

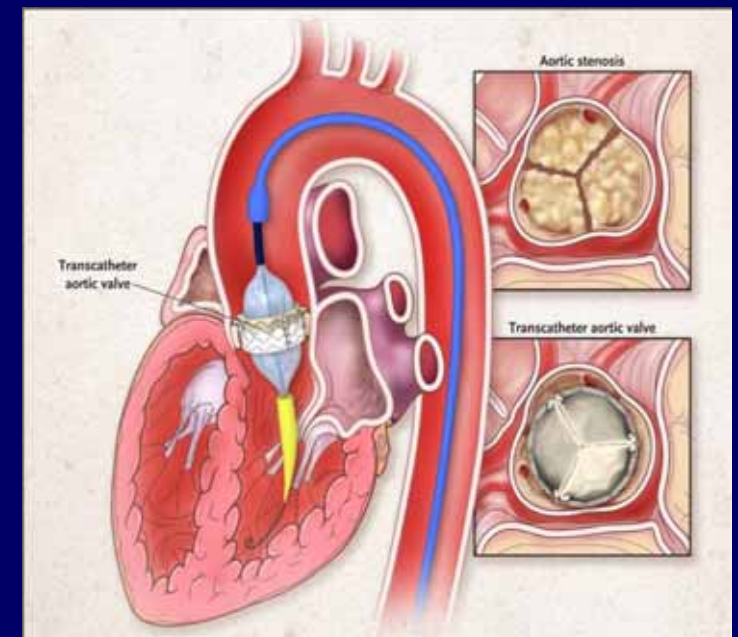
# When Should We Consider TAVI Procedure in Korea (Surgeon's Viewpoint) ?

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# Aortic Stenosis in Korea

- Rapidly increasing valve disease in Korea
- Still low incidence of associated coronary disease
- Very few cases of AS surgery with previous CABG
- High incidence of bicuspid AS
- TAVI started as investigator initiated study in 2010
- No consensus on TAVI indication in Korea



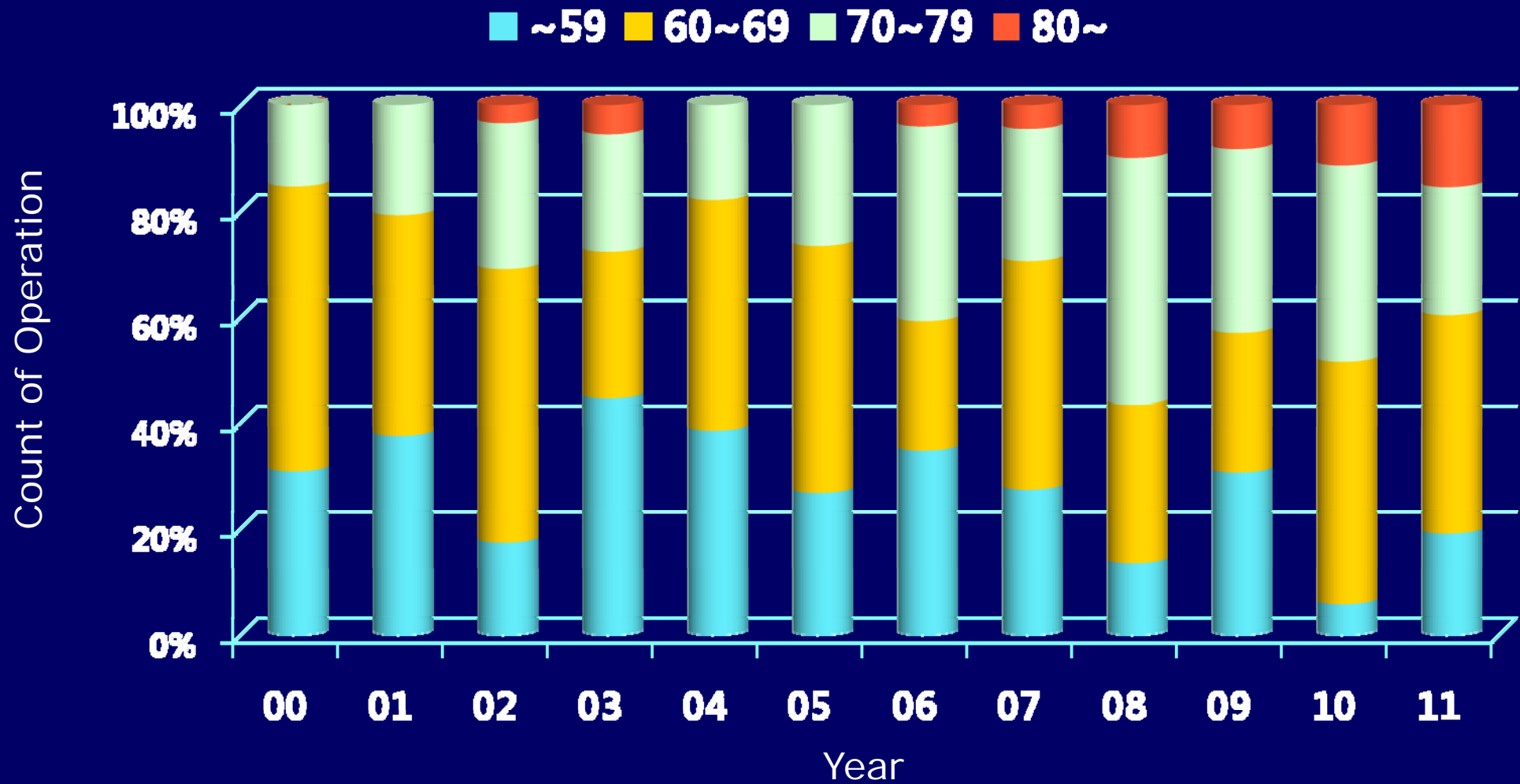
# Early & Late Outcomes of Primary AVR for Degenerative AS

