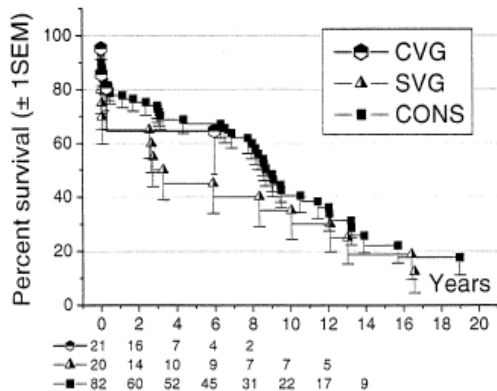
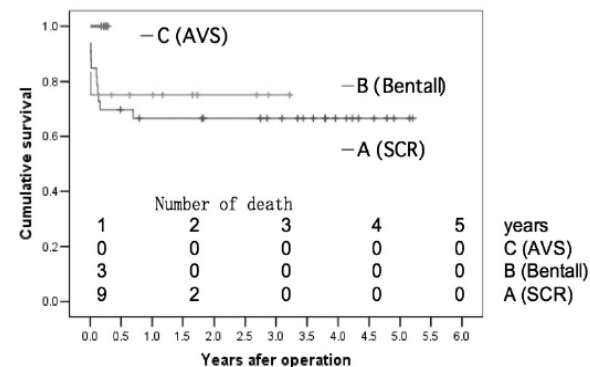
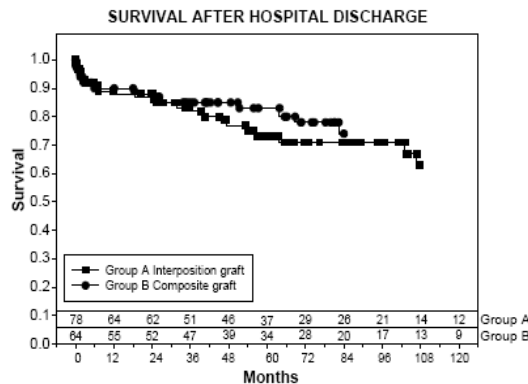
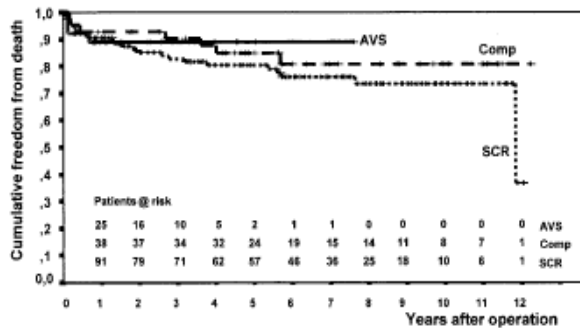
- SELEZIONE DEI PAZIENTI
- CONTESTO CHIRURGICO COMPLESSO

