SVAO VS TAVI:

quando l'una quando l'altra

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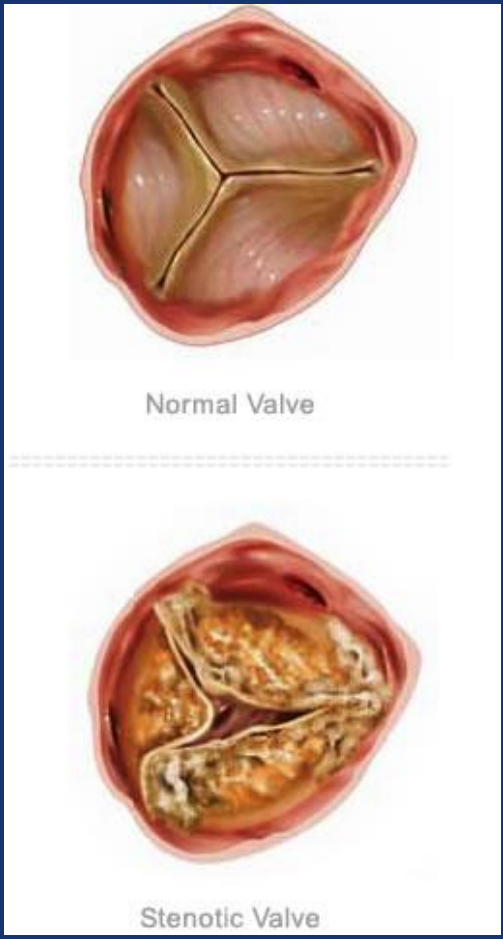
AORTIC STENOSIS



Epidemiology

Aortic Stenosis (AS) prevalence is 4-5% in people more than 75 years old

There are more than 300,000 people with severe AS worldwide

More than 30% of all patients with symptomatic severe AS are not referred or are contraindicated from current surgical valve replacement

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AORTIC STENOSIS

Natural History of Very Severe Aortic Stenosis

Raphael Rosenhek, MD; Robert Zilberszac; Michael Schemper, PhD; Martin Czerny, MD; Gerald Mundigler, MD; Senta Graf, MD; Jutta Bergler-Klein, MD; Michael Grimm, MD; Harald Gabriel, MD; Gerald Maurer, MD

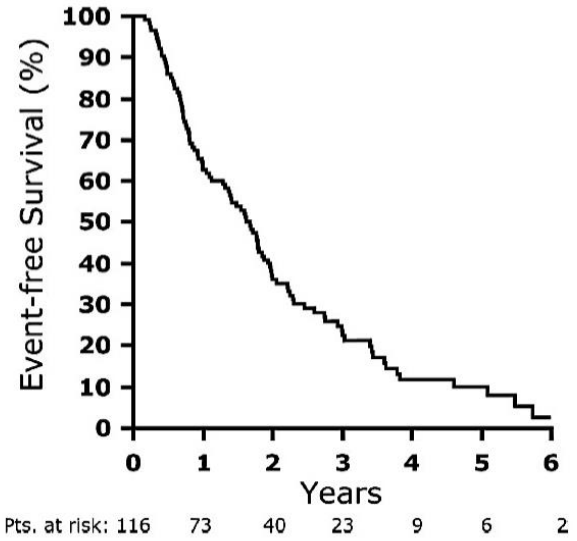


Figure 1. Kaplan–Meier event-free survival rate for the entire patient population with very severe aortic stenosis defined by a peak aortic jet velocity ≥5.0 m/s.

(*Circulation*. 2010;121:151-156.)

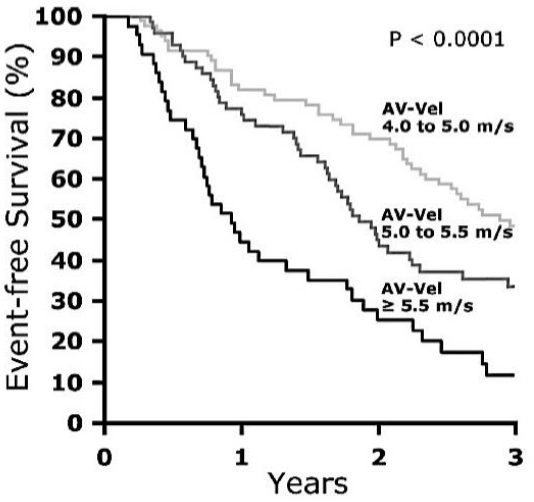
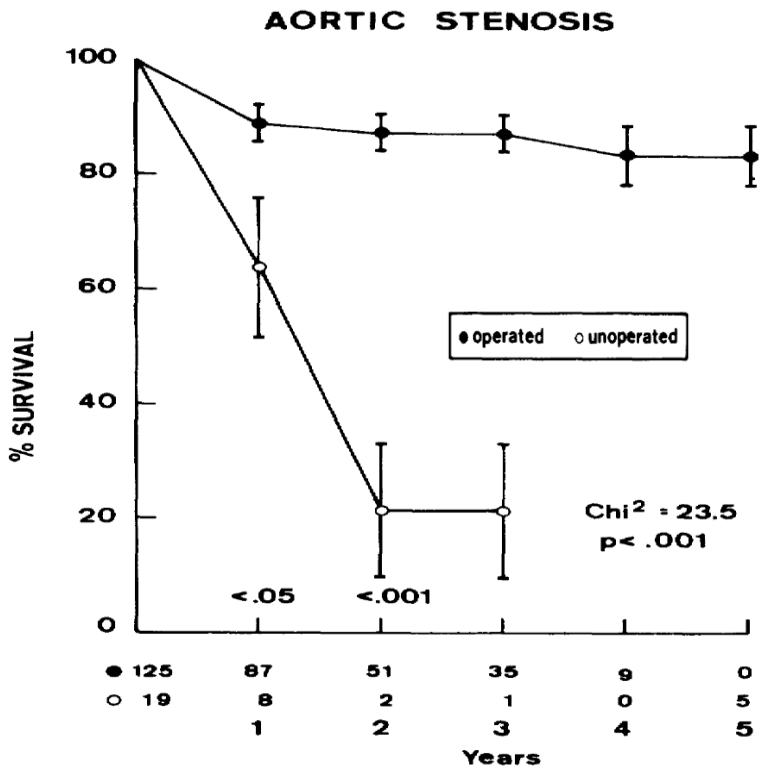


Figure 2. Kaplan–Meier event-free survival rate for patients with a peak aortic jet velocity (AV-Vel) between 4.0 and 5.0 m/s (light gray line; n=82) vs between 5.0 and 5.5 m/s (dark gray line; n=72) vs ≥5.5 m/s (black line; n=44).

AORTIC STENOSIS

The Effect of Aortic Valve Replacement on Survival



F Schwarz, P Baumann, J Manthey, M Hoffmann, G Schuler, HC Mehmel, W Schmitz and W Kubler
Circulation 1982;66:1105-1110

The mortality difference for people with symptoms of aortic stenosis treated with aortic valve replacement versus those not undergoing this procedure is one of the most striking in medicine.