- Samsung Medical Center -

# Material

- 1995 Jan. ~ 2011 Dec.
- 559 pts : referred for AVR
  - 500 – AVR
  - 59 - AVR + CABG
- Exclusion criteria
  - main CAD with AS (58 pts)
  - previous cardiac surgery (3 pts)
  - rheumatic AS (22 pts)
- Age :  $65 \pm 10$  (30~87 yr)

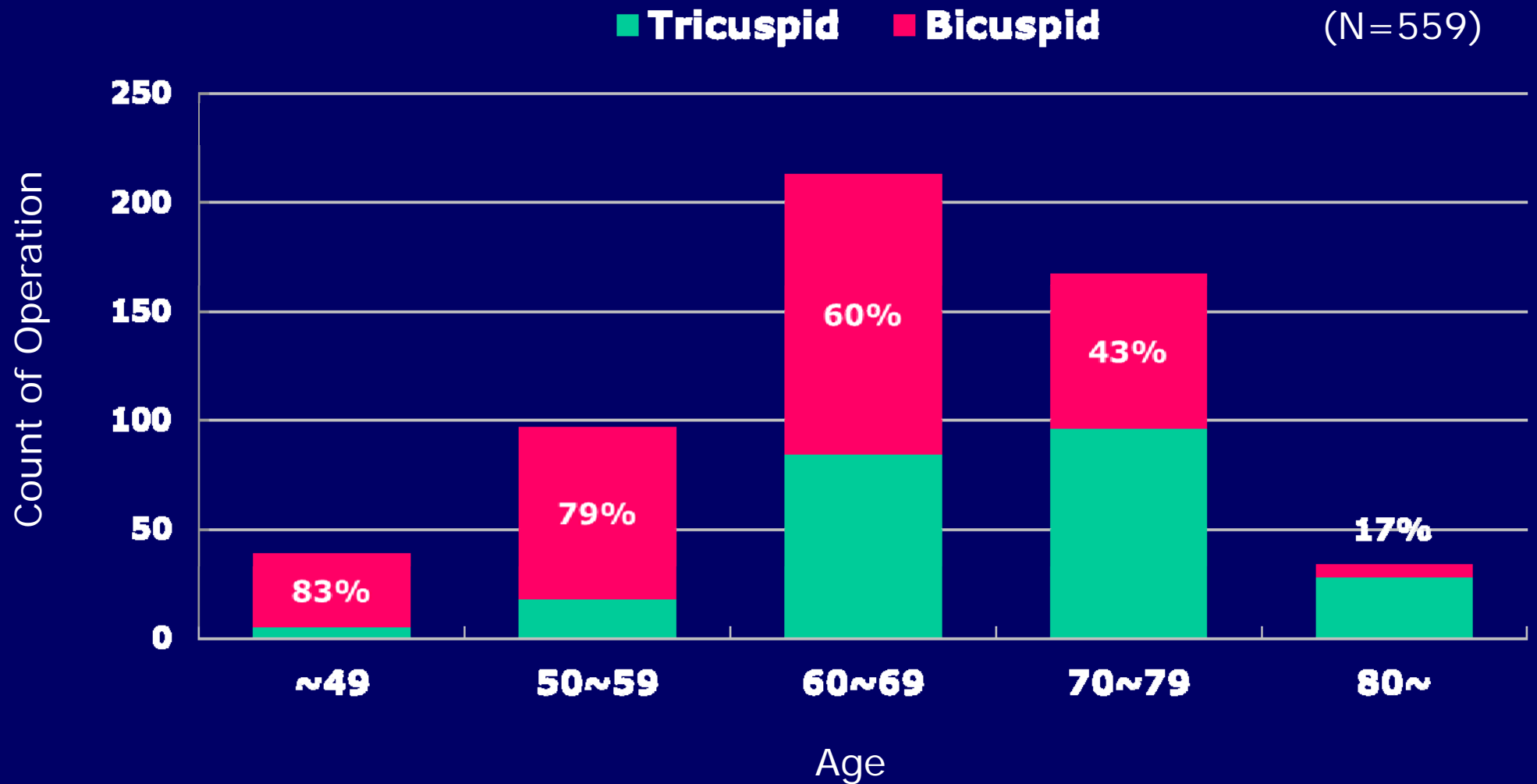
# Age Distribution of AVR for AS



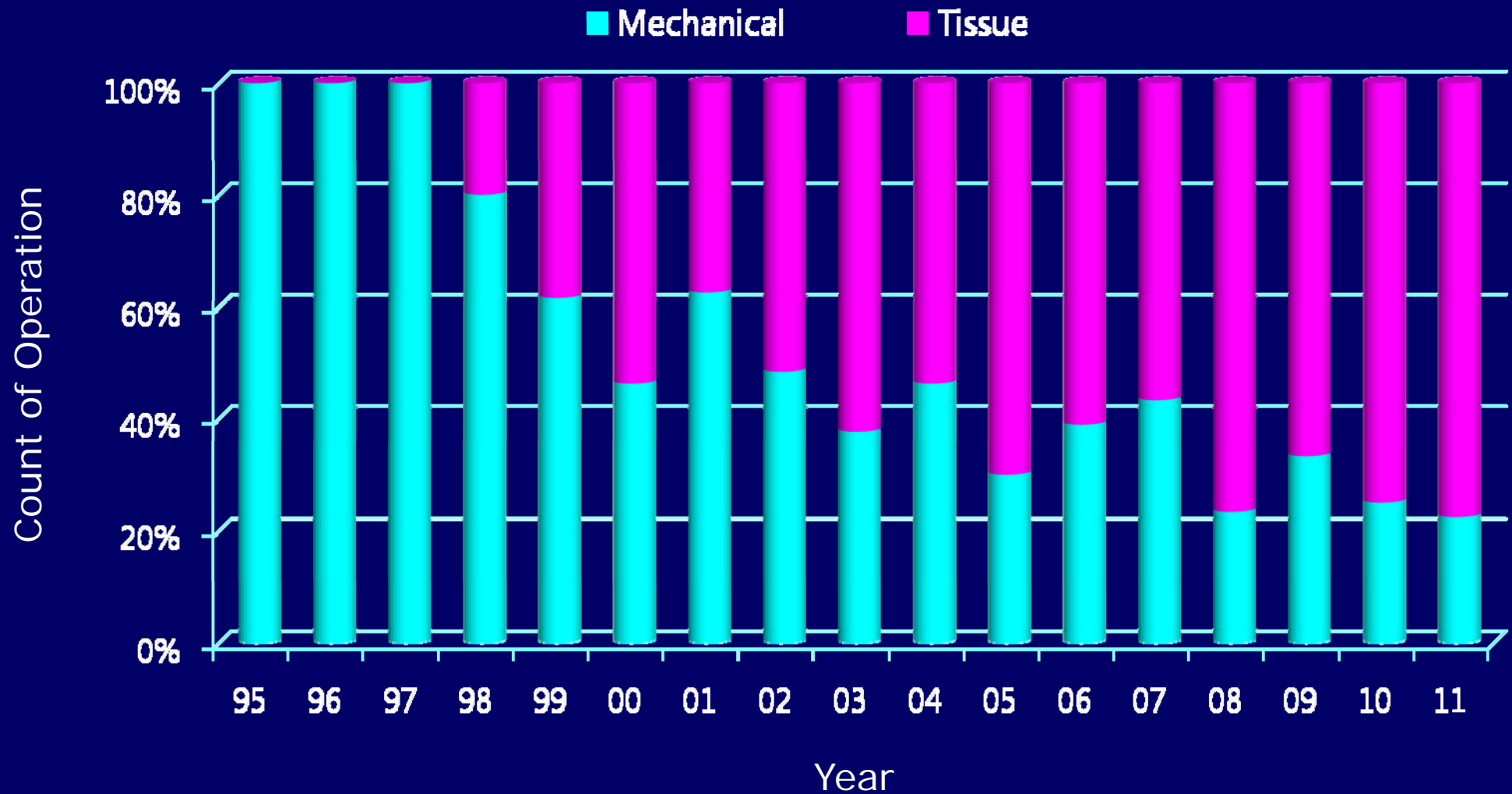
# Patients Characteristics

Variables	Incidence (%)
Hypertension	43%
Diabetics	19%
CVA	4%
Chronic lung disease	5%
Previous MI	2%
Af	11%
Preop. inotropic	4%