TECNICHE  
RIPARAZIONE  
PROSSIMALE MAI  
FR

- PRESENTAZIONE CLINICA DETERMINANTE

NON STRUMENTALIZZARE LA MORTALITA'  
LA SELEZIONE FA MALE AI NUMERI E BENE AL PAZIENTE

# OUTCOMES – SOPRAVVIVENZA



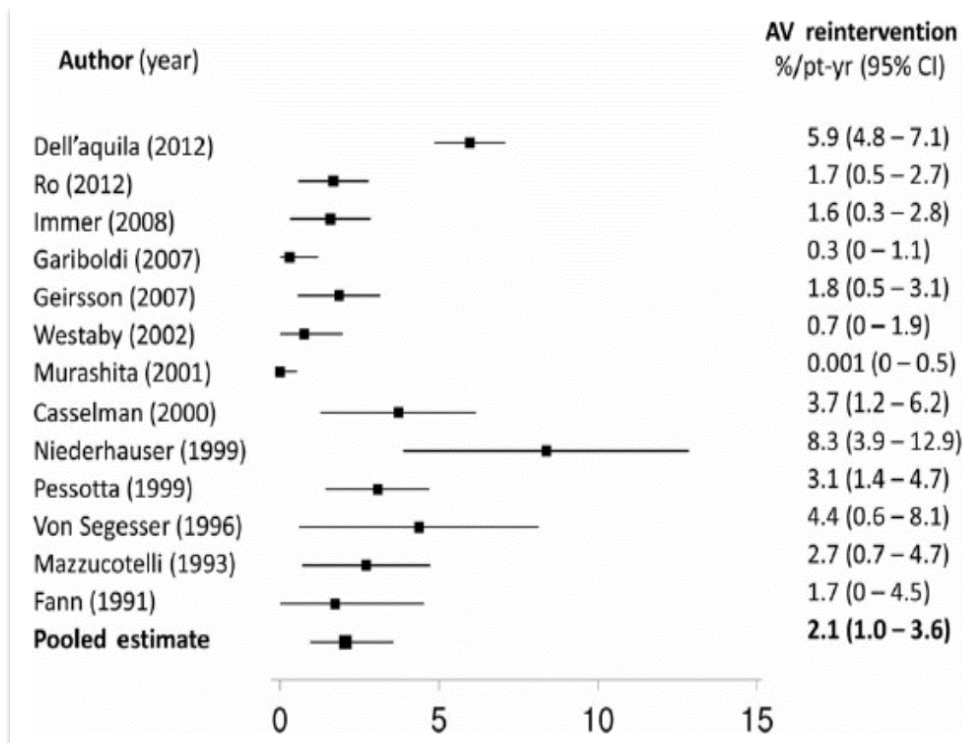
NO DIFFERENZE TRA TECNICHE  
SOPRAVVIVENZA A 10 ANNI 40% - 70%

# OUTCOMES – REINTERVENTI

## Aortic valve preservation and repair in acute Type A aortic dissection<sup>†</sup>

Richard Saczkowski<sup>a</sup>, Tarek Malas<sup>a</sup>, Thierry Mesana<sup>a</sup>, Laurent de Kerchove<sup>b</sup>,  
Gebrine El Khoury<sup>b</sup> and Munir Boodhwani<sup>a\*</sup>

European Journal of Cardio-Thoracic Surgery (2014) 1-7



LIBERTA' REDO VA

5a: 89%

10a: 79%

2.1% pt/a



20% PAZIENTI  
REINTERVENTO A 10 ANNI

# FATTORI DI RISCHIO REINTERVENTO PROSSIMALE



## POPOLAZIONE

- SINDROME DI MARFAN
- ETA' < 40 ANNI

## ANATOMIA

- ANNULUS AORTICO DILATATO

## PATOLOGIA

- DISSEZIONE 3 SENI DI VALSALVA
- DISSEZIONE CORONARIE

## FUNZIONALI

- ISCHEMIA MIOCARDICA
- INSUFFICIENZA VALVOLARE AORTICA

# INSUFFICIENZA VALVOLARE AORTICA



ROOT NORMALE – COAPTAZIONE NORMALE  
(NORMAL ANATOMY)



DILATAZIONE STJ – TETHERING DEI LEMBI  
(INCOMPLETE LEAFLET CLOSURE)

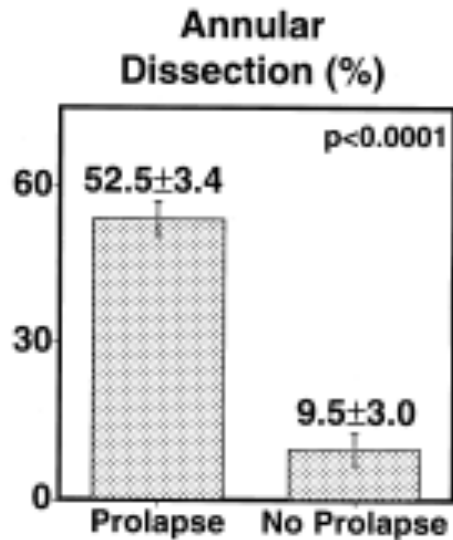


DISSEZIONE DEL ROOT – PROLASSO DEI LEMBI  
(AORTIC LEAFLET PROLAPSE)