"Carabello, Lancet 2009"

AORTIC STENOSIS

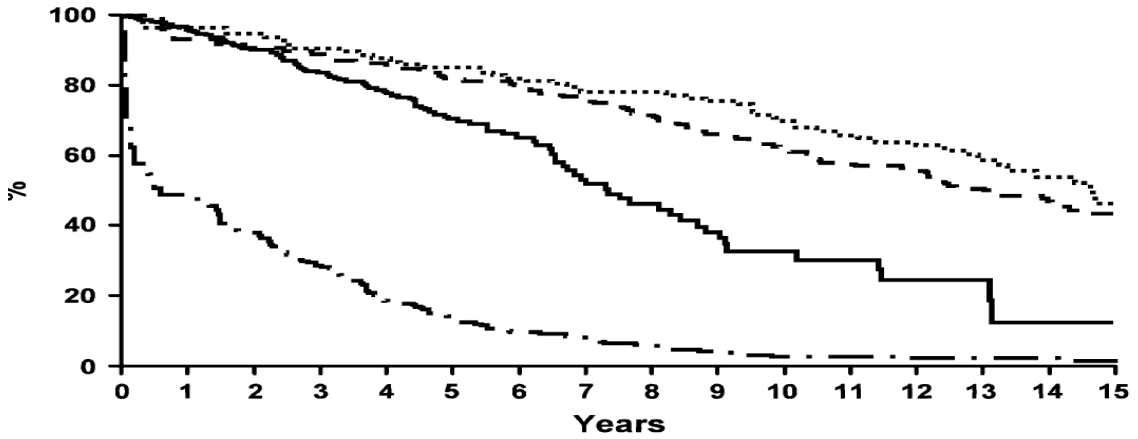
The benefits of early valve replacement in asymptomatic patients with severe aortic stenosis

Morgan L. Brown, MD,[a] Patricia A. Pellikka, MD,[b] Hartzell V. Schaff, MD,[a] Christopher G. Scott, MS,[c] Charles J. Mullany, MD,[a] Thoralf M. Sundt, MD,[a] Joseph A. Dearani, MD,[a] Richard C. Daly, MD,[a] and Thomas A. Orszulak, MD[a]

Conclusion: Among patients with severe aortic stenosis who underwent aortic valve replacement, early and late outcomes were similarly good in patients who had symptoms before the operation compared with those who were asymptomatic. It is important to note that among patients with asymptomatic severe aortic stenosis, the omission of surgical treatment was the most important risk factor for late mortality.

J Thorac Cardiovasc Surg 2008;135:308-15

Figure 3. Survival of all patients diagnosed with asymptomatic severe aortic stenosis. *AVR*, Aortic valve replacement; *sym*, symptomatic.



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AORTIC STENOSIS

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PRACTICE GUIDELINE

2014 AHA/ACC Guideline for the Management of Patien

A Report of th
Task Force on

Developed in C
American Societ
Society of Cardi

C: Asymptomatic severe AS					
C1	**Asymptomatic severe AS**	• Severe leaflet calcification or congenital stenosis with severely reduced leaflet opening	• Aortic V_{max} ≥4 m/s or mean ΔP ≥40 mm Hg • AVA typically is ≤1.0 cm^2 (or AVAi ≤0.6 cm^2/m^2) • Very severe AS is an aortic V_{max} ≥5 m/s or mean ΔP ≥60 mm Hg	• LV diastolic dysfunction • Mild LV hypertrophy • Normal LVEF	• None: Exercise testing is reasonable to confirm symptom status
C2	**Asymptomatic severe AS with LV dysfunction**	• Severe leaflet calcification or congenital stenosis with severely reduced leaflet opening	• Aortic V_{max} ≥4 m/s or mean ΔP ≥40 mm Hg • AVA typically ≤1.0 cm^2 (or AVAi ≤0.6 cm^2/m^2)	• LVEF <50%	• None
D: Symptomatic severe AS					
D1	**Symptomatic severe high-gradient AS**	• Severe leaflet calcification or congenital stenosis with severely reduced leaflet opening	• Aortic V_{max} ≥4 m/s or mean ΔP ≥40 mm Hg • AVA typically ≤1.0 cm^2 (or AVAi ≤0.6 cm^2/m^2) but may be larger with mixed AS/AR	• LV diastolic dysfunction • LV hypertrophy • Pulmonary hypertension may be present	• Exertional dyspnea or decreased exercise tolerance • Exertional angina • Exertional syncope or presyncope
D2	**Symptomatic severe low-flow/low-gradient AS with reduced LVEF**	• Severe leaflet calcification with severely reduced leaflet motion	• AVA ≤1.0 cm^2 with resting aortic V_{max} <4 m/s or mean ΔP <40 mm Hg • Dobutamine stress echocardiography shows AVA ≤1.0 cm^2 with V_{max} ≥4 m/s at any flow rate	• LV diastolic dysfunction • LV hypertrophy • LVEF <50%	• HF • Angina • Syncope or presyncope
D3	**Symptomatic severe low-gradient AS with normal LVEF or paradoxical low-flow severe AS**	• Severe leaflet calcification with severely reduced leaflet motion	• AVA ≤1.0 cm^2 with aortic V_{max} <4 m/s or mean ΔP <40 mm Hg • Indexed AVA ≤0.6 cm^2/m^2 and • Stroke volume index <35 mL/m^2 • Measured when patient is normotensive (systolic BP <140 mm Hg)	• Increased LV relative wall thickness • Small LV chamber with low stroke volume • Restrictive diastolic filling • LVEF ≥50%	• HF • Angina • Syncope or presyncope

AR indicates aortic regurgitation; AS, aortic stenosis; AVA, aortic valve area; AVAi, aortic valve area indexed to body surface area; BP, blood pressure; HF, heart failure; LV, left ventricular; LVEF, left ventricular ejection fraction; ΔP, pressure gradient; and V_{max}, maximum aortic velocity.

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AORTIC STENOSIS

Recommendations	COR
AVR is recommended for symptomatic patients with severe high-gradient AS who have symptoms by history or on exercise testing (stage D1)	I
AVR is recommended for asymptomatic patients with severe AS (stage C2) and LVEF <50%	I
AVR is indicated for patients with severe AS (stage C or D) when undergoing other cardiac surgery	I
AVR is reasonable for asymptomatic patients with very severe AS (stage C1, aortic velocity ≥5.0 m/s) and low surgical risk	IIa
AVR is reasonable in asymptomatic patients (stage C1) with severe AS and decreased exercise tolerance or an exercise fall in BP	IIa
AVR is reasonable in symptomatic patients with low-flow/low-gradient severe AS with reduced LVEF (stage D2) with a low-dose dobutamine stress study that shows an aortic velocity ≥4.0 m/s (or mean pressure gradient ≥40 mm Hg) with a valve area ≤1.0 cm^2 at any dobutamine dose	IIa
AVR is reasonable in symptomatic patients who have low-flow/low-gradient severe AS (stage D3) who are normotensive and have an LVEF ≥50% if clinical, hemodynamic, and anatomic data support valve obstruction as the most likely cause of symptoms	IIa
AVR is reasonable for patients with moderate AS (stage B) (aortic velocity 3.0–3.9 m/s) who are undergoing other cardiac surgery	IIa
AVR may be considered for asymptomatic patients with severe AS (stage C1) and rapid disease progression and low surgical risk	IIb

AORTIC STENOSIS

Decision-making in elderly patients with severe aortic stenosis: why are so many denied surgery?

Bernard Iung[1*], Agnès Cachier[1], Gabriel Baron[2], David Messika-Zeitoun[1], François Delahaye[3], Pilar Tornos[4], Christa Gohlke-Bärwolf[5], Eric Boersma[6], Philippe Ravaud[2], and Alec Vahanian[1]

Table 3 Factors associated with a decision not to operate

	P-value	Odds ratio	95% CI
LV ejection fraction	0.004		
>50%		1	
30–50%		2.66	1.57–4.64
≤30%		7.09	2.42–20.82
Age (years)	0.005		
75–80		1	
80–85		1.90	1.22–2.99
≥85		3.60	1.47–8.82
Neurological dysfunction	0.02	3.82	1.23–12.27

Conclusion Surgery was denied in 33% of elderly patients with severe, symptomatic AS. Older age and LV dysfunction were the most striking characteristics of patients who were denied surgery, whereas comorbidity played a less important role.

