Capitolo 28
Valvulopatia aortica

How to Deal with Asymptomatic Severe Aortic Stenosis ?

Luigi Chiariello, Paolo Nardi, Giovanni A. Chiariello, Marco Russo

Aortic Valve Stenosis (AS)

General considerations

- Most prevalent heart valvular disease
- When symptomatic is usually fatal within 3 years
- AVR in symptomatic AS associated with excellent long-term results
- Surgical risk is low (~1-4%, also in elderly)

AS

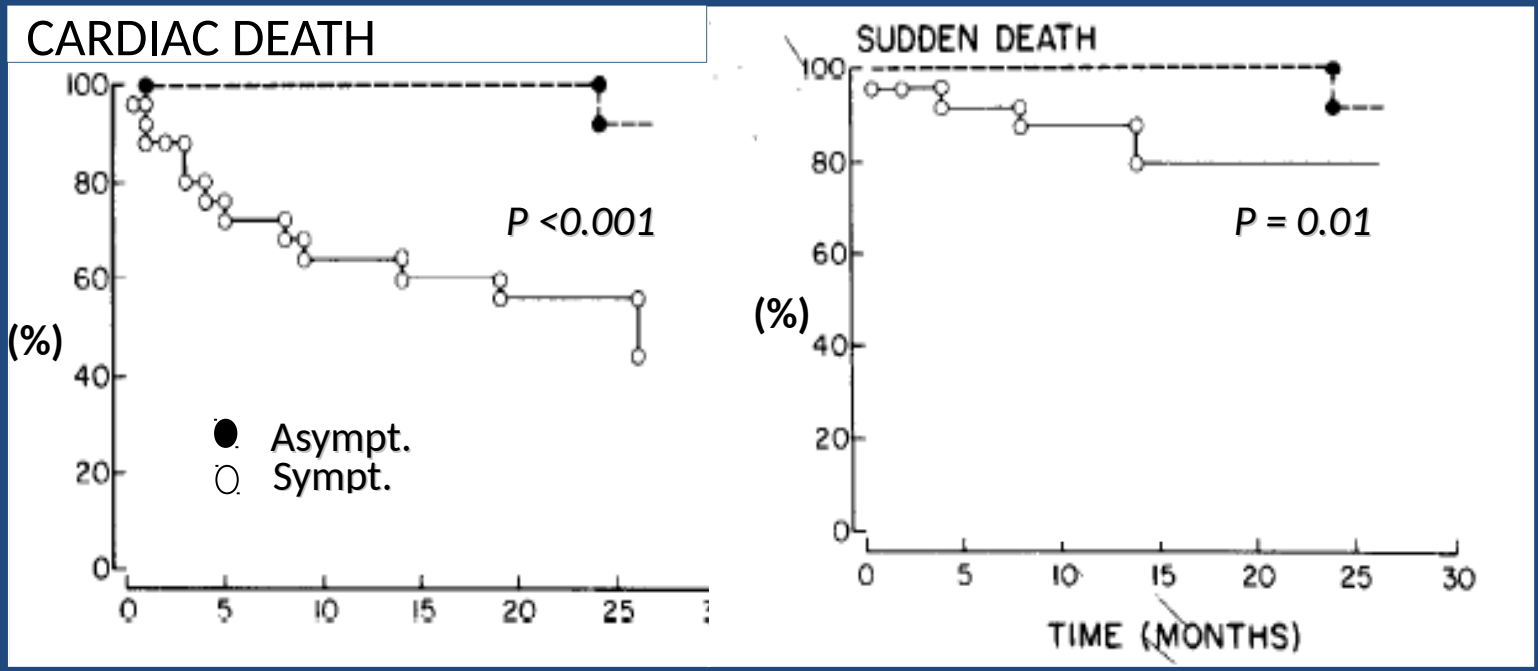
Natural History: Average survival from onset of symptoms

- Angina: 5 years
- Syncope: 3 years
- Heart failure: 2 years

Braunwald E, Circulation 1968

AS

Symptomatic (n=39) vs. Asymptomatic (n=51) pts



Conclusion: "It seems reasonable to recommend that the asymptomatic AS can be followed medically until symptoms development"

Kelly TA, Am J Cardiol 1988

ASYMPTOMATIC AS

- AVR will not improve the quality of life (the patient is asymptomatic)
- Most pts have a good short-term prognosis (risk of sudden death <1% per year vs.