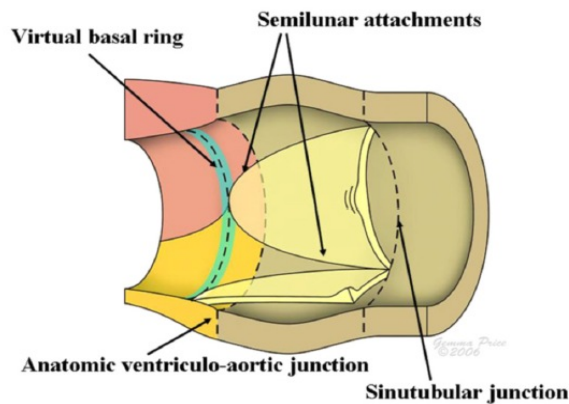
PROLASSO DEL FLAP DI DISSEZIONE  
(DISSECTION FLAP PROLAPSE)

# INSUFFICIENZA VALVOLARE AORTICA



**TABLE I** Analysis of AR Severity Stratified by Presence of Leaflet Prolapse

	Prolapse (n = 15)	No Prolapse (n = 19)
Root diameter	r = 0.32 (p = 0.24)	r = 0.70 (p < 0.001)
Annular circumference	r = 0.30 (p = 0.28)	r = 0.70 (p < 0.02)
<u>Annular dissection</u>	r = 0.06 (p = 0.82)	r = 0.43 (p = 0.06)



## Structural Determinants of Aortic Regurgitation in Type A Dissection and the Role of Valvular Resuspension as Determined by Intraoperative Transesophageal Echocardiography

Martin G. Keane, MD, Susan E. Wieggers, MD, Eugene Yang, MD, Victor A. Ferrari, MD, Martin G. St. John Sutton, MBBS, and Joseph E. Bavaria, MD

*Am J Cardiol* 2000;85:604-610

# INSUFFICIENZA VALVOLARE AORTICA

## Preservation of the Aortic Valve in Acute Type A Dissection Complicated by Aortic Regurgitation

Renzo Pessotto, MD, Francesco Santini, MD, Peppino Pugliese, MD, Giuseppe Montalbano, MD, Giovanni Battista Luciani, MD, Giuseppe Faggian, MD, Paolo Bertolini, MD, and Alessandro Mazzucco, MD

Ann Thorac Surg 1999;67:2010-3

13/15 CASI DI REINTERVENTO PROSSIMALE PER DILATAZIONE DEL ROOT +/- IAO

## Risk factor analysis for proximal and distal reoperations after surgery for acute type A aortic dissection

Matthias Kirsch, MD  
Céline Soustelle  
Rémi Houël, MD  
Marie Line Hillion, MD  
Daniel Loisançe, MD

J Thorac Cardiovasc Surg 2002;123:318-25

21 CASI DI REINTERVENTO PROSSIMALE:  
IAO + DILATAZIONE DEL ROOT AORTICO REDISSEZIONE ROOT

## Acute type A aortic dissection: long-term results and reoperations

Jos A. Bekkers<sup>†</sup>, Goris Bol Raap, Johanna J.M. Takkenberg and Ad J.J.C. Bogers

European Journal of Cardio-Thoracic Surgery 43 (2013) 389-396

Segment	Indication	N	Reoperation	N
Aortic valve	Preserved valve incompetence	12	Valved conduit implantation	6
			Aortic valve replacement	5
			Allograft root replacement	1

# REINTERVENTI DOPO SOST AO SOPRASINUALE

## INTERVALLO

- MEDIA 4-6 ANNI [PIU' BREVE PER PSEUDOANEURISMA – INFEZIONE]