European Heart Journal (2005) **26**, 2714–2720

AORTIC STENOSIS

How can we find the right balance?

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AORTIC STENOSIS

Risk stratification & evaluation of frialty

- EuroScore
- **EuroScore II**
- **STS – score**

- **Frialty index**

DON'T FORGET CLINICAL EVALUATION !!!!

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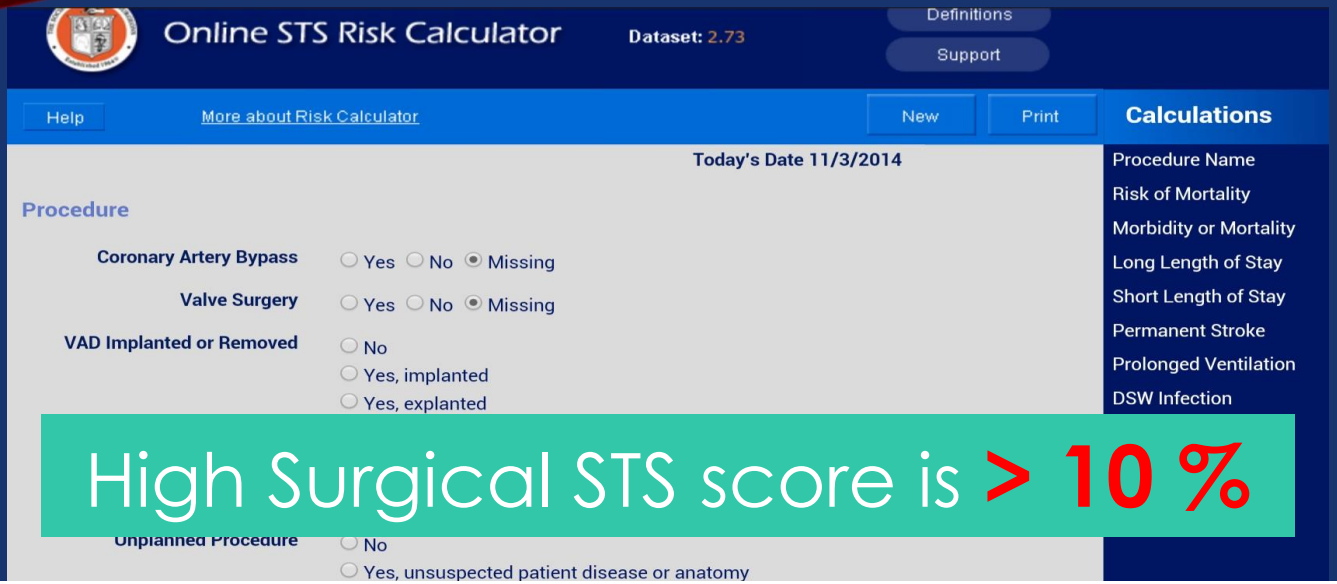
Risk stratification



High Surgical STS score is **> 10 %**

High Surgical risk by EuroSCORE is **> 20%**

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Risk stratification & evaluation of frialty

EuroScore

EuroSCORE Performance in Valve Surgery: A Meta-Analysis

Alessandro Parolari, MD, PhD, Lorenzo L. Pesce, PhD, Matteo Trezzi, MD, Laura Cavallotti, MD, Samer Kassem, MD, Claudia Loardi, MD, Davide Pacini, MD, Elena Tremoli, PhD, and Francesco Alamanni, MD

Department of Cardiac Surgery, Unit for Clinical Research in Atherothrombosis, Centro Cardiologico Monzino IRCCS, University of Milan, Milan, Italy; Department of Radiology, The University of Chicago, Chicago, Illinois; and Department of Cardiac Surgery, S. Orsola-Malpighi Hospital, University of Bologna, Bologna, Italy

Background. The European System for Cardiac Operative Risk Evaluation (EuroSCORE) was developed to predict immediate outcomes after adult cardiac operations, but less than 30% of the cases used to develop this score were valve procedures. We studied EuroSCORE performance in valve procedures.

Methods. We performed a meta-analysis of published studies reporting the assessment of discriminatory power of the EuroSCORE by receiver operating characteristics (ROC) curve analysis in adult valve operations. A comparison of observed and predicted mortality rates was also performed.

Results. A literature search identified 37 potentially eligible studies, and 12 were selected for meta-analysis comprising 26,621 patients with 1250 events (mortality rate, 4.7%). Meta-analysis of these studies provided an average area under the curve (AUC) value of 0.730 (95% confidence interval [CI], 0.717 to 0.743). The same results were obtained when meta-analyses were performed separately in studies categorized on reliability of uncertainty estimation: in the seven studies reporting reliable uncertainty estimation (8175 patients with 358 events; mortality rate, 4.4%), the ROC curve provided an average AUC value of 0.724 (95% CI, 0.699 to 0.749). The five studies not reporting reliable uncertainty estimation (18,446 patients with 892 events; mortality rate, 4.8%) had an average AUC of 0.732 (95% CI, 0.717 to 0.747). We documented a constant [illegible] overpredict mortality [illegible] EuroSCORE, [illegible] in the additive and especially in the logistic [illegible]

Conclusions. The EuroSCORE has low discrimination ability for valve surgery, and it sensibly overpredicts risk. Alternative risk scoring algorithms should be seriously considered.

(Ann Thorac Surg 2010;89:787–93)

Risk stratification & evaluation of frialty

EuroScore: weakness point

- Porcelain aorta
- Radiotherapy
- Cancer
- Difficult anatomy
- Grade of excellence and results of center/operator
- Patient's frialty
- …

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TREATMENT OPTIONS

- **Medications**
- **Balloon Valvuloplasty**
  - one-year restenosis rate of 80% with an absence of mortality benefit
- **Open Heart, Surgical Valve Replacement**
  - the gold standard. However, more than 30% of all patients with symptomatic AS are not referred or are contraindicated from current surgical valve replacement
- **Transcatheter Aortic Valve Implantation (TAVI)**

