

Capitolo 28

Valvulopatia aortica

VANTAGGI E LIMITI DELLE PROTESI MECCANICHE E BIOLOGICHE

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AORTIC VALVE REPLACEMENT

OPERATIVE MORTALITY

Authors	Type of operation	N. Pts	Mortality (%)
Jamieson WR, STS DB, 1999	AVR	26,317	4.3
Jamieson WR, STS DB, 1999	AVR + CABG	22,713	8.0
Collective Review, 1995-2005	AVR +/- CABG	5,249	4.9
Desai ND, STS DB, 2008	AVR +/- CABG	216.245	5.7
	AVR		2-5
	AVR + CABG		7-9
Univ. Tor Vergata, 2010	AVR	1,336	2.5
	AVR + CABG	466	5

MITRAL VALVE REPLACEMENT

OPERATIVE MORTALITY

Authors	Type of operation	N. Pts	Mortality (%)
Collective Review, 1995-2002	MVR	2,579	7.0
Desai ND, STS DB, 2008	MVR +/- CABG	132,641	7.7
	MVR + AVR	24,608	11.5
Gudbjartsson T, STSDB, 2008	MVR		5-9
	Elective		3.4
	Urg.		7.9
Univ. Tor Vergata, 2010	MVR	440	4.9

PROTESI BIOLOGICHE

VANTAGGIO

**NON NECESSARIA
TERAPIA ANTICOAGULANTE
A LUNGO TERMINE**

PROTESI BIOLOGICHE

SVANTAGGIO

DURATA LIMITATA

PROSTHETIC AORTIC VALVE SELECTION

(ACC/AHA 2006 Guidelines)

Class I

- **Mechanical prosthesis** in patients with a mechanical valve in the mitral or tricuspid position
- **Bioprostheses** in patients of any age who will not take warfarin or who have major contraindications to warfarin therapy

Controindicazioni alla terapia anticoagulante

- **diateesi emorragiche**
- **angiodisplasie**
- **gravi anemie emolitiche**
- **scarsa compliance a terapia A/C**
- **donne giovani con aspettativa di gravidanza**

PROTESI BIOLOGICHE

Prima generazione



Hancock
(porcine)

Limiti

- **posizionamento in sede anulare**
- **deterioramento protesi biologica a 10 anni**

PROTESI BIOLOGICHE

Seconda generazione



Medtronic Hancock II Carpentier-Edwards (porcine)



A 3D anatomical model of a cervical vertebra, specifically the seventh cervical vertebra (C7), viewed from a posterior-lateral perspective. The model highlights the spinous process (a long, thin projection) and the transverse process (a short, thick projection). The articular processes are also visible, which include the superior and inferior articular processes. The body of the vertebra is shown in yellow, and the surrounding ligaments and soft tissue are in white.

Carpentier-Edwards *(Perimount)*

PROTESI BIOLOGICHE

Seconda generazione

Vantaggi

- posizionamento sopravvissutale (\uparrow calibro)
- \uparrow libertà di deterioramento a 10-15 anni

PROTESI BIOLOGICHE

Terza generazione



St. Jude Trifecta
(pericardial)



**Carpentier-Edwards
Magna (pericardial)**



Sorin Mitroflow
(pericardial)

PROTESI BIOLOGICHE

Terza generazione

Vantaggi

- stent a basso profilo, flessibile, di agevole impianto
- emodinamicamente più efficienti
- ↑ libertà da deterioramento (~20 anni)

PROTESI MECCANICHE

A gabbia e palla

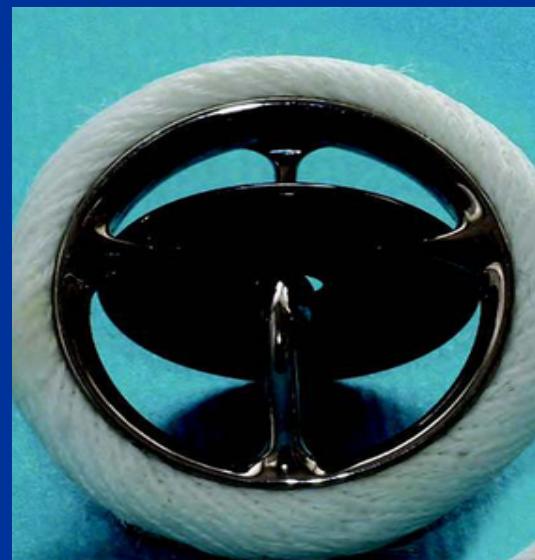


PROTESI MECCANICHE

Monodisco (Tilting Disk)



Björk-Shiley



Medtronic-Hall



Omnicarbon

PROTESI MECCANICHE

Bileaflet



St. Jude Medical
(Regent)



CarboMedics



Sorin BiCarbon

IDEAL PROSTHETIC HEART VALVE

- The valve should:
 - provide a cure
 - have normal function
 - last a lifetime
- PHV implantation should be:
 - with very low mortality, nondestructive
 - associated with satisfactory QoL