2% per month in symptomatic pts)

SEVERE AS

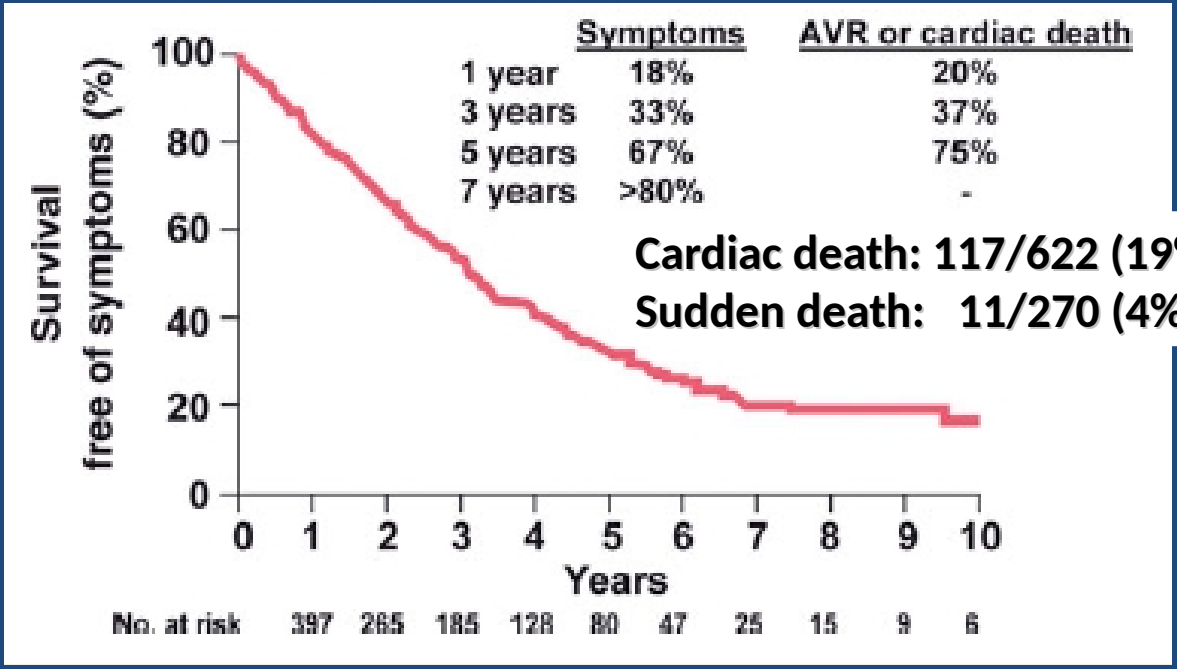
Definition Criteria

	Aortic stenosis
Valve area (cm^2)	<1.0
Indexed valve area (cm^2/m^2 BSA)	<0.6
Mean gradient (mmHg)	>40
Maximum jet velocity (m/s)	>4.0
Velocity ratio (VTI)	<0.25