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MAKE A GOOD CHOICE

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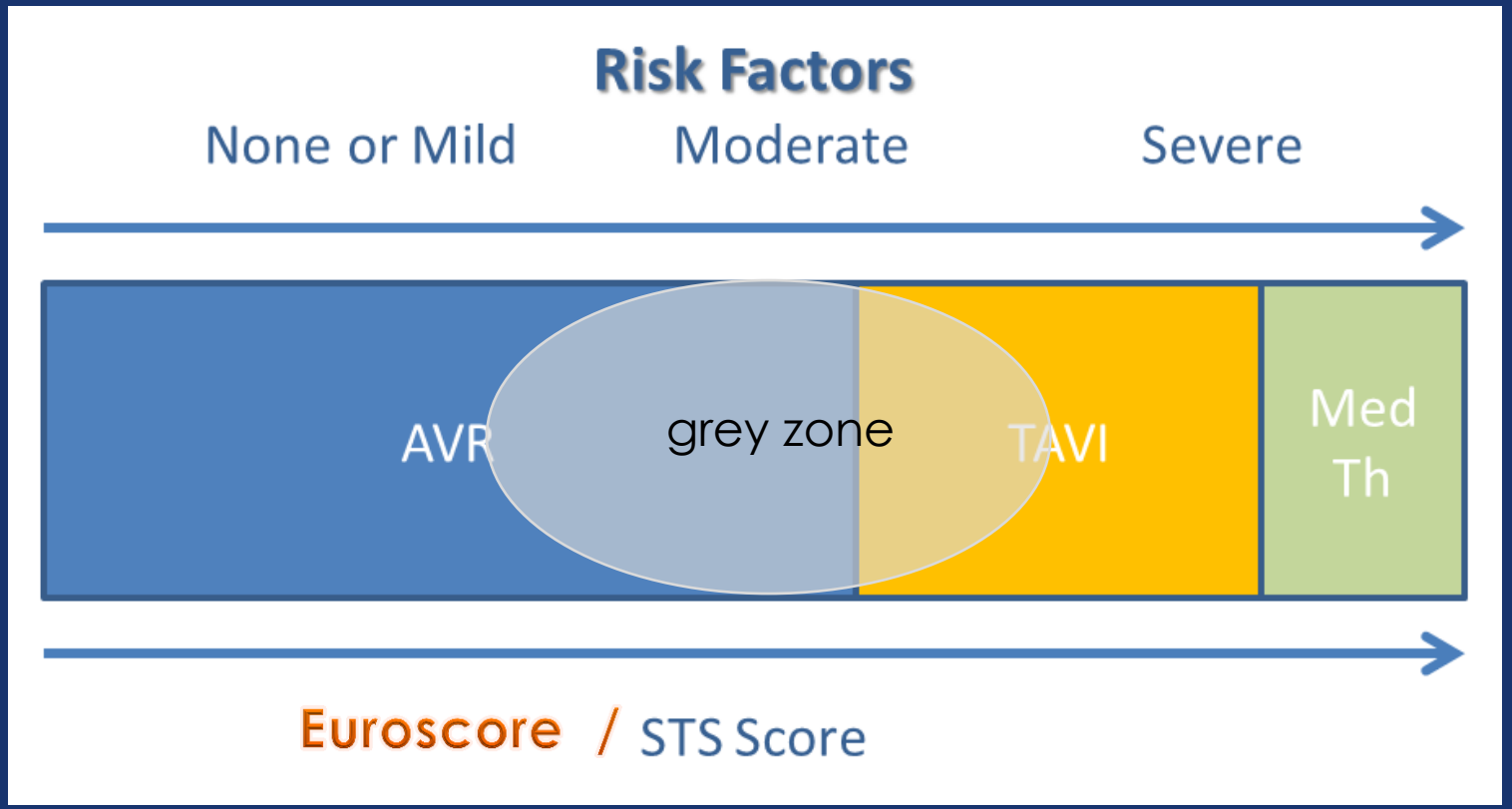
PATIENT INDICATIONS: YESTERDAY

THE "GREY ZONE" BETWEEN TRANSCATHETER AORTIC VALVE IMPLANTATION AND CONVENTIONAL SURGERY



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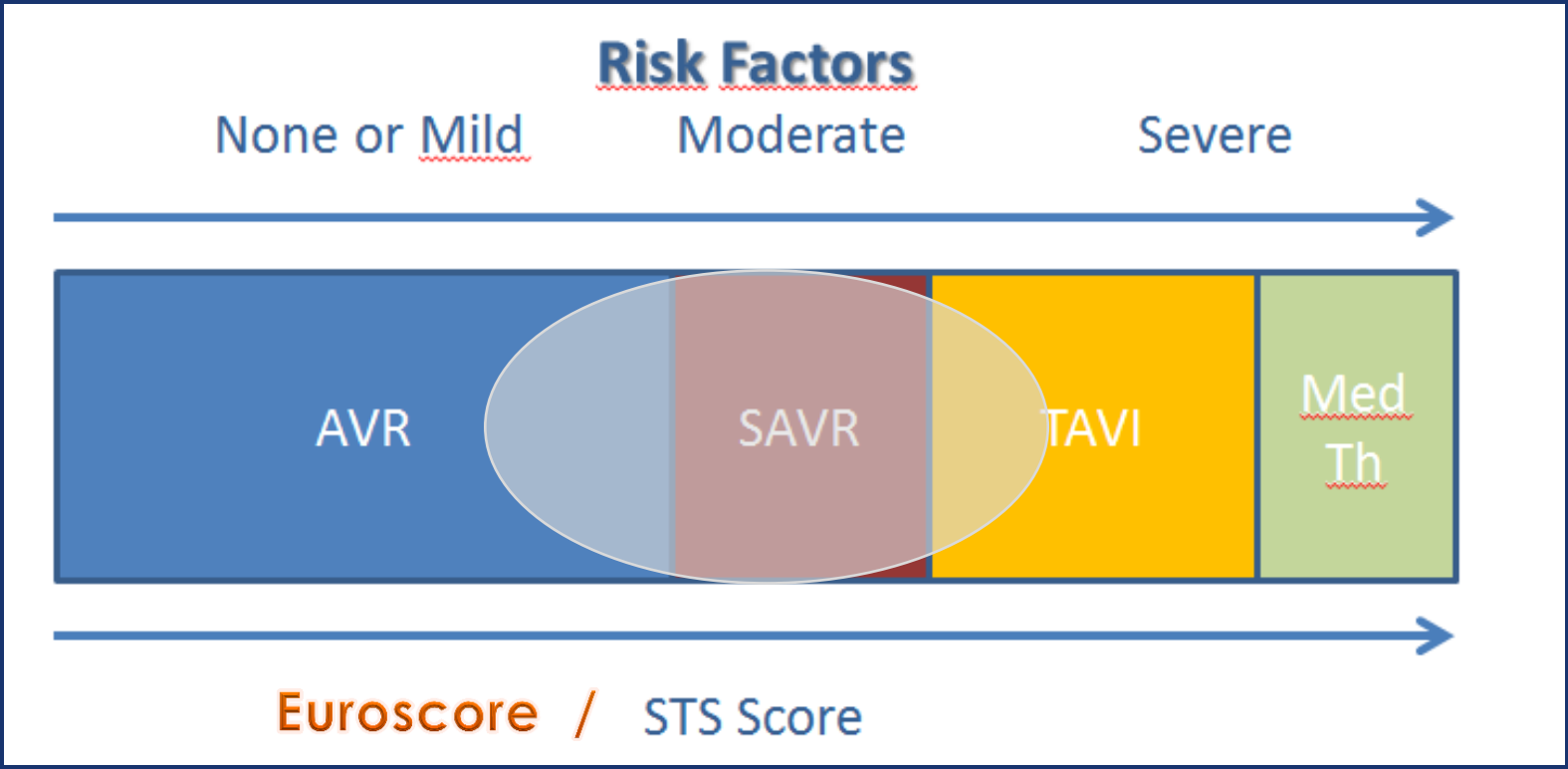
PATIENT INDICATIONS: TODAY



- SEVERE AORTIC ROOT CALCIFICATION
- FIRST CHOICE FOR MINI-INVASIVE SURGERY?
- FIRST CHOICE FOR REDO?
- A NEW STANDARD FOR AVR?