## INDICAZIONE

- DILATAZIONE DEL ROOT+/- IAo
- PSEUDOANEURISMA
- INFEZIONE

## TIPO

- BENTALL
- SVAo
- RIPARAZIONE PSEUDOANEURISMA

## RISULTATI

- MORTALITA' OSPEDALIERA 0-12% / MORTALITA' PIU' ALTA PER PSEUDOANEURISMA – INFEZIONE
- SOPRAVVIVENZA 5 ANNI 82%



# DILATAZIONE/DISSEZIONE ROOT

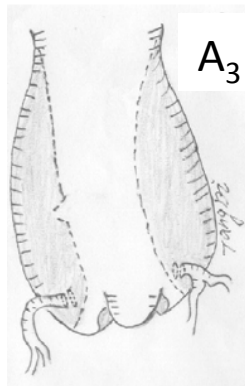
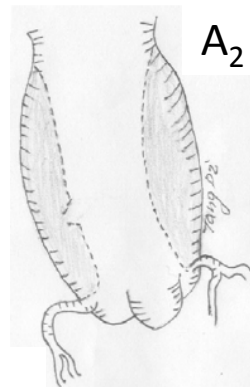
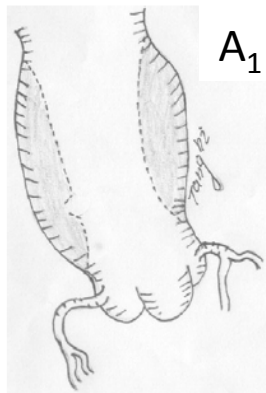
Variables	Acute dissecting aneurysm (Group I). N=41	Atherosclerotic non-dissecting aneurysm (Group II). N=22	P	Effects of ascending aorta replacement on aortic root dilatation <sup>☆</sup> Ruggiero De Paulis <sup>a,*</sup> , Enrico Cetrano <sup>a</sup> , Marco Moscarelli <sup>a</sup> , Giuseppe Andò <sup>a,b</sup> , Fabio Bertoldo <sup>a</sup> , Raffaele Scaffa <sup>a</sup> , Fabrizio Tomai <sup>a</sup> , Luigi Chiariello <sup>a</sup> European Journal of Cardio-thoracic Surgery 27 (2005) 86-89
Age (years)	58 ± 11	63 ± 11	0.1	
Sex (M/F)	31/10	6/16	0.0004	
Hypertension (%)	22 (53%)	15 (68%)	0.2	
Use of β-blockers	25 (60%)	14 (63%)	0.6	
EF (%)	53 ± 9	57 ± 9	0.14	
Root diameter preop. (mm)	41.6 ± 6.4	44.1 ± 11.9	0.27	
Aortic regurgitation ≥ 2	25 (61%)	8 (36%)	0.06	
Marfan syndrome	2 (5%)	0	-	
Bicuspid aortic valve	1 (2.4%)	5 (23%)	0.01	

Variables	Acute dissecting aneurysm (Group I). N=41	Atherosclerotic non-dissecting aneurysm (Group II). N=22	P
Root diameter early postop. (mm)	38.8 ± 5.1	36.6 ± 5.0	0.12
Root diameter at follow-up (mm)	42.8 ± 6.2	37.7 ± 5.3	0.006
> 10% increase in root diameter	15 (36%)	1 (4,5%)	0.0022
Aortic regurgitation ≥ 2 early post-op.	4 (10%)	4 (18%)	0.34
Aortic regurgitation ≥ 2 at follow-up	23 (56%)	5 (22%)	0.008
Reoperation (6 Bentall, 1 AVR)	7 (17%)	-	-

# QUANTIFICARE COINVOLGIMENTO DEL ROOT

257 PZ. 2003-2008. MORTALITA' 4.7%. FU 35 MESI



46%

24%

30%

SOST AO  
SOPRASINUSALE 90%

SOST ROOT  
AORTICO  
91%

## Repair of Acute Type A Dissection: Our Experiences and Results

LiZhong Sun, MD, RuiDong Qi, MD, JunMing Zhu, MD, YongMin Liu, MD, Qian Chang, MD, and Jun Zheng, MD *Ann Thorac Surg* 2011;91:1147-53

# PROMUOVERE UN APPROCCIO RADICALE?

## INDICAZIONE

- PSEUDOANEURISMA (OSTI CORONARICI>SUTURA PROSSIMALE)
- INFEZIONE
- [DEGENERAZIONE BIOPROTESI???)