ESC Guidelines, Eur J Cardiothorac Surg 2014

ASYMPTOMATIC SEVERE AS

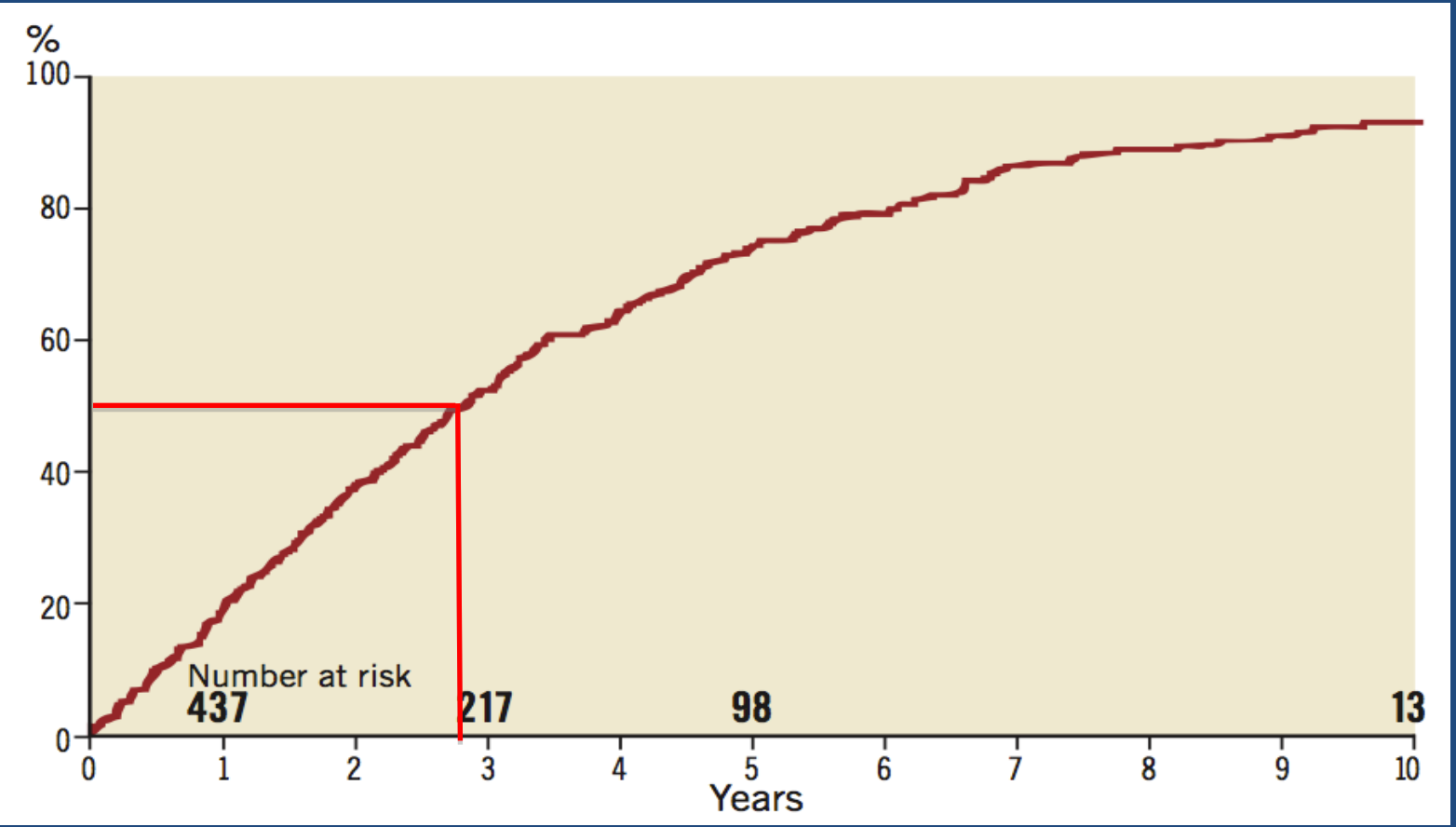
662 pts (mean age 72±11 yrs) initially not having AVR



Pellikka PA et al, Circulation 2005

ASYMPTOMATIC SEVERE AS

622 pts (mean age 72±11 yrs) initially not having AVR



By three years, 52% of the patients had developed symptoms, undergone AVR or died

Brown ML, J Thorac Cardiovasc Surg 2008

Asymptomatic Severe AS

- Risk of sudden death is not zero
- Risk of sudden death vs. operative risk of early AVR must be taken into consideration
- Pts may not recognize their symptoms, thus putting themselves at risk of death

Asymptomatic Severe AS

The Risk of Waiting

- Sudden death rate of 2% per month once symptoms occur, requires a strict interval of follow-up visit (<3 months)

Asymptomatic Severe AS

Who are the high risk pts with severe AS:

1) ***Positive Exercise Test***
2) ***Heavy Valve Calcification***
3) ***Rapid progression of AS***
4) ***Left Ventricular Hypertrophy***
5) ***Rising of Biomarkers (BNP)***

