INSTITUT JANTUNG NEGARA
National Heart Institute

Transcatheter Aortic Valve Implantation :

The Malaysian Experience

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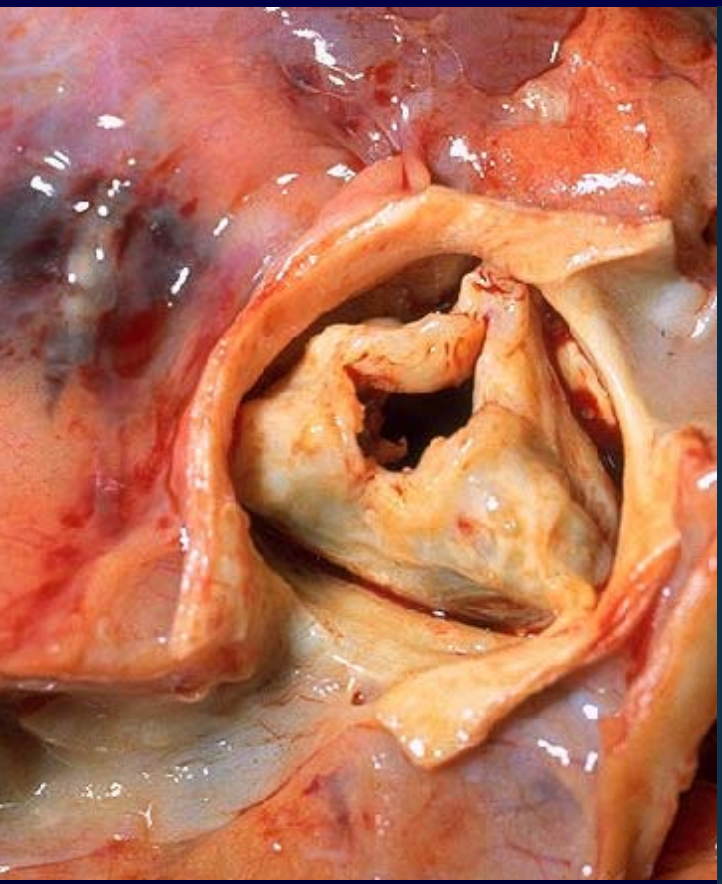
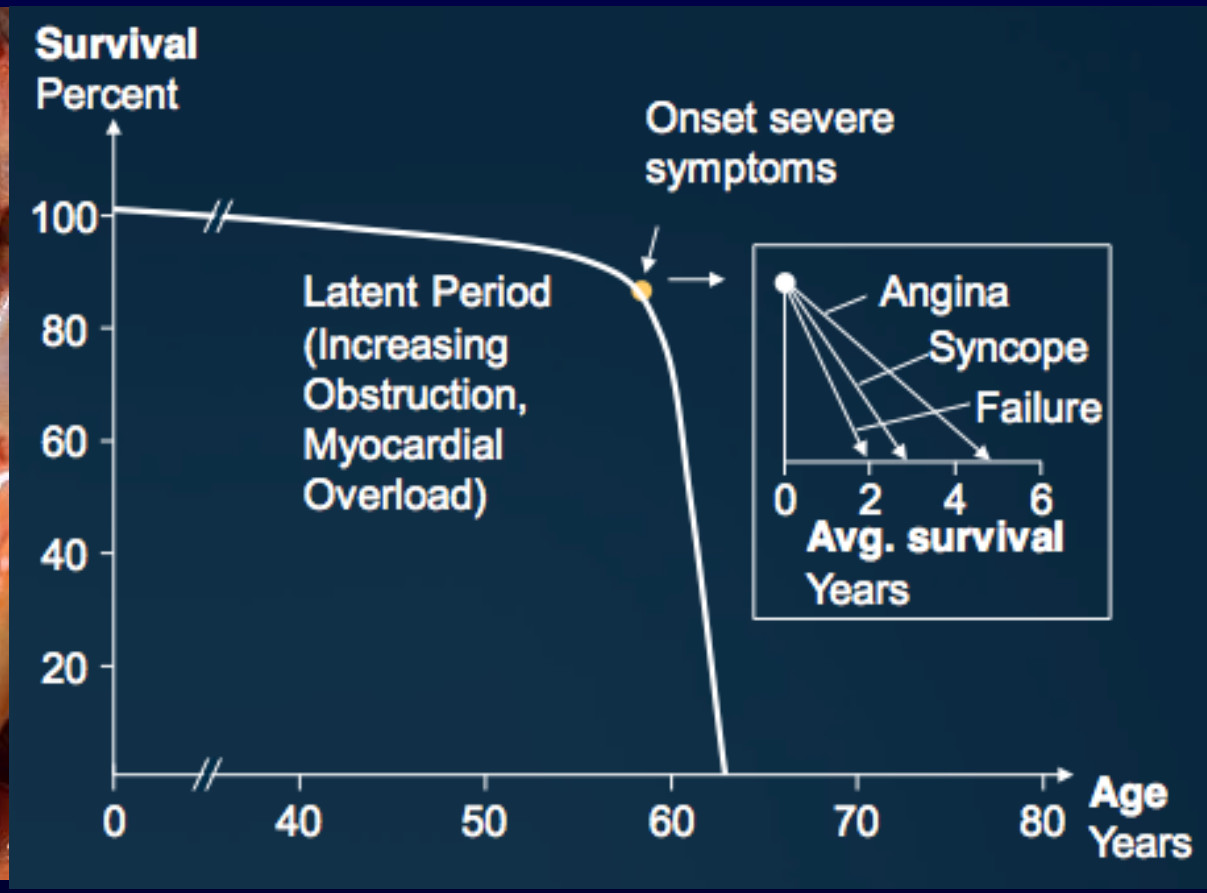
Aortic valve stenosis





Mechanical heart valves

Starr-Edwards caged-ball valve.

The Omniscience valve

Medtronic-Hall valve.

St. Jude bi-leaflet valve

The CarboMedics bi-leaflet valve.

Bioprosthetic valves.

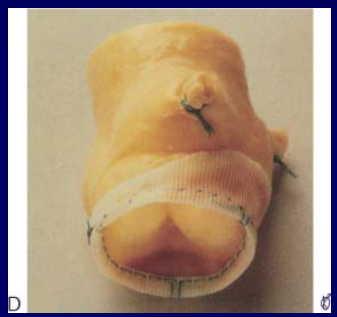
Stented valves

Hancock valve

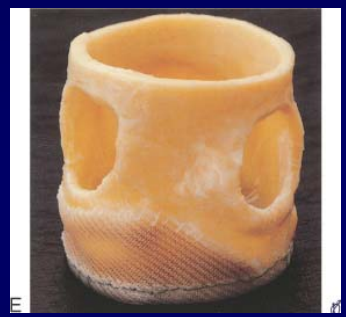
Carpentier-Edwards valve

Medtronic Intact valve.

Stentless valves:



Medtronic Freestyle stentless valve

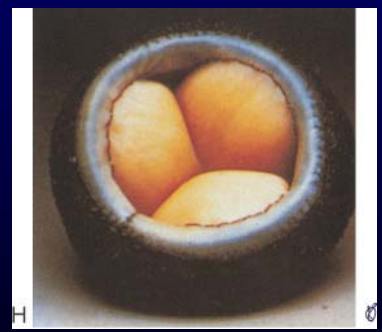


Edwards Prima stentless valve

St. Jude Medical Toronto SPV stentless valve.

Pericardial valves:

