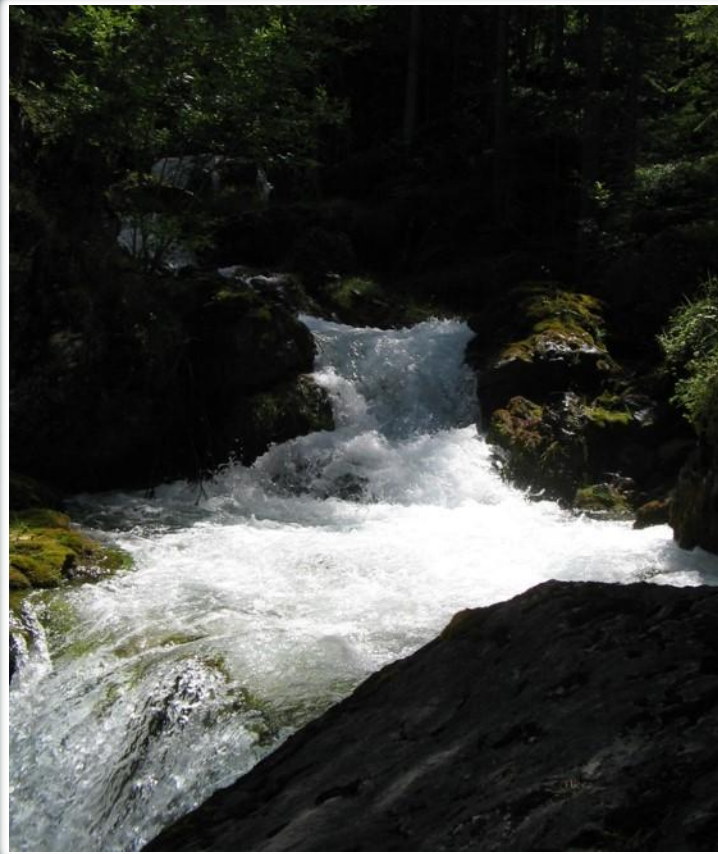


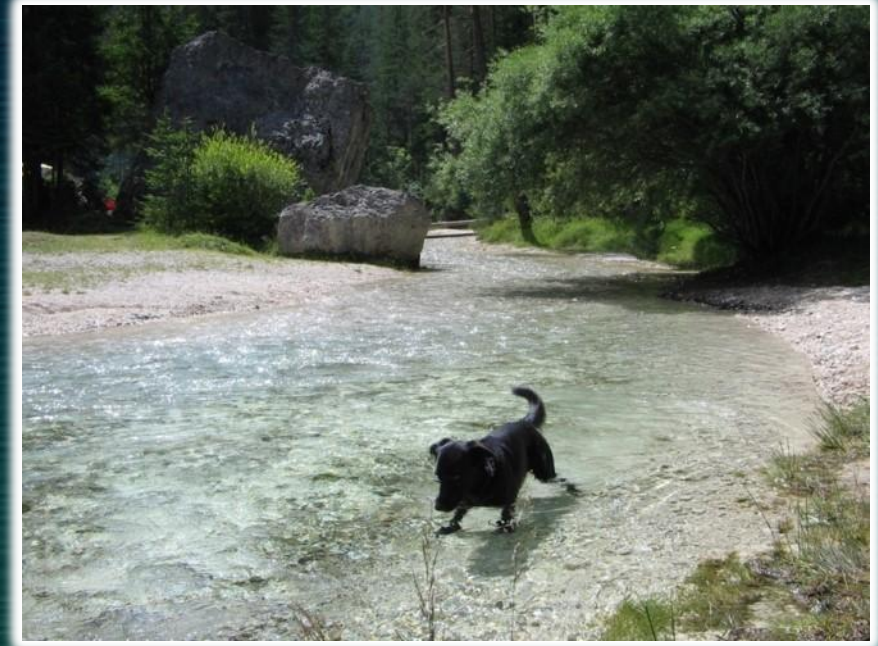
Quando è necessario allargare l'annulus aortico. Cenni di tecnica

Maurizio Salati
UC Cardiochirurgia
Policlinico San Matteo -Pavia

Le dimensioni di una protesi sono importanti ?



200 mt.



Forse...

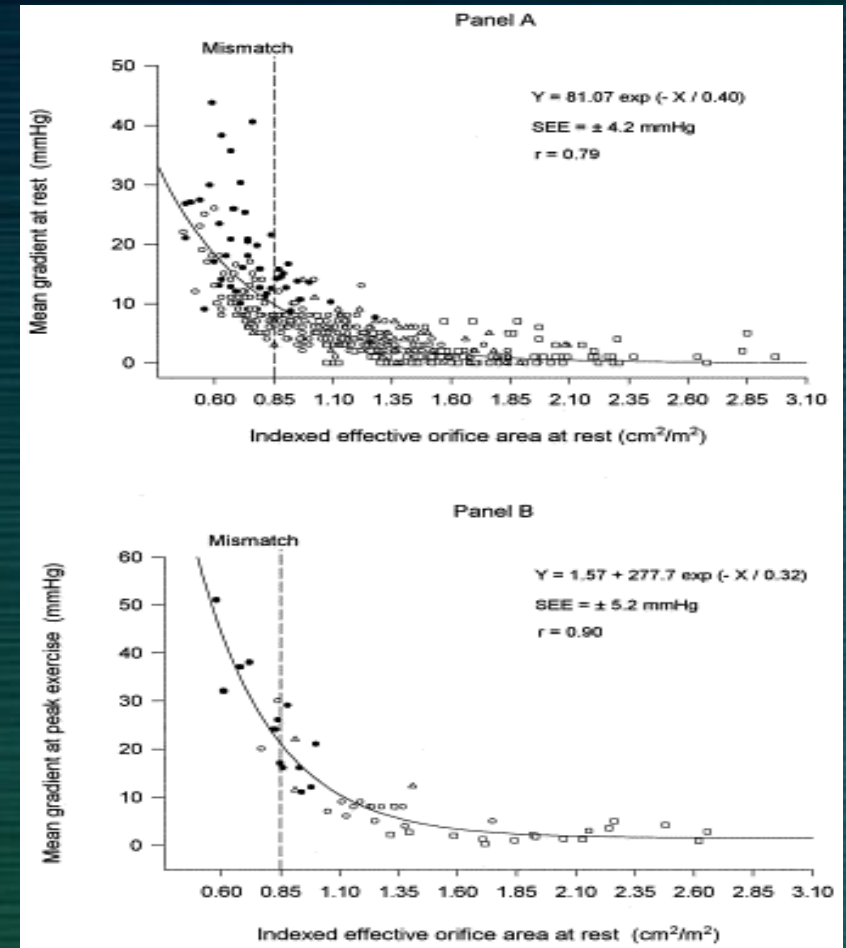
Performance protesi valvolari aortiche (EOA)

Table 1. Aortic Valve Prostheses and Effective Orifice Areas

Valve Type	n	Effective Orifice Area (cm ²) for Nominal Valve Size						References
		19 mm	21 mm	23 mm	25 mm	27 mm	29 mm	
Mechanical prostheses								
St. Jude Medical standard	428	1.01	1.33	1.60	1.93	2.35	2.81	[28]
St. Jude Medical Regent	72	1.84	2.47	2.91	3.34	4.28	4.80	[13]
Bjork-Shiley Monostrut/Sorin tilting disk	88	0.90	1.08	1.31	1.96	2.51	4.10	[29, 30]
Carbomedics Standard	15	1.25	1.42	1.69	2.04	2.55	2.63	[4, 9, 17]
Omnicarbon	45	...	1.25	1.49	1.94	2.11	2.27	[28]
MCRI On-X	7	1.50	1.70	2.00	2.40	3.20	3.20	[9, 13, 17]
Bioprostheses								
Carpentier-Edwards Perimount	64	1.08	1.25	1.51	1.62	1.85	...	[4]
Carpentier-Edwards Perimount Magna	27	1.30	1.70	2.10	2.30	[17]
Medtronic Mosaic	234	1.11	1.28	1.51	1.69	2.04	...	[4]
St. Jude Medical Biocor/Epic	80	...	1.30	1.60	1.80	2.00	3.30	[15, 17]

Mismatch paziente/protesi (PPM) : definizione

- PPM moderato : EOAI < 0.85 cm²/m²
- PPM severo : EOAI < 0.65 cm²/m²



PPM : soggetti a rischio

- Pazienti candidati a bioprotesi con $BSA > 1.7$ e $LVOT = 21$ mm
- Pazienti candidati a bioprotesi con $LVOT = 19$ mm
- Pazienti candidati a protesi meccaniche di ultima generaz. Con $BSA > 2.2$ e $LVOT = 19$ mm



Impatto del PPM: evidence –based medicine ?