Ventilator	1%
ECMO	0.3%
Logistic EUROscore	5.5(1.5~68.2)
10-20	36 (6.4%)
>20	18 (3.2%)

# Incidence of Bicuspid Valve



# Mechanical vs Tissue valve in AS





# Associated Procedure

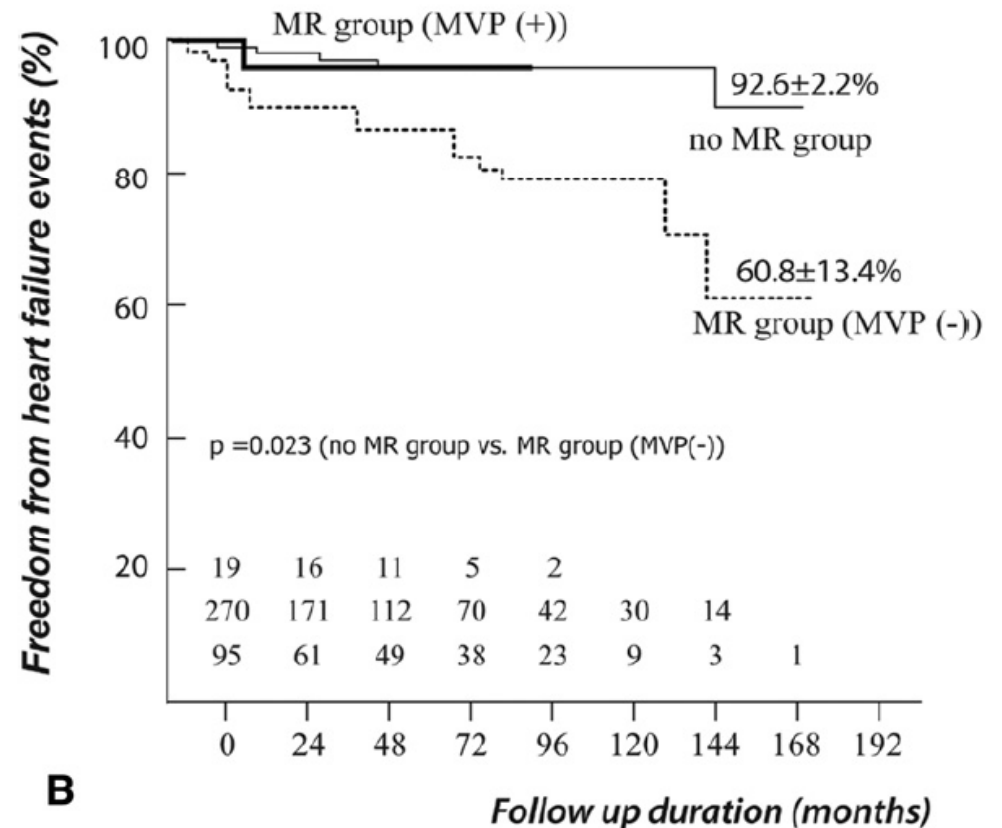
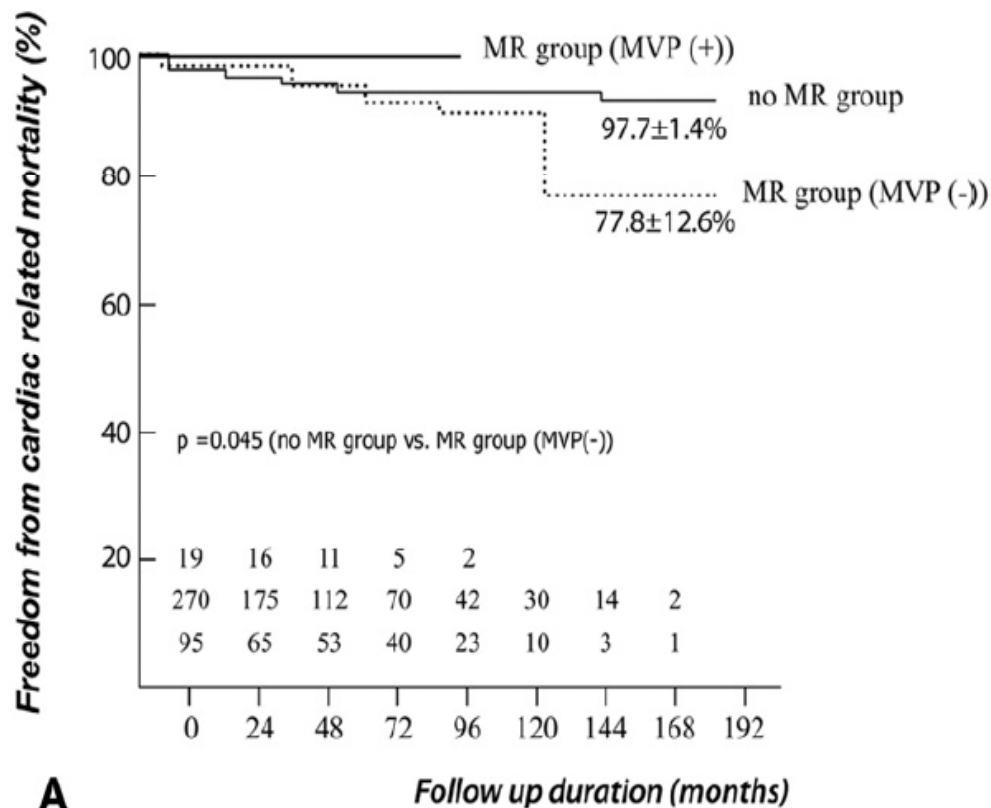
Associated procedure	No. (%)
Ascending Aorta wrapping	94 (17%)
Ascending Aorta replacement	35 (6%)
Root widening	12 (2%)
Annulus pericardial patch reconstruction	40 (7%)
MR repair	33 (6%)
TR repair	20 (4%)
Subaortic myectomy	52 (9%)
Maze	32 (6%)
CABG 1V	39 (7%)
2V	15 (3%)
3V	5 (1%)