Carpentier-Edwards pericardial valve



Sorin Pericarbon pericardial valve

Autologous pericardial valve

European Heart Journal (2003) **24**, 1231–1243

ELSEVIER

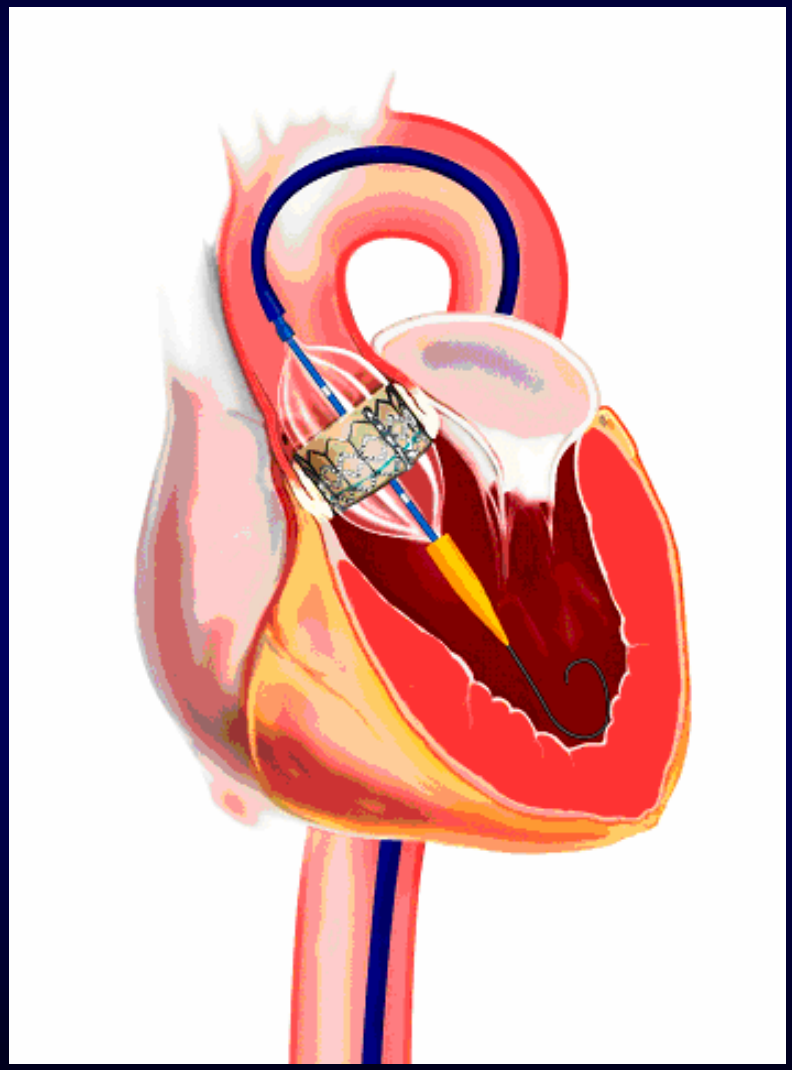
EUROPEAN SOCIETY OF CARDIOLOGY

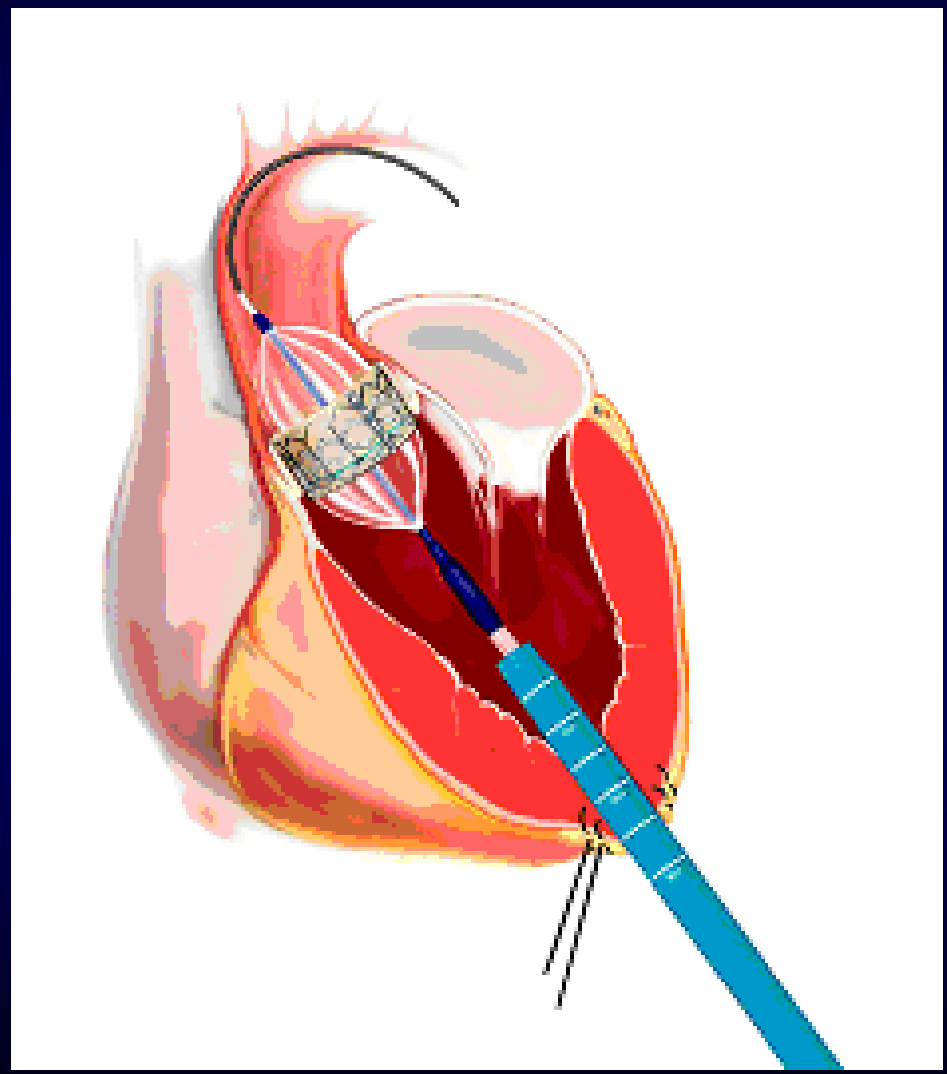
A prospective survey of patients with valvular heart disease in Europe: The Euro Heart Survey on Valvular Heart Disease

31% of patients with severe heart valve disease are not operated

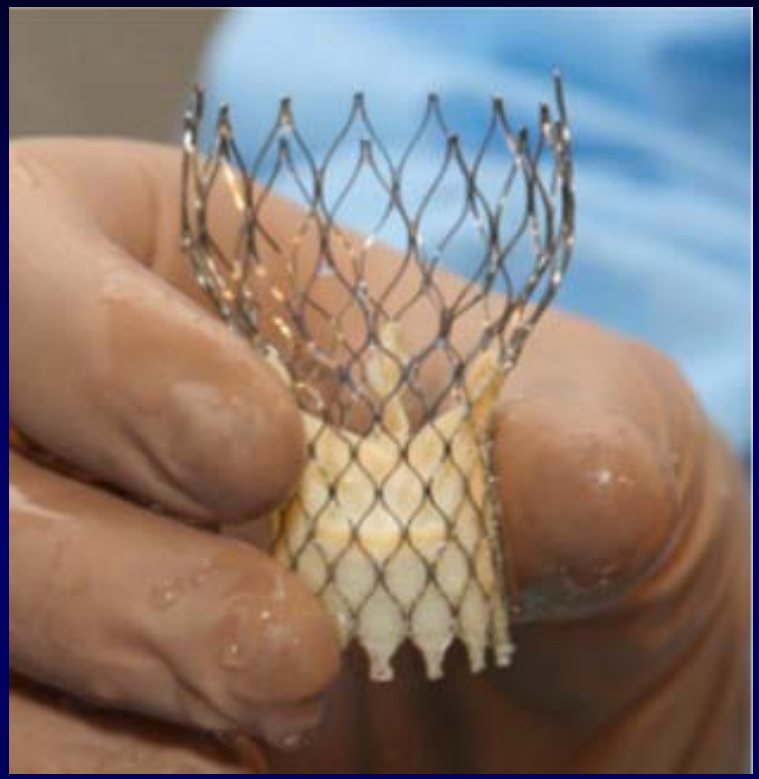

Alain Cribier
April 16, 2002

Edward Sapien Valve
Transfemoral & transapical access





CoreValve



Self-expanding nitinol frame & porcine pericardium

Length 50 mm, 18 Fr = 6 mm

Two sizes: - small valve; ø 26 mm, annulus 20-23 mm

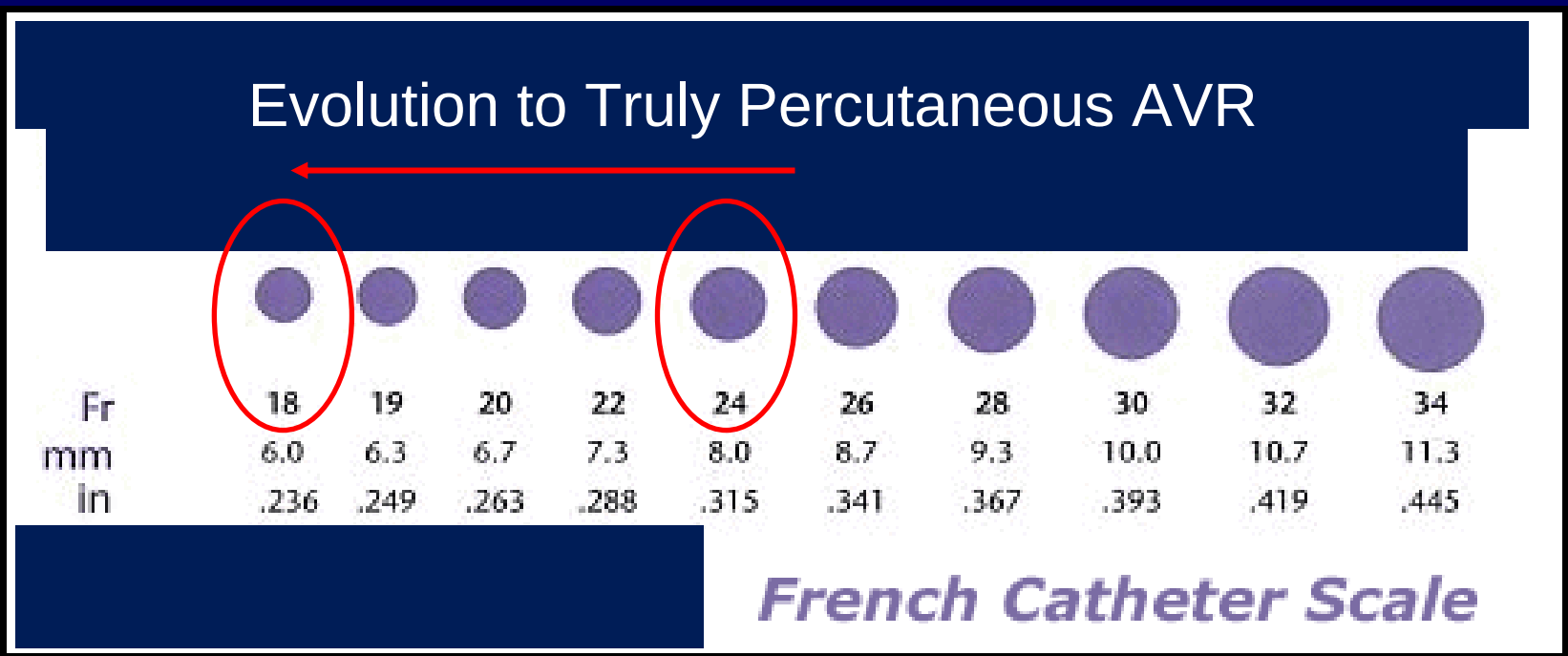
- large valve; ø 29 mm, annulus 23-27 mm