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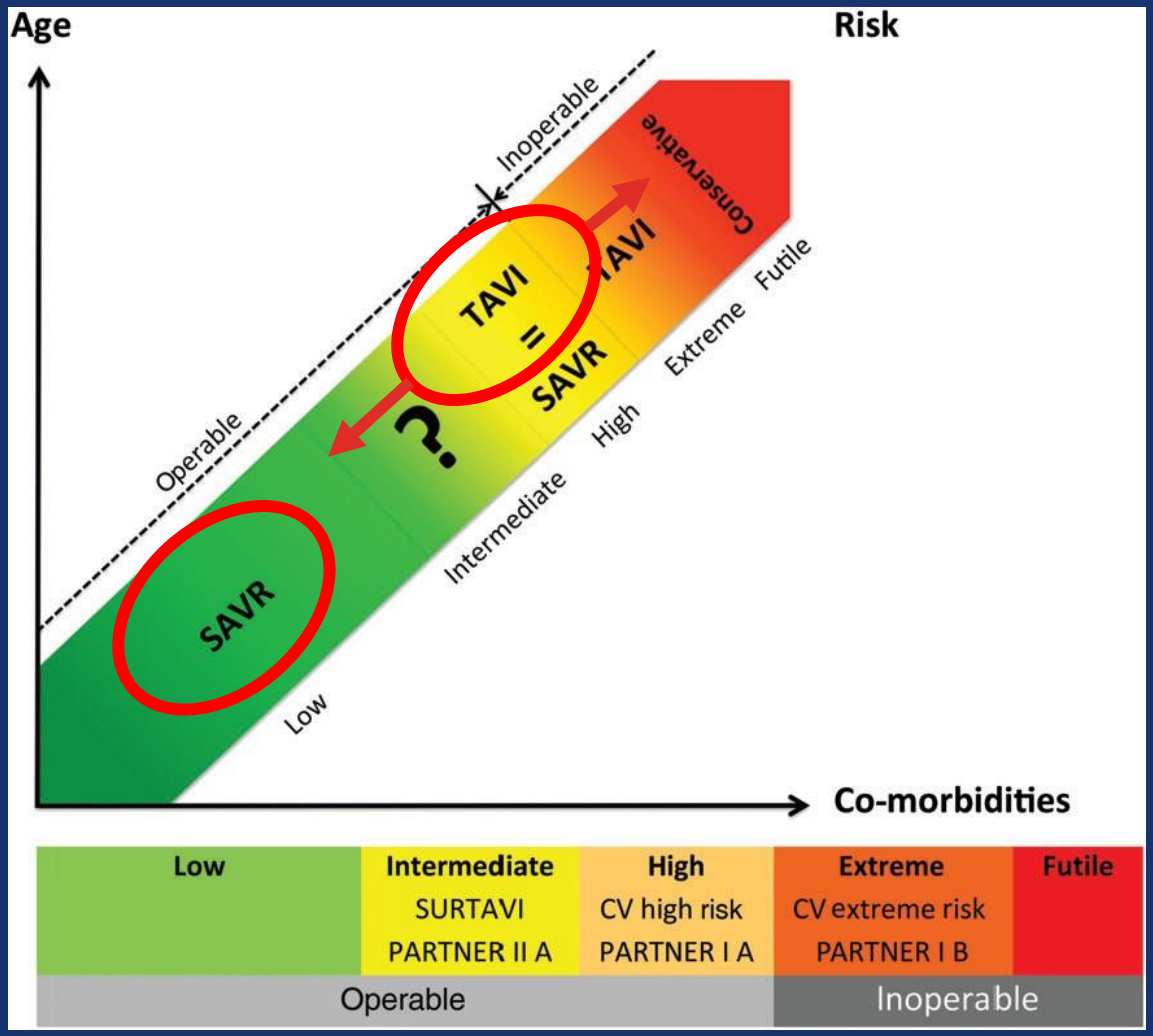
AORTIC STENOSIS

PATIENT INDICATIONS: FUTURE



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Traditional AVR

State Of The Art

AVR is the actual
GOLD STANDARD

- about 300.000 operations/yr
- More than 40 years of clinical experience
- Prostheses are reliable
- Predictable and low risks
- Long term results available

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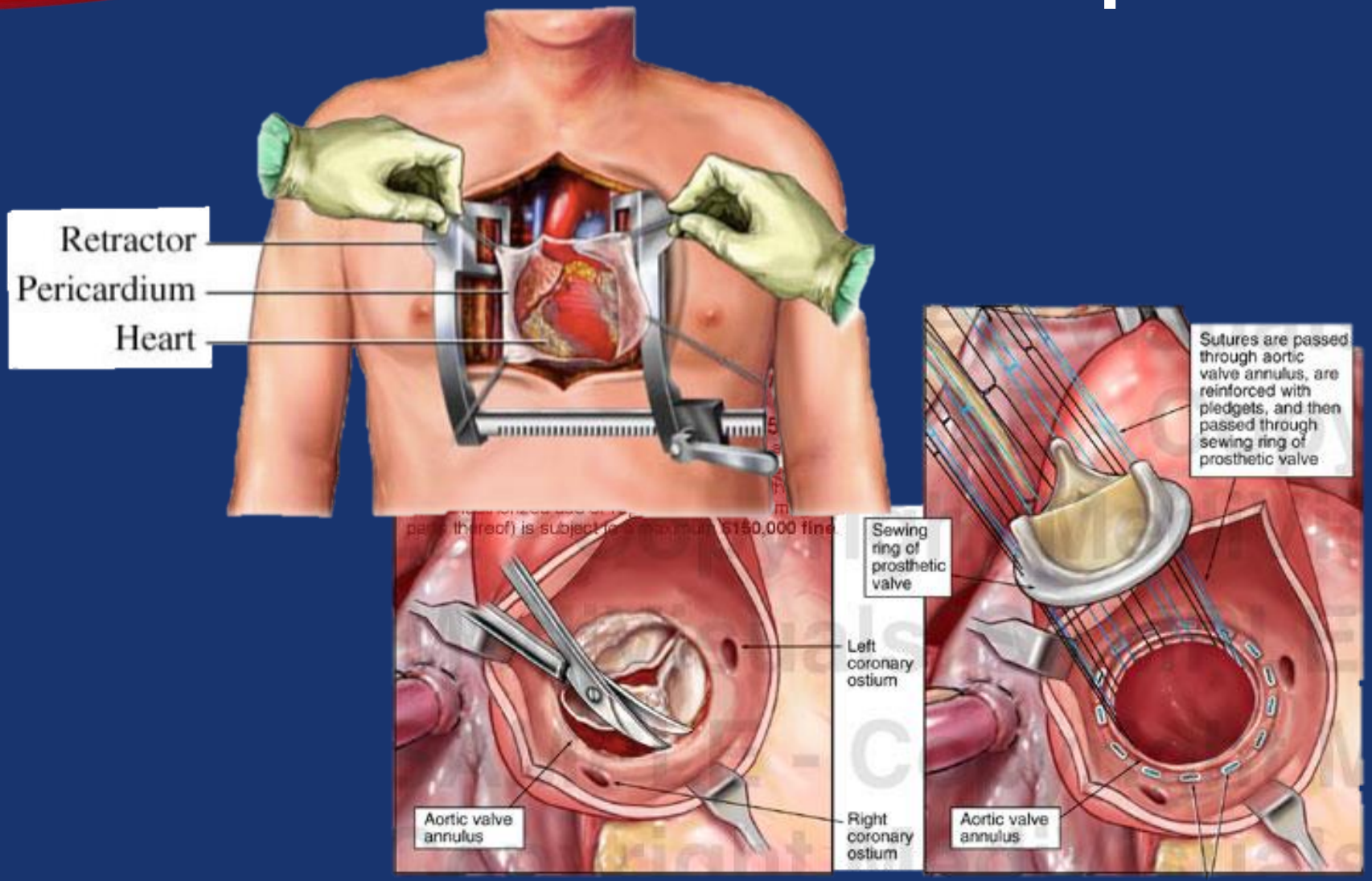
AVR: traditional prosthesis



SAVR: SUTURLESS VALVE

SAVR: SUTURLESS VALVE

WHY?