# Long-Term Clinical Impact of Functional Mitral Regurgitation After Aortic Valve Replacement

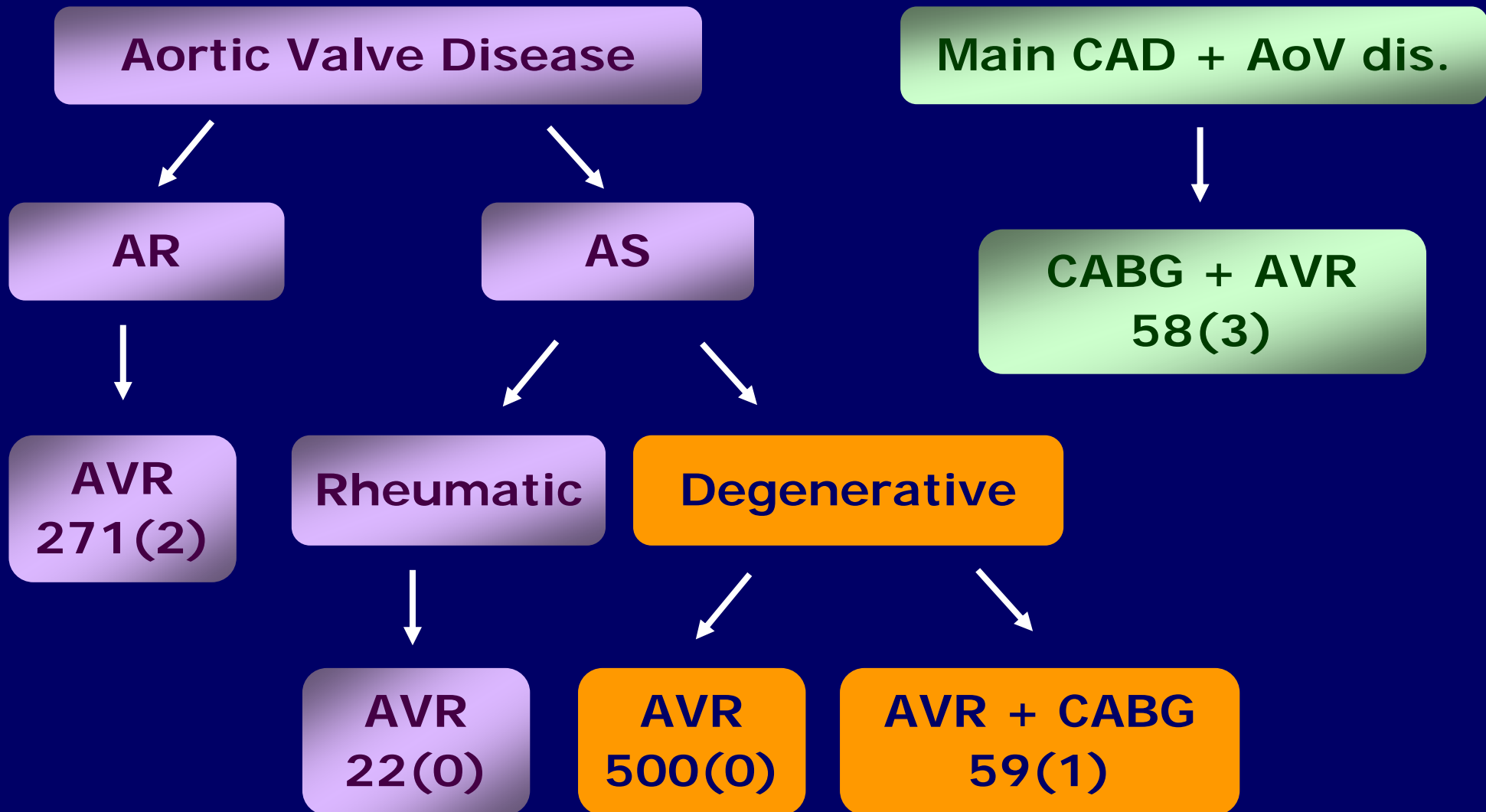
Dong Seop Jeong, MD, PhD, Pyo Won Park, MD, PhD, Kiick Sung, MD, PhD, Wook Sung Kim, MD, PhD, Ji-Hyuk Yang, MD, PhD, Tae-Gook Jun, MD, PhD, and Young Tak Lee, MD, PhD