Carabello BA, Circulation 2012

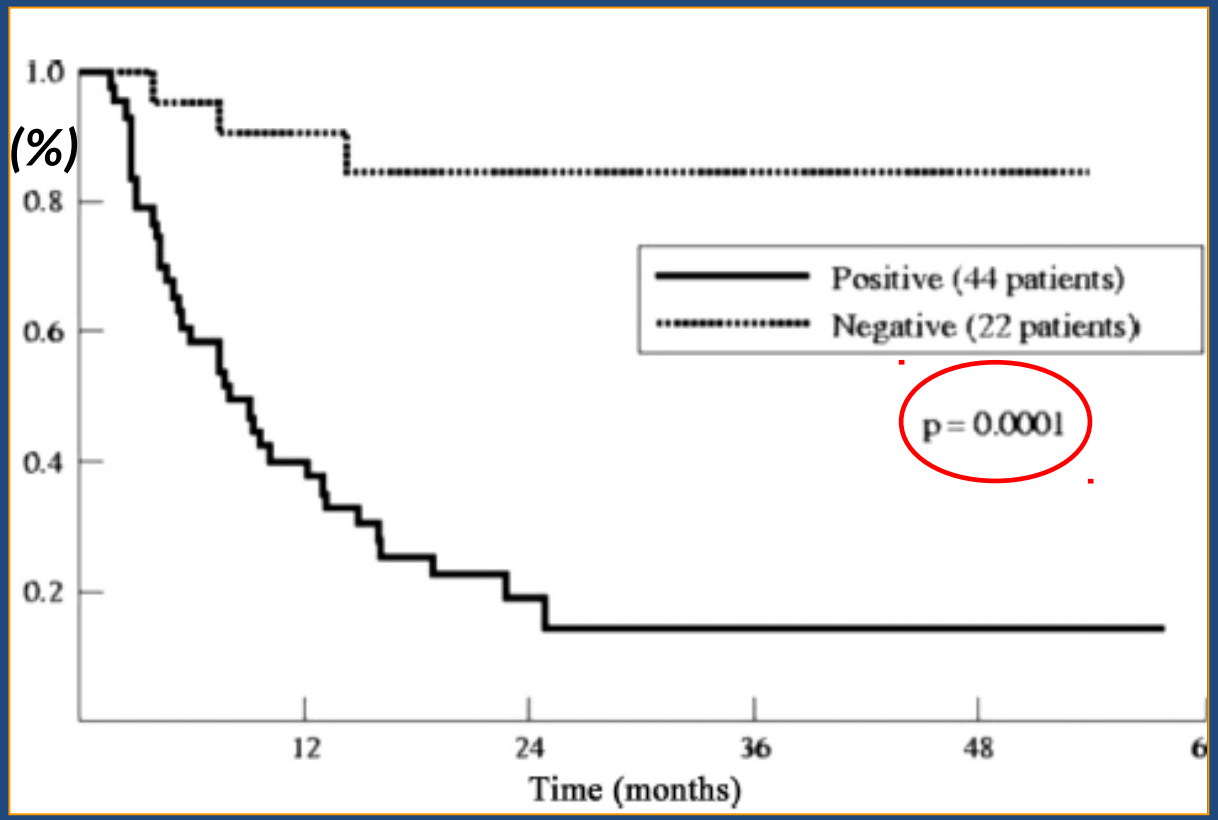
Asymptomatic Severe AS

Positive Exercise Testing

- Failure to achieve a rise in blood pressure
- Occurrence of symptoms
- Haemodynamic instability
- Reduction in exercise tolerance

ASYMPTOMATIC SEVERE AS

Positive Exercise Testing and Event-free Survival %)



Amato MC et al, Heart 2001

Asymptomatic Severe AS

Progression

- More rapid in severely calcified valves and more severely stenosed valves
- AS with a peak velocity>4 m/s requires AVR within 2-3 yrs
- As with a peak velocity>5 m/s requires AVR within 1 yrs

ASYMPTOMATIC SEVERE AS

Progression in the elderly: case report
(P.A., 86-year female pt)