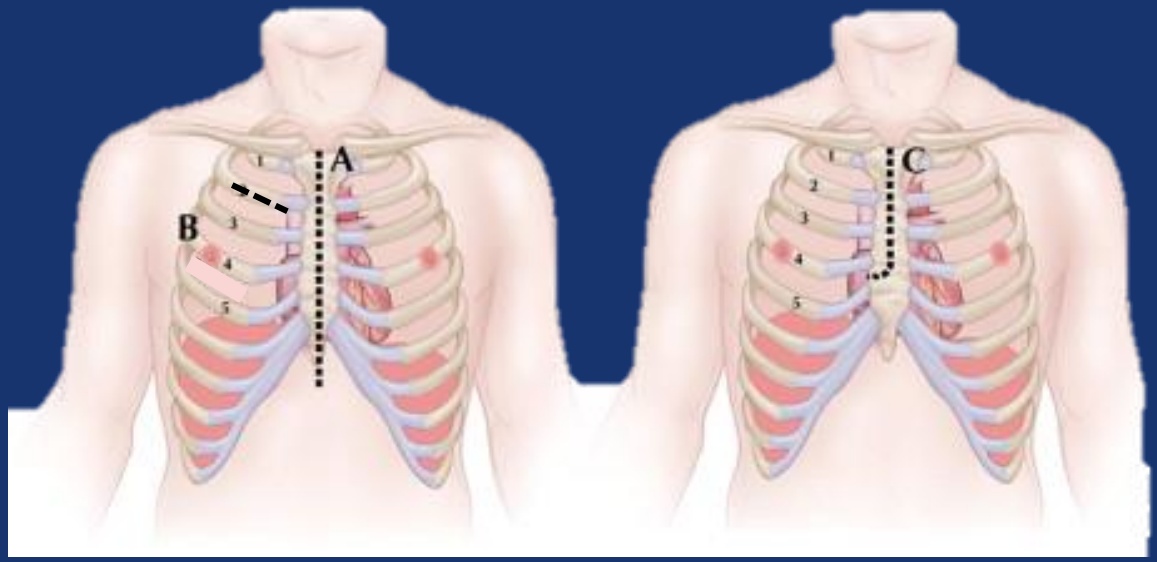
Research
Innovation
IMPROVEMENT

traditional

transcatheter

SAVR: SUTURLESS VALVE

With every Surgical Approach



SAVR: SUTURLESS VALVE

Perceval S ™

3f Enable valve ™

INTUITY Valve System ™

SAVR: SUTURLESS VALVE

INDICATIONS

- AVR isolated
  (++ mini surgery)
- ReDO AVR after explantation of previous prosthesis
- AVR associated with CABG or other cardiac procedure (MVR,TR-Rep,…)

CONTRAINDICATIONS

- Aortic valve insufficiency
- Aortic Aneurysm
- Previous Endocarditis (less than 3 months)

SAVR: SUTURLESS VALVE

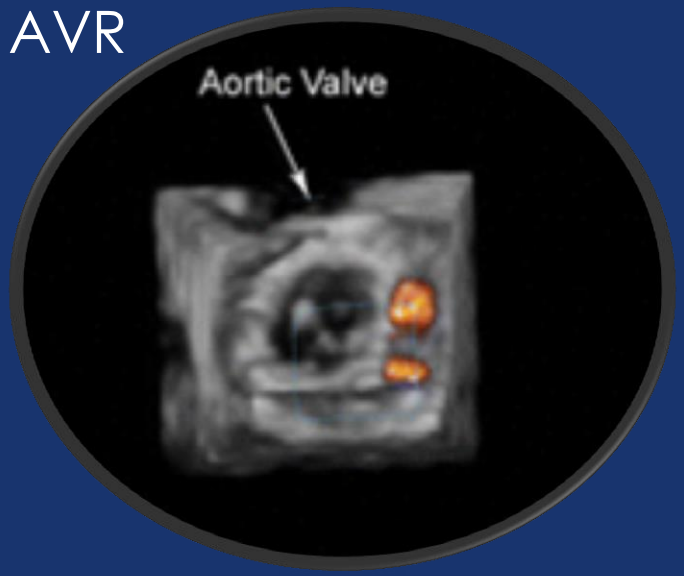
ADVANTAGES

- Reduced cross-clamp time
- Reduced CPB time
- Reduced myocardial ischemia time
- Complete removal of diseased native valve
- Easy implantantion
- Mini-invasive approach
- Valve Heamodinamic

SAVR: SUTURLESS VALVE

DISADVANTAGES

- Paravalvular leak vs traditional AVR
- Surgical trauma vs TAVI
- Delayed dislocation
- Height of aortotomy



Suturless AVR

AVR: mini vs standard

REVIEW

Minimal Access Aortic Valve Replacement: Is It Worth It?

Bari Murtuza, PhD, FRCS, John R. Pepper, FRCS, Rex DeL Stanbridge, FRCS, Catherine Jones, BSc, MBBS, Christopher Rao, MBBS, Ara Darzi, KBE, FRCS, and Thanos Athanasiou, PhD, FETCS

Departments of Cardiothoracic Surgery and Surgical Oncology and Technology, St. Mary's Hospital, Faculty of Medicine, Imperial

This review suggests that minimal access AVR can be offered on the basis of patient choice and cosmesis rather than evident clinical benefit

val, 0.51-1.00; $p = 0.05$), intensive care unit stay, total hospital stay, and ventilation time in the minimal access

(Ann Thorac Surg 2008;85:1121–31)

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AVR: mini vs standard

ANNALS OF CARDIOTHORACIC SURGERY

Ann Cardiothorac Surg. 2015 Jan; 4(1): 26–32.
doi: 10.3978/j.issn.2225-319X.2015.01.01
PMCID: PMC4311160

Minimally invasive aortic valve surgery: state of the art and future directions

Mattia Glauber, Matteo Ferrarini, and Antonio Miceli

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Abstract

Go to:

Minimally invasive aortic valve replacement (MIAVR) is defined as an aortic valve replacement (AVR) procedure that involves a small chest wall incision as opposed to conventional full sternotomy (FS). The MIAVR approach is increasingly being used with the aim of reducing the "invasiveness" of the surgical procedure, while maintaining the same efficacy, quality and safety of a conventional approach. The most common MIAVR techniques are ministernotomy (MS) and right anterior minithoracotomy (RT) approaches. Compared with conventional surgery, MIAVR has been shown to reduce postoperative mortality and morbidity, providing faster recovery, shorter hospital stay and better cosmetics results, requires less rehabilitations resources and consequently cost reduction. Despite these advantages, MIAVR is limited by the longer cross-clamp and cardiopulmonary bypass (CPB) times, which have raised some concerns in fragile and high risk patients. However, with the introduction of sutureless and fast deployment valves, operative times have dramatically reduced by 35-40%, standardizing this procedure. According to these results, the MIAVR approach using sutureless valves may be the "real alternative" to the transcatheter aortic valve implantation (TAVI) procedures in high risk patients "operable" patients. Prospective randomized trials are required to confirm this hypothesis.