CoreValve

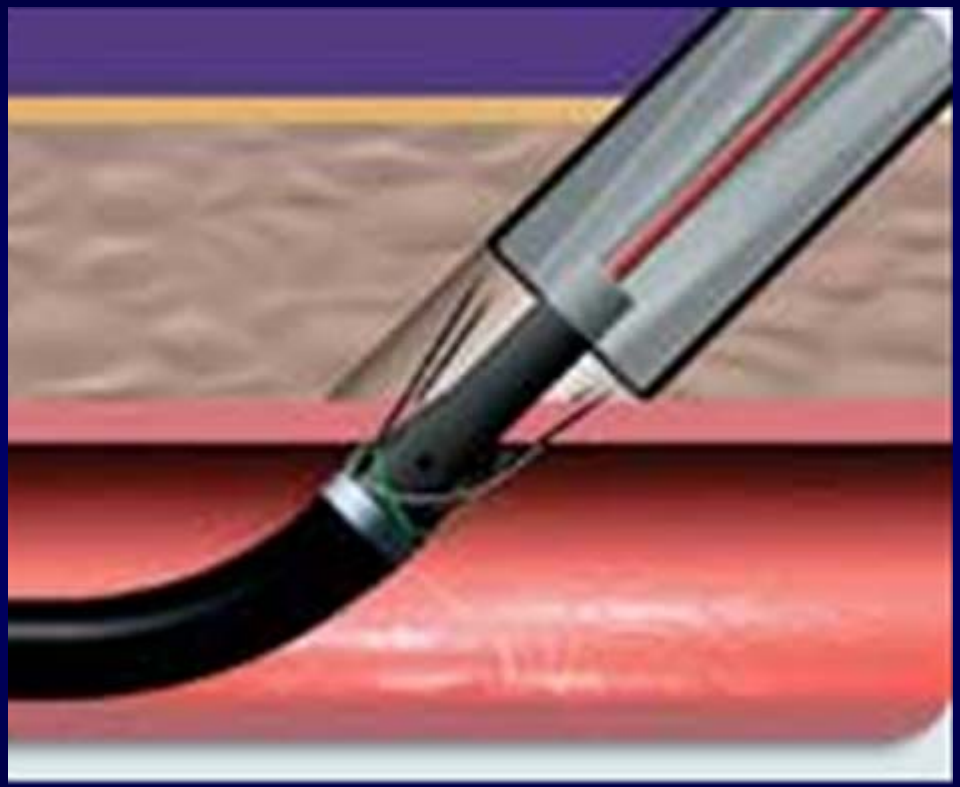
Evolution of Self-Expanding TAVI

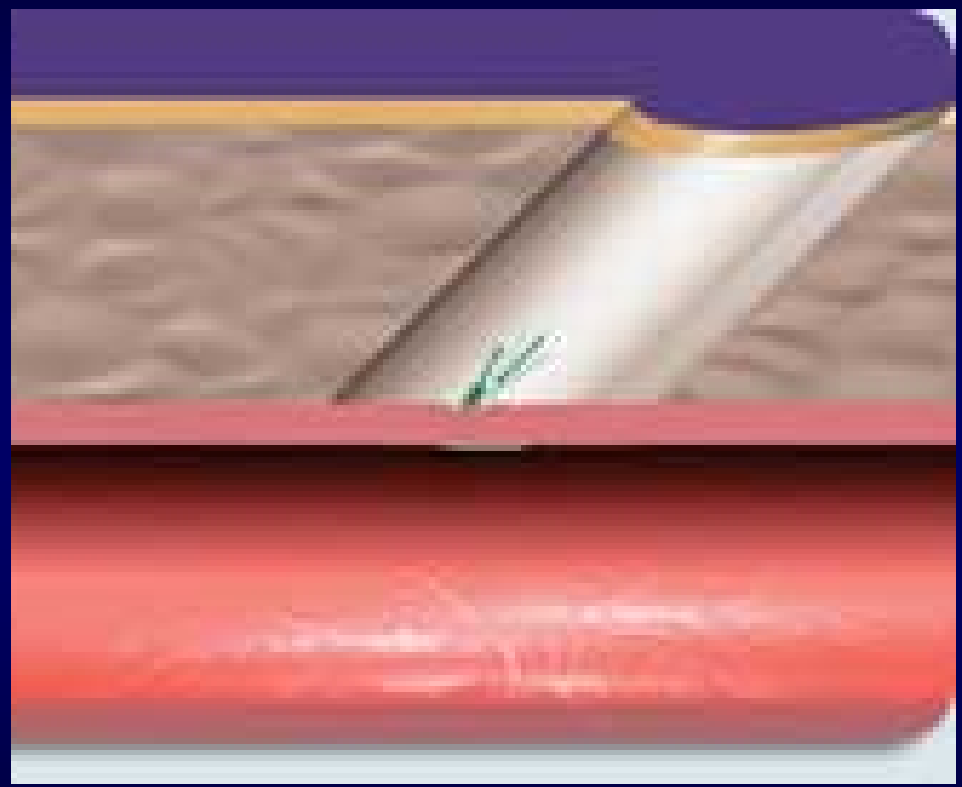
The CoreValve clinical experience includes three product generations:

- 1st generation (25F) - Proof of concept
- 2nd generation (21F) - Safety & efficacy study
- 3rd generation (18F) - Safety & efficacy study + Post CE Registry



ProSTAR (Abbott)