Patient prosthesis mismatch affects short- and long-term outcomes after aortic valve replacement[☆]

Thomas Walther^{*}, Ardawan Rastan, Volkmar Falk, Sven Lehmann, Jens Garbade, Anne K. Funkat, Friedrich W. Mohr, Jan F. Gummert

Universität Leipzig, Herzzentrum, Klinik für Herzchirurgie, Strümpellstrasse 39, 04289 Leipzig, Germany

Received 29 December 2005; received in revised form 2 April 2006; accepted 13 April 2006

4131 pts
29.3%
PPM

Patient-prosthesis mismatch does not affect survival following aortic valve replacement[☆]

Neil J. Howell, Bruce E. Keogh, Vivien Barnett, Robert S. Bonser, Timothy R. Graham, Stephen J. Rooney, Ian C. Wilson, Domenico Pagano^{*}

Department of Cardiothoracic Surgery, University Hospital NHS Foundation Trust, Birmingham, UK

Received 28 November 2005; received in revised form 2 March 2006; accepted 14 March 2006

1431 pts.
8.7 %
severe PPM

Impatto del PPM sulla sopravvivenza a 5 anni

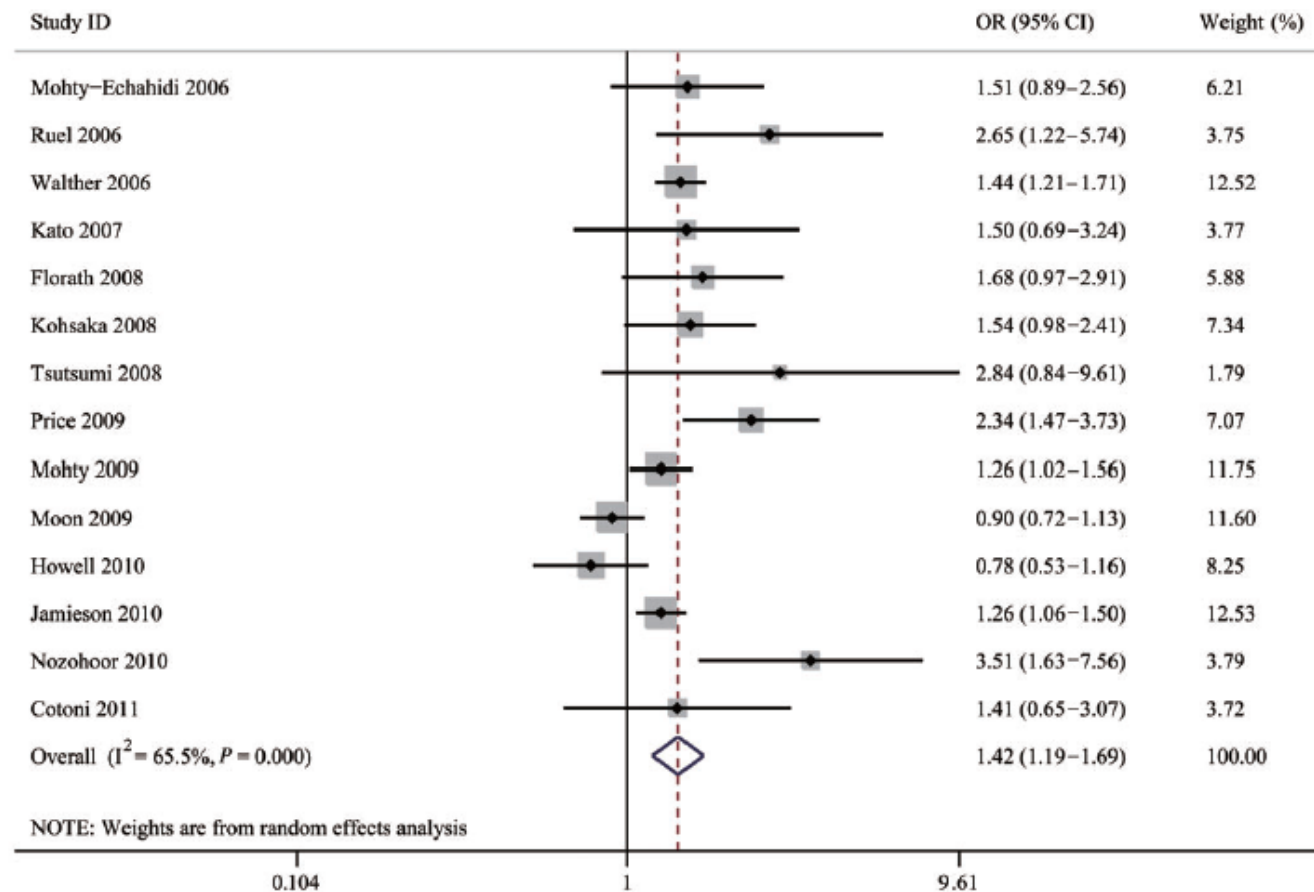


Figure 2: Forest plot of studies assessing the effect of PPM on 5-year survival rates.

