Aortic valve implantation

Aortic stenosis: an underestimated pathology in the elderly

Antonio Marzocchi - Bologna

TORINO, 21 OTTOBRE 2011

Aortic sclerosis (aortic valve calcification without obstruction to blood flow, considered a precursor of calcific degenerative calcific aortic stenosis) increases in incidence with age and is present in 29% of individuals older than 65 years and in 37% of individuals older than 75 years. In elderly persons, the prevalence of aortic stenosis is between 2% and 9%.

Degenerative calcific aortic stenosis usually manifests in individuals older than 75 years and occurs most frequently in males.

Townsend CM, et al. *Sabiston Textbook of Surgery*. 18th ed. Saunders; 2008:1841-1844

Aortic valve stenosis

Prevalence

Approximately 2% of people over the age of 65,
3% of people over age 75,
and 4% percent of people over age 85
have aortic valve stenosis.
The prevalence is increasing with the aging population in North America and Europe.

Stewart BF et al. J Am Coll Cardiol. 1997; 29: 630-634

Clinical Section

Aortic Valve Replacement in the Elderly: Frequently Indicated yet Frequently Denied

Katrina A. Bramstedt

Department of Community Medicine and General Practice, Monash University, East Bentleigh, Vic., Australia

Gerontology 2003;49:46-49

Abstract

Background: The prevalence of aortic stenosis is nearly 20% in octogenarians. Aortic valve replacement (AVR) is the optimal therapy choice, yet many symptomatic patients are denied this beneficent technology. Whether mechanical or bioprosthetic, aortic valves are not a scarce resource and their safety, effectiveness and longevity are proven. *Objective:* Because the geriatric population is soaring, clinicians will be encountering more cases of aortic stenosis and the decision-making that leads to surgical referral or non-referral warrants exploration. *Methods:* A literature review was conducted to explore the notion that physicians deny AVR to their patients based solely on their chronological age value. *Results:* Using age as the sole exclusion criterion, medical literature documents the fact that AVR is frequently denied to the elderly. *Conclusion:* It appears that AVR is another beneficent cardiac technology that has been added to the age discrimination list, even though the devices are not scarce, they are cost-effective, and they can improve the life of a symptomatic elderly patient. There is no ethical justification for denying AVR to clinically suitable elderly candidates who request such therapy.

Stewart BF et al. J Am Coll Cardiol. 1997; 29: 630-634

Incidence & Prevalence of Aortic Stenosis

Aortic stenosis affects approximately 5 out of every 10,000 people in the United States. It is more likely to affect men than women; 80% of adults with symptomatic AS are male.

Stewart BF et al. J Am Coll Cardiol. 1997; 29: 630-634

Epidemiologia della stenosi aortica degenerativa

Prevalence of aortic valve abnormalities in the elderly:
an echocardiographic study of a random population sample.
(Helsinki - Finland)

age groups 75 to 76, 80 to 81 and 85 to 86 years (n = 501)
Mild calcification in 222 (40%)
Severe calcification in 72 (13%)

critical aortic valve stenosis was 2.9%
($\leq$ 0,8 cm^2)

Lindroos M et al. J Am Coll Cardiol, 1993; 21:1220-5

Burden of valvular heart diseases: a population-based study

Vuyisile T Nkomo, Julius M Gardin, Thomas N Skelton, John S Gottdiener, Christopher G Scott, Maurice Enriquez-Sarano

Prevalenza delle valvulopatie
USA
3 studi dal 1985 al 1992

Nkomo VT et al Lancet 2006, 368:1005-1011

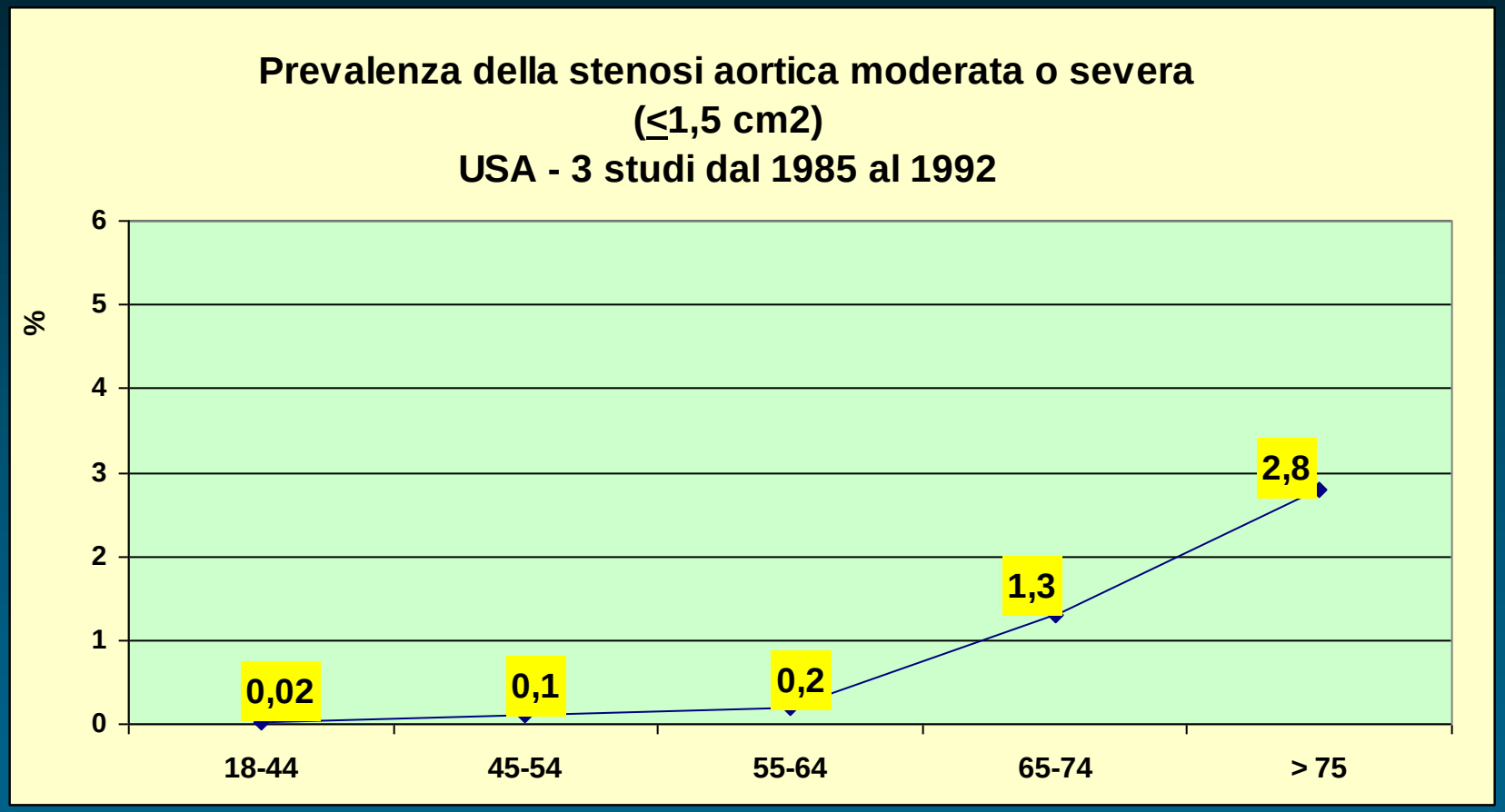
Prevalence of valvular heart diseases in population-based studies

	Age (years)				
	18–44	45–54	55–64	65–74	≥75
Participants (n)	4351	696	1240	3879	1745
Male, n (%)	1959 (45%)	258 (37%)	415 (33%)	1586 (41%)	826 (47%)
Mitral regurgitation (n=449)	23, 0·5% (0·3–0·8)	1, 0·1% (0–0·8)	12, 1·0% (0·5–1·8)	250, 6·4% (5·7–7·3)	163, 9·3% (8·1–10·9)
Mitral stenosis (n=15)	0, 0% (0–0·1)	1, 0·1% (0–0·8)	3, 0·2% (0·1–0·7)	7, 0·2% (0·1–0·4)	4, 0·2% (0·1–0·6)
Aortic regurgitation (n=90)	10, 0·2% (0·1–0·4)	1, 0·1% (0–0·8)	8, 0·7% (0·3–1·3)	37, 1·0% (0·7–1·3)	34, 2·0% (1·4–2·7)
Aortic stenosis (n=102)	1, 0·02% (0–0·1)	1, 0·1% (0–0·8)	2, 0·2% (0·6–1·9)	50, 1·3% (1·0–1·7)	48, 2·8% (2·1–3·7)

Nkomo VT et al Lancet 2006, 368:1005-1011

Burden of valvular heart diseases: a population-based study

Vuyisile T Nkomo, Julius M Gardin, Thomas N Skelton, John S Gottdiener, Christopher G Scott, Maurice Enriquez-Sarano