BIOLOGICAL VS MECHANICAL PROSTHESES

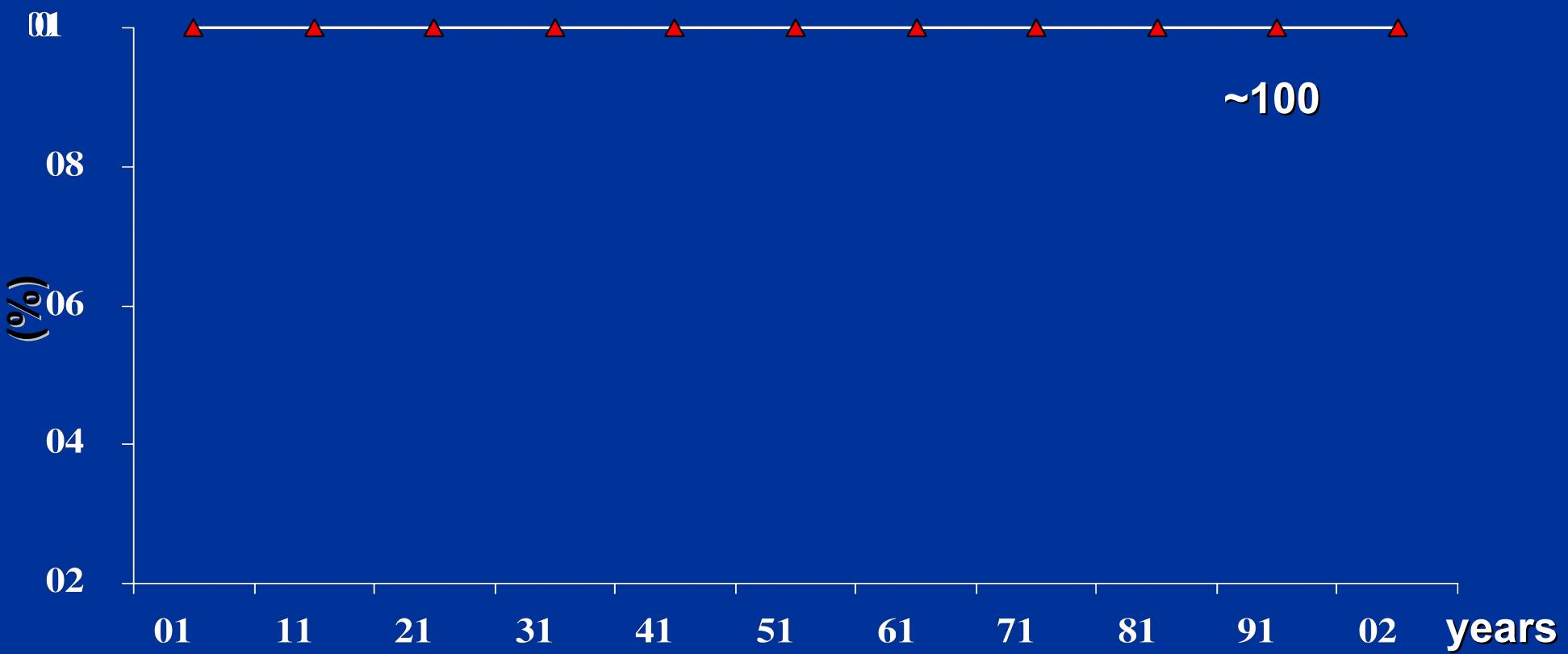
(575 pts, 394 AVR, 181 MVR,
Bjork-Shiley vs. Porcine Valves, DVA trial)

- similar 15-year mortality
- higher reoperation rate
(29 vs 10%) in pts <65 yrs
- greater reoperation rate in MVR vs AVR group
(44 vs 23%)
- lower bleeding rate (0.9-2% /year vs 2-2.5% /year)
- no difference for thromboembolism
and other complications

MECHANICAL PROSTHESES

FREEDOM FROM STRUCTURAL VALVE DETERIORATION

(aortic and mitral position, 4.695 pts)