SAVR: SUTURLESS VALVE

CONCLUSIONS

- Shorter cross clamping time will affect mortality and morbidity substantially in elderly patients
- One major advantage of this valve will be seen in patients undergoing complex operations, or concomitant mitral/tricuspid surgery and coronary revascularization, especially in compromised ventricles
- In high risk pts **not a competition with TAVI**, but **a refiniment of indications**
- PVL: lesson from TAVI + technical refinement

- Better emodinamic = LONGER VALVE SURVIVAL ?

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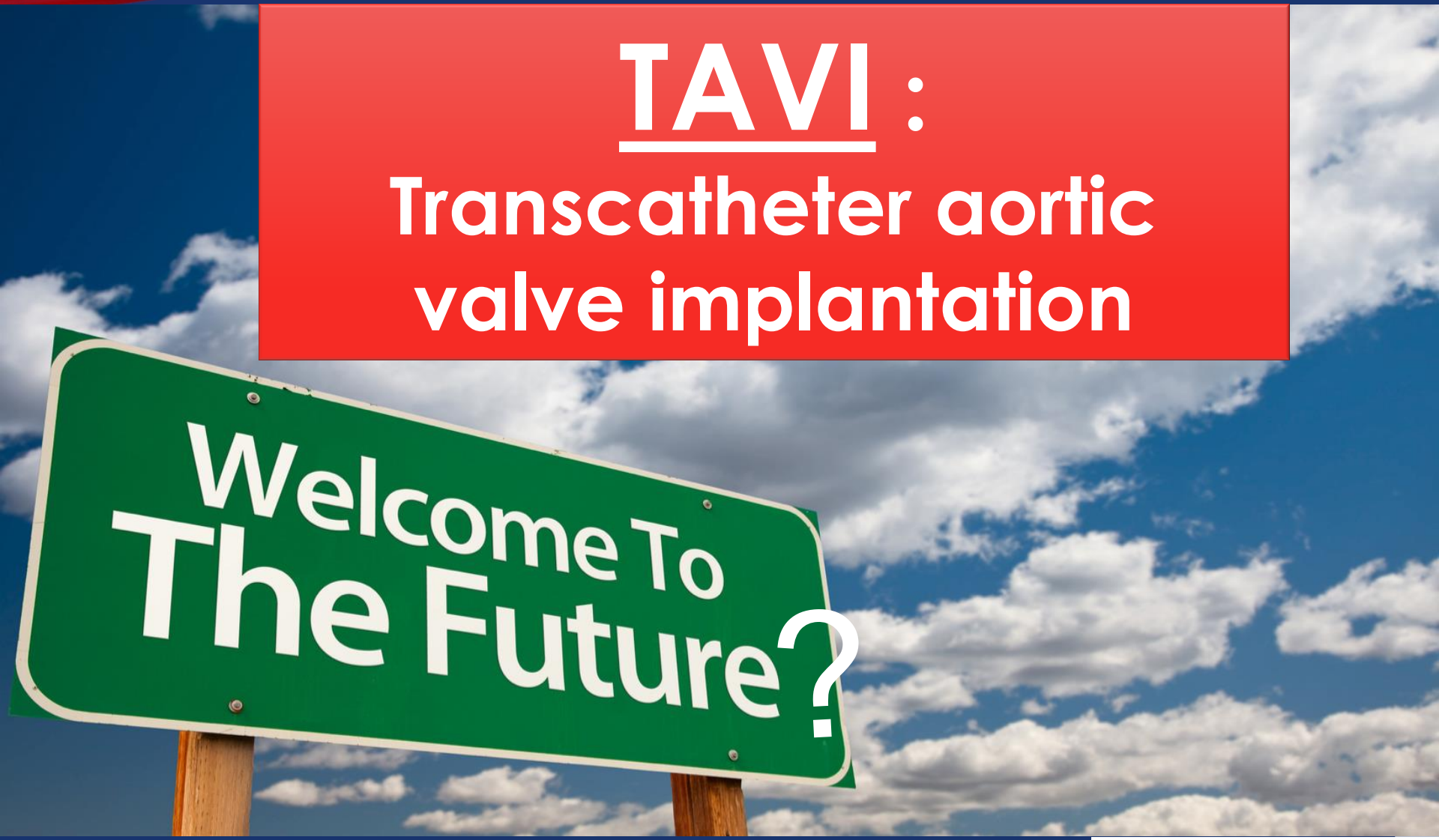
TAVI :
Transcatheter aortic valve implantation



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TAVI : INDICATIONS

Indications for transcatheter aortic valve implantation

ESC/EACTS GUIDELINES

	Class	Level
TAVI should only be undertaken with a multidisciplinary "heart team" including cardiologists and cardiac surgeons and other specialists if necessary.	I	C
TAVI should only be performed in hospitals with cardiac surgery on-site.	I	C
TAVI is indicated in patients with severe symptomatic AS who are not suitable for AVR as assessed by a " heart team" and who are likely to gain improvement in their quality of life and to have a life expectancy of more than 1 year after consideration of their comorbidities.	I	B
TAVI should be considered in high risk patients with severe symptomatic AS who may still be suitable for surgery, but in whom TAVI is favoured by a "heart team" based on the individual risk profile and anatomic suitability.	IIa	B

« At the present stage, TAVI should not be performed in patients at intermediate risk for surgery and trials are required in this population. »

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TAVI : CONTRAINDICATIONS

ABSOLUTE CONTRAINDICATIONS — ESC/EACTS GUIDELINES
Absence of a 'heart team' and no cardiac surgery on the site
Appropriateness of TAVI, as an alternative to AVR, not confirmed by a 'heart team'
CLINICAL
Estimated life expectancy <1 year *Improvement of quality of life by TAVI unlikely because of comorbidities* *Severe primary associated disease of other valves with major contribution to the patient's symptoms, that can be treated only by surgery*
ANATOMICAL
Inadequate annulus size (<18 mm, >29 mm)
Thrombus in the left ventricle
Active endocarditis
Elevated risk of coronary ostium obstruction (asymmetric valve calcification, short distance between annulus and coronary ostium, small aortic sinuses)
Plaques with mobile thrombi in the ascending aorta, or arch
For transfemoral/subclavian approach: inadequate vascular access (vessel size, calcification, tortuosity)