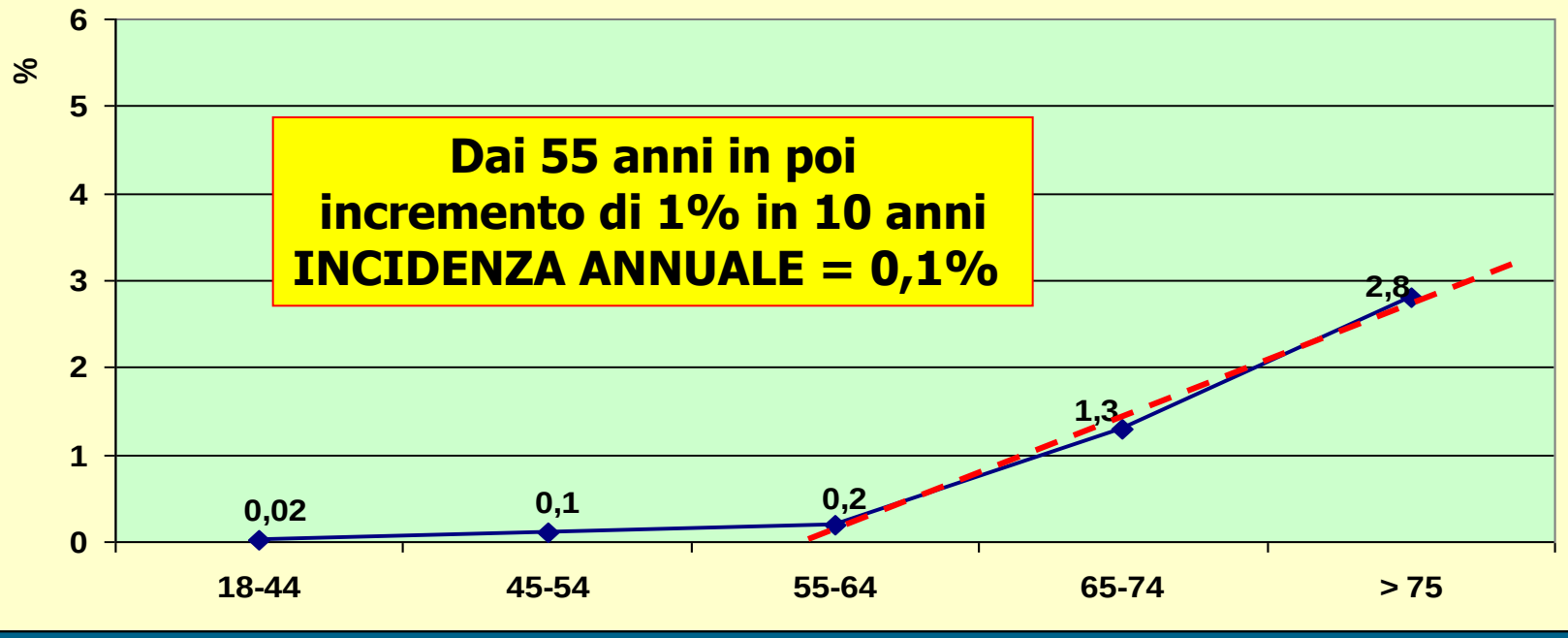


Lancet 2006, 368:1005-1011

Burden of valvular heart diseases: a population-based study

Vuyisile T Nkomo, Julius M Gardin, Thomas N Skelton, John S Gottdiener, Christopher G Scott, Maurice Enriquez-Sarano

Prevalenza della stenosi aortica moderata o severa (≤1,5 cm2)
USA - 3 studi dal 1985 al 1992



Lancet 2006, 368:1005-1011

Epidemiologia della stenosi aortica degenerativa

Prevalence, referral patterns, testing, and surgery in aortic valve disease

- five million privately insured beneficiaries
- a 5% sample of Medicare beneficiaries

EXTRAPOLATED PREVALENCE:

1.8% (approximately 5.2 million people)

10.7% in persons aged ≥ 65 years

Bach DS et al. J Heart Valve Dis 2007;16:362-9

JMC
JOINT MEETING OF CARDIOLOGY

From Caliper to Catheter

Turin, October 21, 2011

HEART TEAM AND PATIENT SELECTION

Maurizio D'Amico

Struttura Complessa di Cardiologia Ospedaliera
Azienda Ospedaliera S.G. Battista, Molinette di Torino

Why TAVI?
Who thinks to TAVI first?
When TAVI?
Who does select the “TAVI patient”?
- Clinical features
- Imaging

Why TAVI?

When TAVI?

Who thinks to TAVI first?

Who does select the “TAVI patient”?

- **Clinical characteristics**
- **Imaging**

SURGICAL AORTIC VALVE REPLACEMENT (AVR

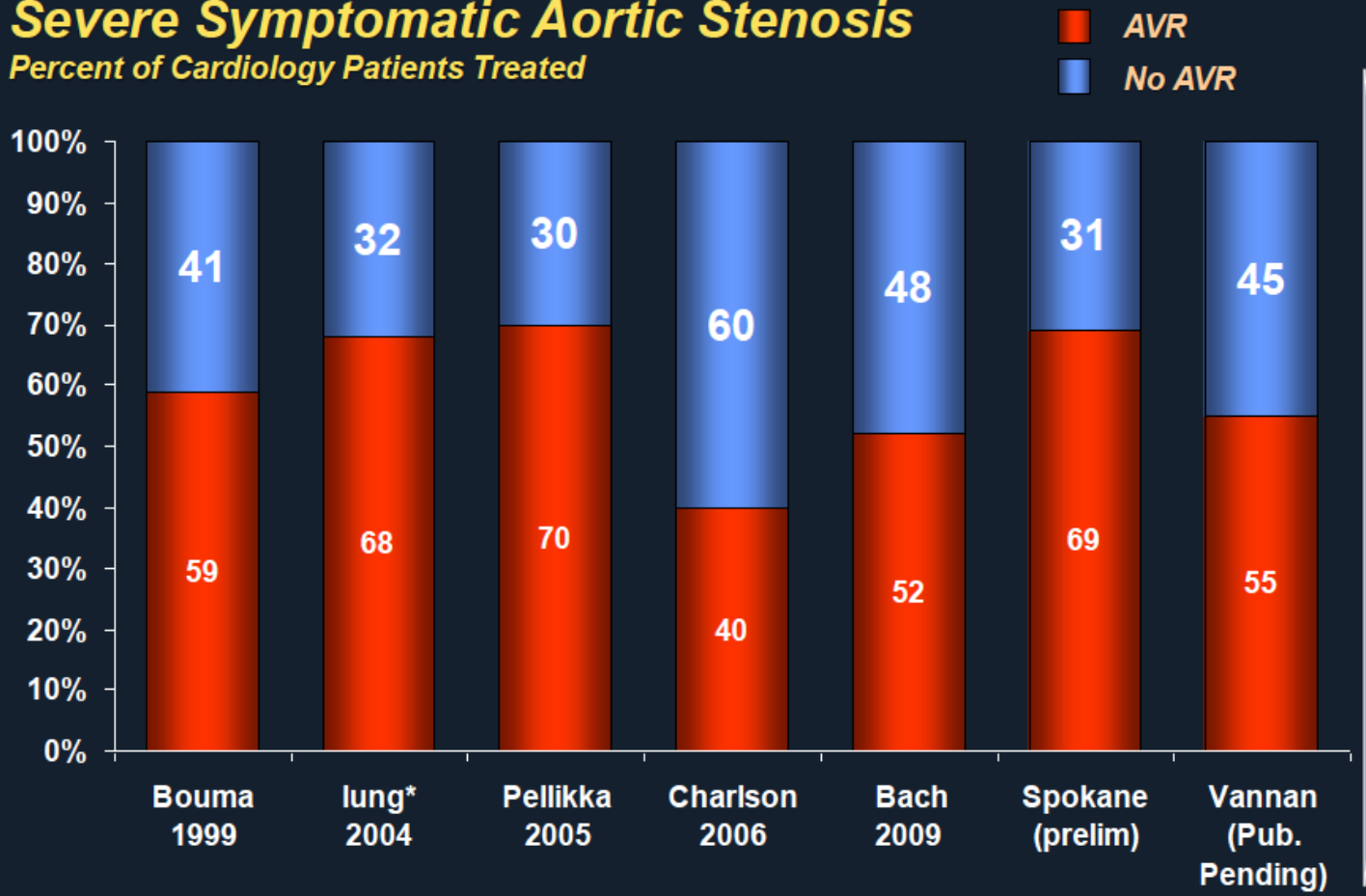
Good results from AVR

- ↑ Survival
- ↓ Symptoms
- Low operative mortality

in low risk patients

O'Brien SM, Shahian DM, Filardo G, et al. Ann Thorac Surg 2009;88:Suppl:S23-S42

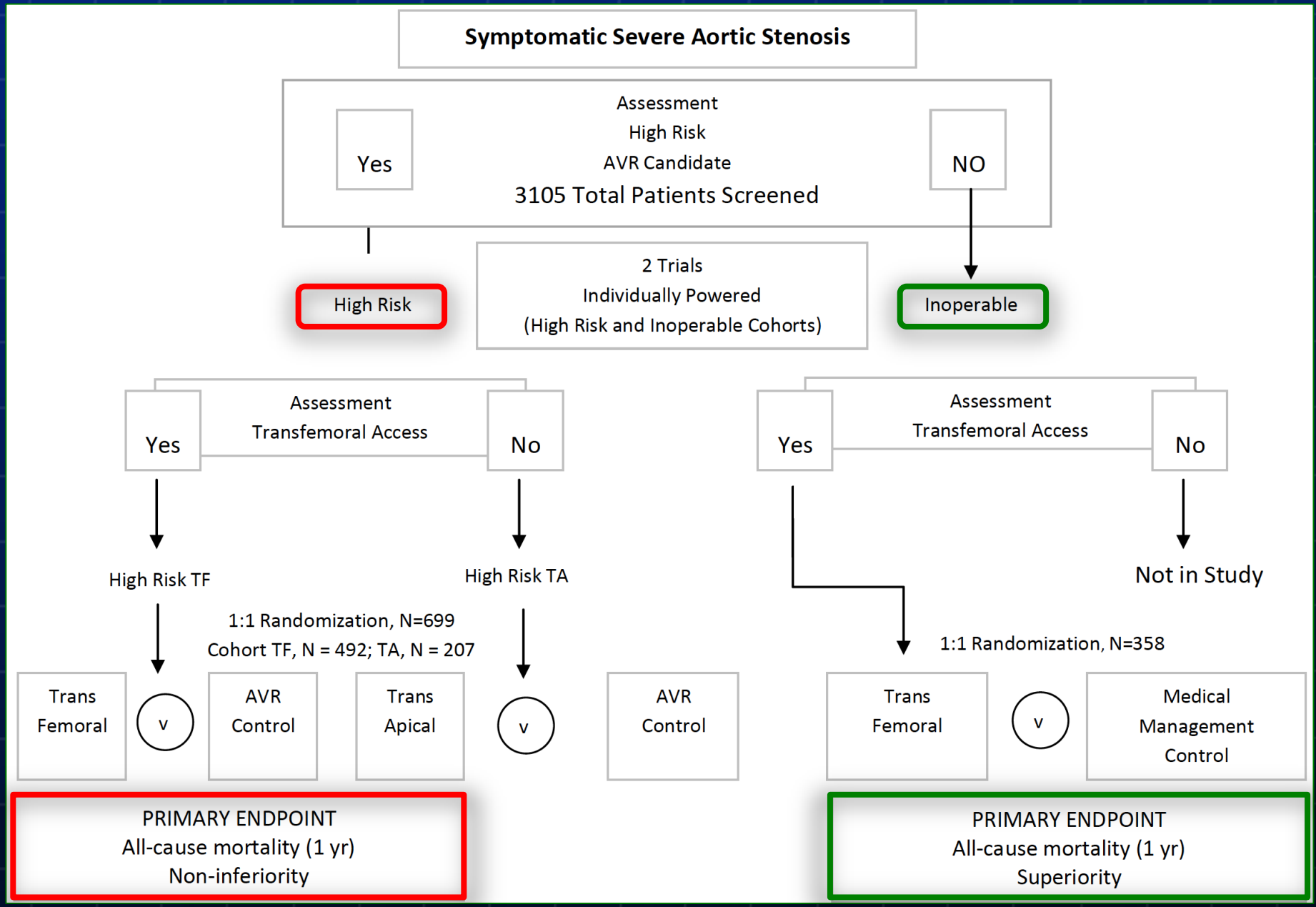
At Least 30% of Patients with Severe Symptomatic AS are "Untreated"!