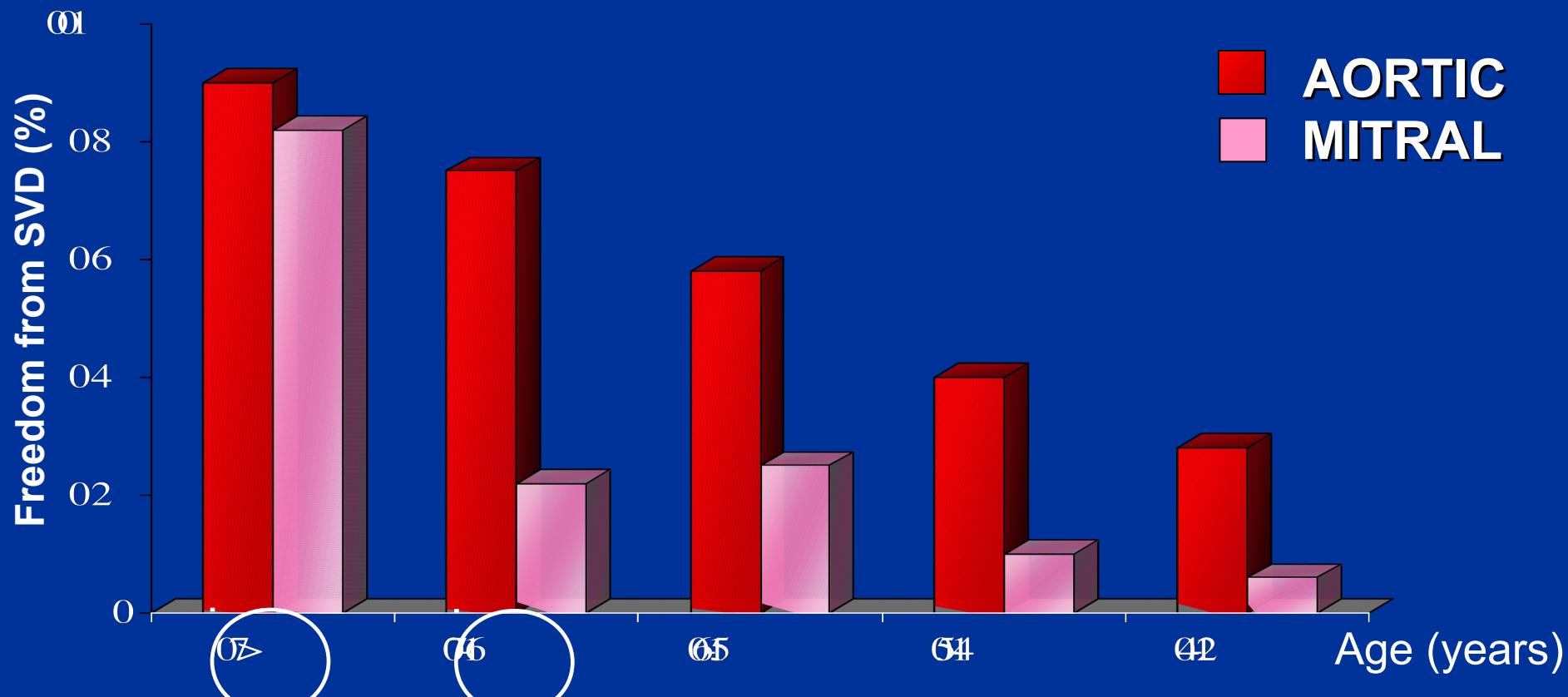


Rahimtoola SH, JACC 2003

BIPROSTHESIS

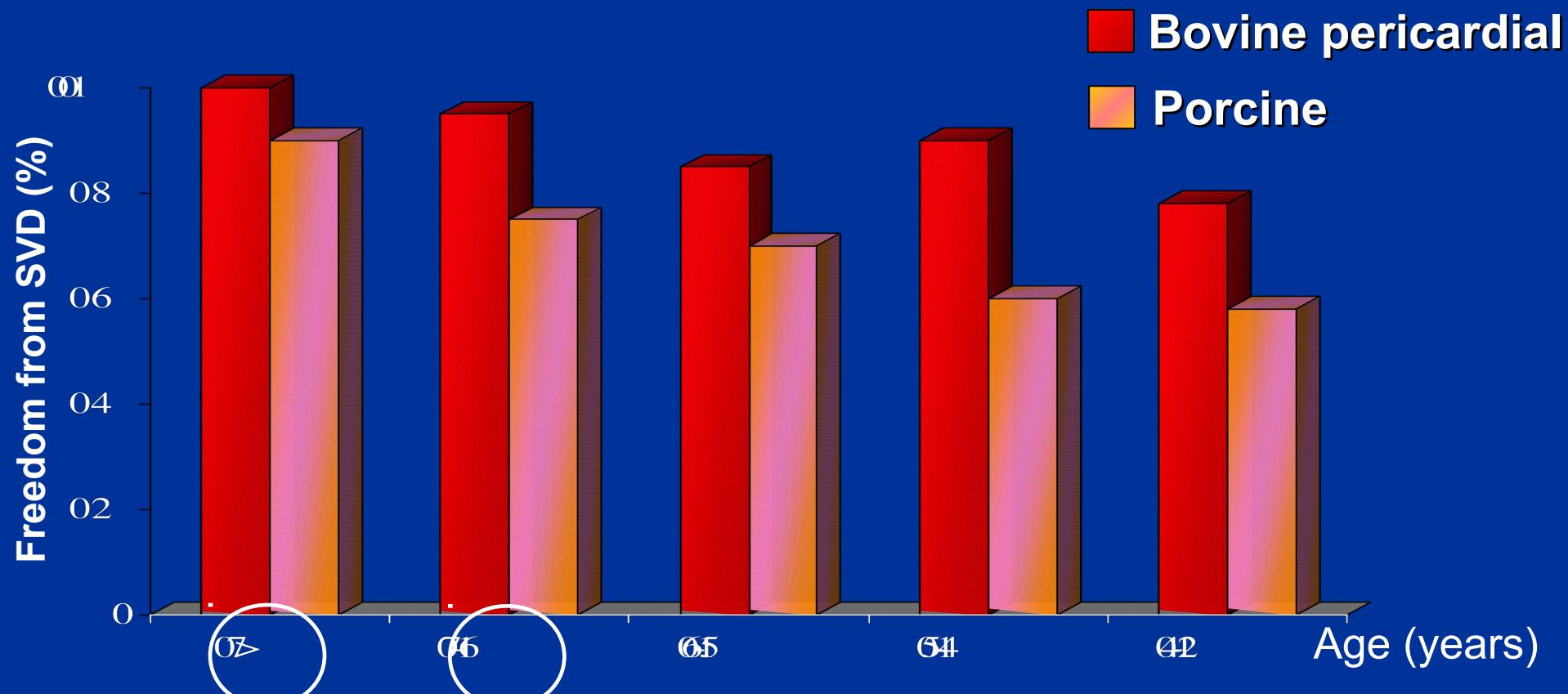
STRUCTURAL VALVE DETERIORATION (SVD) at 15 yrs

by patient age and valve position



BIOPROSTHESIS

10-year freedom from SVD after
1,266 C-E porcine vs 429 C-E pericardial valves
in mitral position by patient age

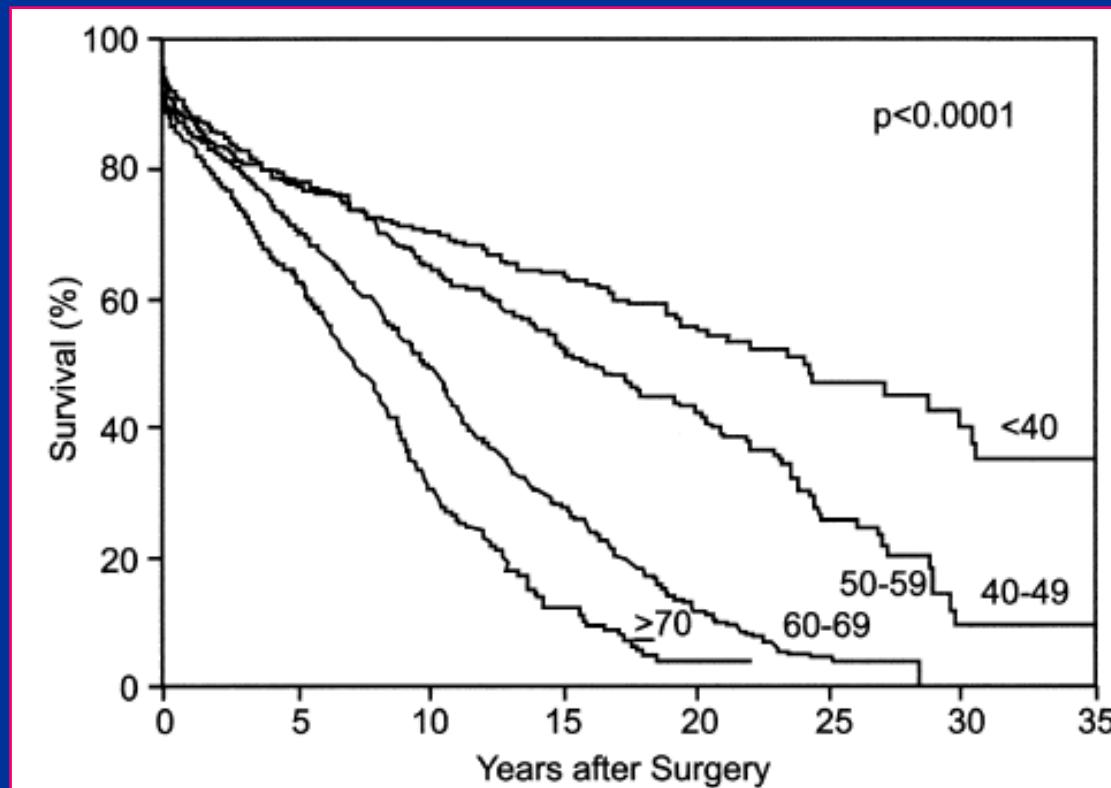


CHOICE OF PROSTHETIC HEART VALVE

- Bioprostheses have a low rate of SVD in the older patient and are the PHV of choice for AVR in patients $\geq 60\text{-}65$ years, and for MVR in patients $\geq 65\text{-}70$ years
 - in younger patients mechanical valves are the PHV of choice