**Ann Thorac Surg 2011**

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# Hospital Mortality after Primary AVR (1995 ~ 2011)



# Early Outcomes

Complication	No. (N=559)
Mortality	1 (0.2%)
Cerebral infarction	4 (0.7%)
Reoperation(bleeding)	12
Early endocarditis (Reop)	1
Paravalular leakage	2 (0.4%)
New complete heart block	4 (0.7%)
ICD insertion	1
Mediastinitis	2
ICH, SDH	2
IABP or ECMO	3
ARF(CVVH)	3

# Late Outcomes

- **F-U time** : 50±44 (0 ~205) mo

SMC 457 (82%)

Other hospital 80 (14%)

- **Late Mortality**

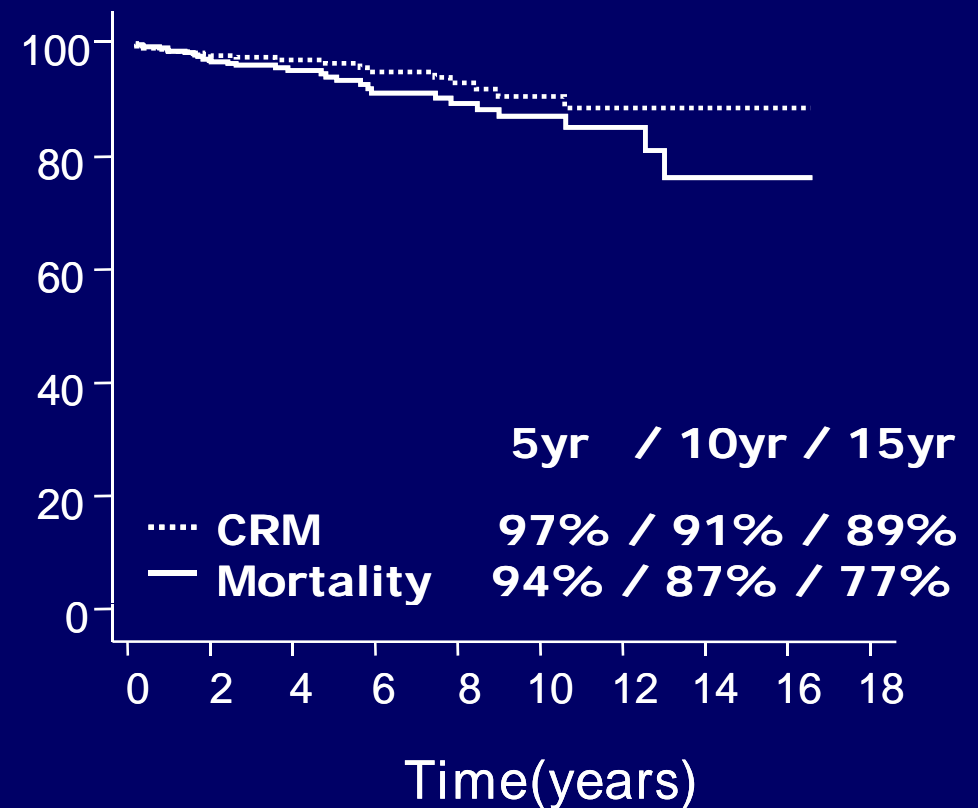
Cardiac death 18 (58%)

Cancer 12 (32%)

Others 4 (10%)