Impatto del PPM sulla sopravvivenza a 10 anni

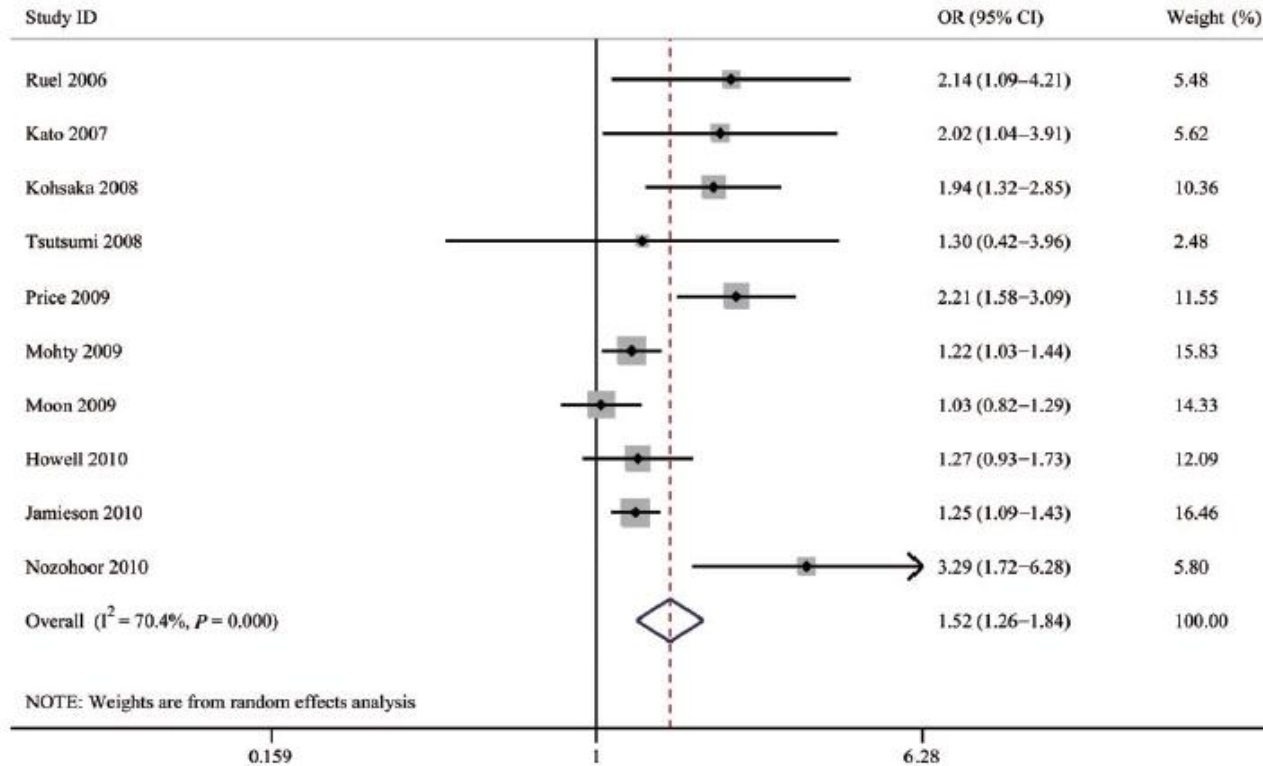
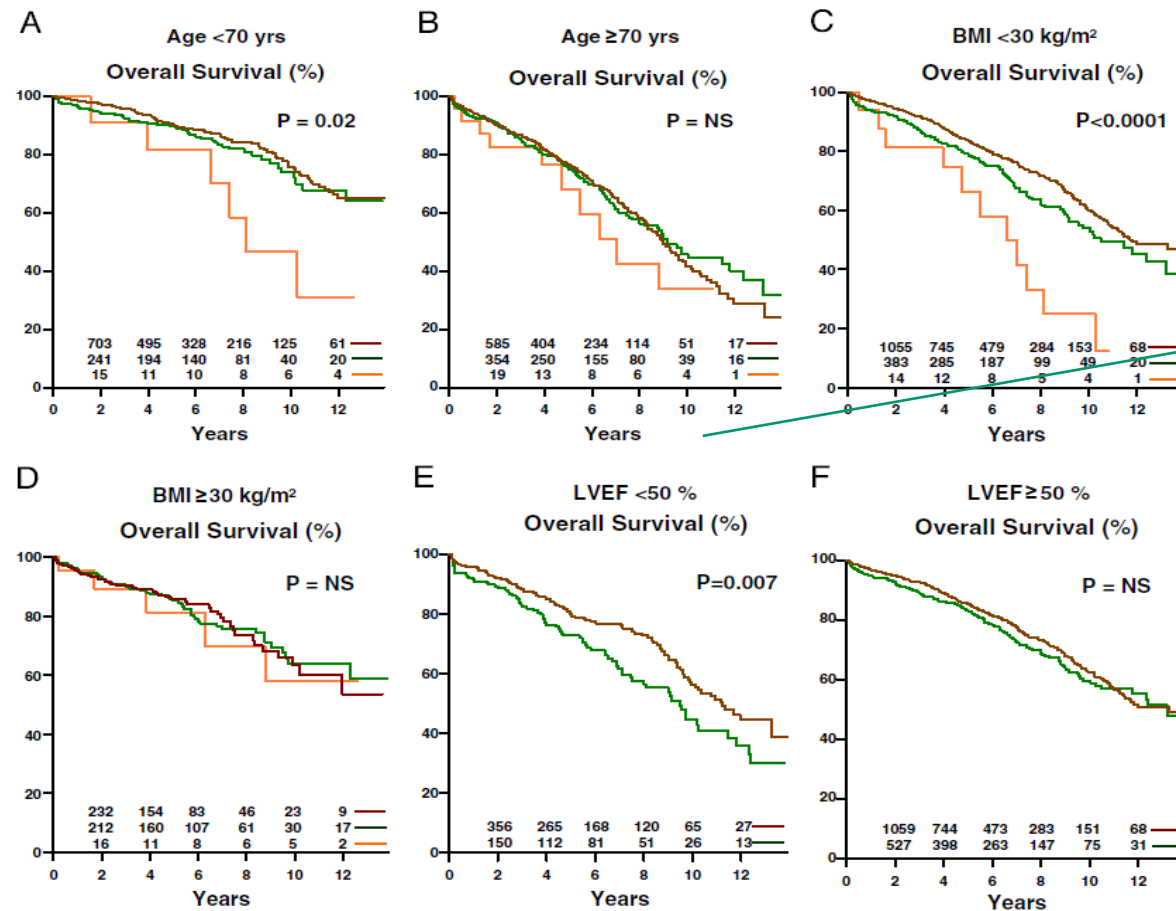


Figure 3: Forest plot of studies assessing the effect of PPM on 10-year survival rates.

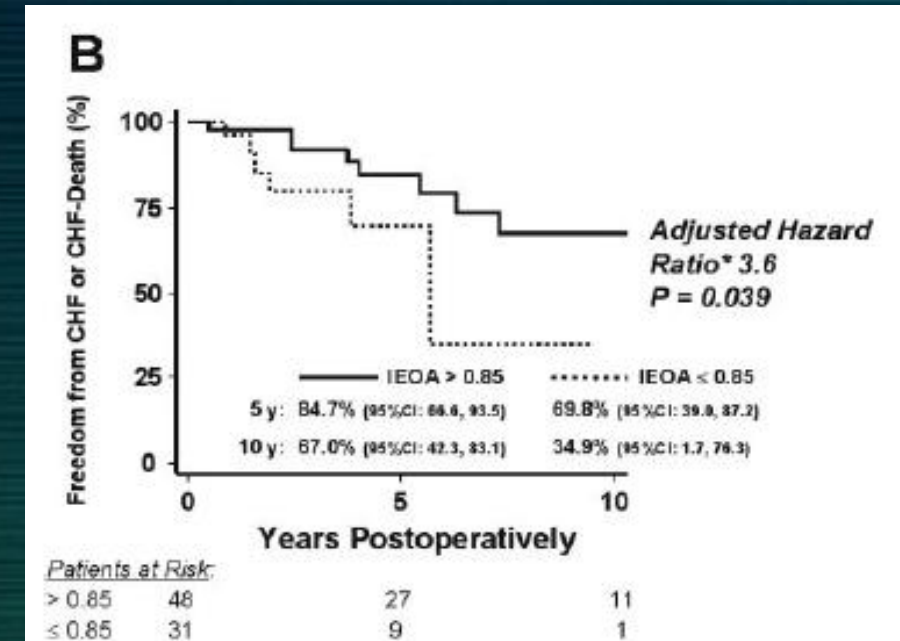
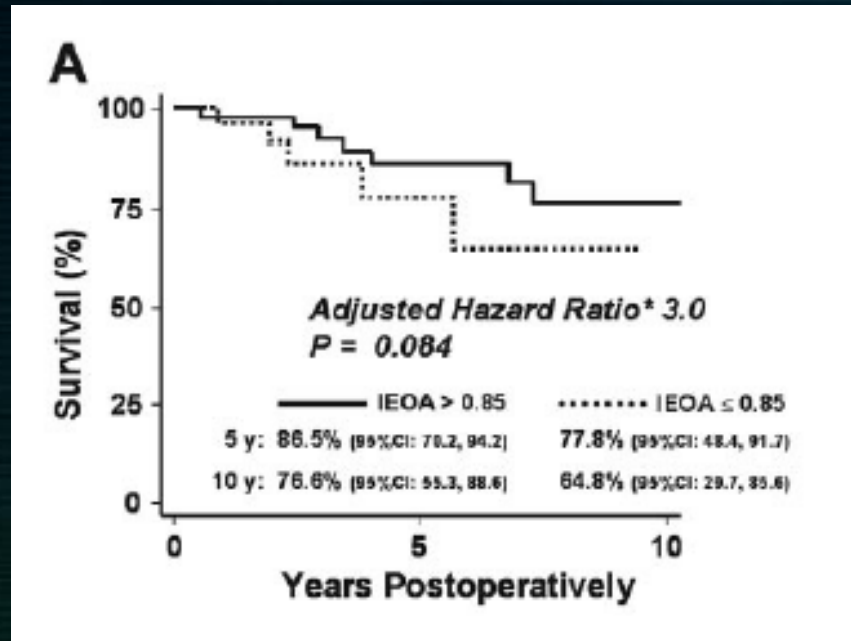
Further analyses, adjusting for confounding factors showed that adverse impact of PPM on long term survival was more pronounced in younger than in older patients...