AVA 0.9 cm2
AV peak vel. 4.1 m/s
AV peak gradient 67 mmHg
AV mean gradient 43 mm Hg

at 2 yrs →

AVA 0.2 cm2
AV peak vel. >5.5 m/s
AV peak gradient 175 mmHg
AV mean gradient 106 mm Hg

(NYHA II)

TOR VERGATA

Left Ventricular Hypertrophy and Diastolic Dysfunction

(4,264 isolated AVR)

- **Severe Left Ventricular Hypertrophy (>180 g/m2) and diastolic dysfunction (LA > 50 mm) are consequence of long-standing AS and are powerful predictors of poor long-term survival after AVR**

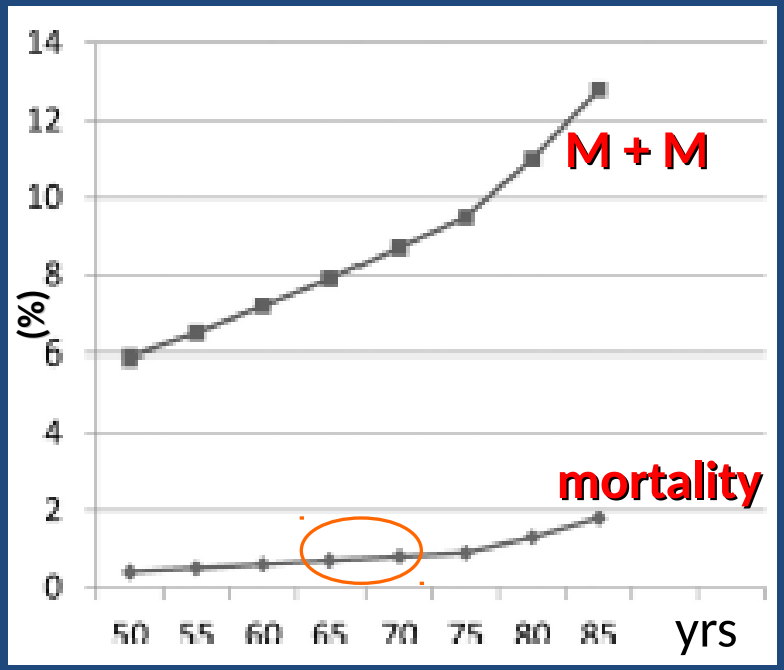
Beach J et al, JTCVS 2013

Aortic Valve Replacement (AVR)

Operative Mortality

Authors	Procedures	N. pts	Mortality (%)
Jamieson WR, STS DB,1999	AVR	26,317	4.3
Jamieson WR, STS DB, 1999	AVR + CABG	22,713	8.0
Desai ND, STS DB, 2009	AVR +/- CABG	216,245	5.7
	Isol. AVR		*2 - 5*
	AVR + CABG		*7 - 9*
McClure RS, 2010	AVR +/- CABG	1,000	7.2
ISTHMUS, 2011	AVR +/- CABG	1,591	6.5
Tor. Vergata Univ. 2013	*AVR*	*1,517*	*2.4*
	AVR + CABG	*569*	*6.3*

STS Score predicted operative mortality and M + M (%) shown by age in healty asymptomatic pts with severe AS



M + M: Mortality & Morbidity

Wendt D, Ann Thorac Surg 2009

Malignant natural history of Asymptomatic Severe AS

- 338 asymptomatic pts (71 +/- 15 yrs) with severe AS:

  239 Medical Treat. (Group MED), 99 AVR (Group AVR)

1,2 and 5 years Survival:

Group MED: 67%, 56% and 38%

Group AVR: 94%, 93% and 90%*

*$P < .0001$

Pai RG, Ann Thorac Surg 2006

- 15-year survival after AVR in asymptomatic is similar to matched population for age and gender
- 10-year survival after AVR was better in asymptomatic vs symptomatic (70% vs 62%)
- 10-year survival in asymptomatic AS without AVR was 33% only