## RISULTATI

- MORTALITA' OSPEDALIERA 0-18%
- SOPRAVVIVENZA 5 ANNI 80%

Table 3. Surgical Indication for Reoperation

Indication	No. (%)
Aneurysm	30 (65)
True	
Degenerative	11 (23)
Postdissection	3 (7)
False	16 (35)
Aortic insufficiency/stenosis	3 (7)
Endocarditis	16 (35)
Prosthetic valve dysfunction	13 (28)
Combination of previous	11 (23)

Table 5. Mortality and Risk Factors (at Multivariate Analysis) for Reoperation on Aortic Root According to Previously Published Articles

First Author	Patients, No.		Mortality	
	Re-ARop	In Study	%	Risk Factor
Hahn, 1998 [19]	7	7	0	...
Raanani, 2001 [6]	31	31	3.3	...
David, 2004 [18]	28	165	7 <sup>a</sup>	Age, NYHA IV
Kirsch, 2006 [9]	7	56	17.9 <sup>a</sup>	Unplanned CABG
Szeto, 2007 [10]	25	156	4	Age, NYHA IV
Joudinaud 2008 [21]	9	20	10 <sup>a</sup>	...

# PROMUOVERE UN APPROCCIO RADICALE?

## INDICAZIONE

- PSEUDOANEURISMA (OSTI CORONARICI>SUTURA PROSSIMALE)
- INFEZIONE
- [DEGENERAZIONE BIOPROTESI???)

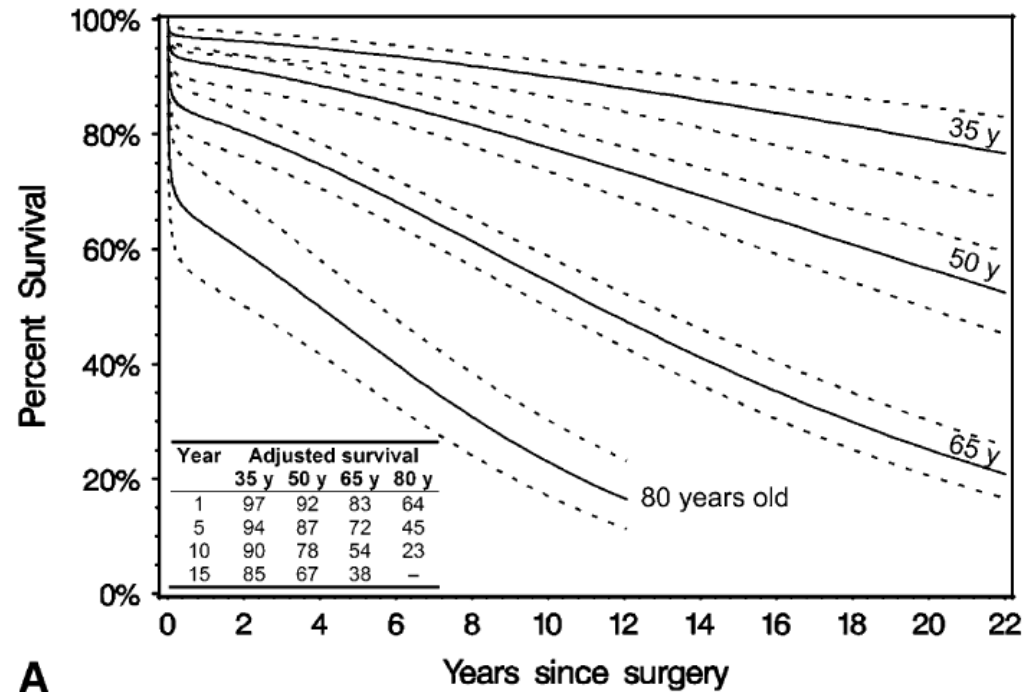
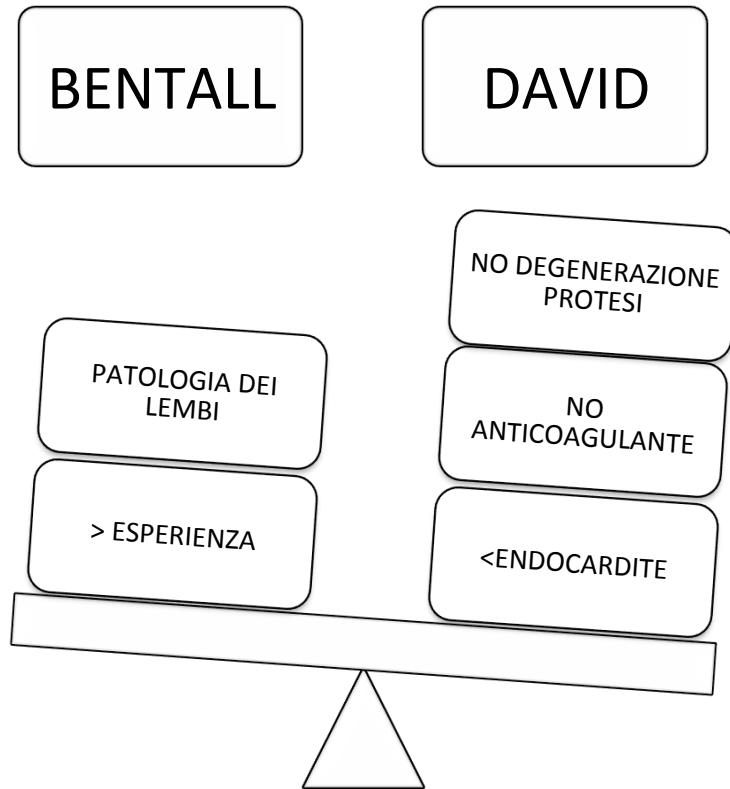
## RISULTATI