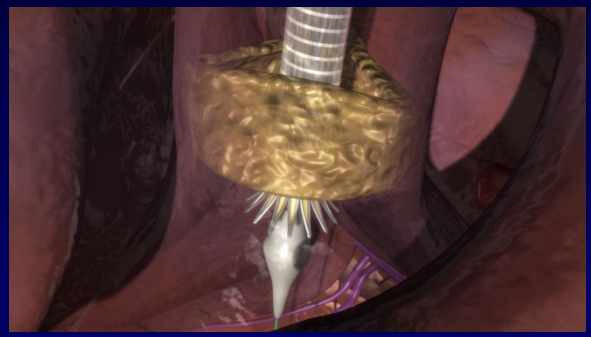
Percutaneous Without Cutdown

Under Local Anesthesia

1st Patient – Femoral Artery Access

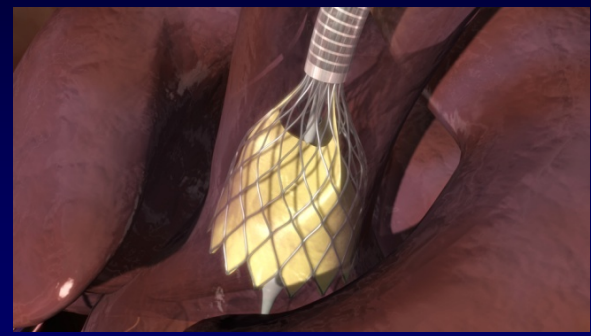
CoreValve Procedure

Slow and Step Deployment Allows Repositionability

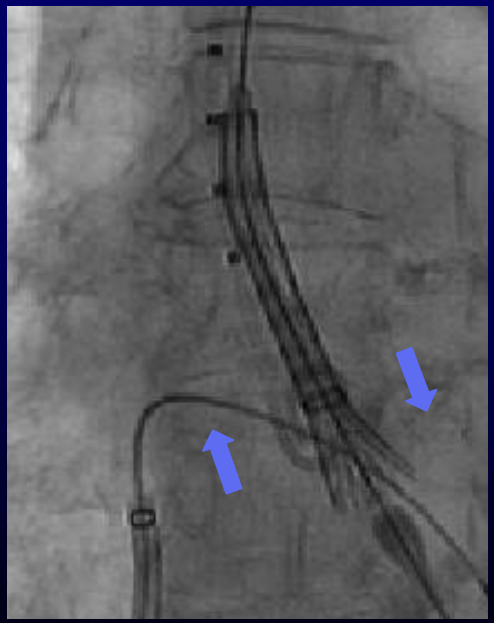


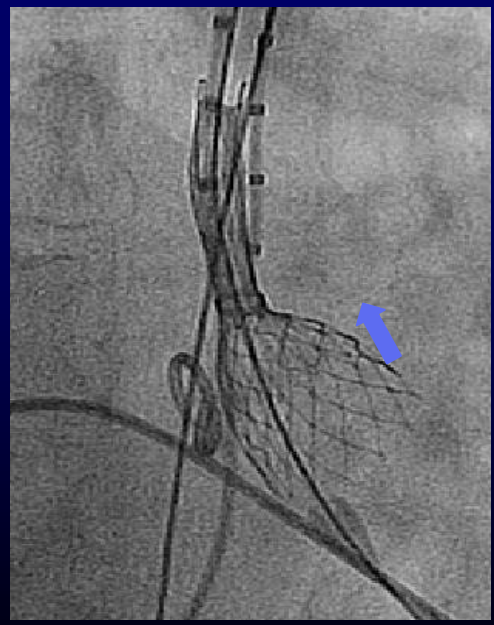
Before annular contact

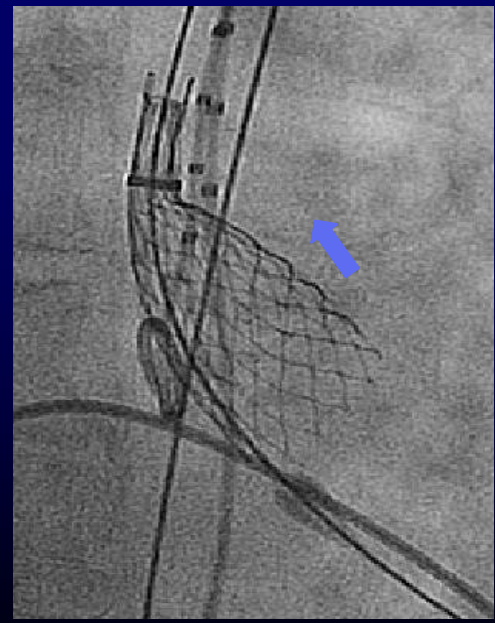
After annular contact



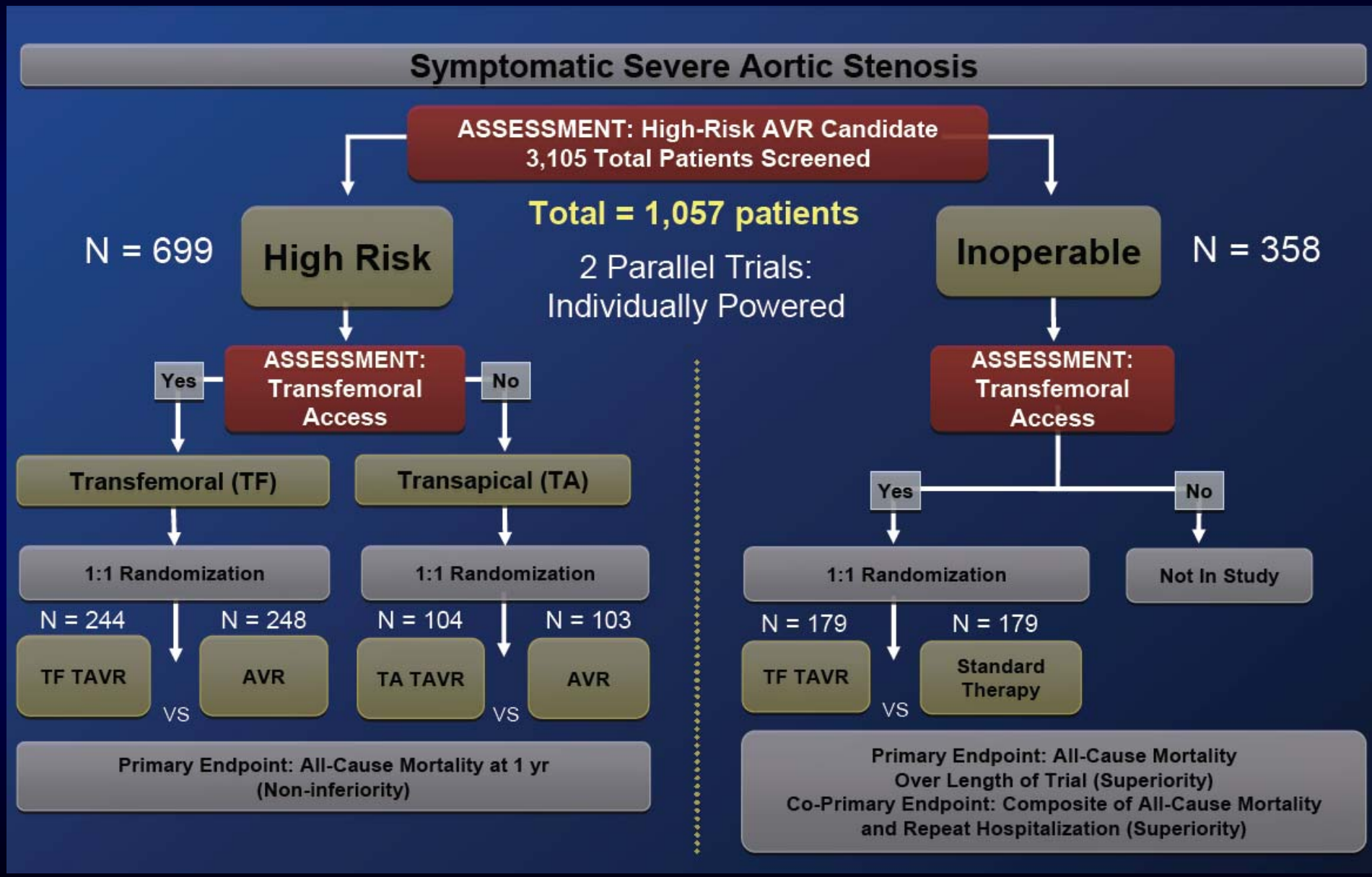
Before device release







Partner trial



Partner Cohort B

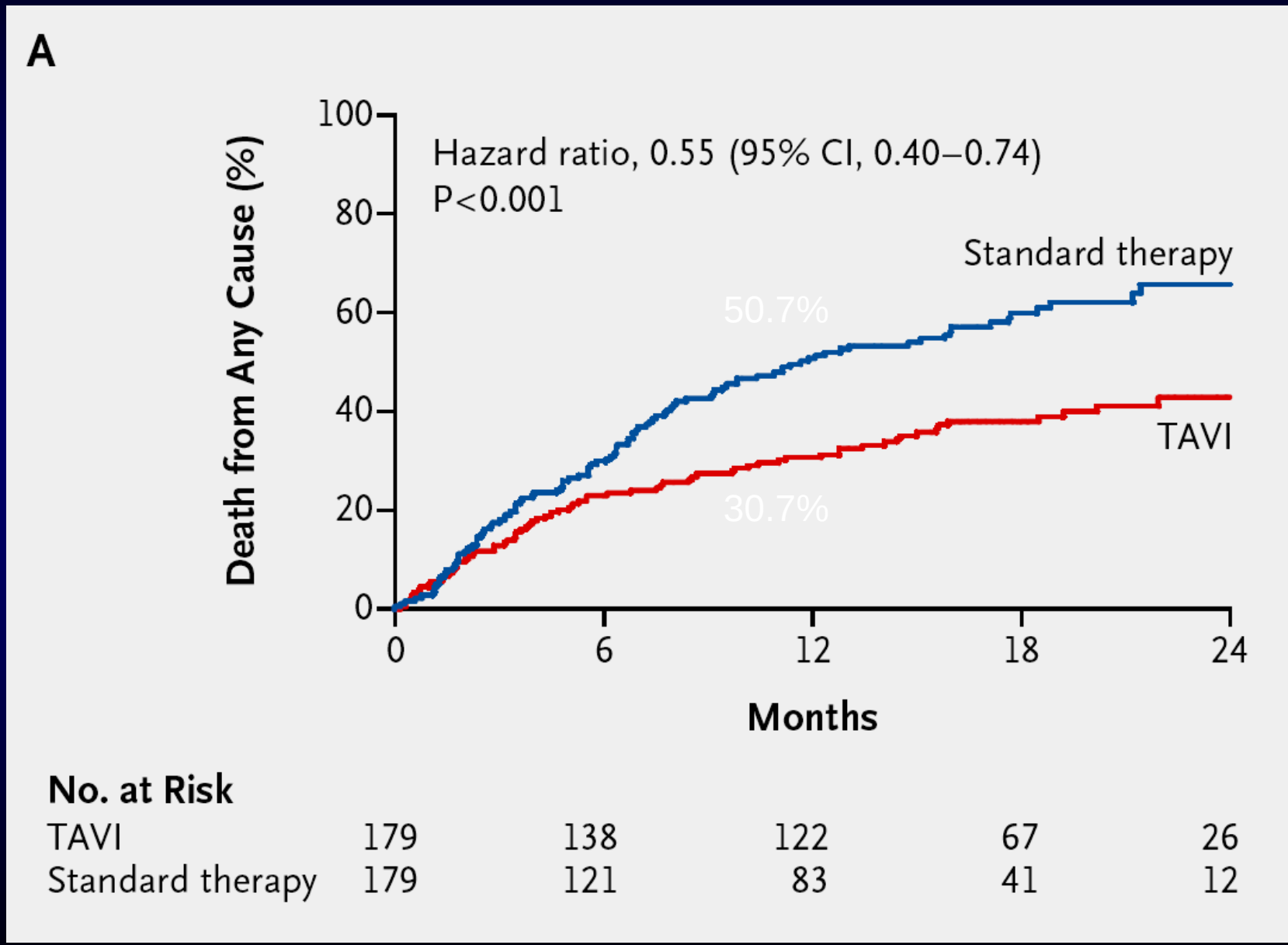
The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 OCTOBER 21, 2010 VOL. 363 NO. 17

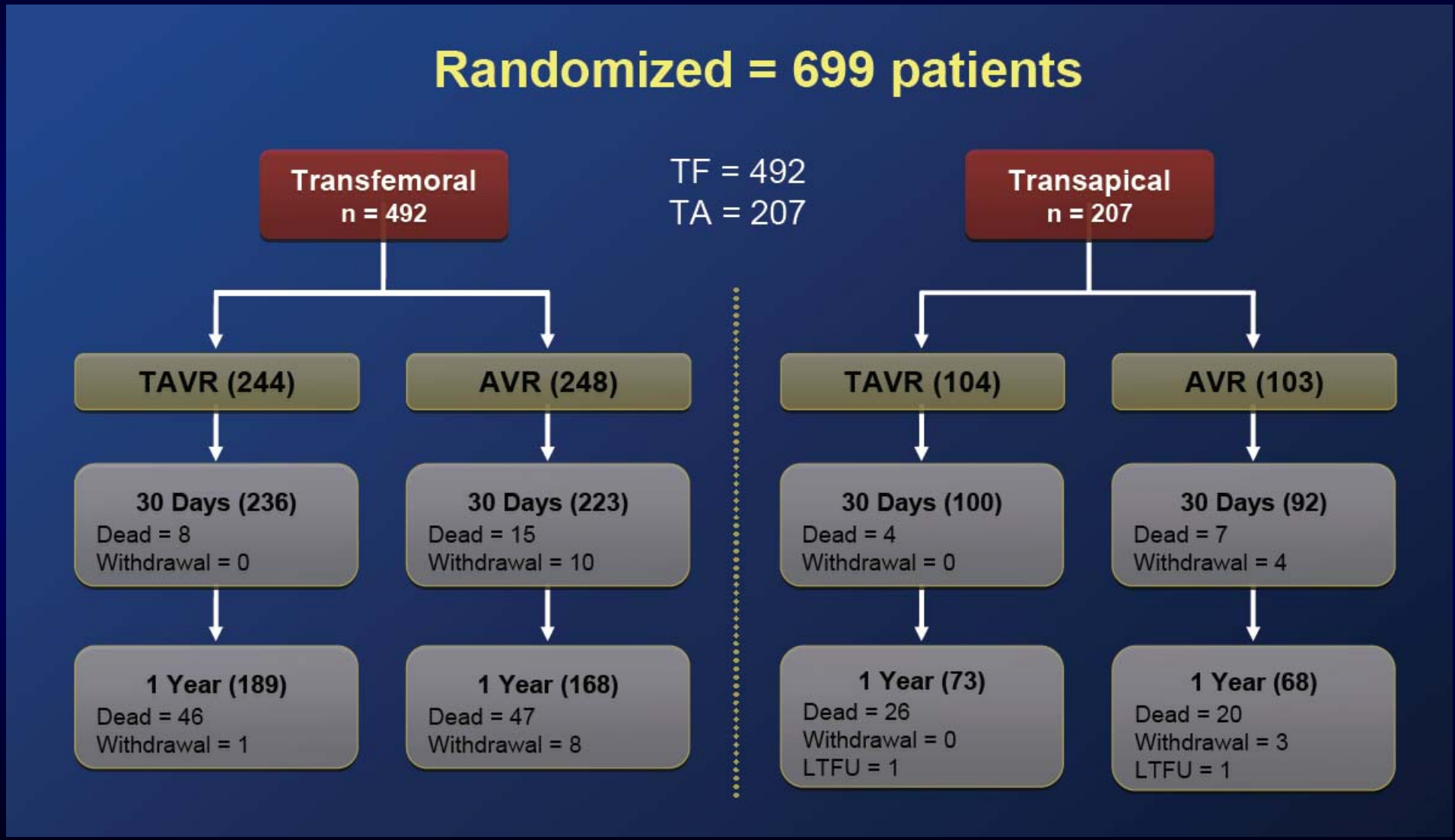
Transcatheter Aortic-Valve Implantation for Aortic Stenosis in Patients Who Cannot Undergo Surgery

Martin B. Leon, M.D., Craig R. Smith, M.D., Michael Mack, M.D., D. Craig Miller, M.D., Jeffrey W. Moses, M.D., Lars G. Svensson, M.D., Ph.D., E. Murat Tuzcu, M.D., John G. Webb, M.D., Gregory P. Fontana, M.D., Raj R. Makkar, M.D., David L. Brown, M.D., Peter C. Block, M.D., Robert A. Guyton, M.D., Augusto D. Pichard, M.D., Joseph E. Bavaria, M.D., Howard C. Herrmann, M.D., Pamela S. Douglas, M.D., John L. Petersen, M.D., Jodi J. Akin, M.S., William N. Anderson, Ph.D., Duolao Wang, Ph.D., and Stuart Pocock, Ph.D., for the PARTNER Trial Investigators*