CHOICE OF PROSTHETIC HEART VALVE

- Survival related to patient's age at time of surgery



Data collected from Non-Randomized Studies 1995-2001

CHOICE OF PROSTHETIC HEART VALVE

- In most clinical situations is between a **mechanical** and a **stented bioprosthetic**
- Important determining factor:
which of the 2 complications,
anticoagulation therapy or **SVD**,
one wants to avoid

CHOICE OF PROSTHETIC HEART VALVE

ANTICOAGULATION THERAPY

- Bleeding rate in patients > 60-65 years is greatly increased (5.0-7.4% /year vs 1.5 /year)

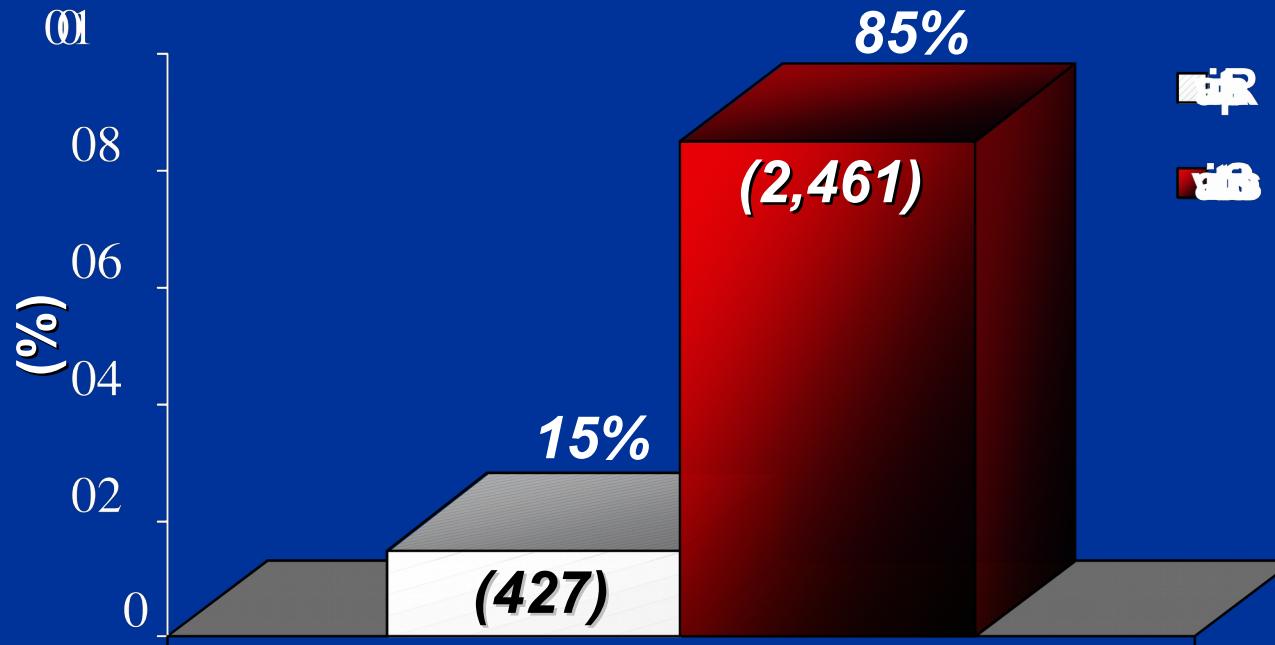
CRITERI DI SCELTA PROTESI VALVOLARE

- Durata
- Necessità di terapia anticoagulante
- Rischio operatorio per eventuale reintervento
- Aspettativa di vita
- Qualità di vita
- *Preferenza paziente*



CHIRURGIA VALVOLARE AORTICA

(2,888 *interventi* 1991-2010)



CHIRURGIA VALVOLARE AORTICA

Evoluzione

- ✓ ↑ età media pazienti
- ✓ ↑ uso bioprotesi in pericardio
- ✓ ↓ uso protesi porcine
 - No terapia anticoagulante



TOR VERGATA

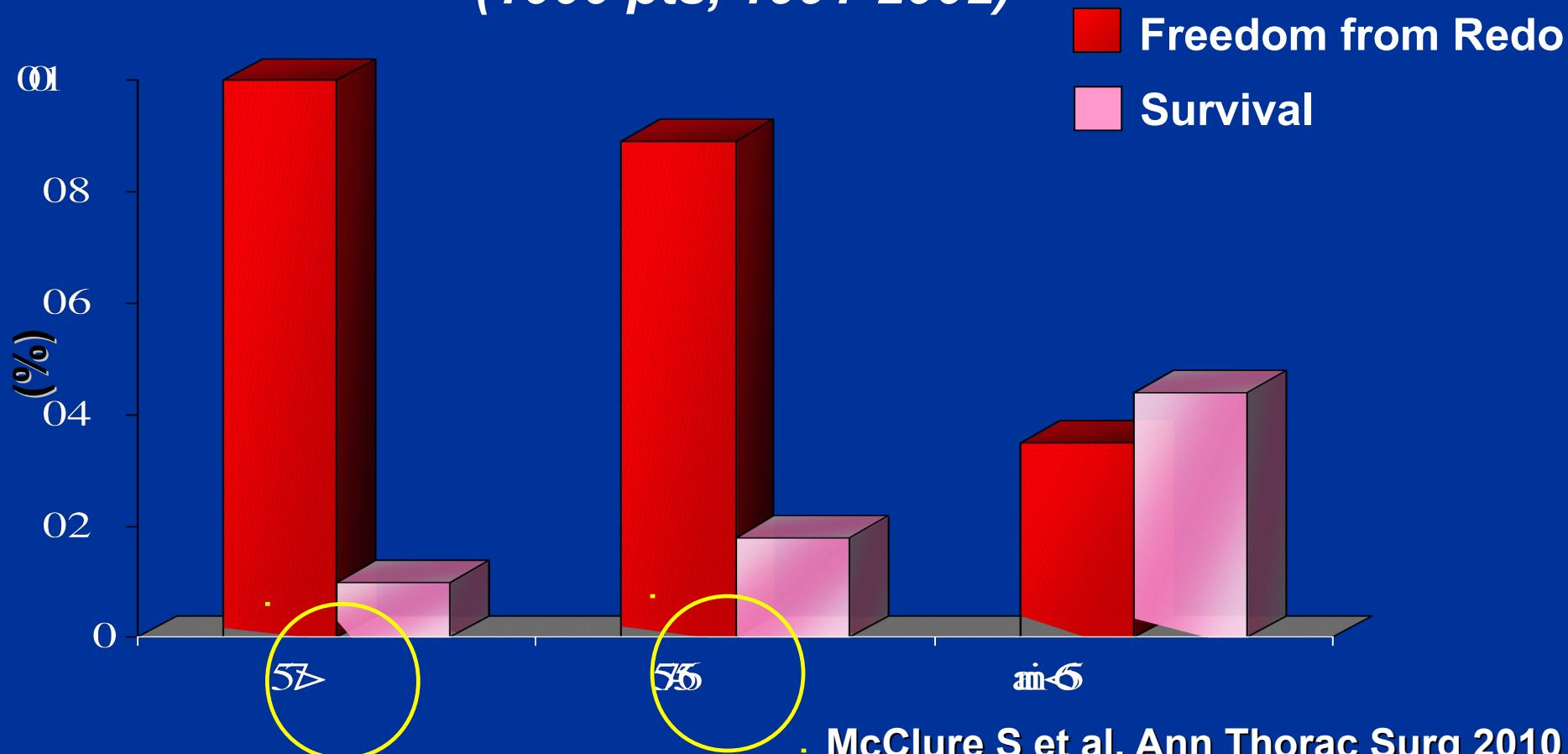
Caratteristiche cliniche pazienti di età > 60 anni