Under-treatment especially prevalent among patients managed by Primary Care physicians

1. *Bouma B J et al. To operate or not on elderly patients with aortic stenosis: the decision and its consequences. Heart 1999;82:143-148*
2. *Iung B et al. A prospective survey of patients with valvular heart disease in Europe: The Euro Heart Survey on Valvular Heart Disease. European Heart Journal 2003;24:1231-1243 (*includes both Aortic Stenosis and Mitral Regurgitation patients)*
3. *Pellikka, Sarano et al. Outcome of 622 Adults with Asymptomatic, Hemodynamically Significant Aortic Stenosis During Prolonged Follow-Up. Circulation 2005*
4. *Charlson E et al. Decision-making and outcomes in severe symptomatic aortic stenosis. J Heart Valve Dis2006;15:312-321*

Overall PARTNER Trial Design



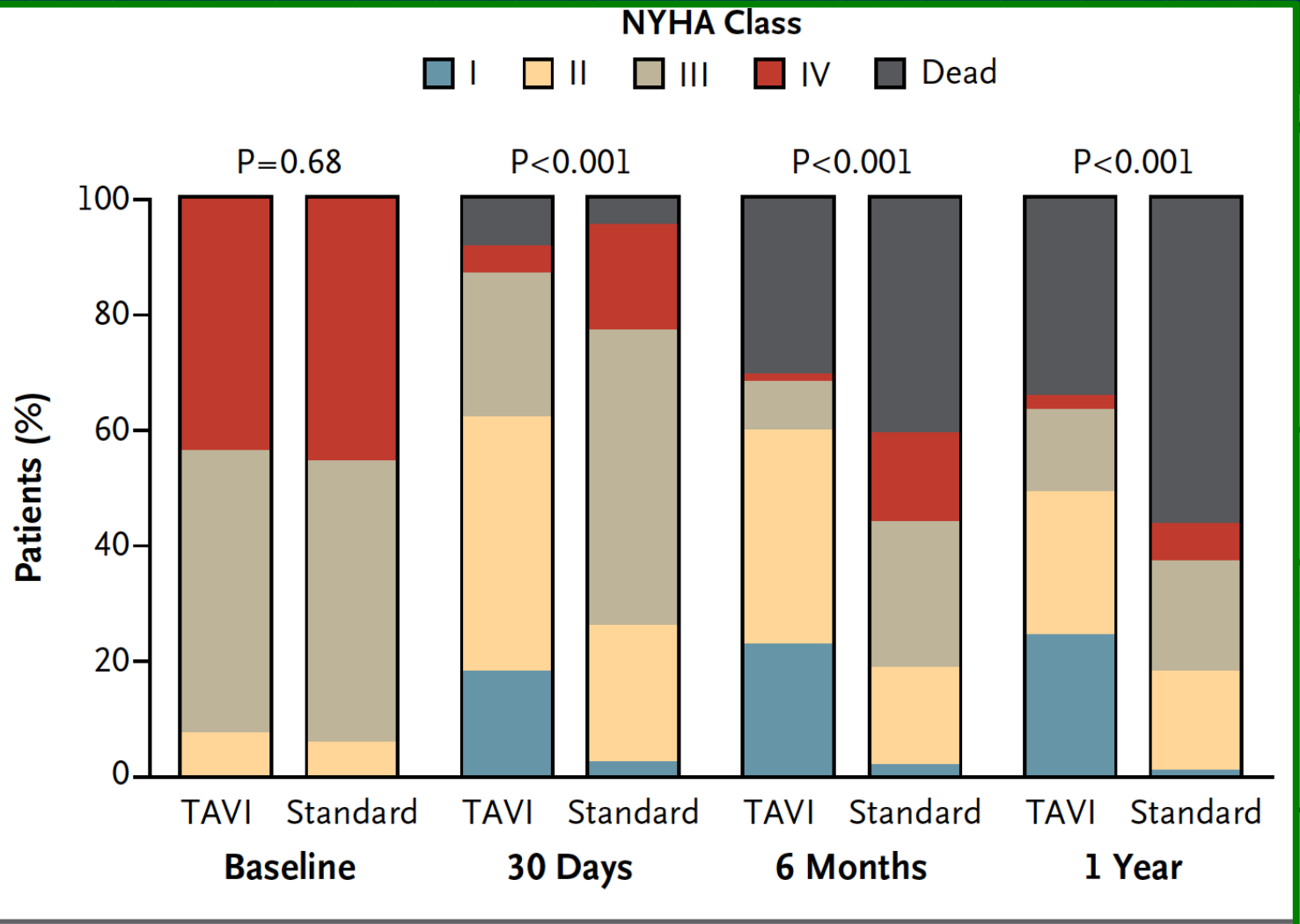


Figure 3. Symptom Status over Time.

Symptom status according to New York Heart Association (NYHA) class is shown at baseline and at 30 days, 6 months, and 1 year among patients randomly assigned to transcatheter aortic-valve implantation (TAVI) or standard therapy (Standard).

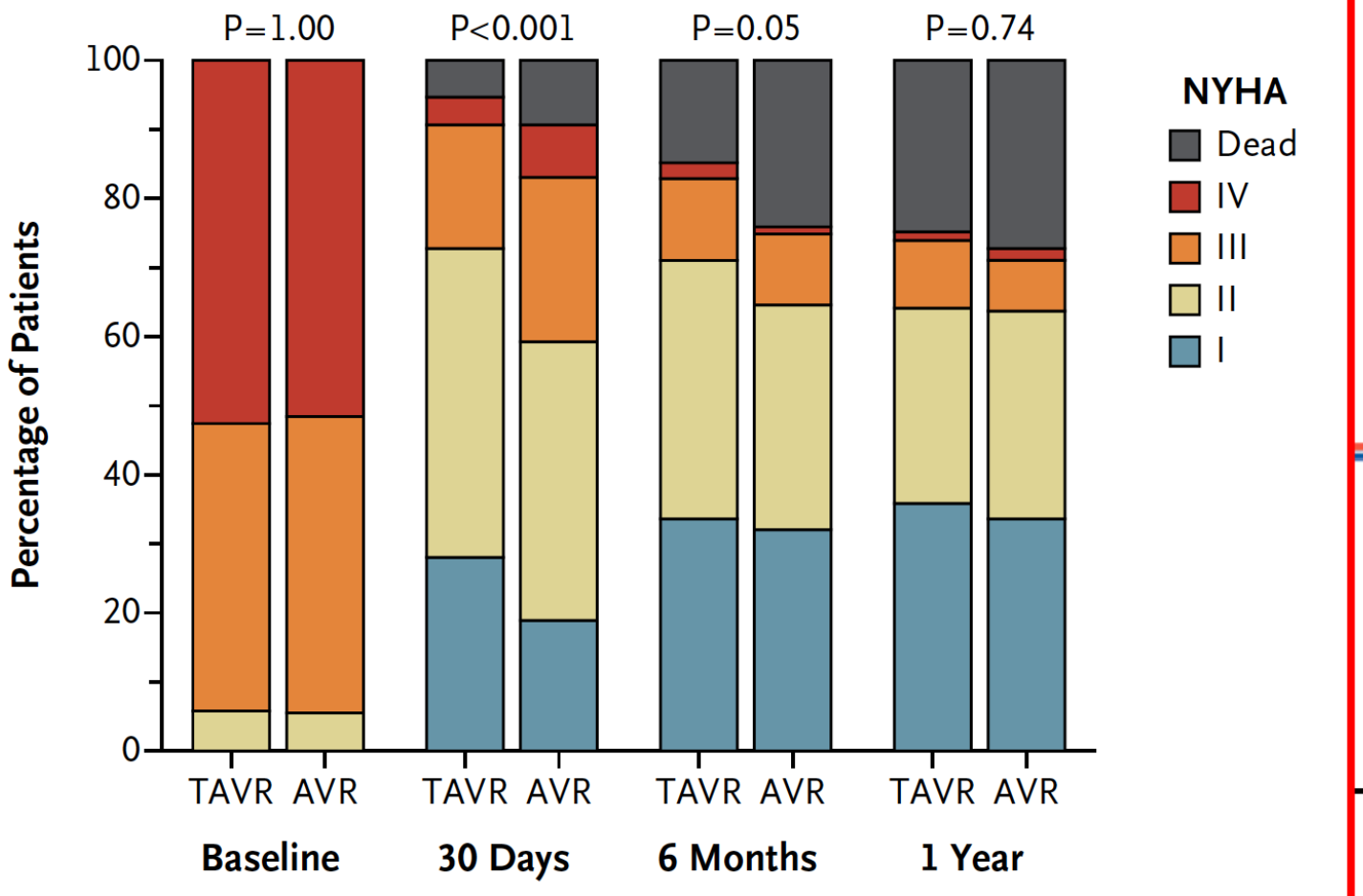


Figure 4. Symptom Status.

Shown is the New York Heart Association (NYHA) functional status (according to time point) for 697 of 699 patients who were randomly assigned to undergo either transcatheter aortic-valve replacement (TAVR) or surgical aortic-valve replacement (AVR).

Why TAVI?

- ✓ New option for inoperable and high risk pati
- ✓ Less invasive procedure

Why TAVI?

Who thinks to TAVI first?

When TAVI?

Who does select the “TAVI patient”?

- Clinical features
- Imaging

Who thinks to TAVI first?