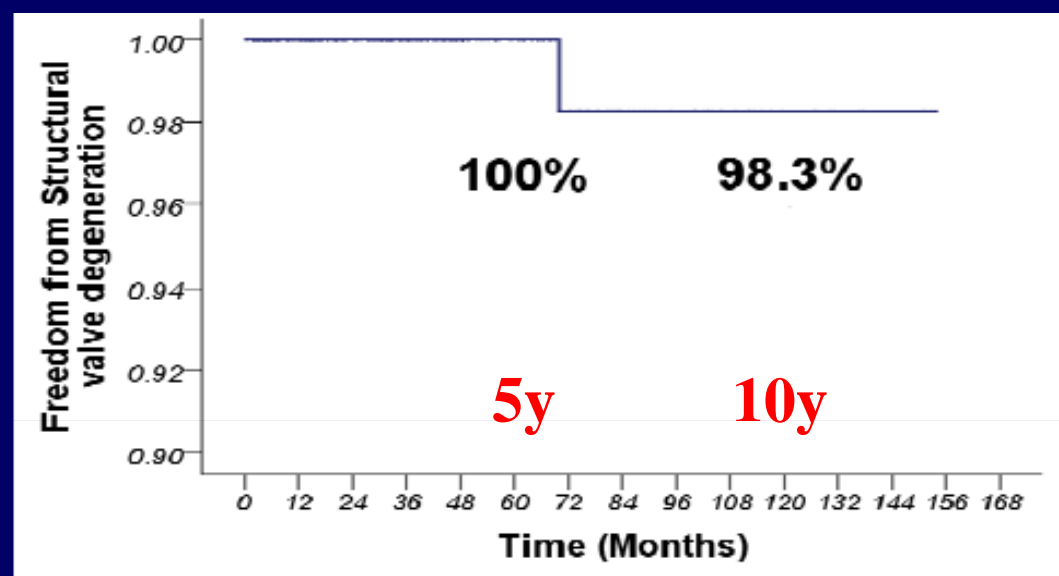
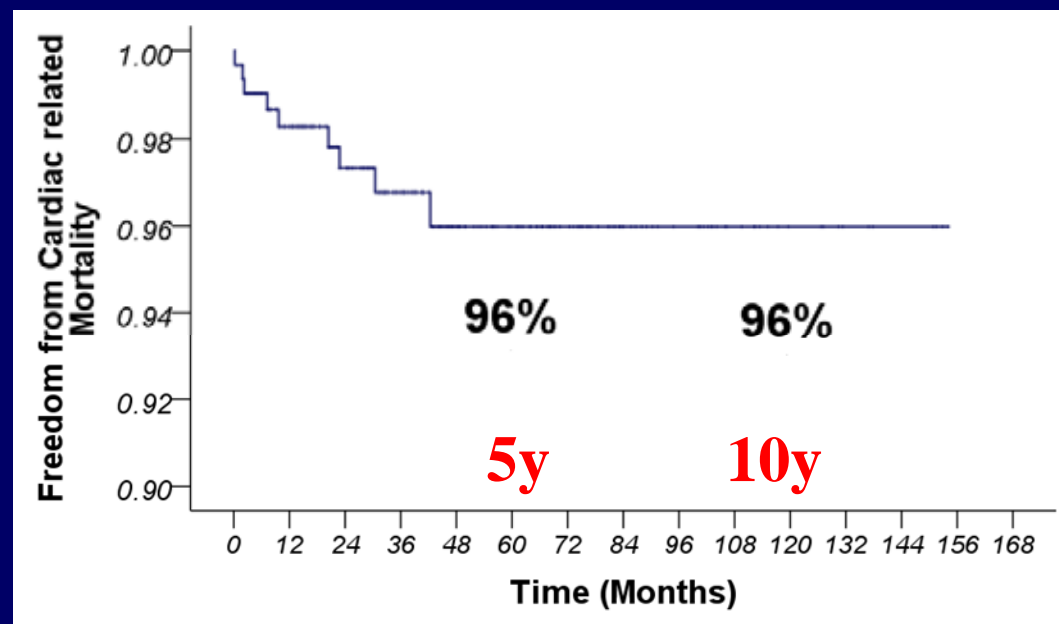
- **Survival rate**

5yr/ 10yr 94%/87%



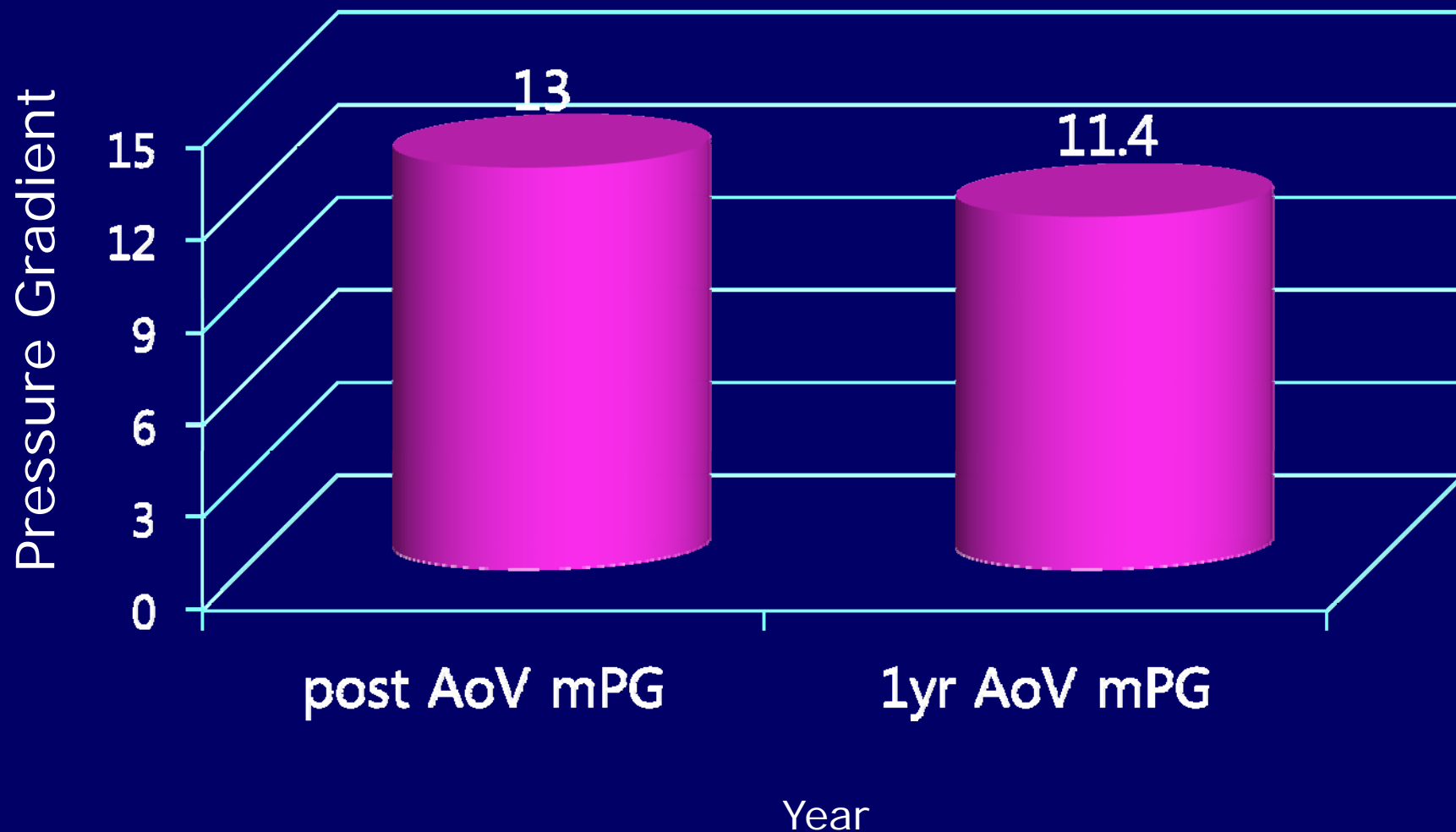
# Late F-U of CE Perimount Tissue Valve

- 1998 Feb.- 2011 Dec.
- 309 pts
- Mean age:  $71 \pm 6.5$ yr
- Early mortality : 1
- Reoperation : 3
  - 2 endocarditis
  - 1 SVD  
(CRF on HD)