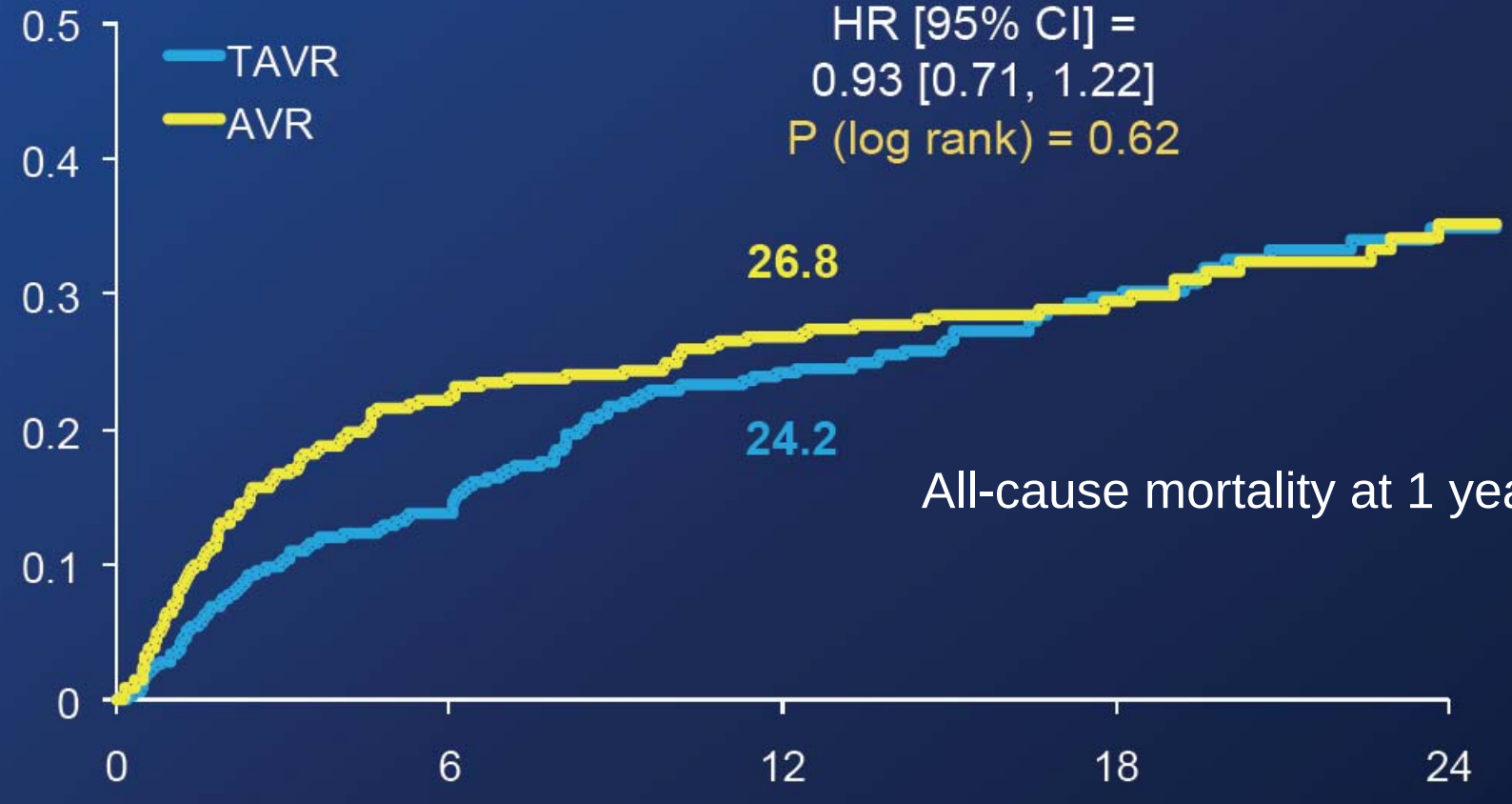
Partner Cohort B



Partner Cohort A



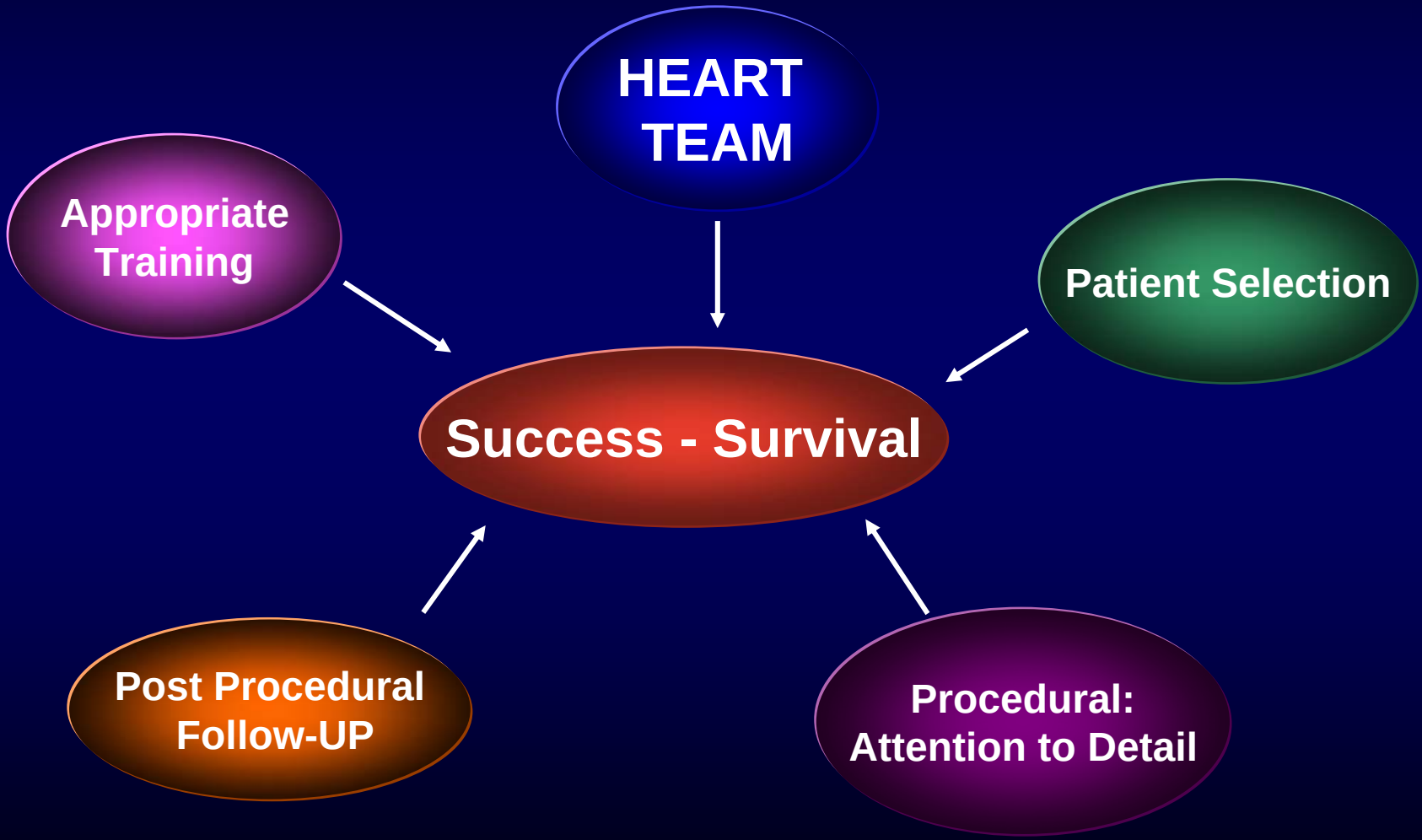
Partner Cohort A



No. at Risk

TAVR	348	298	260	147	67
AVR	351	252	236	139	65

Key Factors for Successful Outcome



Patient Selection is Critical !

Need to ensure a successful programme

Patient safety & clinical benefits

Outcome data (under scrutiny)

Cost issues (funding)

A lot of work is needed in preparing a patient

Clinical Assessment

Severe symptomatic AS

Elderly age group

General condition

General well being before being symptomatic

High surgical risk & wishes to have something done

Patient EuroSCORE Form

For more information
http://euroscore.org

Patient Name: _____

Date of Birth: _____-_____-_____ (yyyy-mm-dd)

Patient Factors		
Age	please fill in age ---------->	
Sex		☐ Female
Chronic pulmonary disease		☐ Yes
Extracardiac arteriopathy		☐ Yes
Neurological dysfunction		☐ Yes
Previous cardiac surgery		☐ Yes
Serum creatinine >200 µmol/ L		☐ Yes
Active endocarditis		☐ Yes
Critical preoperative state		☐ Yes
Cardiac Factors		
Unstable angina		☐ Yes
Moderate LV dysfunction (30% ≥ LVEF > 50%)		☐ Moderate
Poor LV dysfunction (LVEF < 30%)		☐ Poor
Recent myocardial infarct		☐ Yes
Pulmonary hypertension		☐ Yes
Operation Factors		
Emergency		☐ Yes
Other than isolated CABG		☑ Yes
Surgery on thoracic aorta		☐ Yes
Postinfarct septal rupture		☐ Yes

Additive EuroSCORE = 2

Logistic EuroSCORE (mortality %) = 1.51%

Imaging Modalities

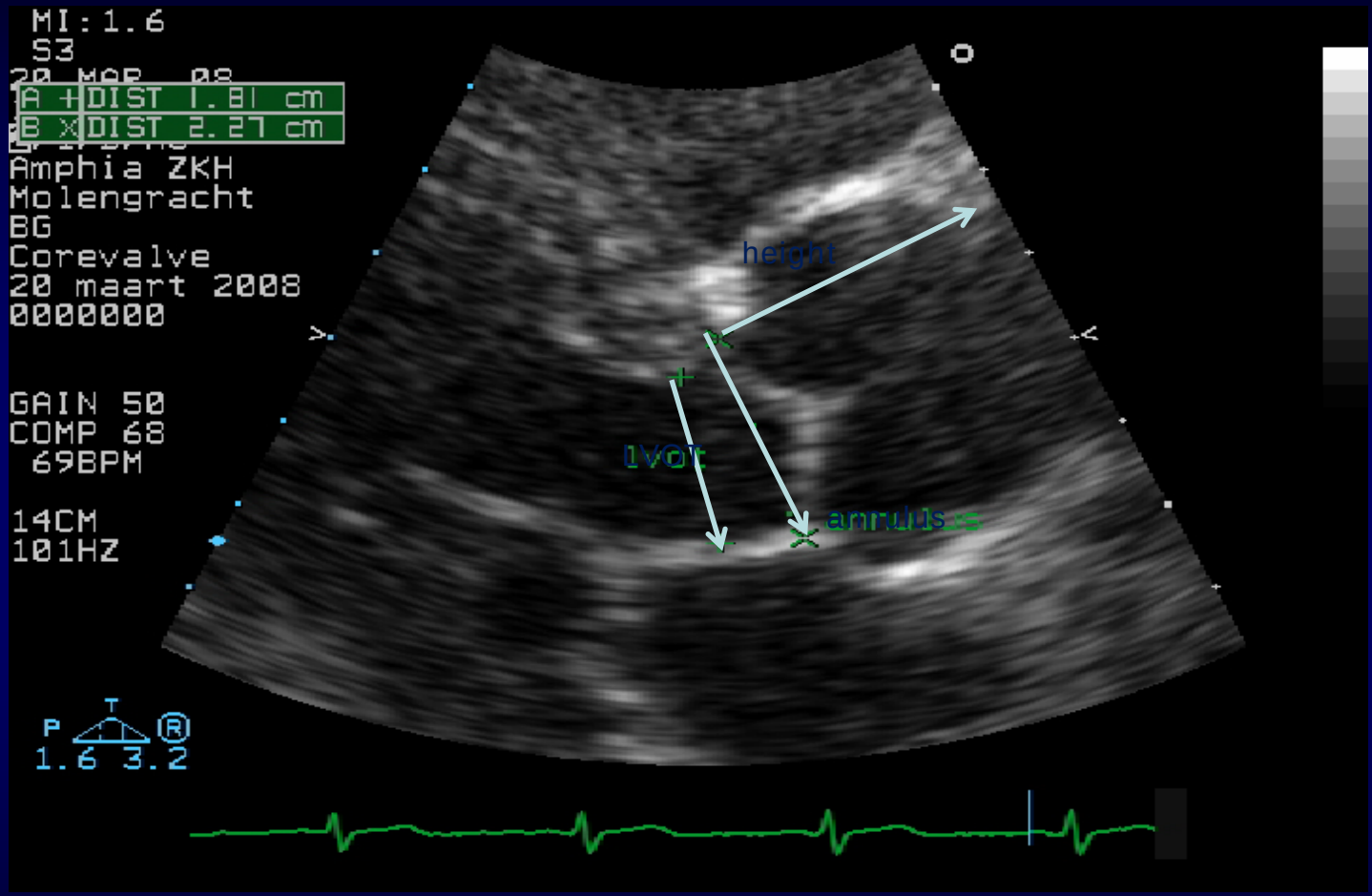
Echocardiography (required)