- General Practitioner
- Outpatient Cardiologist
- Hospital Cardiologist
- Echocardiographer
- Heart Surgeon
- Other physicians

- ✓ **AVR indications**
- ✓ **Old patients and comorbidities**
- ✓ **Euroscore**

EUROscore II EATCS Lisbon October 3 200

Patient related factors

Age [1] (years)	0	0
Gender	select	0
Renal impairment [2] *See calculator below for creatinine clearance*	normal (CC >85ml/min)	0
Extracardiac arteriopathy [3]	no	0
Poor mobility [4]		
Previous cardiac surg		
Chronic lung disease		
Active endocarditis [6]		
Critical preoperative s		
Diabetes on insulin		

EuroSCORE II

EuroSCORE II

Note: Th
EuroSC

Cardiac related factors

NYHA	select	0
CCS class 4 angina [8]	no	0
LV function	select	0
Recent MI [9]	no	0
Pulmonary hypertension [10]	no	0

Operation related factors

Urgency [11]	elective	0
Weight of the intervention [12]	isolated CABG	0
Surgery on thoracic aorta	no	0

Why TAVI?

Who thinks to TAVI first?

When TAVI?

Who does select the “TAVI patient”?

- Clinical features
- Imaging

When TAVI?

Severe aortic stenosis
Old patients
Symptomatic aortic stenosis

Comorbidities

- COPD
- Renal impairment
- History of CABG or previous heart intervention
- History of chest irradiation
- Low EF
- Scores (Euroscore; Euroscore 2; STS score; LEE score.
- Frialty
- …

Why TAVI?

Who thinks to TAVI first?

When TAVI?

Who does select the “TAVI patient”?

- Clinical features
- Imaging

Who does select the “TAVI patient”?

- General Practitioner
- Outpatient Cardiologist
- Hospital Cardiologist
- Echocardiographer
- Heart Surgeon
- Other physicians

Is TAVI a possible option for the patient?

HEART TEAM

HEART TEAM

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

SPECIAL ARTICLE

Transcatheter valve implantation for patients with aortic stenosis: a position statement from the European Association of Cardio-Thoracic Surgery (EACTS) and the European Society of Cardiology (ESC), in collaboration with the European Association of Percutaneous Cardiovascular Interventions (EAPCI)

HEART TEAM

Patient selection

Selection of candidates for TAVI, especially risk assessment, should involve multi-disciplinary consultation between cardiologists, surgeons, imaging specialists, anaesthesiologists, and possibly other specialists if necessary.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

HEART TEAM

Cardiologist

Radiologist

Heart Surgeon

Geriatrist

Anaesthesiologist

Pulmonologist

Imaging specialist

Vascular surgeon

HEART TEAM

Is TAVI possible for the patien

If yes:

Wich Kind of valve?

Wich Kind of access?

HEART TEAM

The following are the four steps of patient selection:

- confirmation the severity of AS;
- evaluation of symptoms;
- analysis of the risk of surgery and evaluation of life expectancy and quality of life;
- assessment of the feasibility and exclusion of contraindications for TAVI.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

1) CONFIRMATION THE **SEVERITY OF A**

*"**Echocardiography** is the preferred tool to assess the severity of AS according to a combination of measurements of valve area and flow-dependentindices".*

- ✓ Aortic jet velocity > 4.0 m/s
- ✓ Mean gradient > 40 mmHg
- ✓ AVA < 1 cm^2
- ✓ Index AVA < 0.6 cm^2/m^2

"Low-dose dobutamine echocardiography is useful to differentiate between severe and the rare 'pseudo severe' AS in patients with low LV ejection fraction and low gradient"

European Heart Journal (2008) **29**, 1463–1470

Echocardiographic Assessment of Valve Stenosis: EAE/ASE Recommendations for Clinical Practice, Journal of American society of Echocardiography 2009

HEART TEAM

The following are the four steps of patient selection:

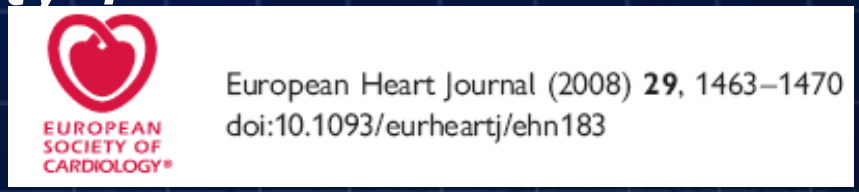
- confirmation the severity of AS;
- evaluation of symptoms;
- analysis of the risk of surgery and evaluation of life expectancy and quality of life;
- assessment of the feasibility and exclusion of contraindications for TAVI.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

2) EVALUATION OF SYMPTOMS

*"At the present stage, TAVI should only be proposed in patients with **severe symptoms** that can definitely be attributed to valve disease because of pending questions on safety and valve durability".*



Today TAVI should be considered in asymptomatic patients with initial signs of ventricular impairment

“Heart Team”

The following are the four steps of patient selection:

- confirmation the severity of AS;
- evaluation of symptoms;
- analysis of the risk of surgery and evaluation of life expectancy and quality of life;
- assessment of the feasibility and exclusion of contraindications for TAVI.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

3) ANALYSIS OF THE RISK OF SURGERY AND EVALUATION OF LIFE EXPECTANCY AND QUALITY OF LIFE

Risk scores:
- Logistic Euroscore > 20%
- STS score > 10%
- …

Life expectancy: TAVI should not be performed in patients whose life expectancy is < 1 year

"For the Committee, the key element to establish whether patients are at high risk for surgery is clinical judgement".

EUROPEAN SOCIETY OF CARDIOLOGY®
European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

3) ANALYSIS OF THE RISK OF SURGERY AND EVALUATION OF LIFE EXPECTANCY AND QUALITY OF LIFE

RISK SCORES

- ✓ EUROSCORE Logistic
- ✓ EUROSCORE Standard
- ✓ **EUROSCORE II**
- ✓ STS score

PROCEDURAL SUCCE

- LEE score
- ADL score
- 15 feets walking test
- Prension test

FRIALTY score

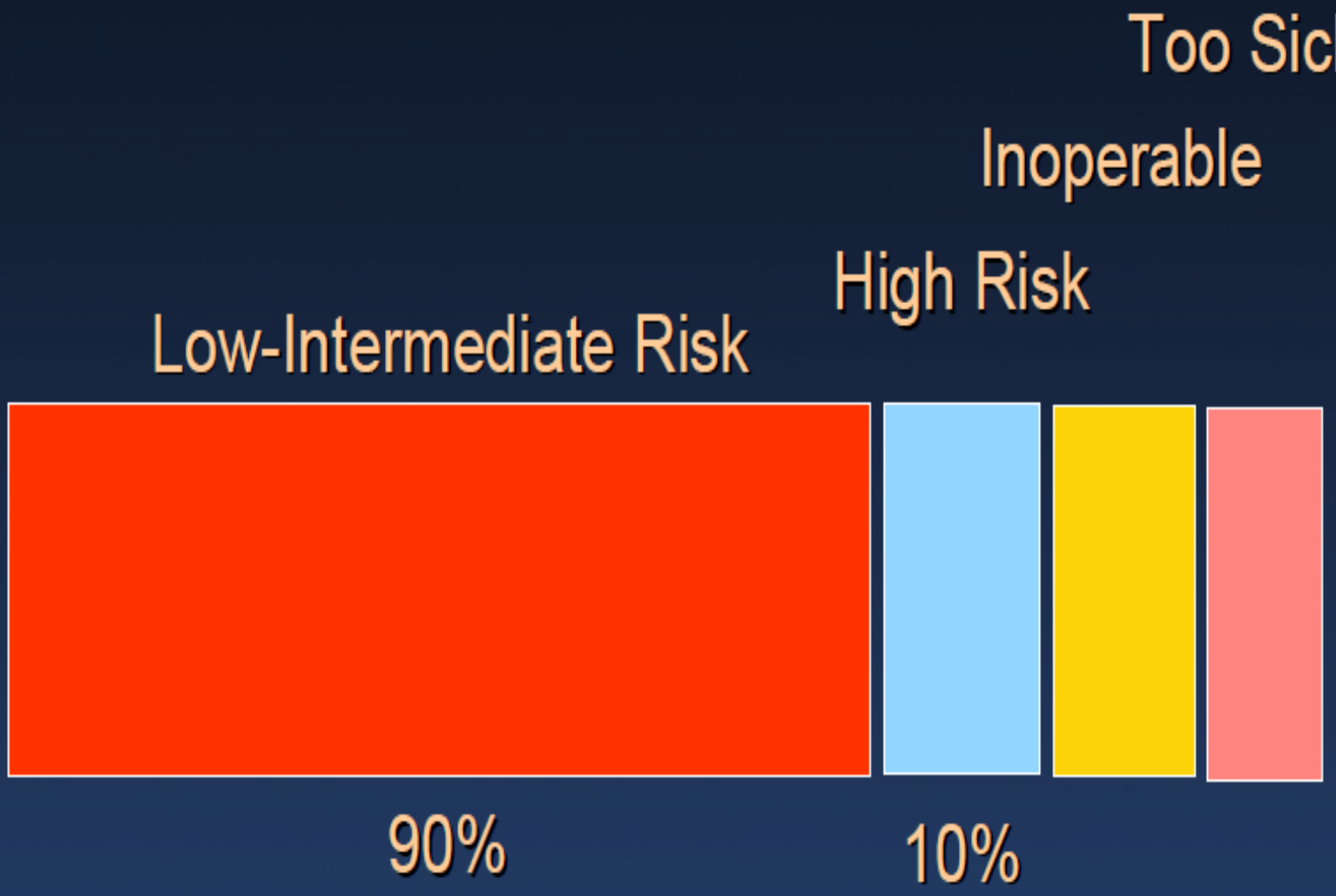
3) ANALYSIS OF THE RISK OF SURGERY AND EVALUATION OF LIFE EXPECTANCY AND QUALITY OF LIFE