PPM : stratificazione della sopravvivenza

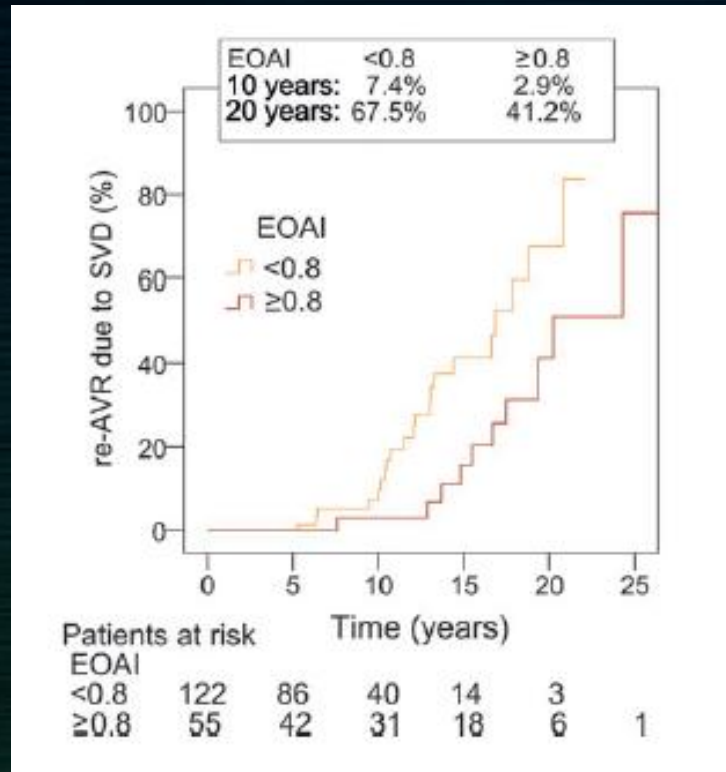


BMI < 30 kg/m²
EF < 50%
Eta' < 70

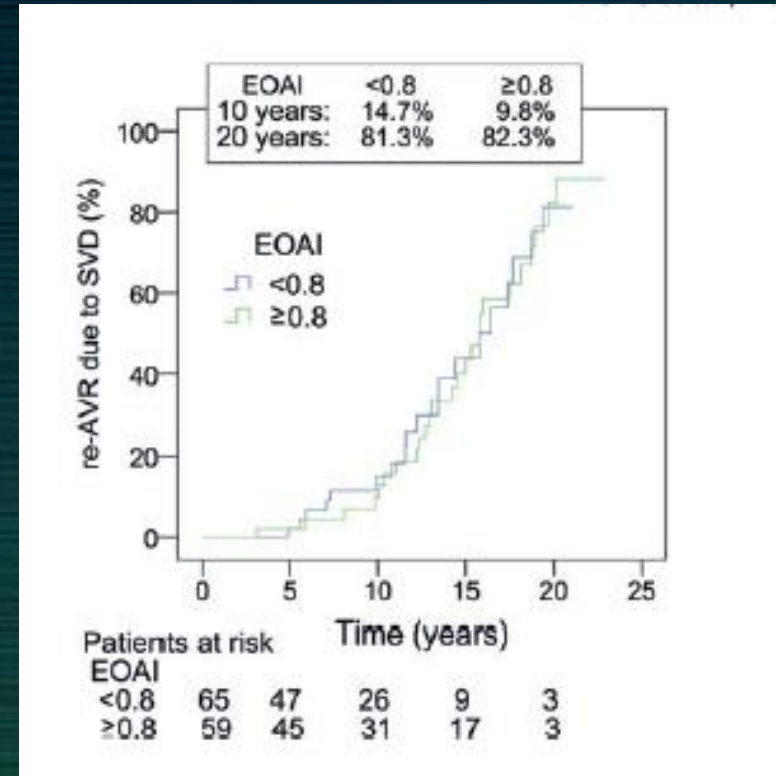
LOW GRADIENT AORTIC STENOSIS : RUOLO DEL PPM



PPM e disfunzione strutturale delle bioprotesi



50-59 y



<50 y

Take Home Message

Quando impiantare una protesi adeguata per la taglia del pz.?

- Nei pazienti giovani e attivi
- Se decidiamo di impiantare una bioprotesi in un paz. di 50-65 anni
- Nei pazienti con frazione di eiezione compromessa
- Nelle stenosi aortiche a basso gradiente

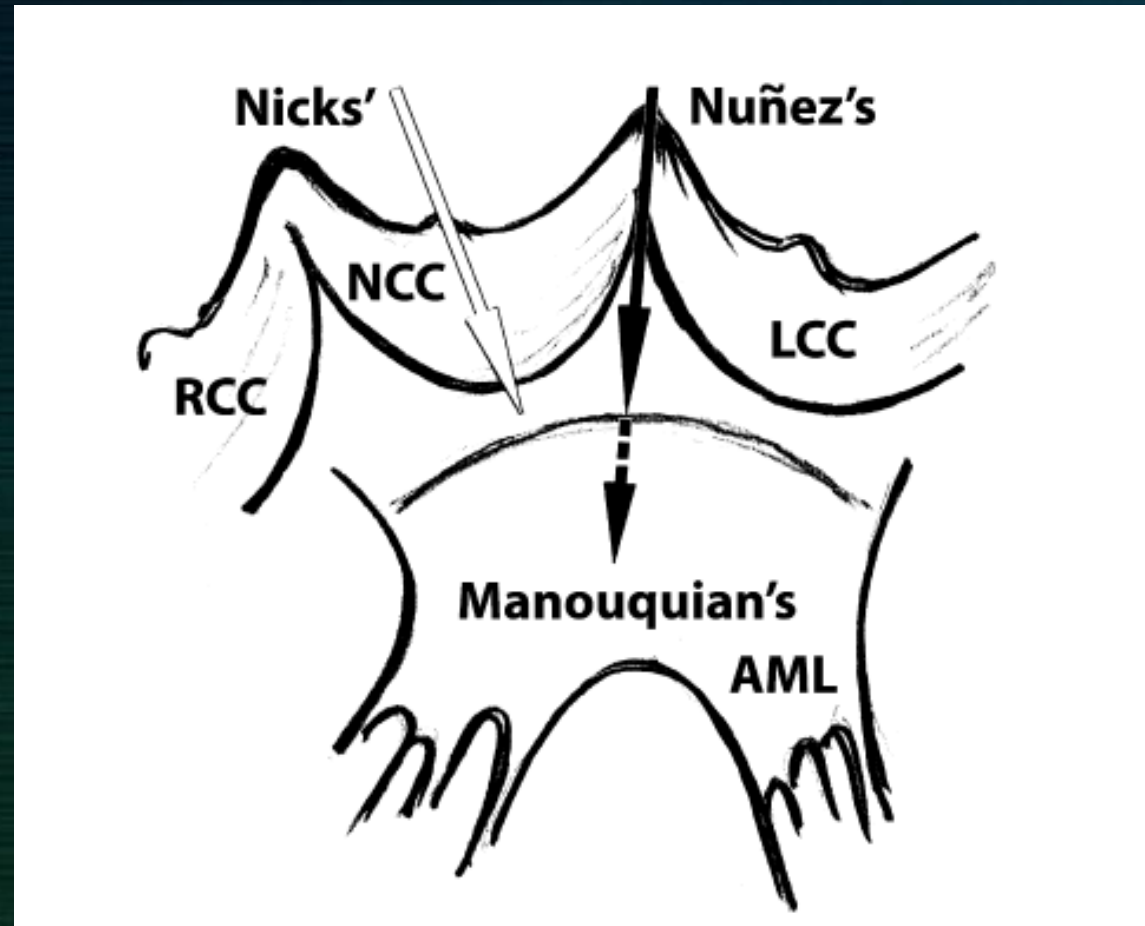
Come impiantare la protesi adeguata in un annulus non adeguato ?