Brown ML, JTCV 2008

CURRENT INDICATIONS FOR AVR IN ASYMPTOMATIC AS

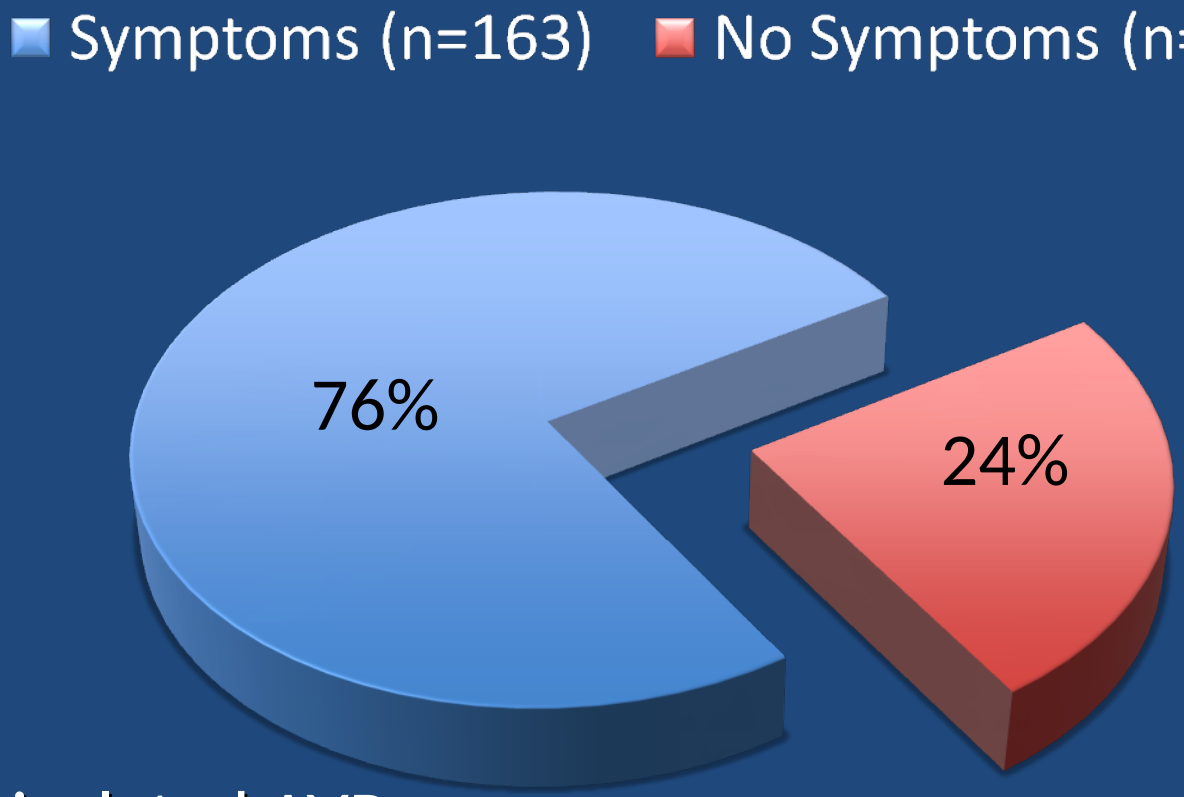
Class of Recommendation	
I	*Severe AS and systolic LV dysfunction (LVEF <50%) not due to another cause*
I	*Severe AS and abnormal exercise test showing symptoms on exercise clearly related to AS*
II a	*Severe AS and abnormal exercise test showing fall in blood pressure*
II a	*If surgical risk is low when:* *1) Very severe AS (peak transvalvular velocity >5.5 m/s)* *2) Severe valve calcification and rate of peak transvalvular velocity progression ≥ 0.3 m/s per year*
II b	*If surgical risk is low in when:* *1) Elevated BNP* *2) Increase of mean pressure gradient with exercise >20 mmHg* *3) Excessive LV hypertrophy*

ESC/EACTS Guidelines, Eur J Cardiothorac Surg 2014

ASYMPTOMATIC SEVERE AS

Our Experience 2010-2012

(53 pts, M/F: 30/23, mean age 63 ± 13 yrs, range 40-86)