FACTORS THAT ARE NOT COVERED IN SCORES

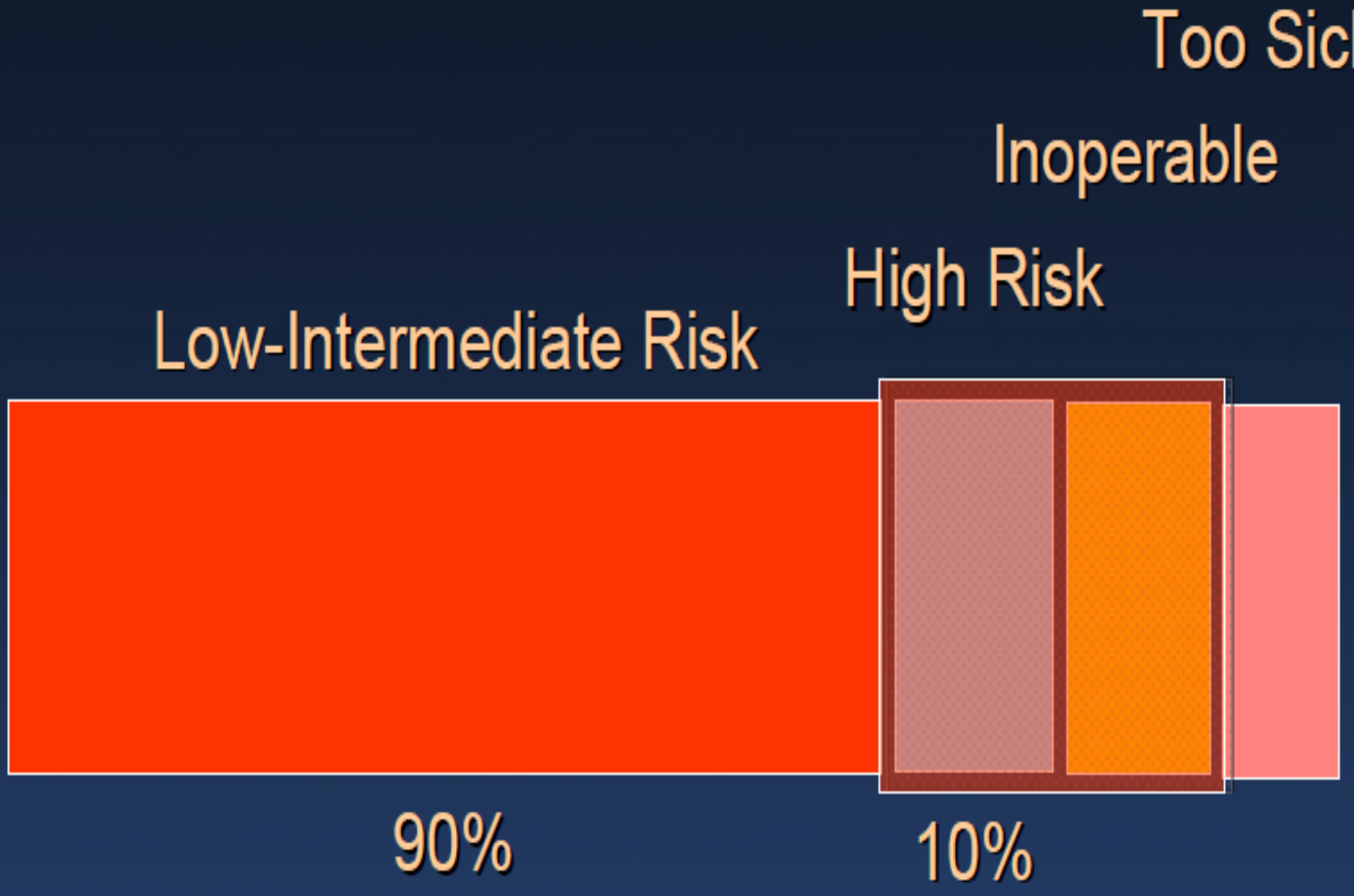
- ✓ Chest radiation
- ✓ Previous aorto-coronary bypass with patent grafts
- ✓ Porcelain aorta
- ✓ Liver cirrhosis
- ✓ Severe thoracic deformity
- ✓ Pulmonary hypertension
- ✓ Right ventricular failure
- ✓ Marked patient frailty
- ✓ …

EUROPEAN SOCIETY OF CARDIOLOGY®
European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

Operable AS patients



Operable AS patients



Tranfemoral: Predictors for 1-Year Mortality

(Multivariable analysis)

Increased Mortality	*p*	Hazard Ratio
Smoking	0.0001	1.94
Renal insufficiency / Failure	0.0003	1.77
Scaled LogEURO Score (/10)	0.004	1.15
Carotid endarterectomy / Carotid stent	0.01	2.81

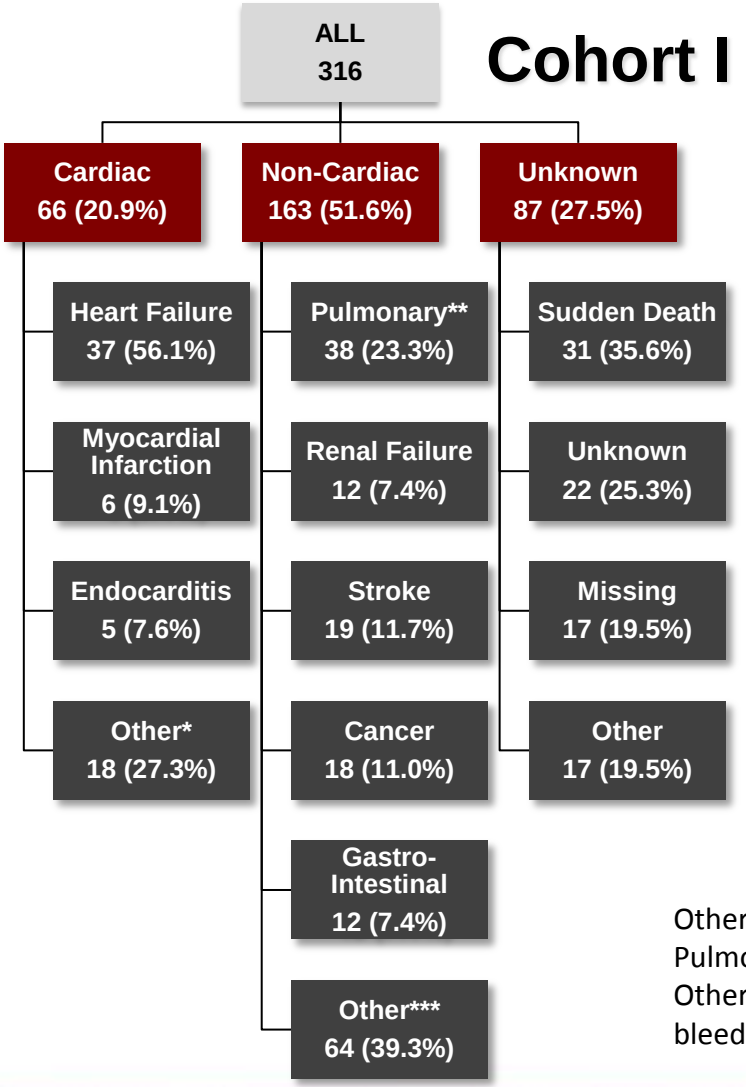
Decreased Mortality	*p*	Hazard Ratio
Carotid artery stenosis (over 50%)	0.006	0.29
Hyperlipidemia / Hypercholesterolemia	0.006	0.65

Transapical: Predictors for 1-Year Mortality

(Multivariable analysis)

Increased Mortality	*p*	Hazard Ratio
Scaled LogEURO Score (/10)	*<0.0001*	1.17
Renal insufficiency / Failure	*0.0002*	1.51
Decreased Mortality	***p***	**Hazard Ratio**
Female	*0.002*	0.68
Hyperlipidemia / Hypercholesterolemia	*0.003*	0.73
Product valve size 26	*0.002*	0.68

Causes of Death: 30 Days to 1-Year



Other* = Arrhythmia, cardiac arrest, and other.
Pulmonary**= Respiratory failure, pulmonary embolism and pneumonia.
Other*** = Multiple organ failure, sepsis, vascular access related, major bleeding, infection, hemorrhage, aneurysm, aortic dissection, and other.

3) ANALYSIS OF THE RISK OF SURGERY AND EVALUATION OF LIFE EXPECTANCY AND QUALITY OF LIFE

Long-Term Outcomes After Transcatheter Aortic Valve Implantation in High-Risk Patients With Severe Aortic Stenosis: The U.K. TAVI (United Kingdom Transcatheter Aortic Valve Implantation) Registry

Neil E. Moat, Peter Ludman, Mark A.de Belder, Ben Bridgewater, Andrew D. Cunningham, Christopher P. Young, Martyn Thomas, Jan Kovac, Tom Spyt, Philip A. MacCarthy, Olaf Wendler, David Hildick-Smith, Simon W. Davies, Uday Trivedi, Daniel J. Blackman, Richard D. Levy, Stephen J.D. Brecker, Andreas Baumbach, Tim Daniel, Huon Gray, and Michael J. Mullen

J. Am. Coll. Cardiol. published online Oct 19, 2011;
doi:10.1016/j.jacc.2011.08.050

3) ANALYSIS OF THE RISK OF SURGERY AND EVALUATION OF LIFE EXPECTANCY AND QUALITY OF LIFE

Table 3 Predictors of Mortality at 1 Year

Variables	Alive (n = 684)	Dead (n = 186)	Univariate Model	p Value	Multivariate Model	p Value
Edwards SAPIEN	321/680 (47.2)	89/182 (48.9)	1.00			
Medtronic CoreValve	359/680 (52.8)	93/182 (51.1)	0.95 (0.70–1.29)	0.75		
Route, other	196/684 (28.7)	75/186 (40.3)	1.00			
Route, transfemoral	488/684 (71.3)	111/186 (59.7)	0.65 (0.48–0.88)	0.006	0.73 (0.52–1.04)	0.08
AR moderate/severe	83/674 (12.3)	32/175 (18.3)	1.49 (1.00–2.21)	0.048	1.66 (1.10–2.51)	0.016
Major vascular complication	39/684 (5.7)	16/185 (8.7)	1.42 (0.82–2.45)	0.21		
Permanent pacemaker	108/683 (15.8)	33/184 (17.9)	1.21(0.83–1.77)	0.32		
Male	355/684 (59.9)	101/186 (54.3)	1.19 (0.88–1.61)	0.25		
Age, yrs	81.8 ± 7.3	82.3 ± 6.4	1.01 (0.99–1.03)	0.52		
AV gradient	81.1 ± 27.1	79.9 ± 27.8	0.996 (0.990–1.002)	0.20		
LVEF ≥50%	459/680 (67.5)	94/185 (50.8)	1.00		1.00	
LVEF 30%–49%	169/680 (24.9)	69/185 (37.3)	1.93 (1.40–2.66)	<0.001	1.49 (1.03–2.16)	0.03
LVEF <30%	52/680 (7.6)	22/185 (11.9)	1.89 (1.16–3.07)	0.01	1.65 (0.98–2.79)	0.06
NYHA functional class I/II	160/680 (23.5)	39/186 (21.0)	1.00			
NYHA functional class III/IV	520/680 (76.5)	147/186 (79.0)	1.14 (0.79–1.63)	0.50		
Coronary disease	301/653 (46.1)	93/175 (53.1)	1.38 (1.01–1.87)	0.04	1.23 (0.88–1.73)	0.23
Any previous cardiac surgery	202/667 (30.3)	57/186 (30.7)	1.04 (0.75–1.43)	0.83		
PVD	179/654 (27.4)	62/178 (34.8)	1.28 (0.91–1.75)	0.16		
Diabetes mellitus	146/675 (21.6)	50/136 (26.9)	1.36 (0.98–1.89)	0.07		
COPD	176/654 (26.9)	63/180 (35.0)	1.40 (1.02–1.93)	0.04	1.41(1.00–1.98)	0.05
Creatinine >200	38/668 (5.7)	19/185 (10.3)	1.84 (1.14–2.97)	0.012	1.55 (0.90–2.68)	0.11

Moat *et al.*
The U.K. TAVI Registry Long-Term Outcomes

JACC Vol. 58, No. 20, 2011
November 8, 2011:000–00

“Heart Team”

The following are the four steps of patient selection:

- confirmation the severity of AS;
- evaluation of symptoms;
- analysis of the risk of surgery and evaluation of life expectancy and quality of life;
- assessment of the feasibility and exclusion of contraindications for TAVI.