Adeguando l'annulus alla protesi adeguata → allargamento tratto di efflusso

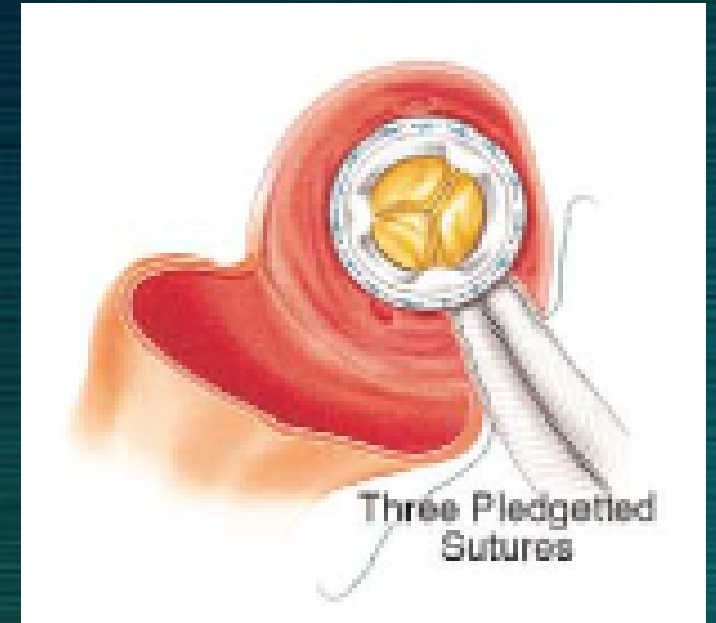
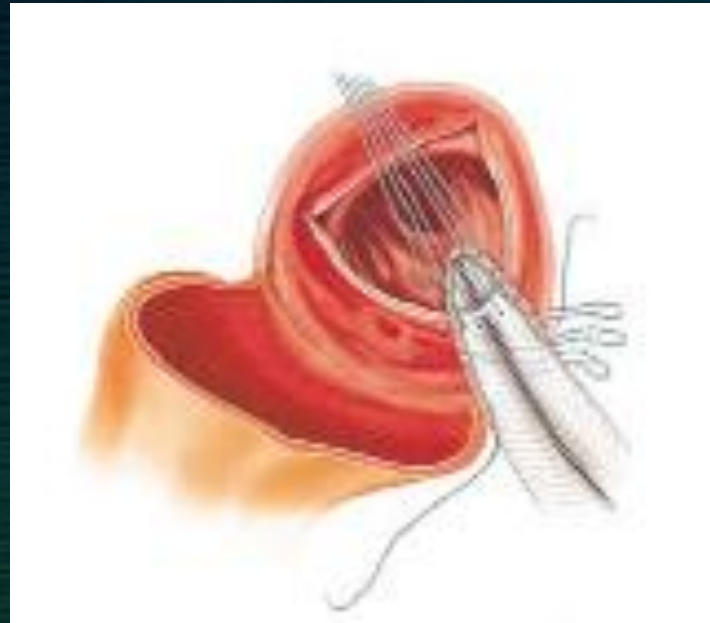
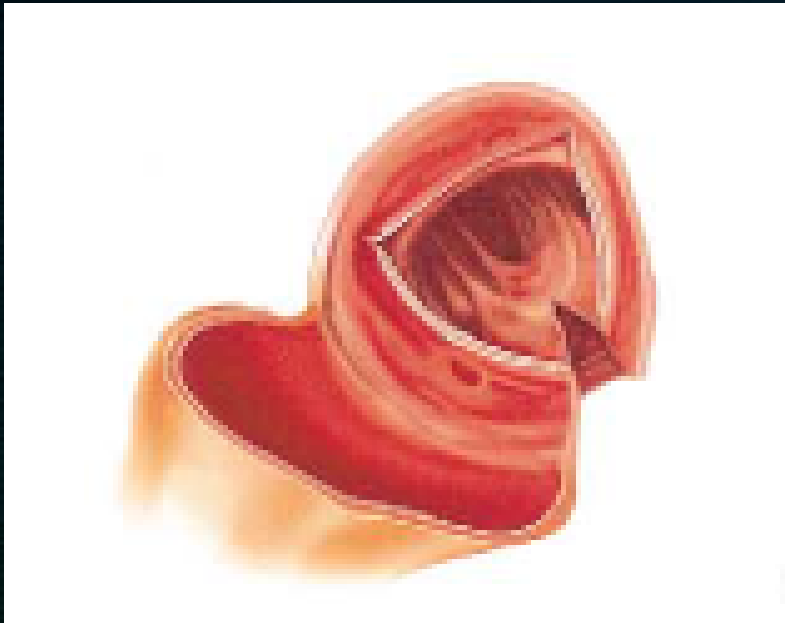
Oppure

Adeguando la protesi all'annulus inadeguato → impianto di stentless pericardica
→ impianto di bioprotesi suturless
→ TAVI

Allargamento annulare posteriore : schema degli interventi possibili

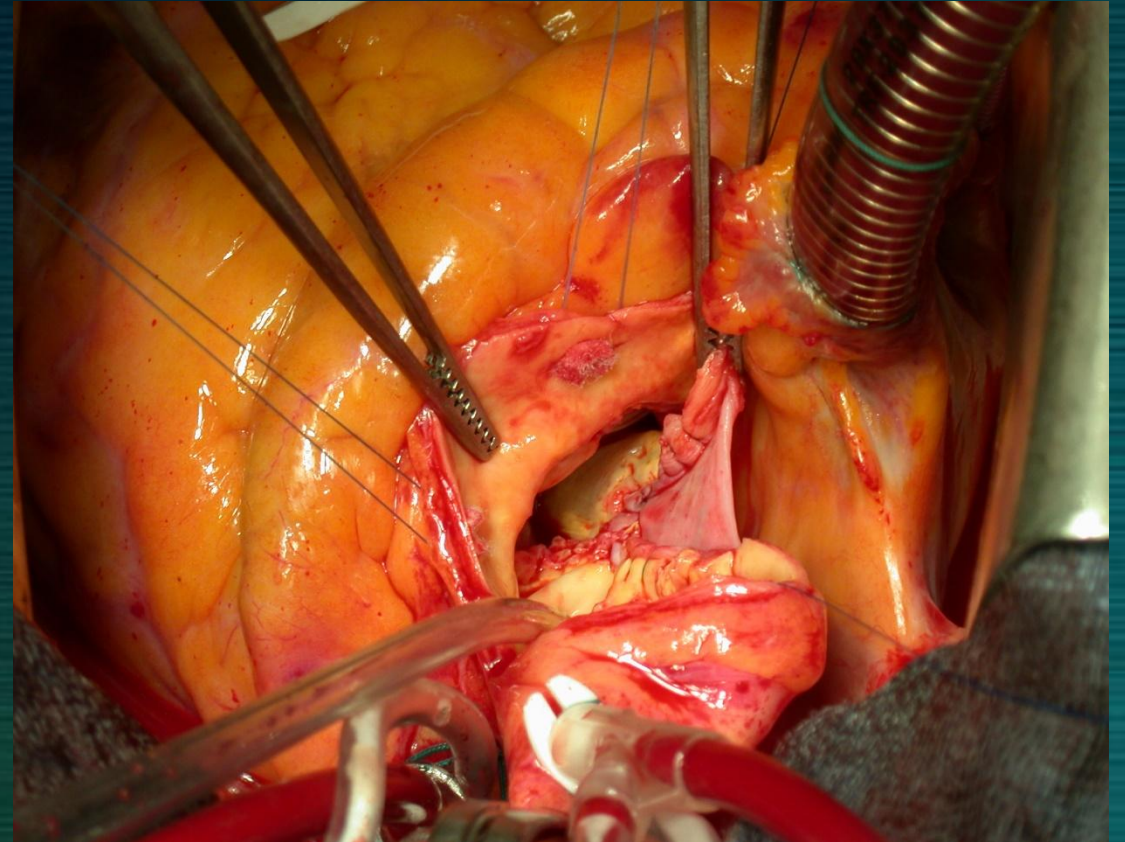
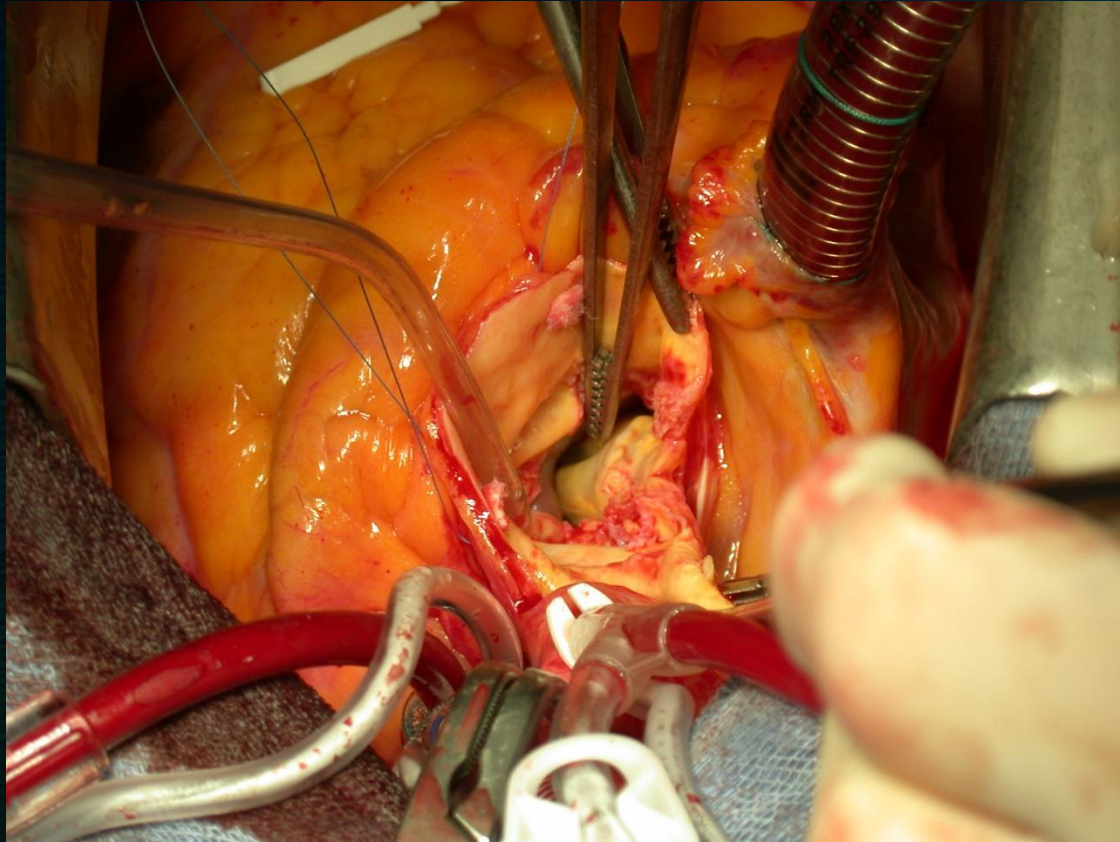