- Additional aortic root imaging

- Coronary Angiography (required)
  - Coronary anatomy
  - Aortic root anatomy
  - Arch anatomy
  - Abdominal aorta
  - Peripheral vasculature

- CT Imaging (recommended)
  - Aortic root and arch anatomy
  - Abdominal aorta
  - Peripheral vascular anatomy
  - 3D rendering

Annulus – LVOT measurement

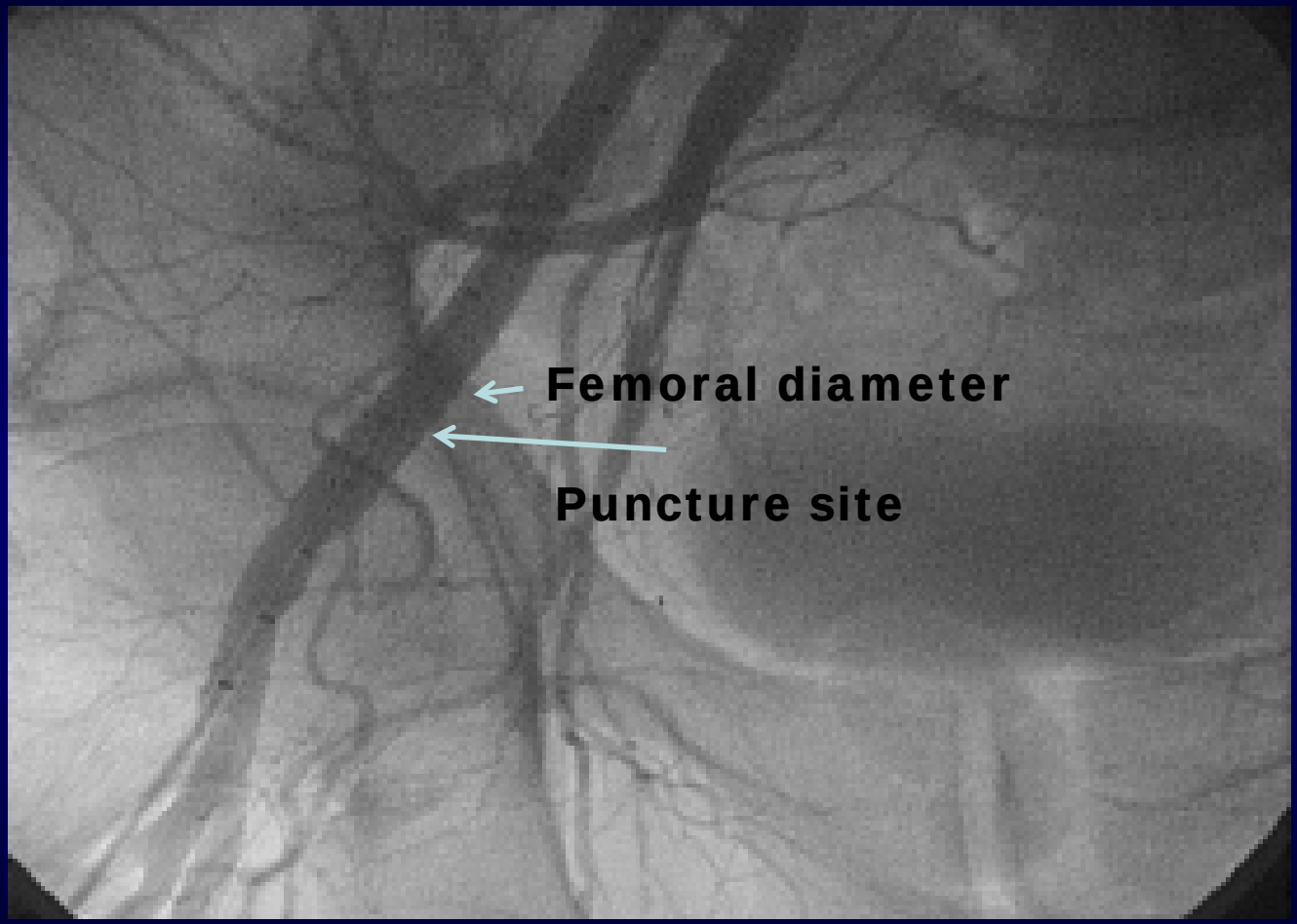


Annulus diameter 20 – 27 mm

Sinus of Valsalva Height ≥ 15 mm

Subaortic stenosis – not present

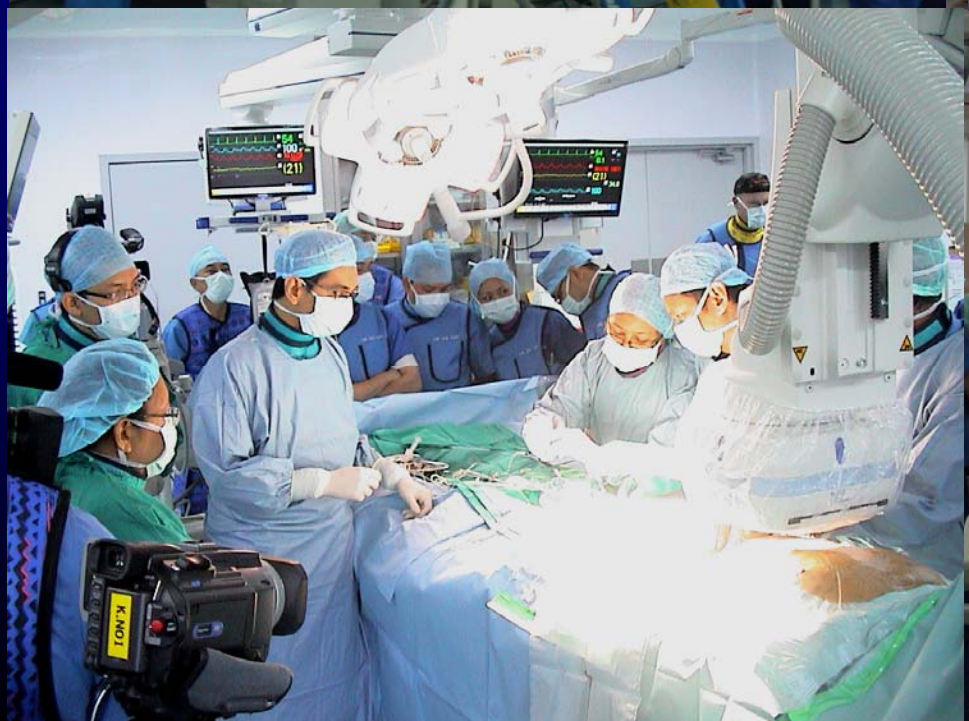
Angio of Femoral Arteries



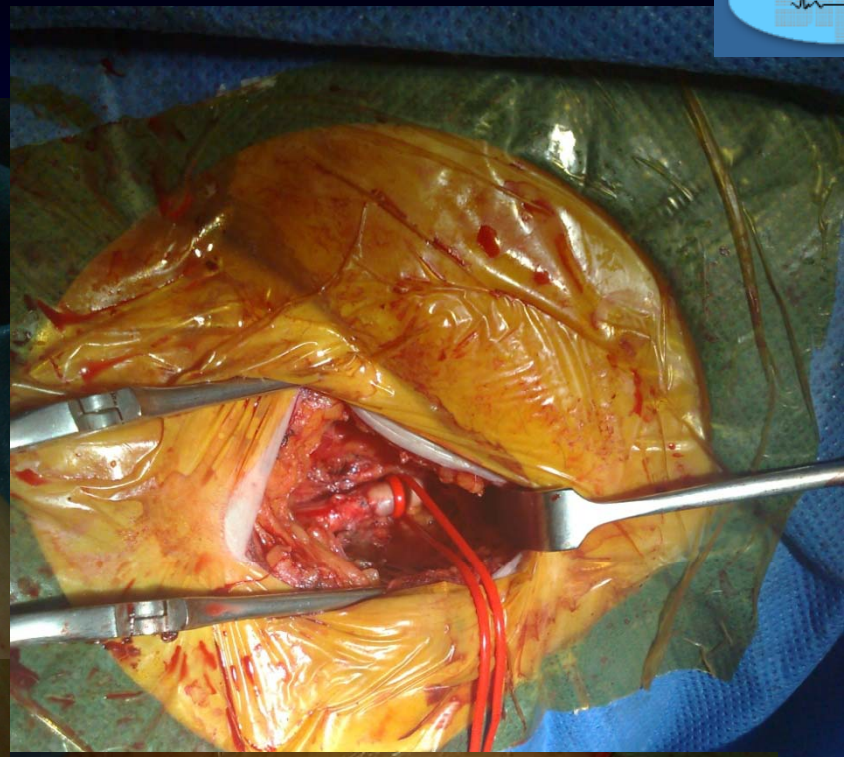
Femoral / iliac diameter ≥ 6 mm in non-diabetic (preferred > 7 mm)