EUROPEAN SOCIETY OF CARDIOLOGY®

European Heart Journal (2008) **29**, 1463–1470
doi:10.1093/eurheartj/ehn183

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

- ✓ **Multidetector Computed Tomograph**
  64 slides cardiac gated
- ✓ **Echocardiography** *(TTE and TEE)*
- ✓ **Angiography**

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Multidetector Computed Tomography

Anulus morphology and dimension (3D)

Aortic root morphology and dimension (3D)

Coronary ostia

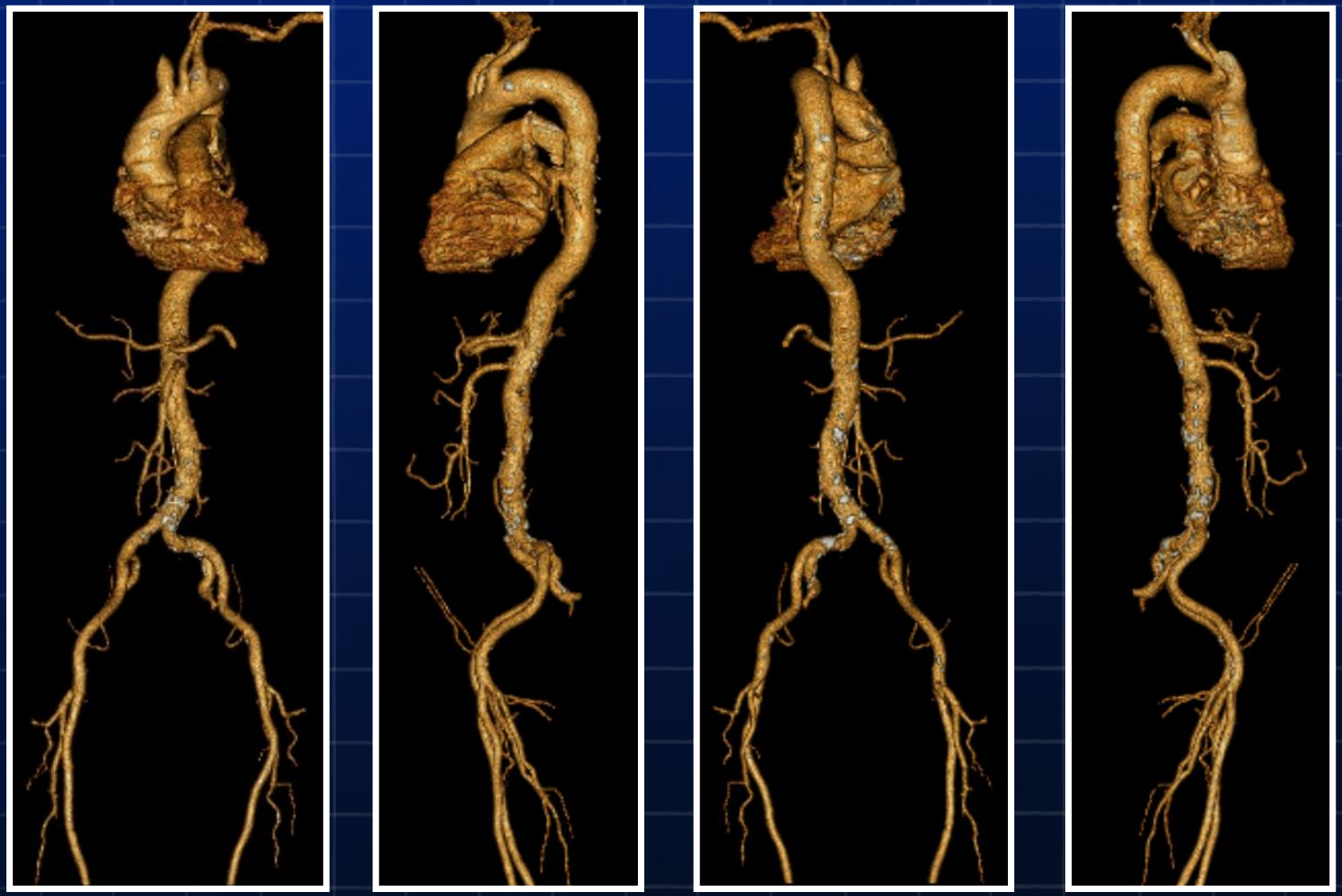
Ascending Aorta and aortic arch)

Subclavian access

Abdominal and thoracic Aorta

Iliofemoral access

Multidetector Computed Tomography

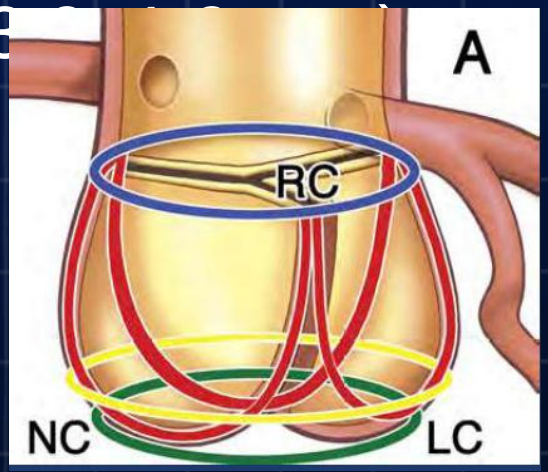


4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Multidetector Computed Tomography **Anulus**

- complex 3D structure and **it is NOT a RING**

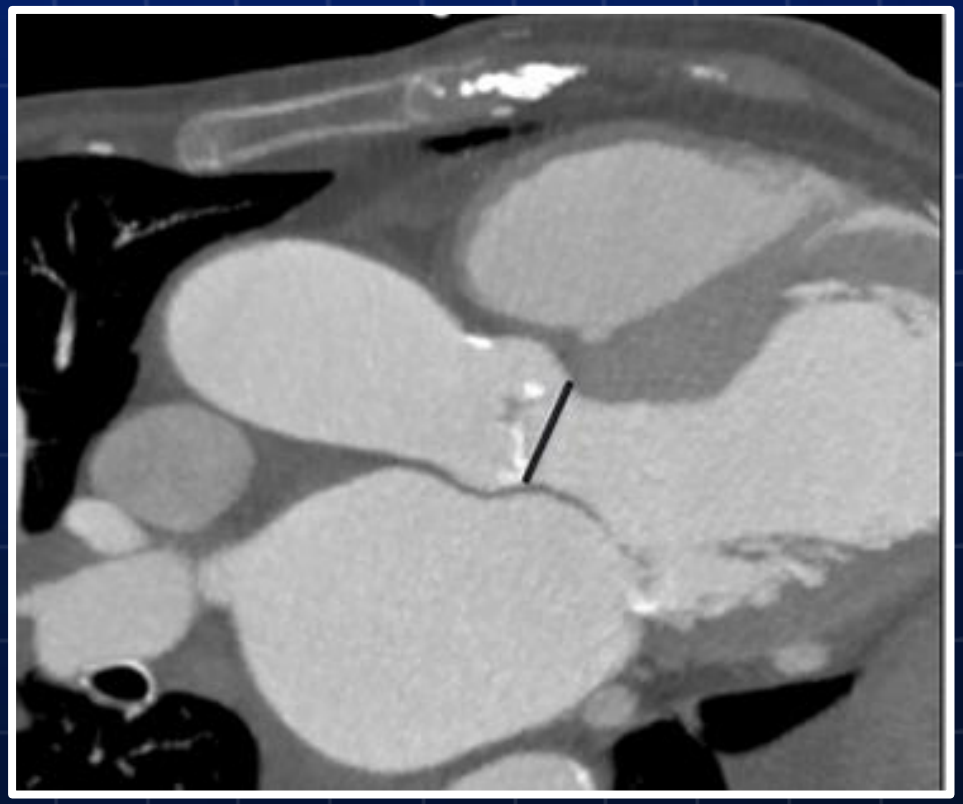
- **oval configuration** in approximately 50% of patients evaluated for TAVI (mean difference between coronal and sagittal measurements of 3