Allargamento posteriore sec. Manouguian

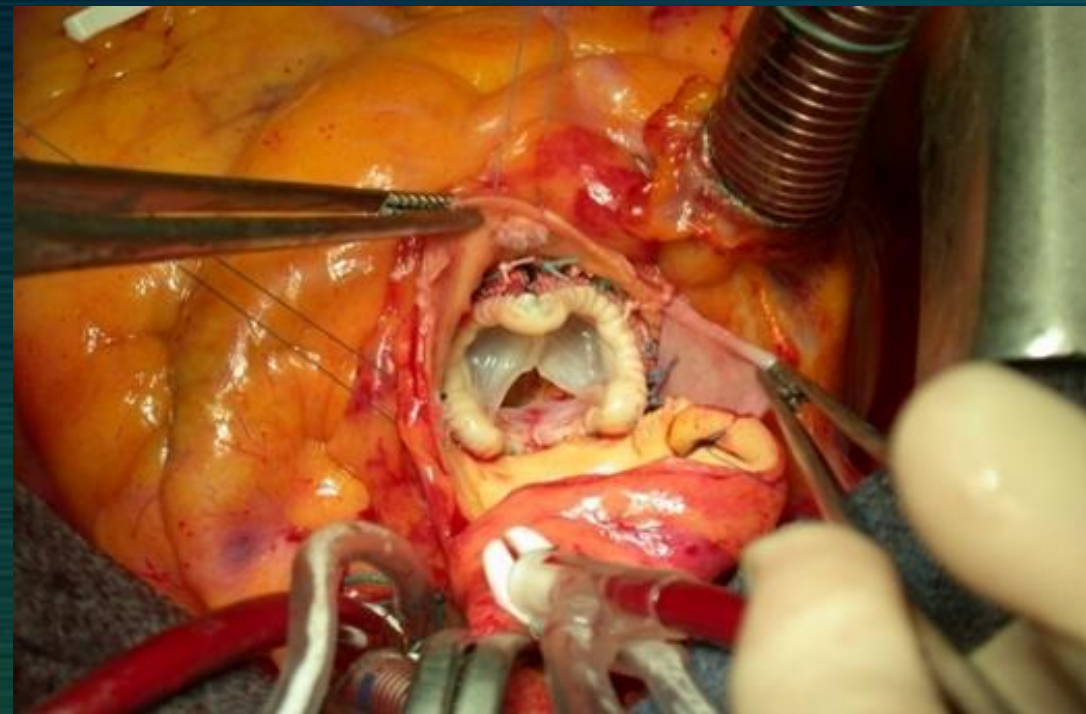
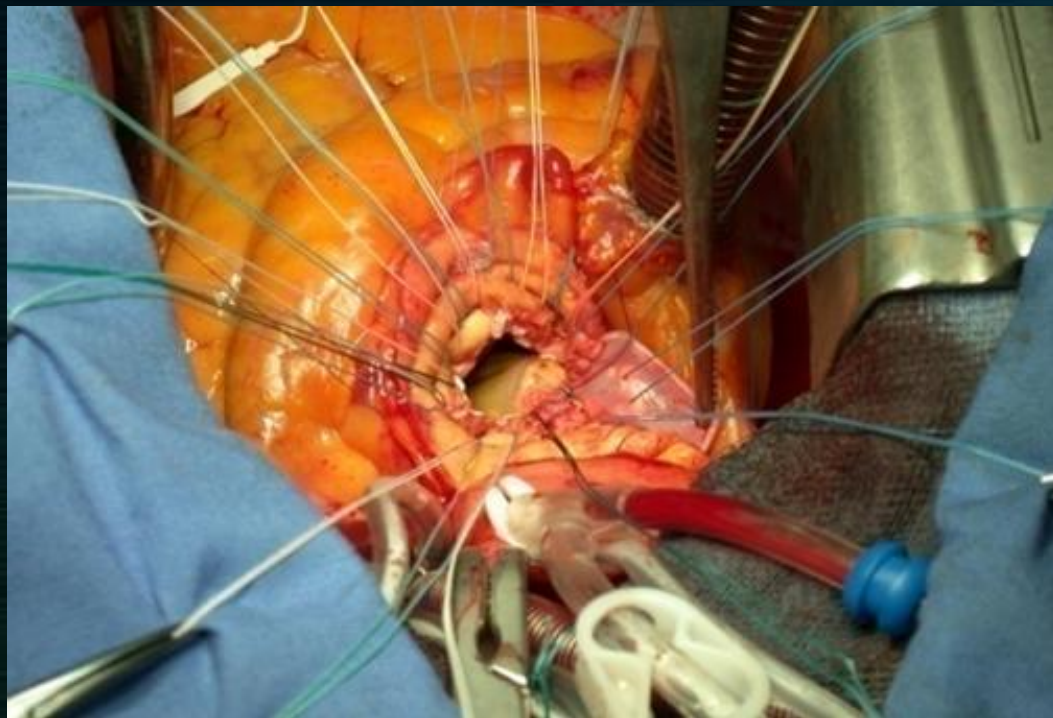