# Mean Pressure Gradient of CE Magna

Magna (2009~2011)



# AVR for AS with High Risk (n=66)

- Inclusion criteria

  - Age > 80 years

  - Logistic Euro score > 20

  - Asc. aorta calcification → replacement

  - Preop. ventilator or ECMO

  - Emergency operation

- Results

  - 1 early mortality in AVR with CABG

  - 1 stroke



# Case of AVR + Ascending Aorta Replacement

Patient; 85 yrs, Male, Severe AS & mild AR

Rt destroyed lung due to tuberculosis

Porcelain ascending aorta

Op.: Rt axillary artery cannulation

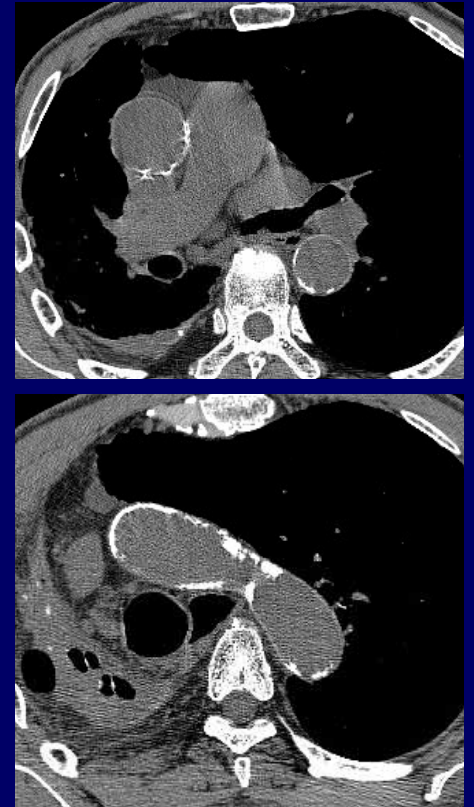
Circulatory arrest, Distal aorta endarterectomy

Ascending aorta replacement

AVR with CE Magna 21mm

Results; uneventful hospital course

discharge (pop # 8)

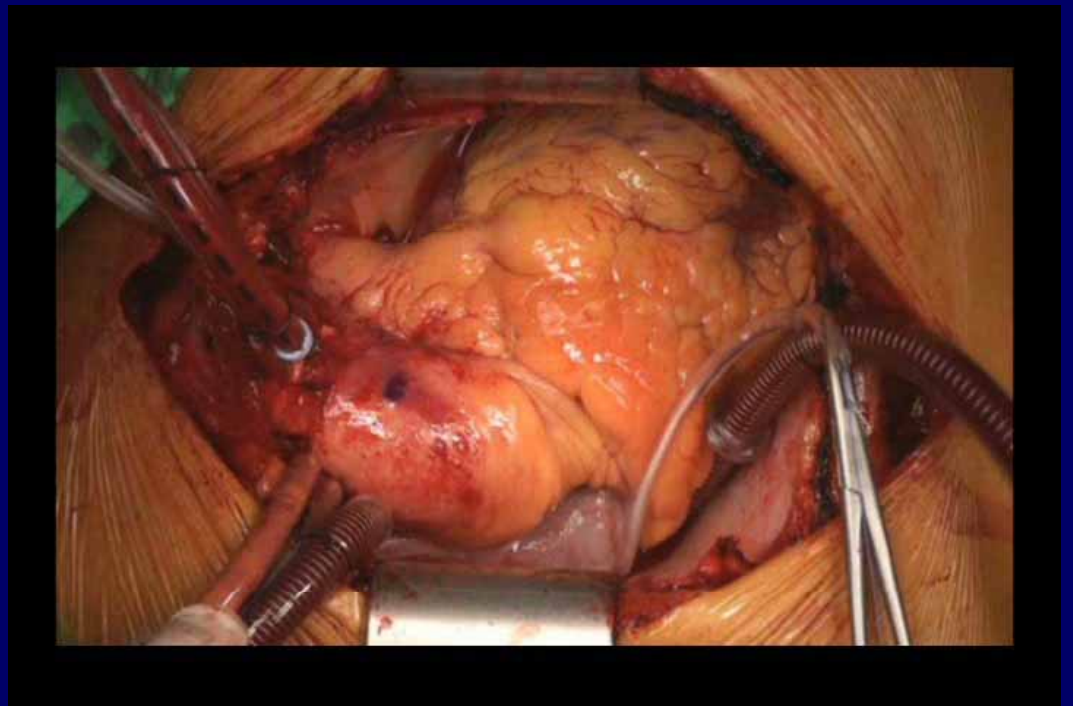


# Recent Case

- 87 yr old male
  - Severe AS, coronary HD, peripheral arteriopathy, Af
  - LV dysfunction (LVEF 25%), ascending aorta calcif.
- 2011 Mar: waiting list on Transapical TAVI
  - Other family member refused TA procedure
  - Intermittent hospital admission due to HF
- 2011 Dec: waiting for transfemoral TAVI
- 2012 Jan: Emergency op. for severe HF & no urine
  - Op; ascending aorta replacement, AVR & Maze op
  - no neurologic Sx, ARF recovered after CRRT,
  - but still in hospital

# AVR with Ascending Aorta Replacement for severe aorta calcification & AS

- 1995 Jan. ~ 2012 Mar.
- 15 pts
- Age :  $76 \pm 7$  (60~86yr)
- Male 60%
- Combined op.  
CABG(3), Maze(2),  
TAP(1), LVOT  
muscle resection(1)
- Early mortality : 0
- Stroke : 1