J Am Coll Cardiol Img2011;4:416–29

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

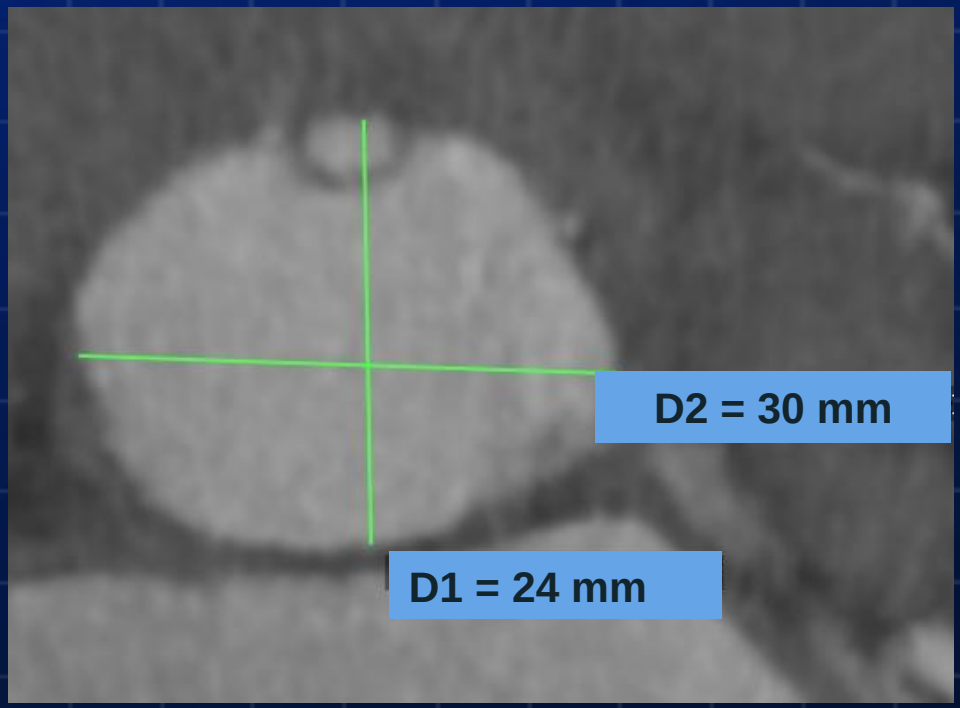
Multidetector Computed Tomography **Anulus**

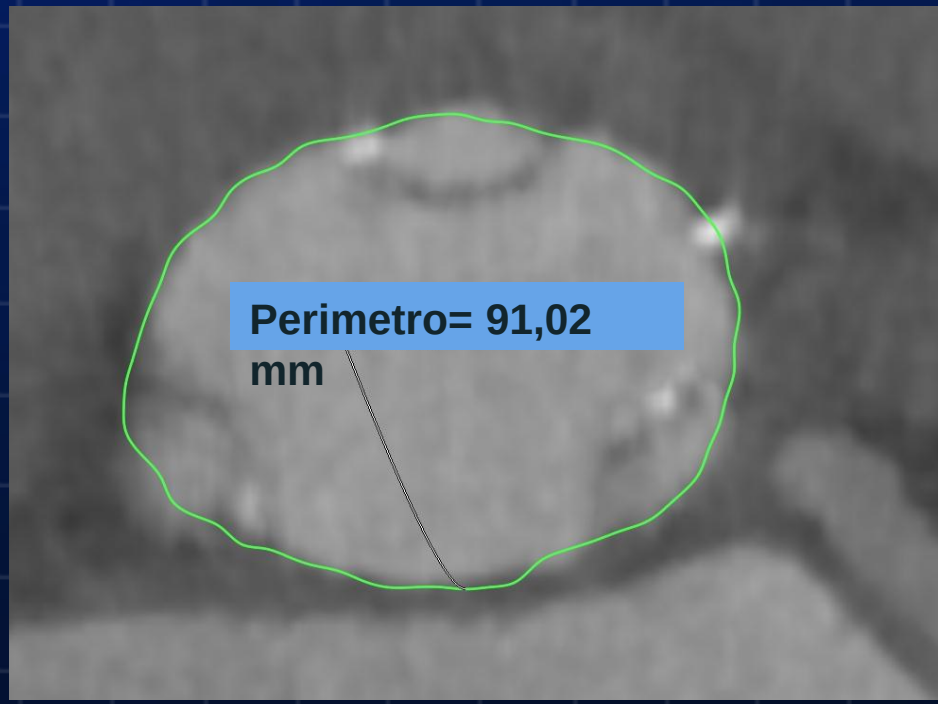


J Am Coll Cardiol Img2011;4:416–29

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Multidetector Computed Tomography **Anulus**

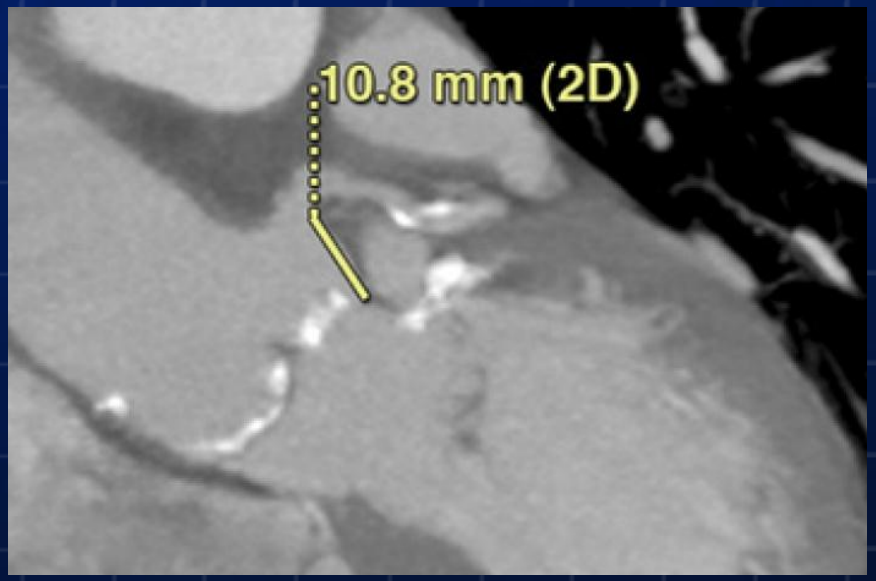




4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Multidetector Computed Tomography

Coronary Ostia

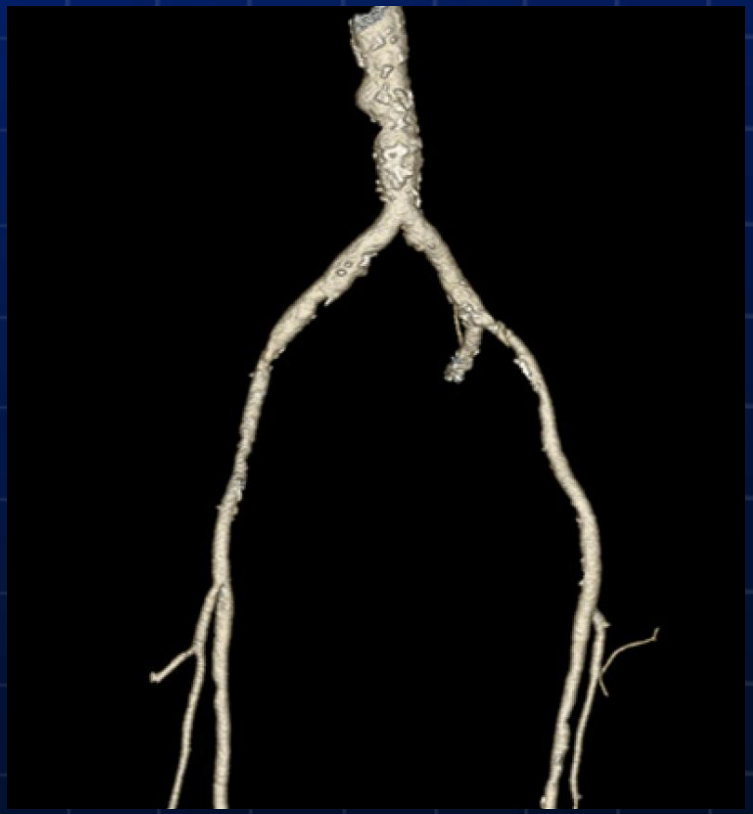


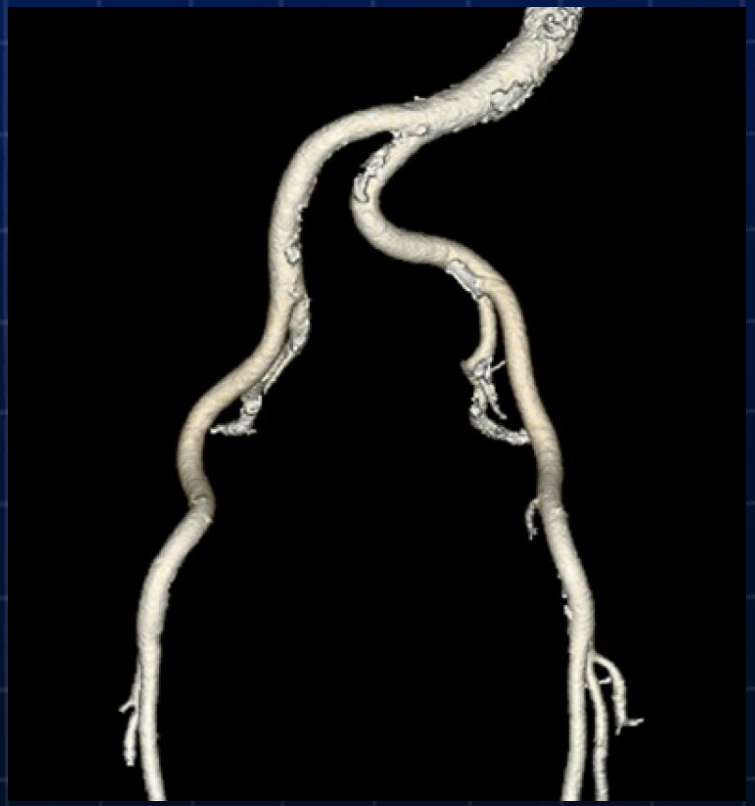
J Am Coll Cardiol Img2011;4:416–29

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Multidetector Computed Tomography

Iliofemoral access





J Am Coll Cardiol Img2011;4:416–

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Echocardiography

EXPERT CONSENSUS STATEMENT

EAE/ASE Recommendations for the Use of Echocardiography in New Transcatheter Interventions for Valvular Heart Disease

Jose L. Zamorano[1*†], Luigi P. Badano[2], Charles Bruce[3], Kwan-Leung Chan[4], Alexandra Gonçalves[5], Rebecca T. Hahn[6], Martin G. Keane[7], Giovanni La Canna[8], Mark J. Monaghan[9], Petros Nihoyannopoulos[10], Frank E. Silvestry[7], Jean-Louis Vanoverschelde[11], and Linda D. Gillam[12‡], *Rochester, Minnesota; Otttawa, Ontario, Canada; Porto, Portugal; New York, New York; Philadelphia, Pennsylvania; London, United Kingdom; Brussels, Belguim; Morristown, New Jersey*