- Apertura dell'atrio sinistro
- Deformazione del lembo anteriore mitralico

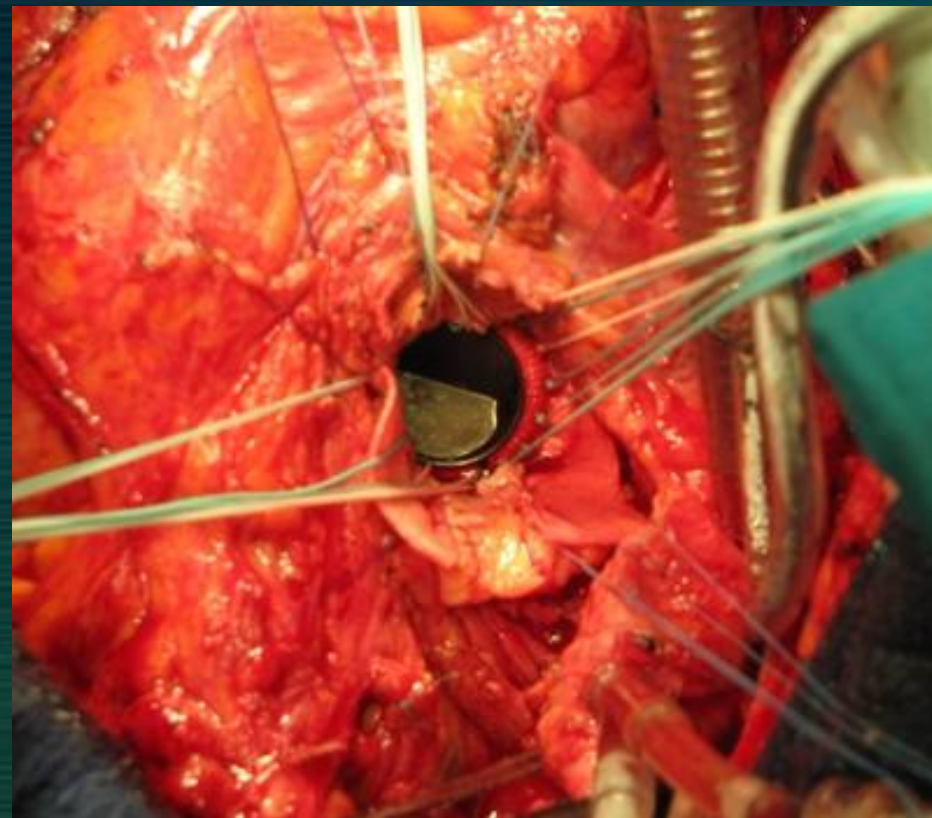
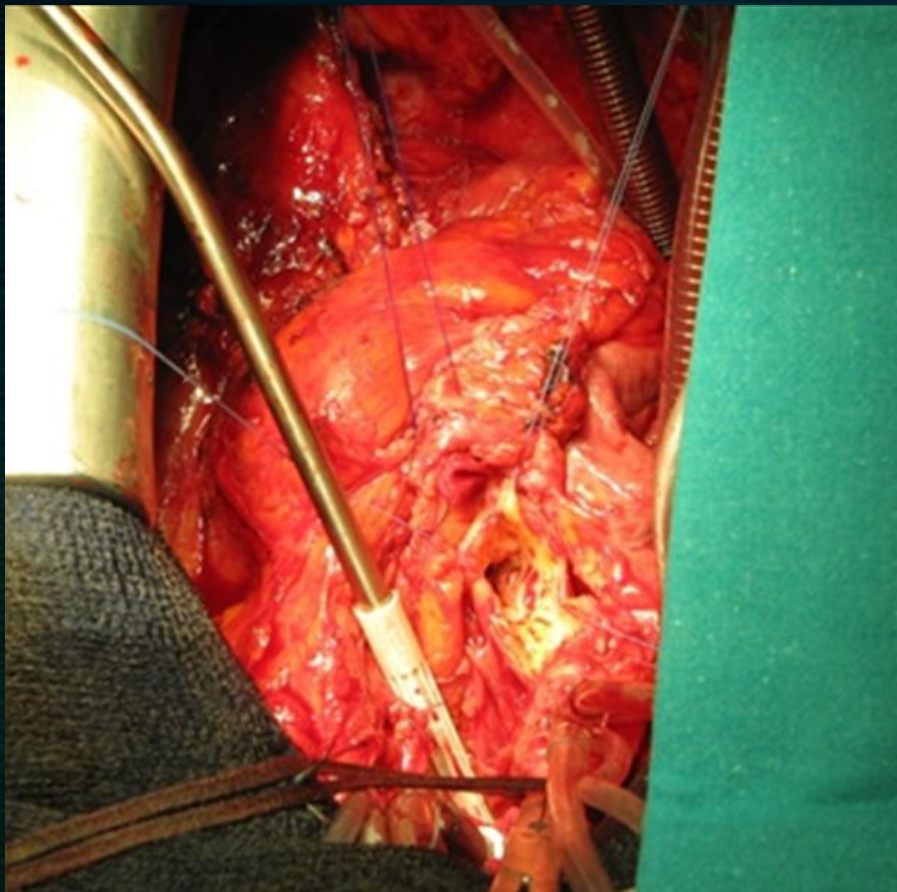
Allargamento posteriore sec. Nunez



Allargamento posteriore sec. Nunez



Allargamento annulus : casi particolari



Allargamento annulus : efficacia

- Clampaggio aortico prolungato (10-17 minuti)
- Mortalità più elevata (0.9-4.5%) anche se non significativamente relata alla procedura
- Incidenza PPM molto variabile (11-62%)
- Non miglioramento della prognosi a distanza.

Italians do it better : la protesi Solo

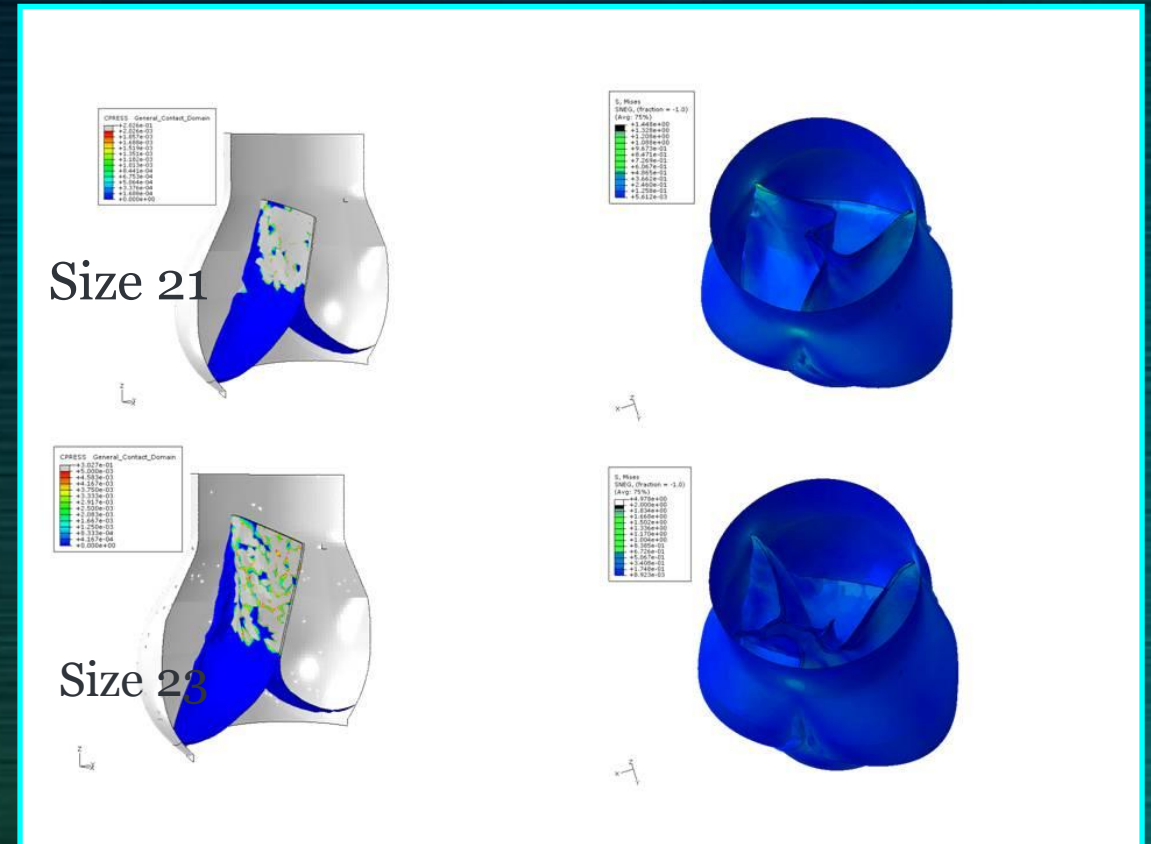
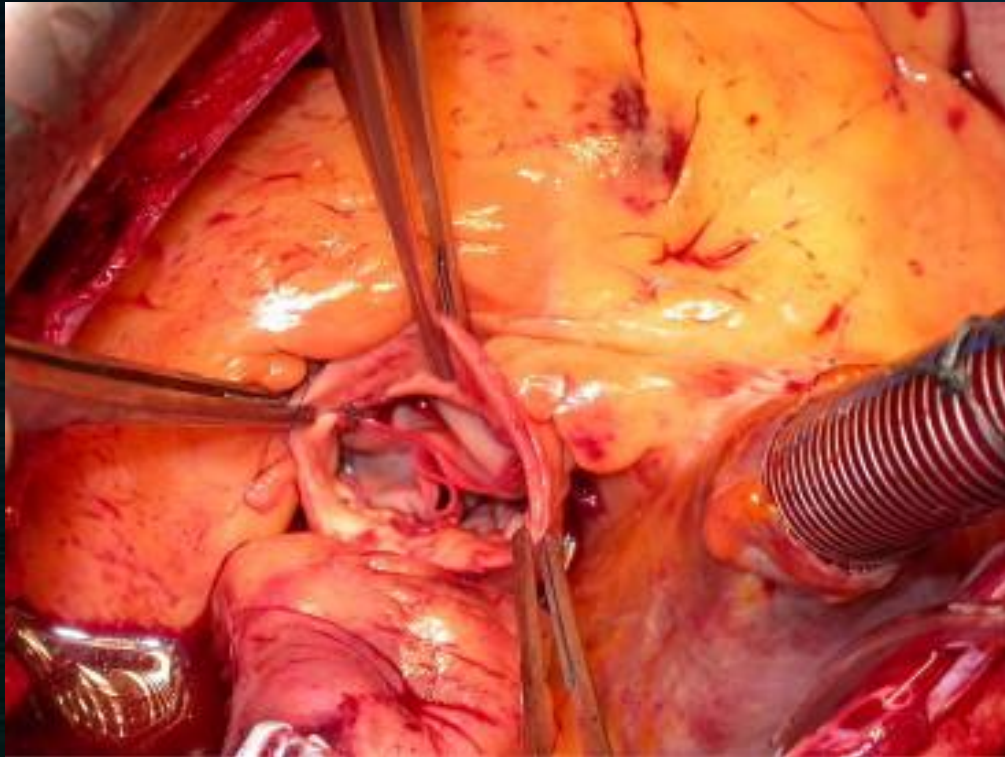
Size	EOA
21	1.6 +/- 0.5
23	1.9 +/- 0.4
25	2.1 +/- 0.4
27	2.2 +/- 0.6