- ⚠ ↑ necessità di altra chirurgia
- ⚠ ↑ rischio di emorragia
- Terapia antiaggregante preferita anche per fibrillazione atriale cronica



15-Year Freedom from reoperation and survival after AVR (C-E pericardial valves)

(1000 pts, 1991-2002)



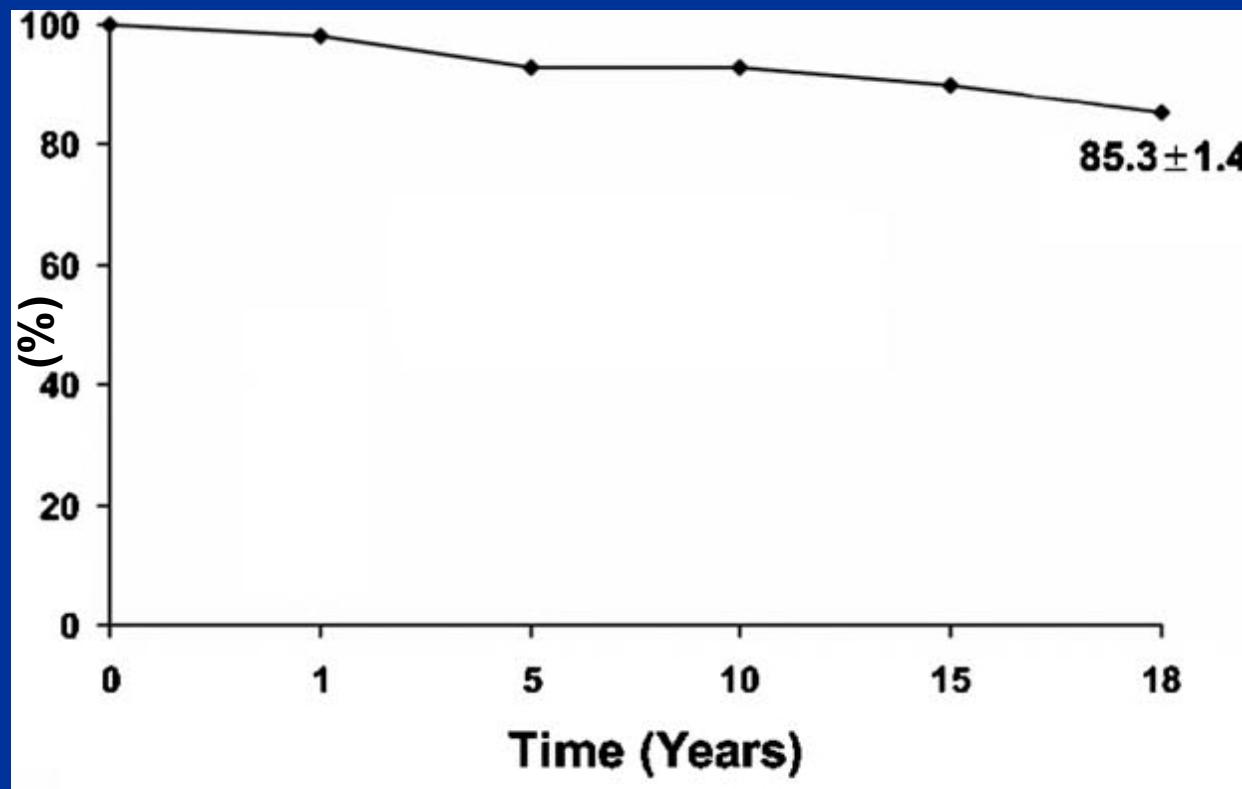
20-Year Freedom from reoperation after AVR (C-E pericardial valves)

for age **[61-70 years]**

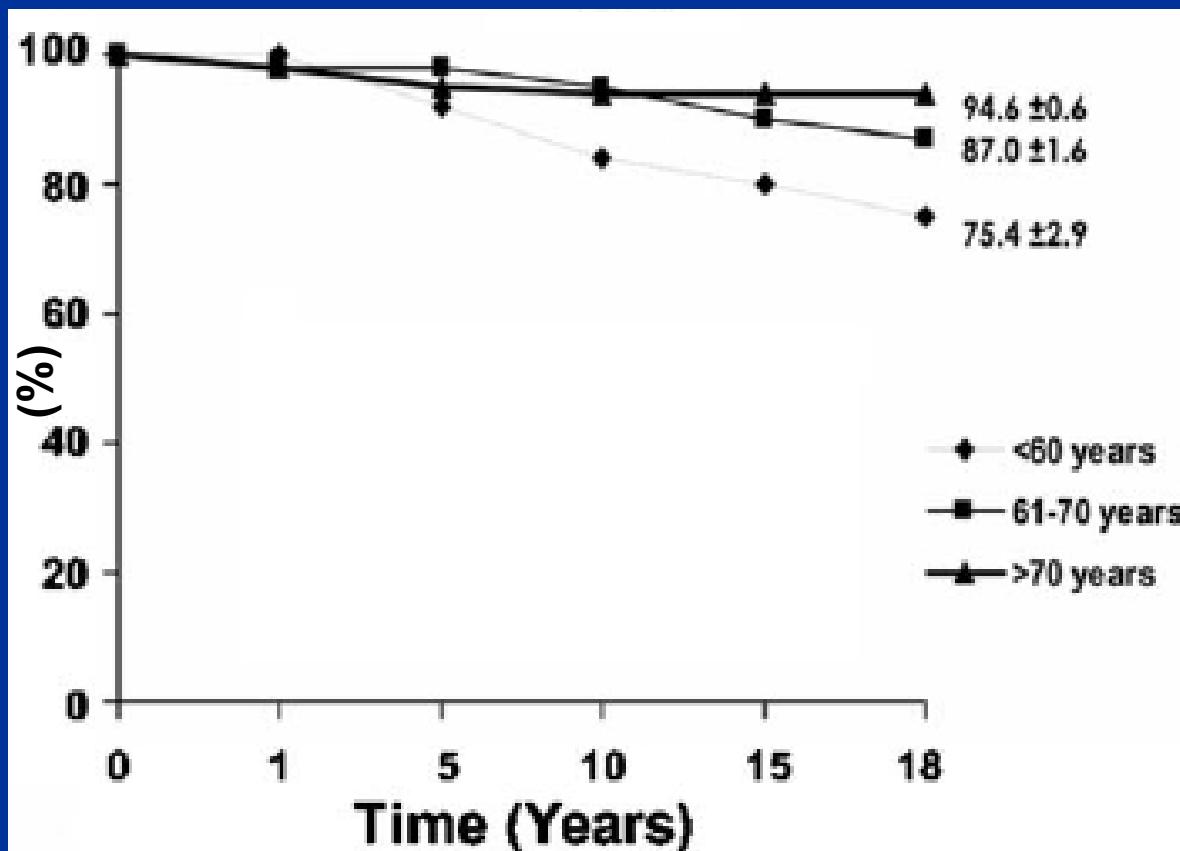
- Actuarial freedom: 80%
- Actual freedom: 90%