- MORTALITA' OSPEDALIERA 0-18%
- SOPRAVVIVENZA 5 ANNI 80%

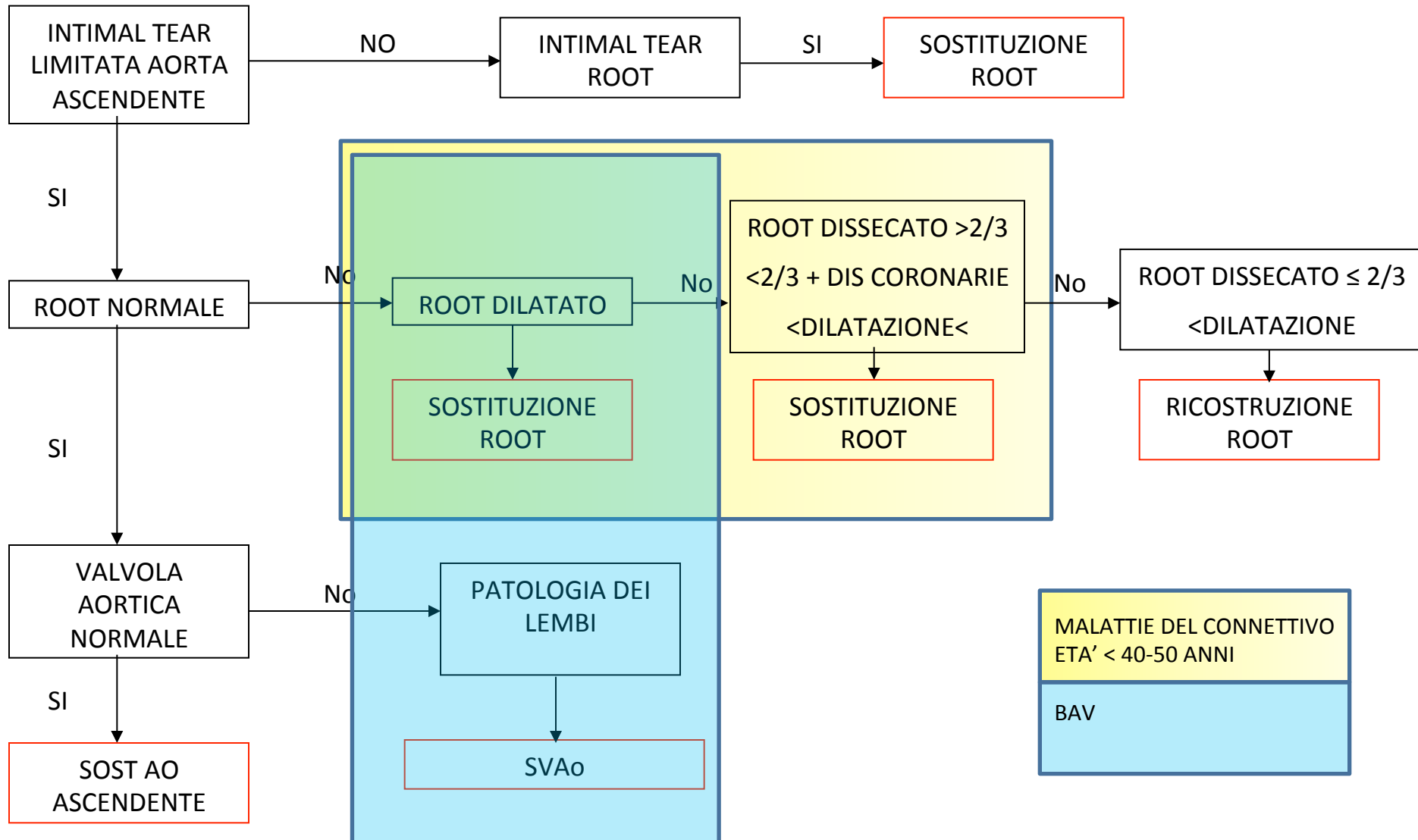
Table 5. Site of Aortic False Aneurysm

Site	No. of Patients	Report	No. of Patients in Study Population	No. of Patients with False Aneurysm	Mortality Rate (%)
Aortic suture line (ascending aorta or aortic arch)		Sullivan KL, et al. <sup>8</sup> (1998)	31	31	29
Proximal	8	Katsumata T, et al. <sup>1</sup> (2000)	10	10	10
Distal	9	Mohammadi S, et al. <sup>9</sup> (2005)	28	28	17
Proximal composite valve graft suture	5	Atik FA, et al. <sup>5</sup> (2006)	60	50	6.7*
Aortotomy suture	4	Kirsch EW, et al. <sup>10</sup> (2006)	56	10	18*
Cerebrovascular vessels suture	2	Villavicencio MA, et al. <sup>6</sup> (2006)	57	37	7*
Left coronary ostium	9	Malvindi PG, et al. <sup>4</sup> (2010)	43	43	6.9