INCIDENZA PPM : 0.7 %



Stanger , JTCS, in press

Protesi Solo : effetti di eccessivo oversizing



Courtesy of P. Totaro

Le nuove protesi suturless : una buona soluzione ?

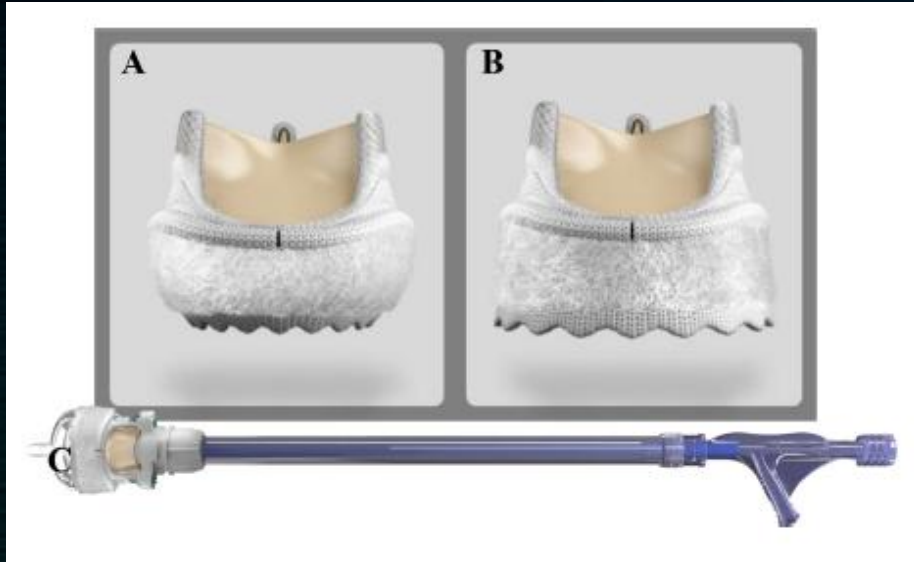


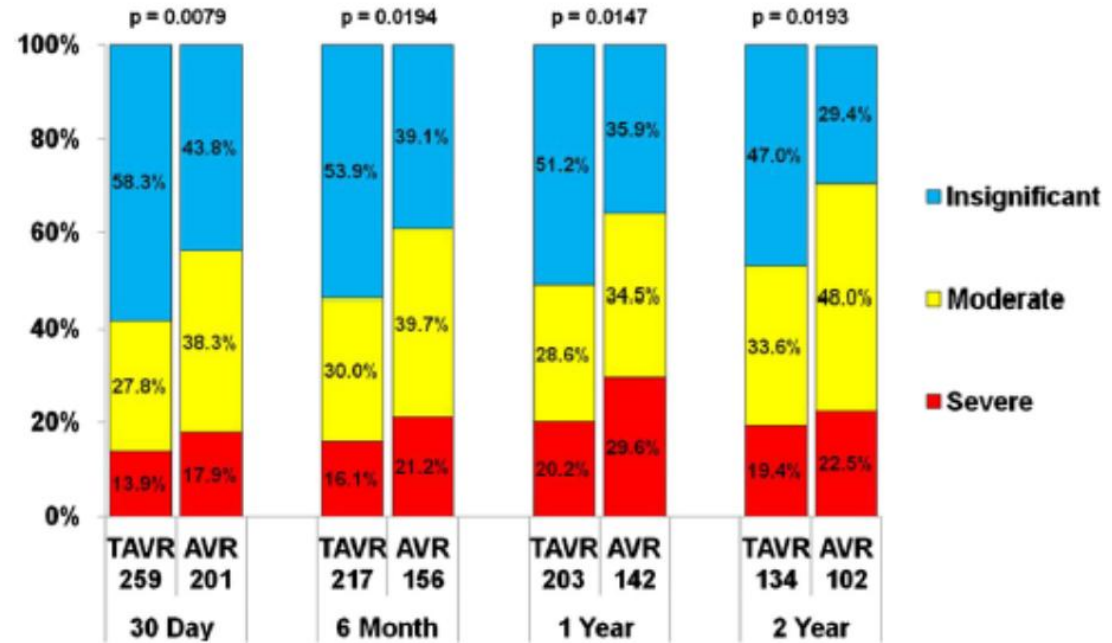
Table 4. Hemodynamic Performance

Characteristic	MIS-RDAVR, Edwards Intuity Valve	FS-AVR, Perimount Valve
EOA, cm ²	Mean ± SD (n) ^a	
Valve size, mm	Discharge	
21	1.8 ± 0.6 (9)	1.6 ± 0.4 (11)
23	1.7 ± 0.4 (16)	1.9 ± 0.5 (14)
25	2.0 ± 0.7 (8)	1.9 ± 0.7 (7)
	3 Month	
21	1.8 ± 0.5 (10)	1.6 ± 0.4 (13)
23	1.9 ± 0.4 (14)	1.6 ± 0.4 (14)
25	2.1 ± 0.5 (8)	2.0 ± 0.6 (10)

Incidenza di PPM suturless / stented= 0%/14.3% , p=0.016

PPM TAVI/AVR : lo studio PARTNER

Nei pazienti con annulus < 20 mm, la Sapien ha un EOAI > C-E Magna (0.87 cm²/m² vs. 0.74 cm²/m²).



Take Home Message

- L'allargamento dell'annulus rimane come raccomandazione in classe I (STS) quando un PPM severo è prevedibile
- L'uso di bioprotesi pericardiche stentless o di protesi suturless potrà ridurre l'incidenza di PPM
- La TAVI può essere una buona soluzione per pazienti anziani con annulus ipoplasico



Grazie per l'attenzione !

PPM : il pragmatismo chirurgico

- 1) Le protesi, se non ostruite o difettose, funzionano tutte.
- 2) I guai grossi derivano da protesi troppo grosse.
- 3) E' evento non comune reintervenire per un PPM.



Effective orifice area protesi valvolari aortiche (cm²)

Protesi	19 mm	21 mm	23 mm	25 mm
Perimount	1.10	1.30	1.50	1.80
Mosaic	1.20	1.22	1.38	1.65
Freestyle	1.15	1.35	1.48	2.00
St Jude R	1.60	2.00	2.20	2.50
St Jude	1.00	1.40	1.50	2.10
Carbomed	1.00	1.54	1.63	1.98