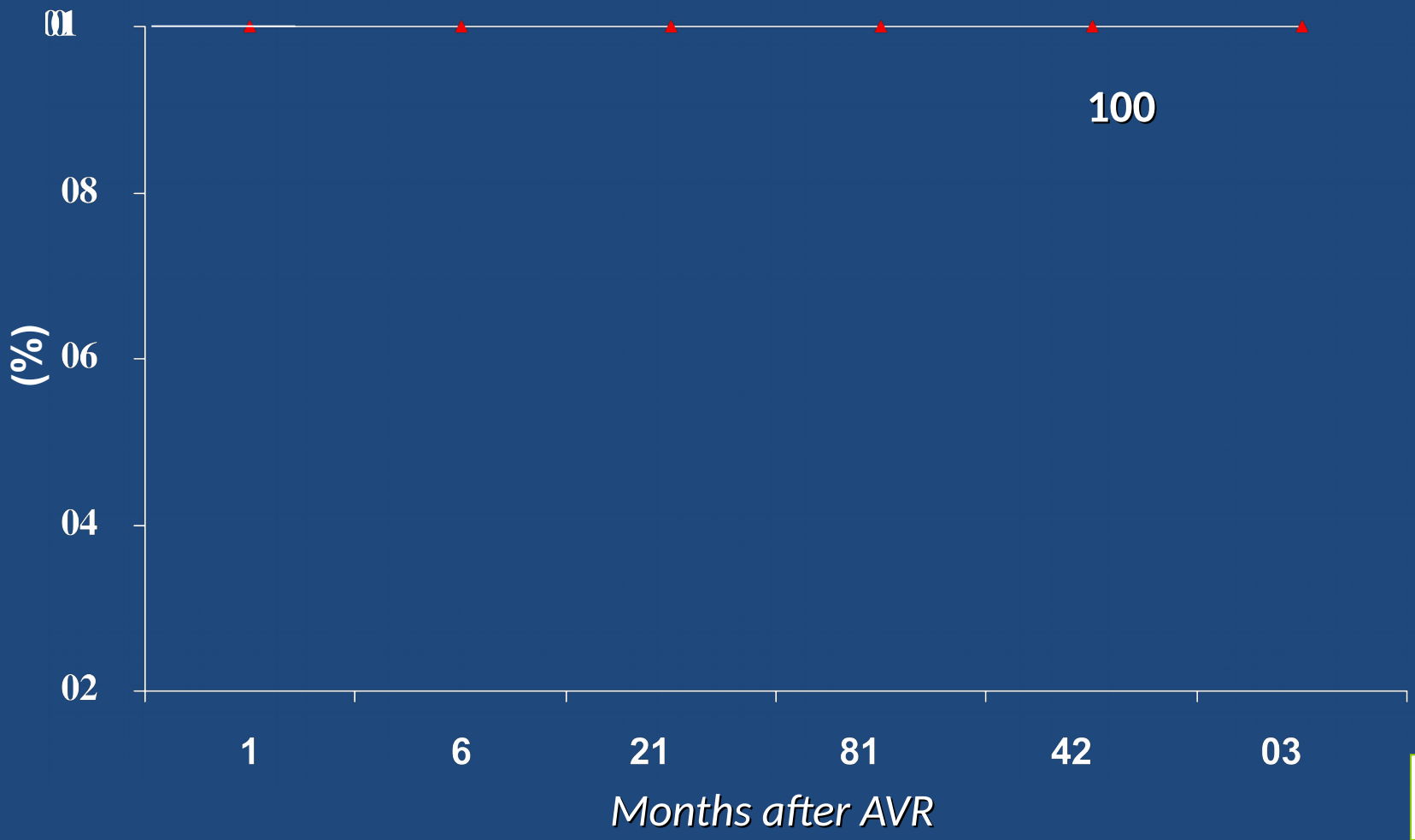


Tot. 216 isolated AVR

TOR VERGATA

ASYMPTOMATIC SEVERE AS

SURVIVAL



TOR VERGATA

Conclusions

- **Moderate Asymptomatic AS: waiting**

  (sudden death <<1% /year, rapid progression of AS seems to be negligible)

ASYMPTOMATIC SEVERE AS

- Without surgery freedom from events (death/AVR) is estimated 40-30% at *short-term* follow-up
- Early surgery offers better survival and cardiac events-free survival as compared with late surgery:
  risk of waiting is higher