J Am Soc Echocardiogr 2011;24:937-65

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Echocardiography

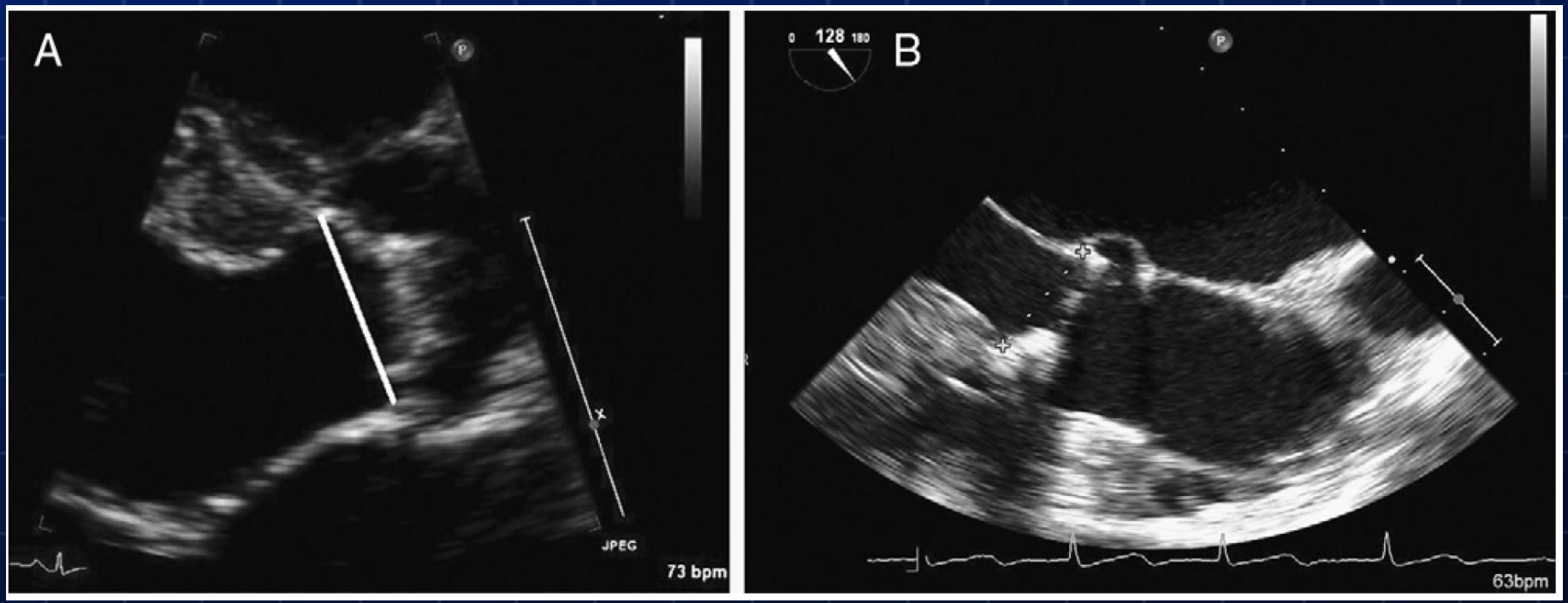
- Annular dimension
- Cusps (number, mobility, thickness)
- Calcifications
- Aortic regurgitation
- LV and RV dimension and funcion
- Basal septal hypertrophy
- …

*"Currently, **bicuspid aortic valve** is an exclusion criterion for TAVI because an elliptical valvular orifice may predispose to an increased risk of incomplete and incorrect deployment of the aortic prosthesis"*

J Am Soc Echocardiogr 2011;24:937-65

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

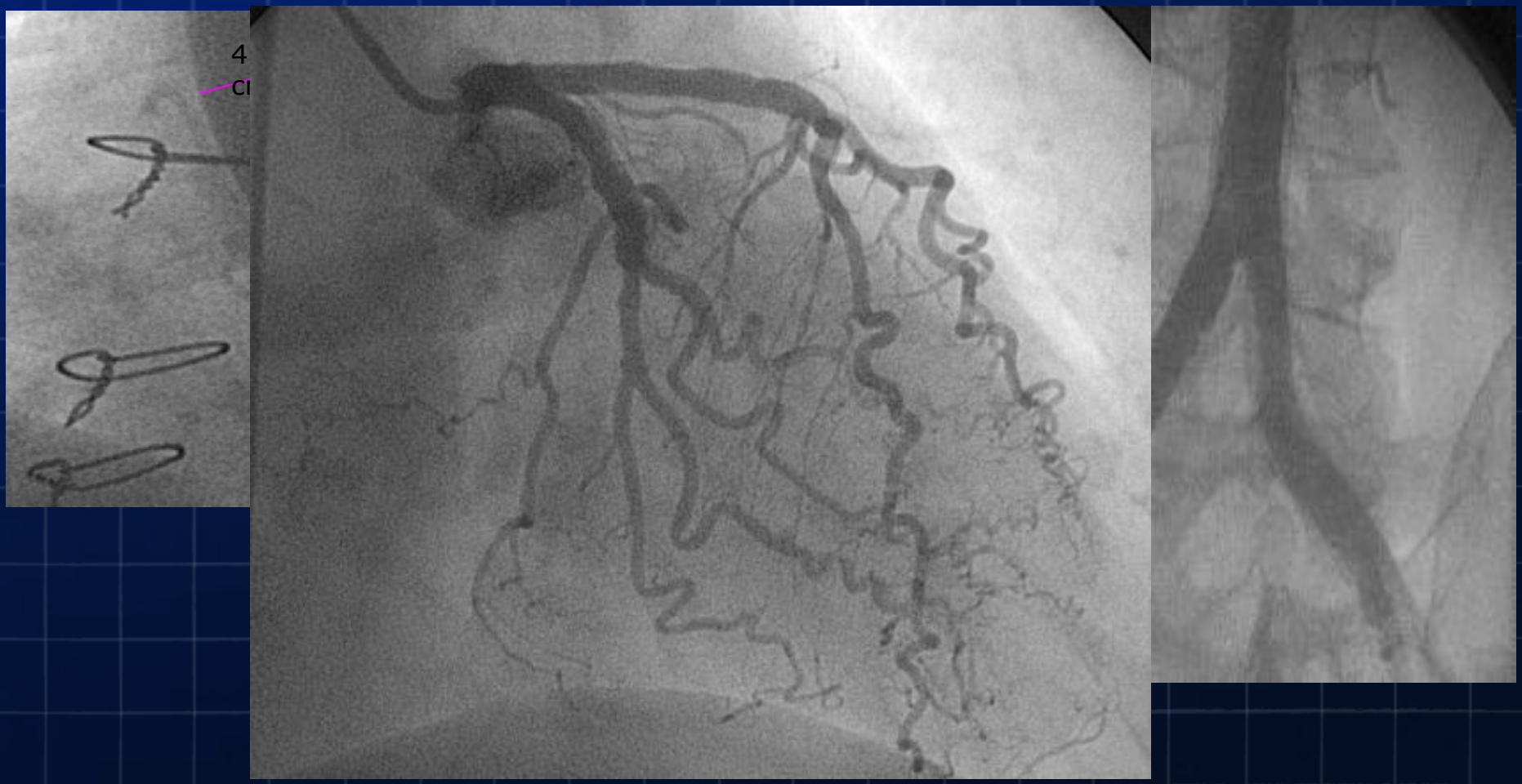
Echocardiography



J Am Soc Echocardiogr 2011;24:937-65

4) ASSESSMENT OF THE FEASIBILITY AND EXCLUSION OF CONTRAINDICATIONS FOR TAVI

Angiography

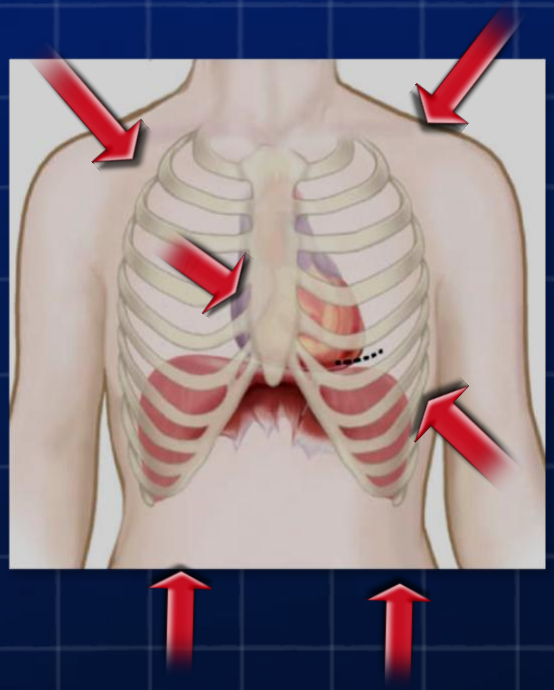


WICH KIND OF ACCESS?

Right Subclavian

Left Subclavian

Trans aorta



Transapical

Transfemoral

WICH KIND OF VALVE?

Edwards Sapien Valve

- Transfemoral
- Transapical

CoreValve – Medtronic

- Transfemoral
- Transaortic
- Transubclavian

NEW VALVES

Edwards 29 mm (anulus 24.5 mm-27 mm) TA only

Core Valve Medtronic 31 (anulus 26 mm-29 mm)

Genera

- Aorti devices and <20
- Bicuspid valves (relative contraindication)
- Presence of asymmetric heavy valvular calcification
- Aortic root dimension >45 mm at the sino-tubular junction for self expandable prostheses
- Low position of coronary ostia (<8 mm from the aortic annulus)
- Dynamic subvalvular obstruction
- Severe organic mitral regurgitation
- Apical left ventricular thrombus

Alec Vahanian, Dominique Himbert, Eric Brochet *Heart* 2010;**96**:1849–1856

Specific contraindications for the transfemoral approach

- Iliac arteries: severe calcification, tortuosity, small diameter (<6–9 mm depending on the device used), previous aorto-femoral bypass
- Aorta: severe angulation, severe atheroma of the arch, coarctation, aneurysm of the abdominal aorta with protruding mural thrombus
- The presence of bulky atherosclerosis of the ascending aorta and arch detected by transoesophageal echocardiography

Contraindications for the transapical approach

- Severe respiratory insufficiency
- Major chest deformity
- Previous surgery of the left ventricle using a patch

Alec Vahanian, Dominique Himbert, Eric Brochet *Heart* 2010;**96**:1849–1856

THANK YOU