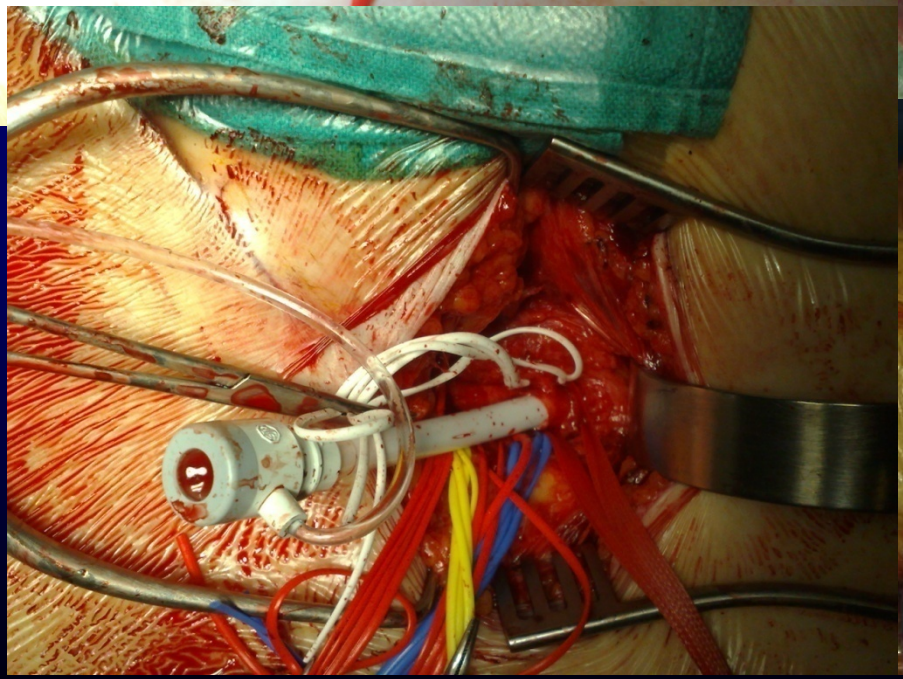
Coronary Angiogram

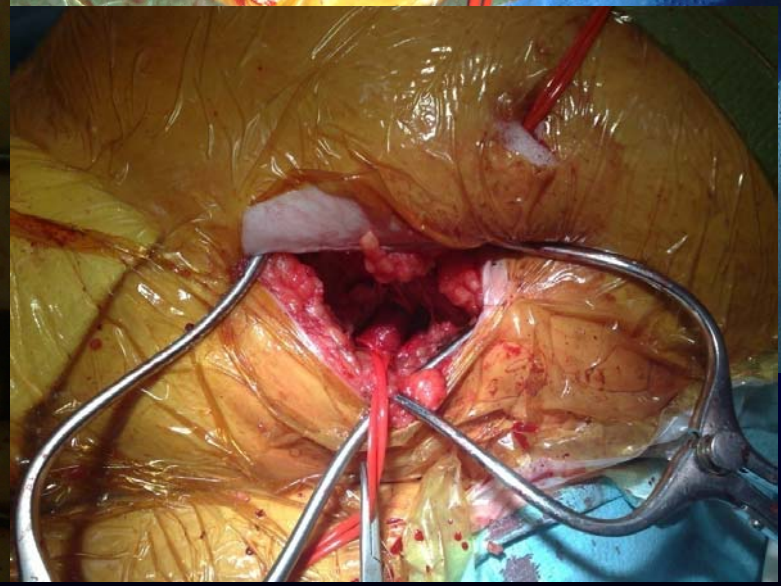
Severe stenosis in proximal segment
Should be treated prior to TAVI



Access Cut-down

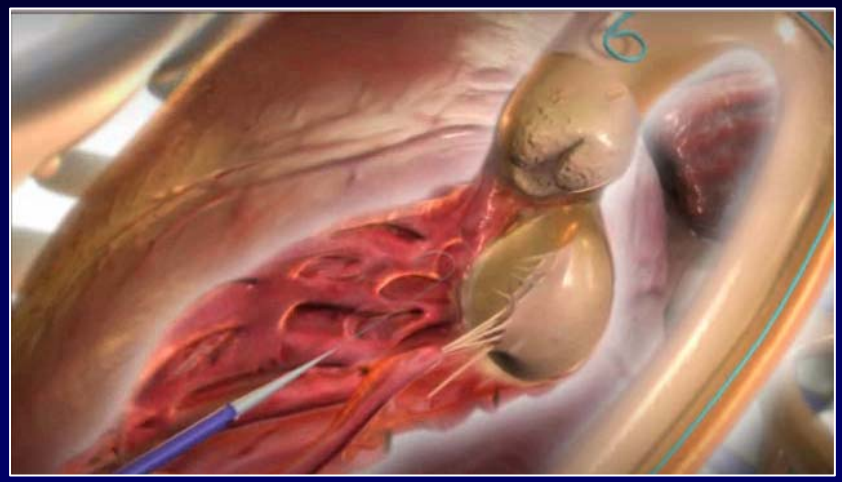


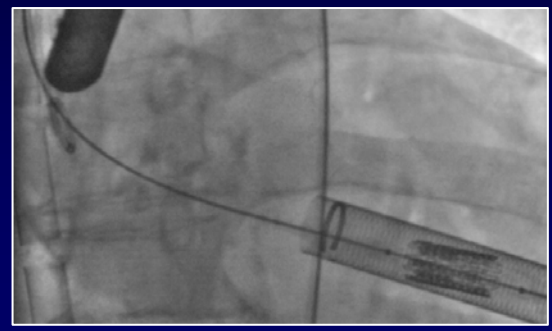


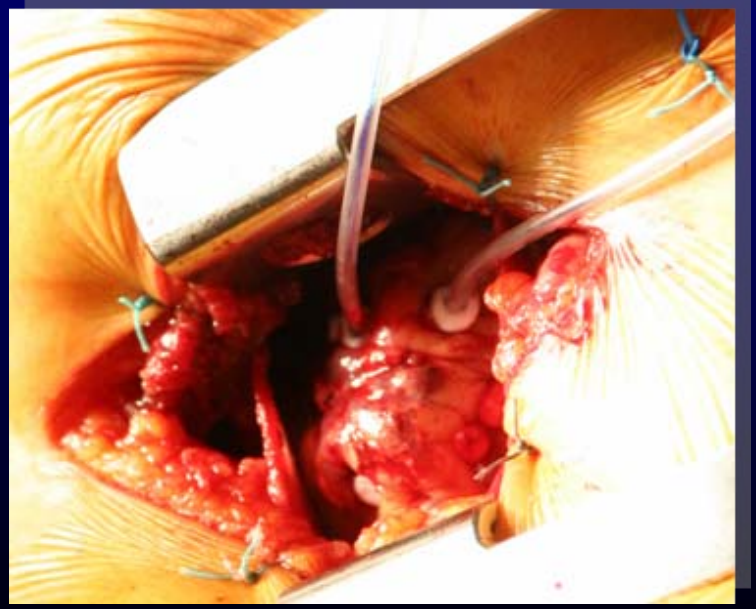


Subclavian/axillary access

Edwards Sapien trans-apical approach







IJN Experience: Baseline characteristics (n=16)

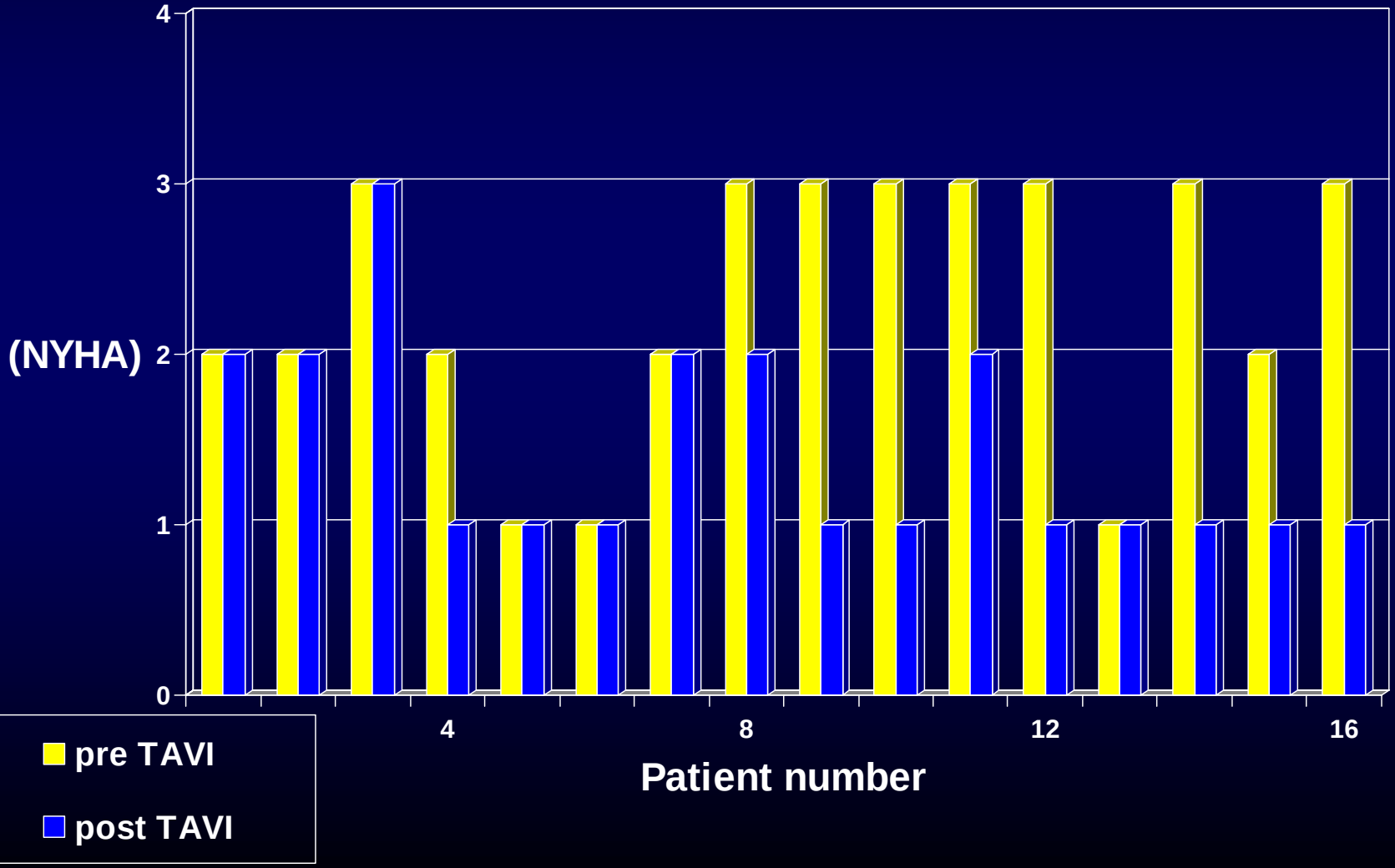
Variables	Patients
Mean age	76 ± 4
Sex male (%)	13 (81%)
Mean body mass index	25.98 ± 8
Coronary artery disease	10 (62.5%)
Hypertension	10 (62.5%)
Diabetes Mellitus	3 (18.8%)
Chronic renal failure	2 (12.5%)
Anaemia + Chronic Myeloid Leukaemia	3 (18.8%)
Others (chronic lung disease, previous cancer, Atrial Fibrillation, Myaesthenia Gravis)	4 (25%)