# PARTNER trial : Inclusion Criteria

## Cohort A (TAVR vs SAVR)

Predicted operative mortality  $>15\%$  or  
STS score  $>10$

## Cohort B ( Inoperable : TAVR vs Medical)

Probability of death or serious, irreversible  
morbidity  $>50\%$

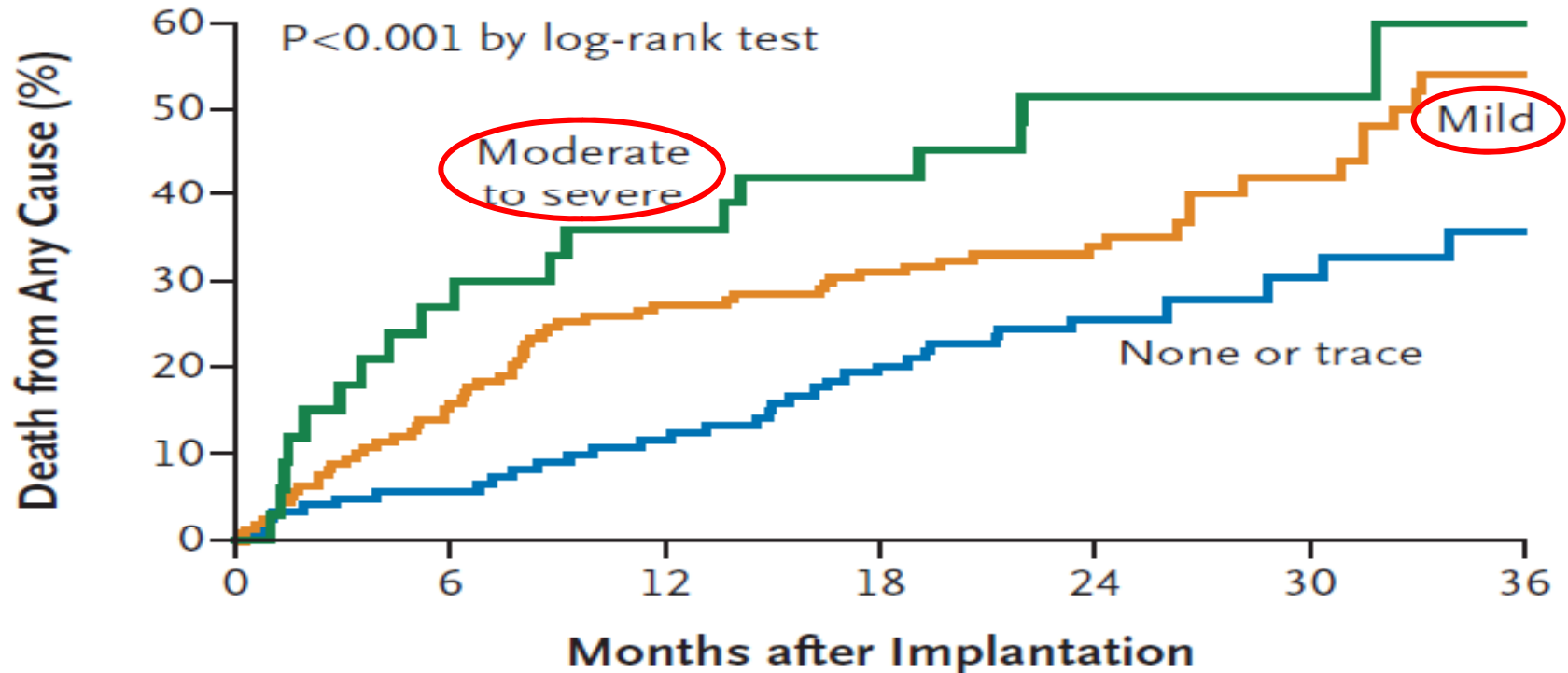
# Patients Characteristics of PARTNER Cohort A (TAVT vs SAVR)

- Mean age(yr) : 84
- STS score : 11.7
- Logistic EuroSCORE : 29.3
- Previous CABG (multiple) : 44%(35%)
- Previous PCI : 32%
- Peripheral vascular dis : 43%
- O<sub>2</sub> dependent lung dis : 16%
- Pacemaker : 21%
- Atrial fibrillation : 25%

# Impact of AR after TAVI in PARTNER trial

NEJM 2012

**D** Severity of Total Aortic Regurgitation: None or Trace, Mild, or Moderate to Severe



**No. at Risk**

None or trace	125	117	108	95	64	29	10
Mild	162	136	118	109	70	31	15
Moderate to severe	34	25	22	19	15	6	2

# Cost Comparison of TAVR vs SAVR in Korea

	Total cost	Patient Burden
Surgical AVR	20,000 US\$	6,000 US\$
TAVI (KFDA approval)		
Reimbursement by national insurance	10,000 + 30,000 US\$	6,000 US\$ (3,000+3,000)
Patient pay all device price	10,000 + 30,000 US\$	33,000 US\$ (3,000+30,000)

# Advantages of TAVR vs SAVR

## TAVR

- Less invasive
- Short ICU & hospital stay
- Less pain &
- Less blood transfusion
- Feasible in porcelain aorta & chest deformity (inoperable)
- Possible valve in valve procedure
- Comparable early results in high risk AS
- Similar cost in some countries

## SAVR

- Possible combined procedure  
MR & TR repair, CABG, Aorta surgery, LVOT muscle resection
- Low incidence of early Cx stroke  
paravalvular leakage  
heart block
- Low cost in some countries
- Proved long term durability of current tissue valve



# Conclusion

- Limited number of AS patients meet the inclusion criteria of PARTNER trial in Korea.
- However, TAVI procedure will be an alternative option for inoperable & very high risk AS patients in the very near future.
- Current indication of TAVI procedure should be decided with collaboration in heart team for the best early and long-term outcomes in AS patients.