18-Year Freedom from SVD of Mitroflow pericardial valves in aortic position

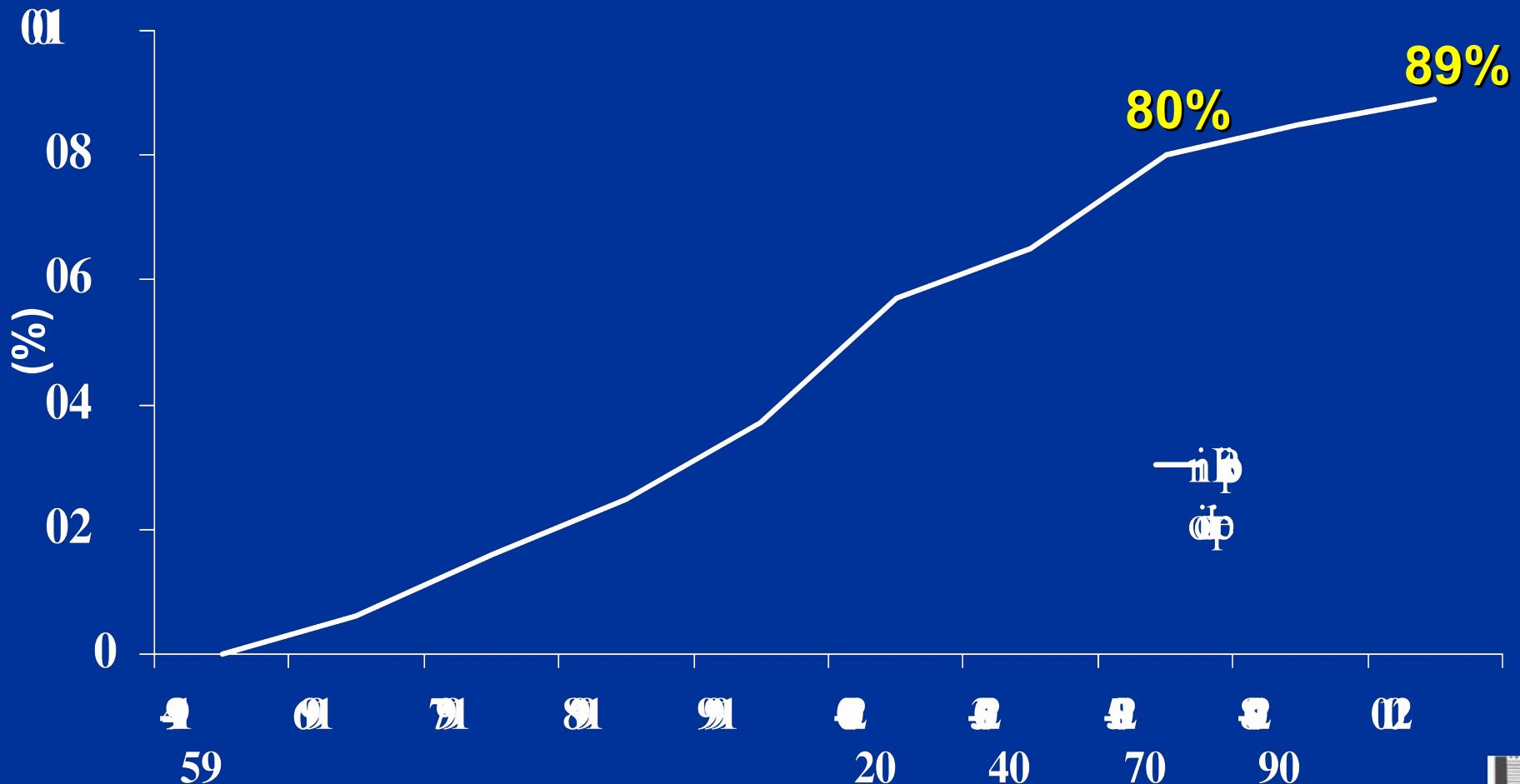
Multicenter Italian Study, 1.591 pts, mean age 75 yrs