Right coronary ostium	4	Di Eusanio M, et al. <sup>11</sup> (2011)	174	22	18
Cannulation site	1				
Aortic patch suture	1				

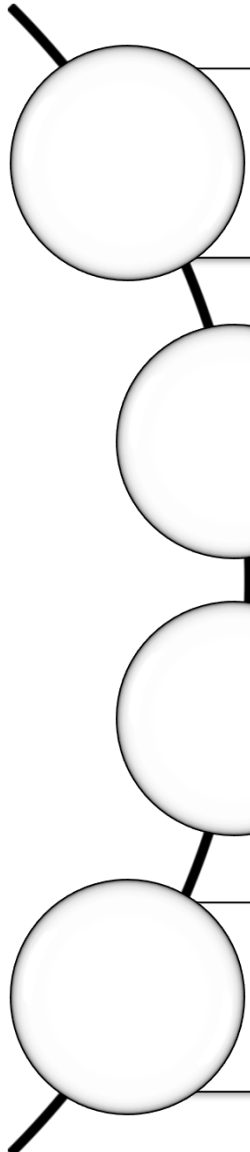
# AV SPARING PROCEDURE (DAVID)/CVG (BENTALL)



# ALGORITMO



# CONCLUSIONI (?)



LA STRATEGIA DI RIPARAZIONE NON PUO' PRESCINDERE DALLA PRESENTAZIONE ANATOMICA E DALL' ESTENSIONE DELLA DISSEZIONE

LA DISSEZIONE COMPLETA E LA DILATAZIONE DEL ROOT AORTICO SUGGERISCONO APPROCCIO RADICALE  
POSSIBILE IMPATTO POSITIVO SU MORTALITA' OSPEDALIERA  
SIGNIFICATIVO IL RISCHIO DI REINTERVENTO DOPO APPROCCIO CONSERVATIVO

L'INTERVENTO DI VALVE SPARING SEC DAVID LEGATO AD ESPERIENZA DELL'OPERATORE  
POTENZIALI VANTAGGI IN SOGGETTI GIOVANI

DIFFICILE INTERPRETARE IL RUOLO DELLA SCELTA TECNICA SULL'OUTCOME IN RELAZIONE ALLA PRESENTAZIONE CLINICA

# THE DARK SIDE OF THE ROOT