Baseline characteristics

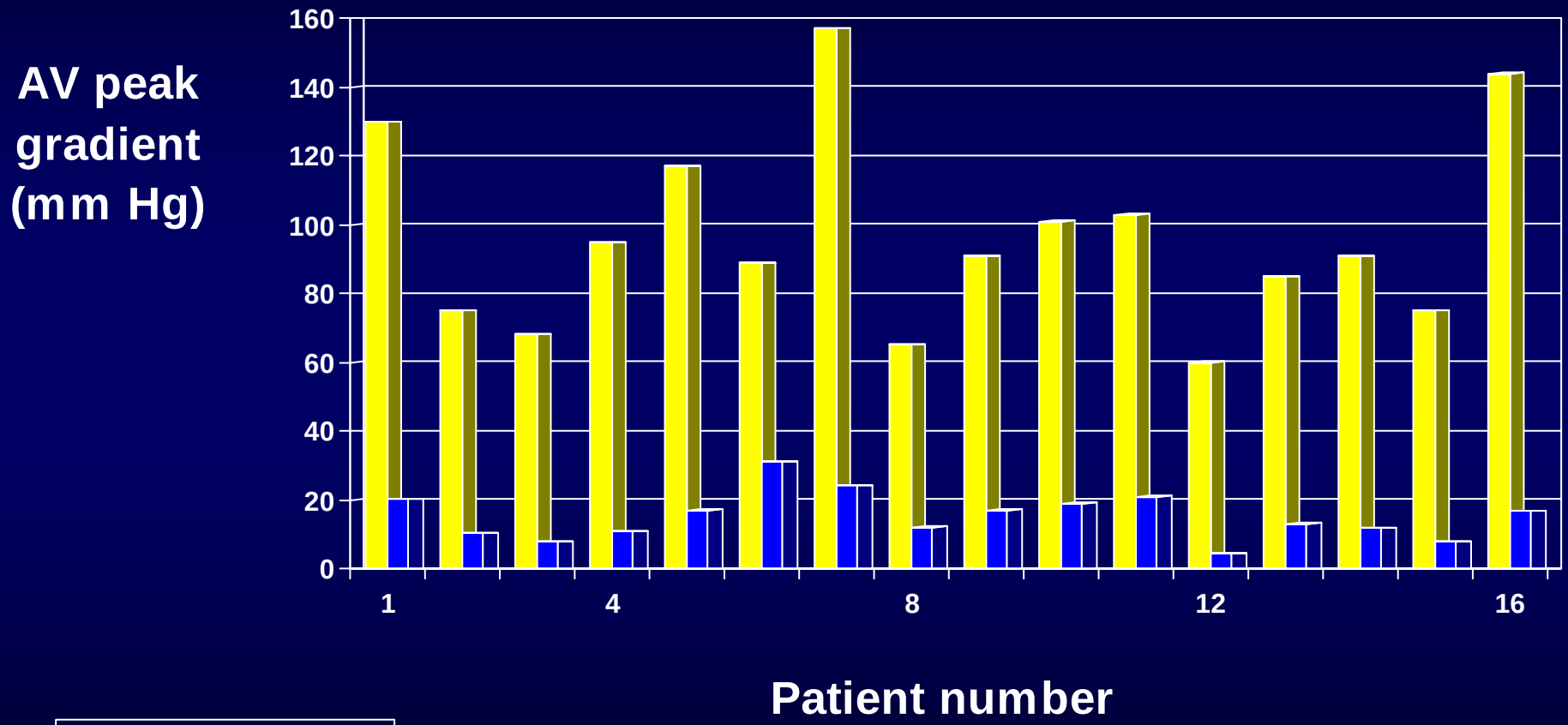
Variables	No
Mean functional class (NYHA)	2.3 ± 0.8
Echo :	
Mean aortic valve area (cm)	0.57 ± 0.13
Mean aortic peak gradient (mmHg)	97 ± 28
Mean ejection fraction (%)	61 ± 8
Median hospital stay (days)	8

RESULTS

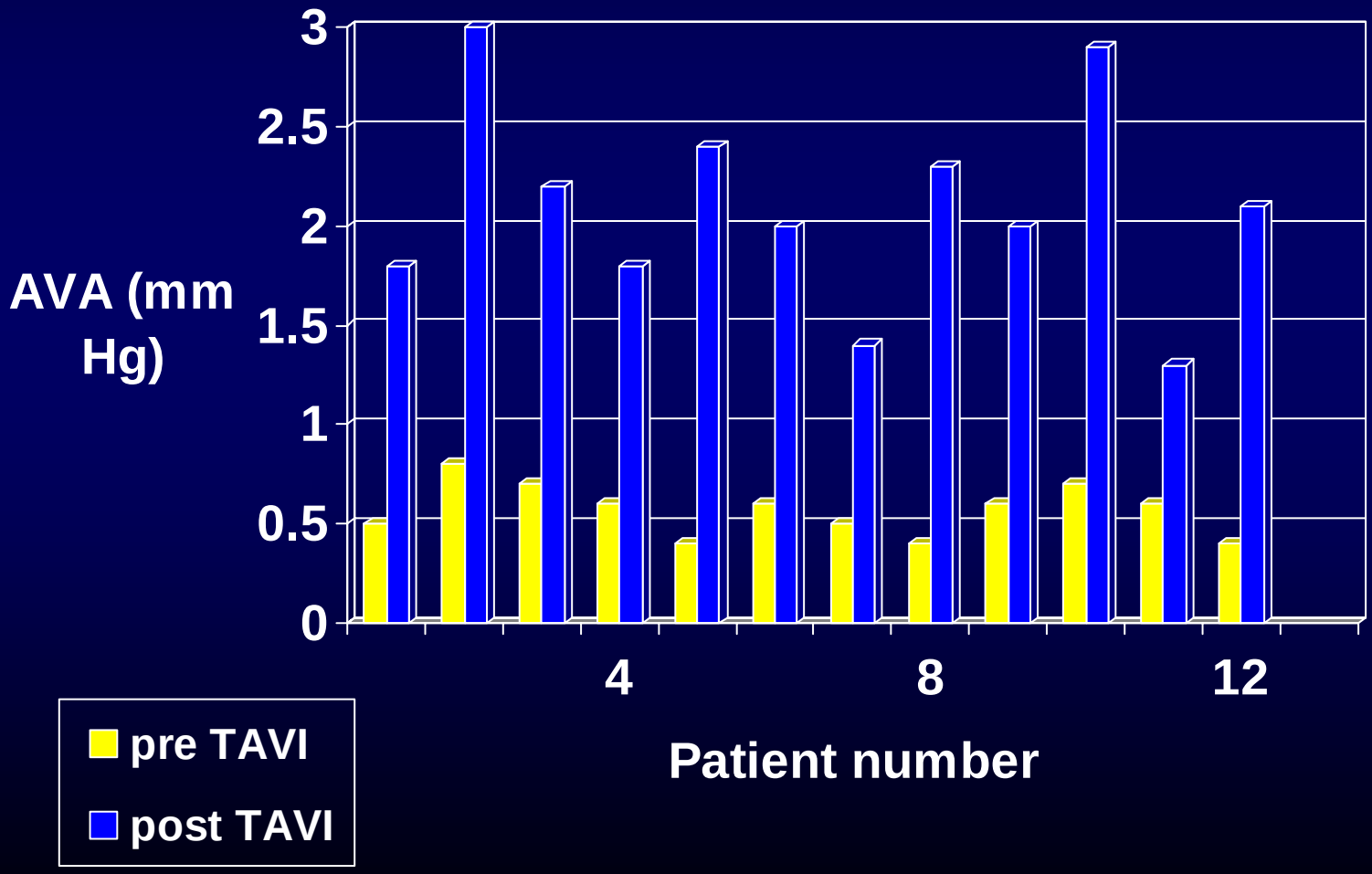
New York Heart Classification NYHA (p=0.003)



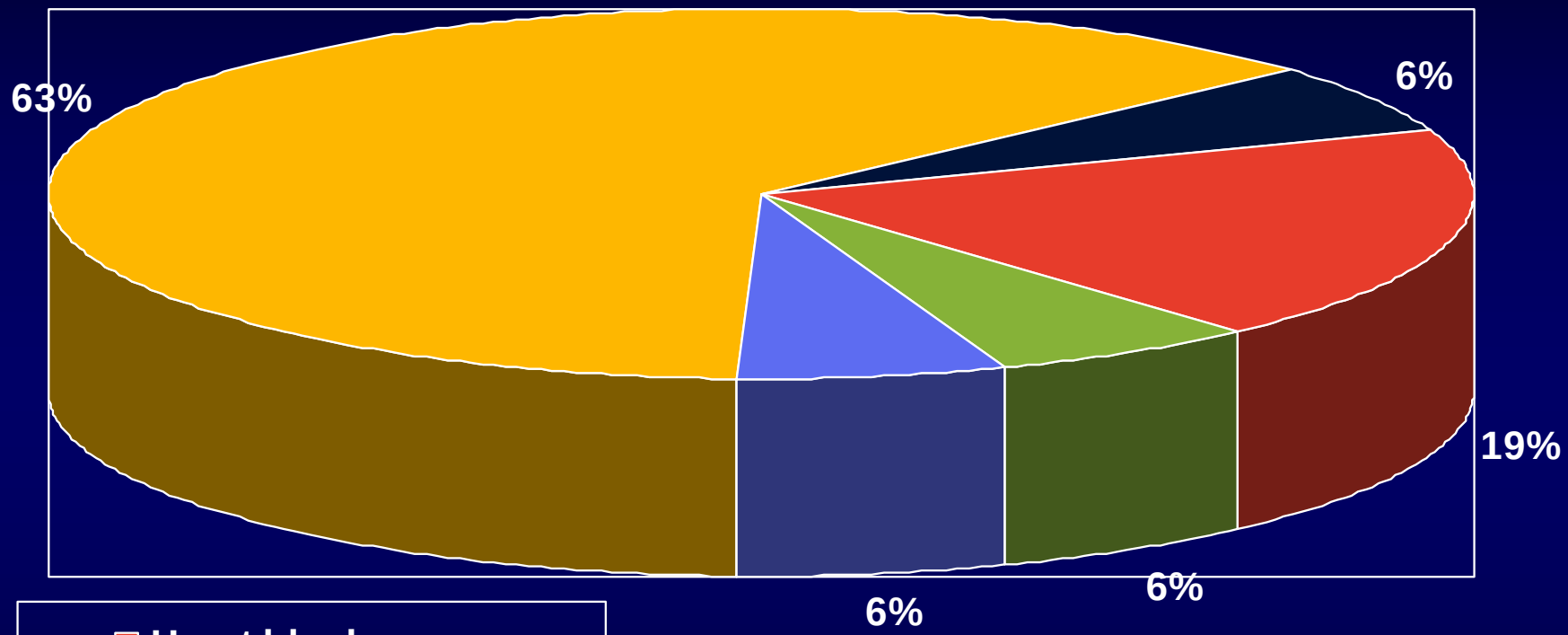
Aortic valve peak gradient (p<0.001)



Aortic Valve Area (AVA) (p <0.001)



Complications (within 3 months)



Conclusions

- The transcatheter aortic valve replacement programme requires a dedicated & committed TEAM approach
- Attention to detail at every juncture is crucial for a successful programme
- Has a steep and in-depth learning curve
- Encourage all to get involved !