18-Year Freedom from SVD of Mitroflow pericardial valves in aortic position

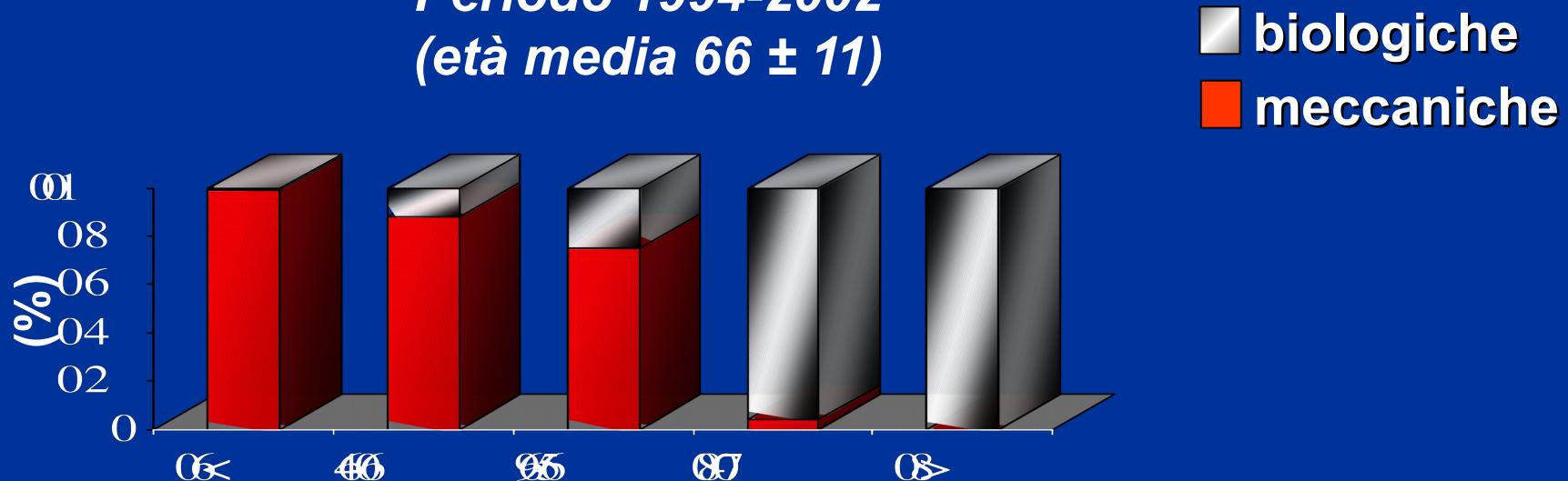


Impiego della bioprotesi in posizione aortica per età tra 65 e 69 anni

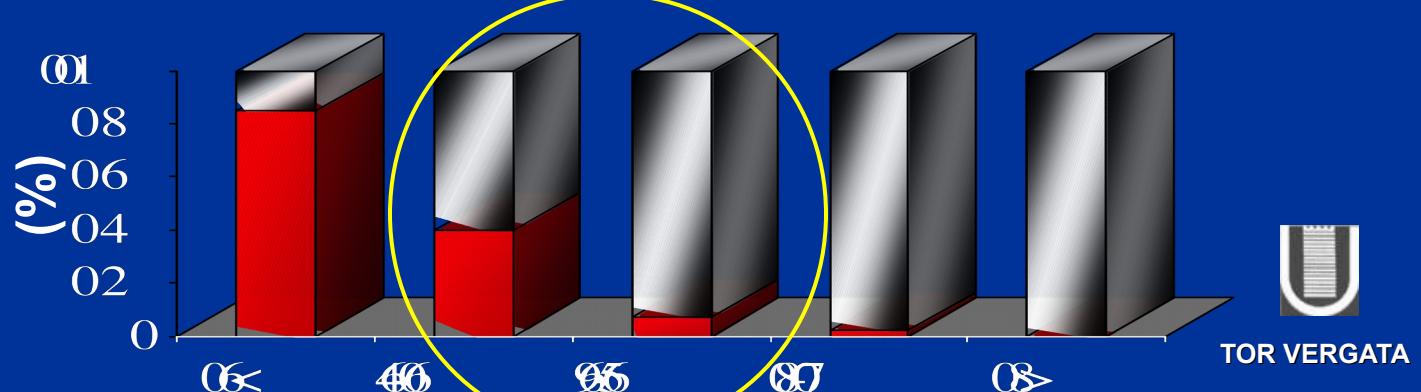


SOSTITUZIONE VALVOLARE AORTICA

*Periodo 1994-2002
(età media 66 ± 11)*

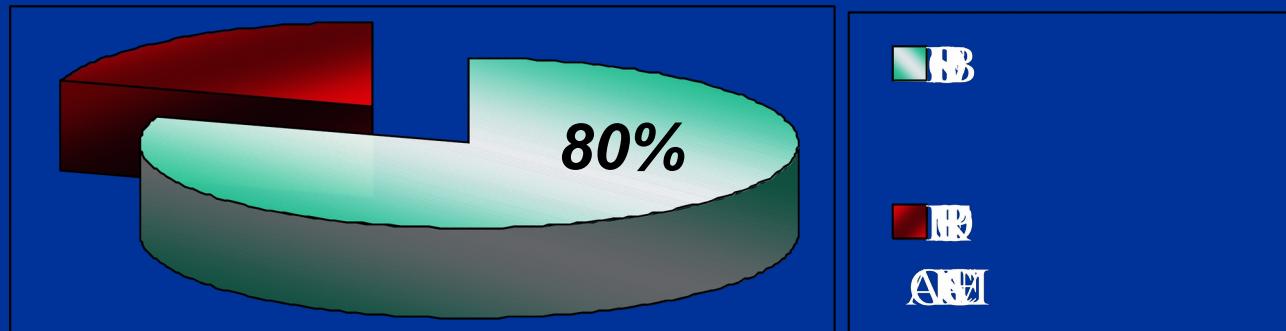


*Periodo 2008-12
(età media 70 ± 11)*



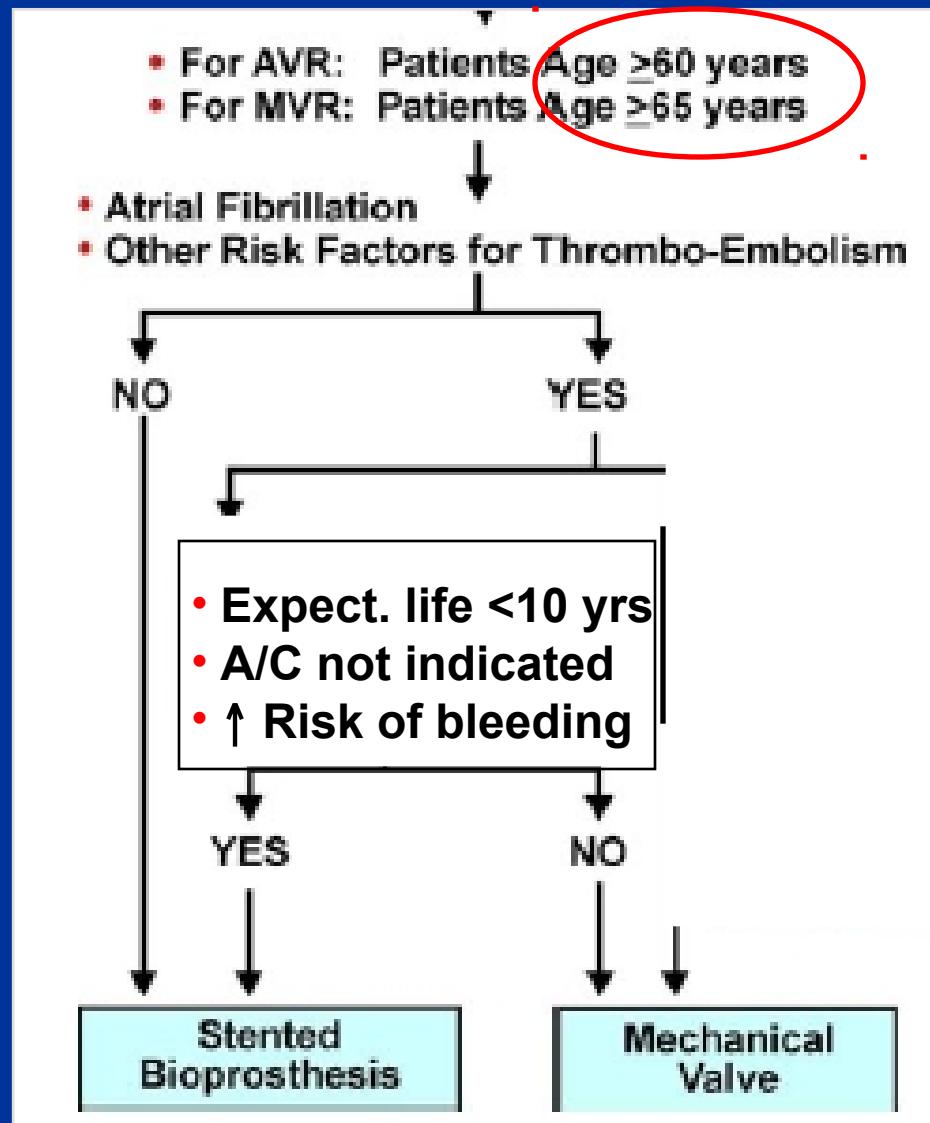
SOSTITUZIONE VALVOLARE AORTICA

Impiego attuale di bioprotesi (pericardio bovino)

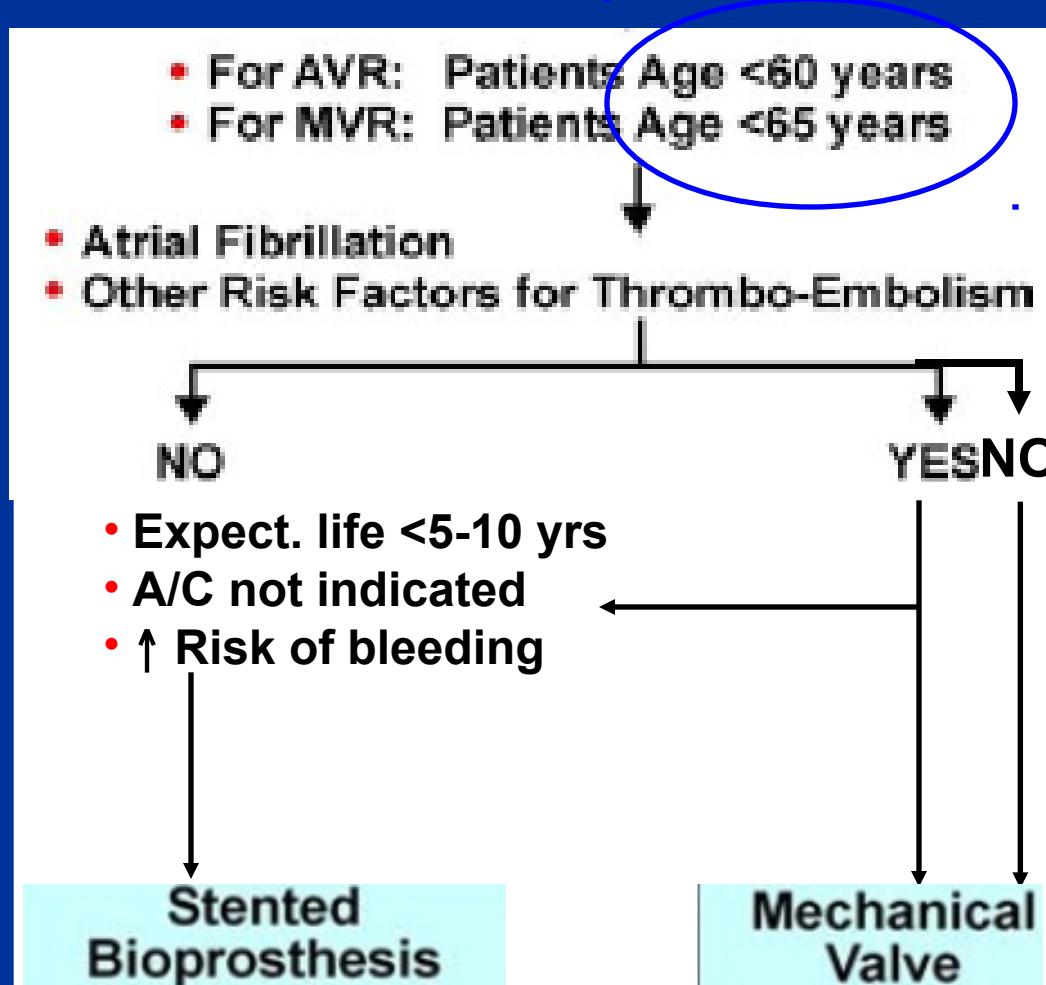


- I pazienti che necessitano della chirurgia valvolare, aspirano ad intervento definitivo e ad un futuro libero da complicanze

CHOICE OF PROSTHETIC HEART VALVE



CHOICE OF PROSTHETIC HEART VALVE



*AVR, Aortic Valve Replacement
MVR, Mitral Valve Replacement*

SOSTITUZIONE VALVOLARE AORTICA

Bioprostesi

- Pazienti di età ≥ 60 anni ($\sim 80\%$ attuale popolazione)
- Elevata libertà da reintervento a lungo termine per età ≥ 60 anni ($\sim 90\% a 15 anni$)

Prospettive future

Impianto percutaneo di bioprotesti:

- **Estensione dell'indicazione**
- **Trattamento disfunzione di bioprotesti**

Nuova Terapia anticoagulante (senza monitoraggio INR):

- **Qualità di vita migliore**