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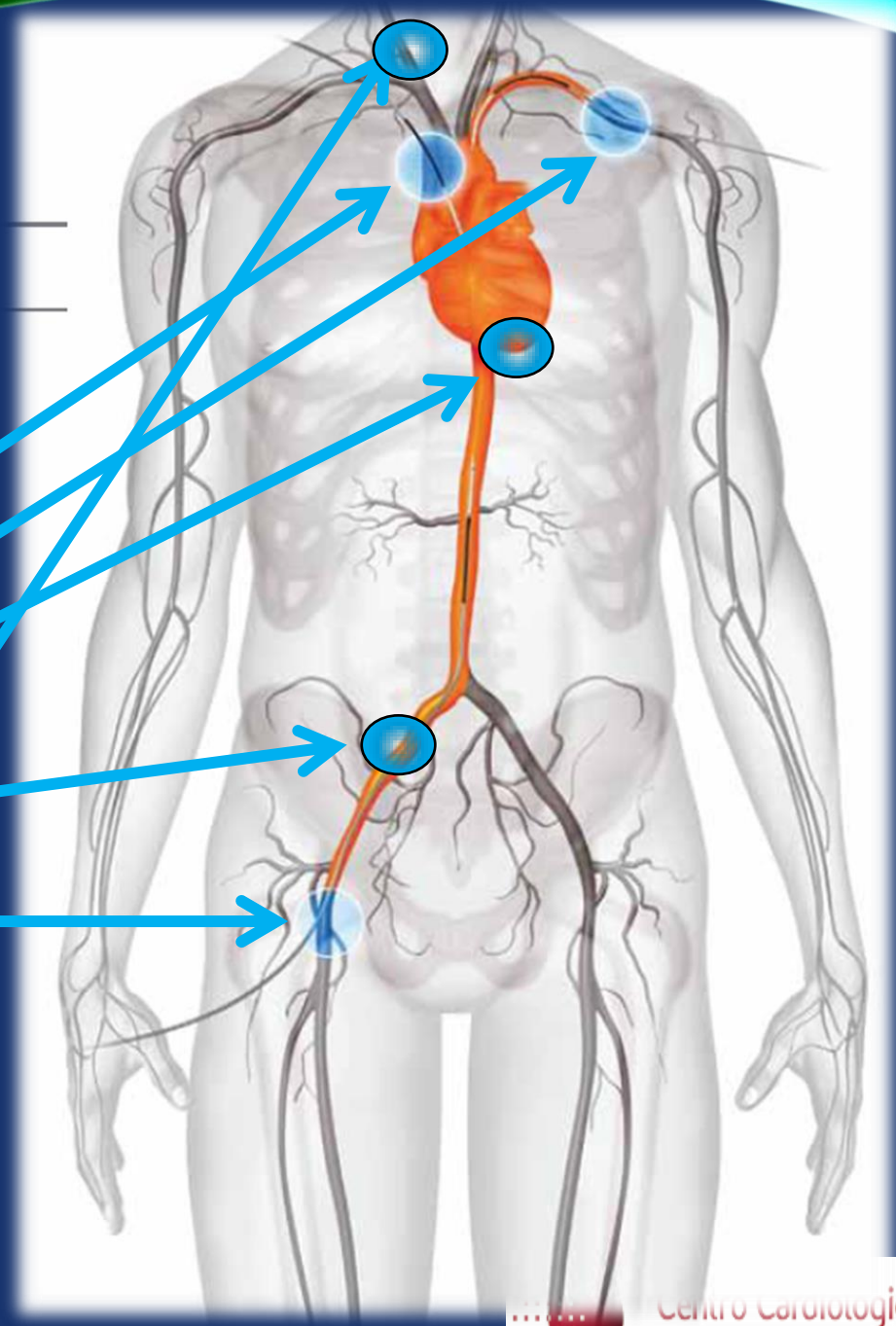
TAVI : CONTRAINDICATIONS

RELATIVE CONTRAINDICATIONS (ESC/EACTS GUIDELINES)
Bicuspid or non-calcified valves
Untreated coronary artery disease requiring revascularization
Haemodynamic instability
LVEF <20%
For transapical approach: severe pulmonary disease, LV apex not accessible

TAVI

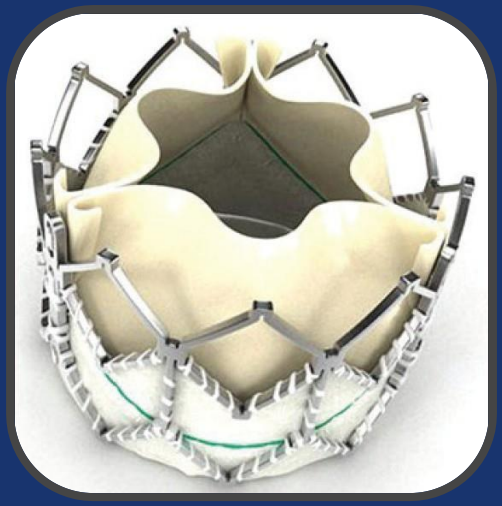
APPROACH

- Ascending Aorta
- Subclavian Artery
- Cardiac Apex
- Iliac Artery
- Femoral Artery
- Carotid Artery



TransCatheterAorticValve

Sapien XT (Edwards)

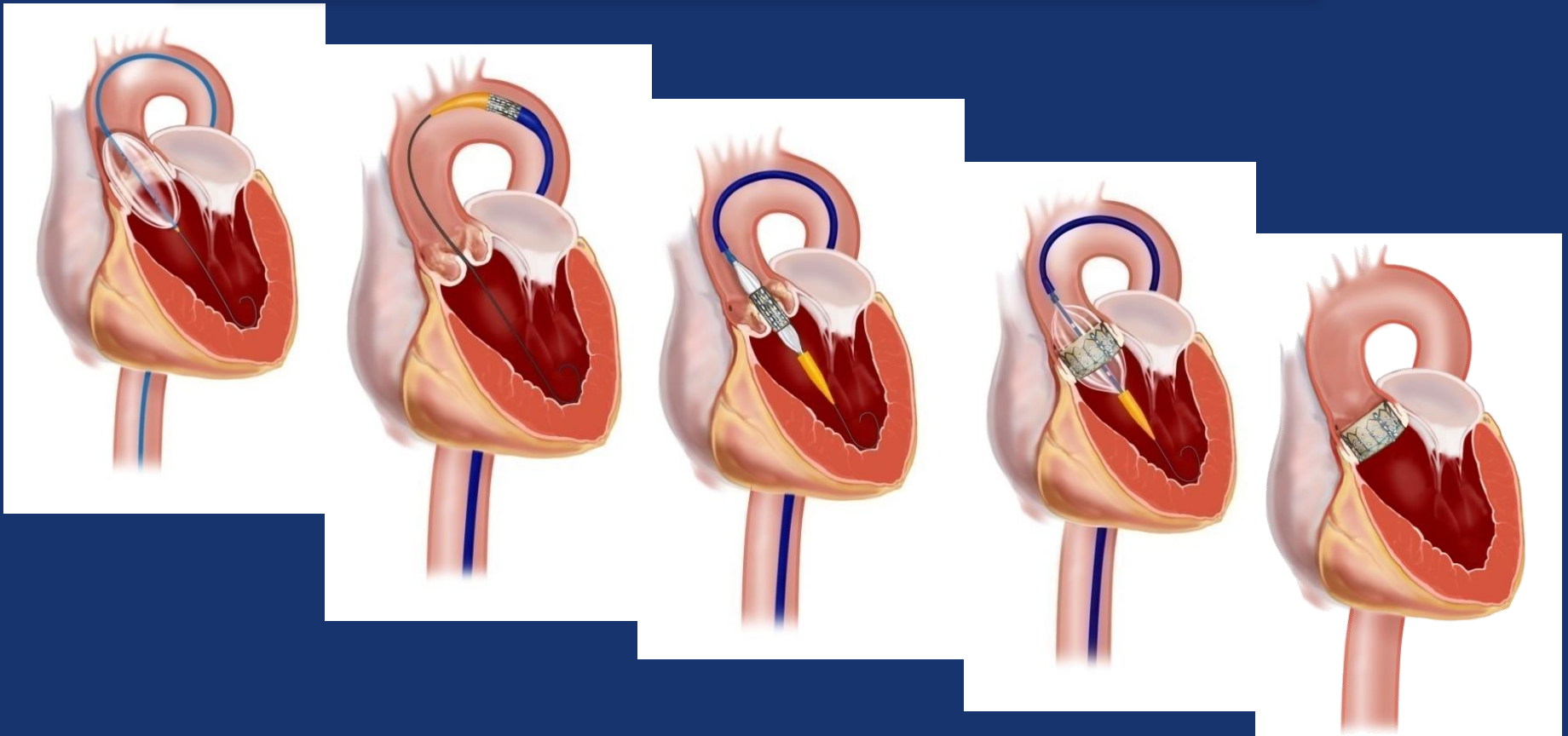


Corevalve (Medtronic)

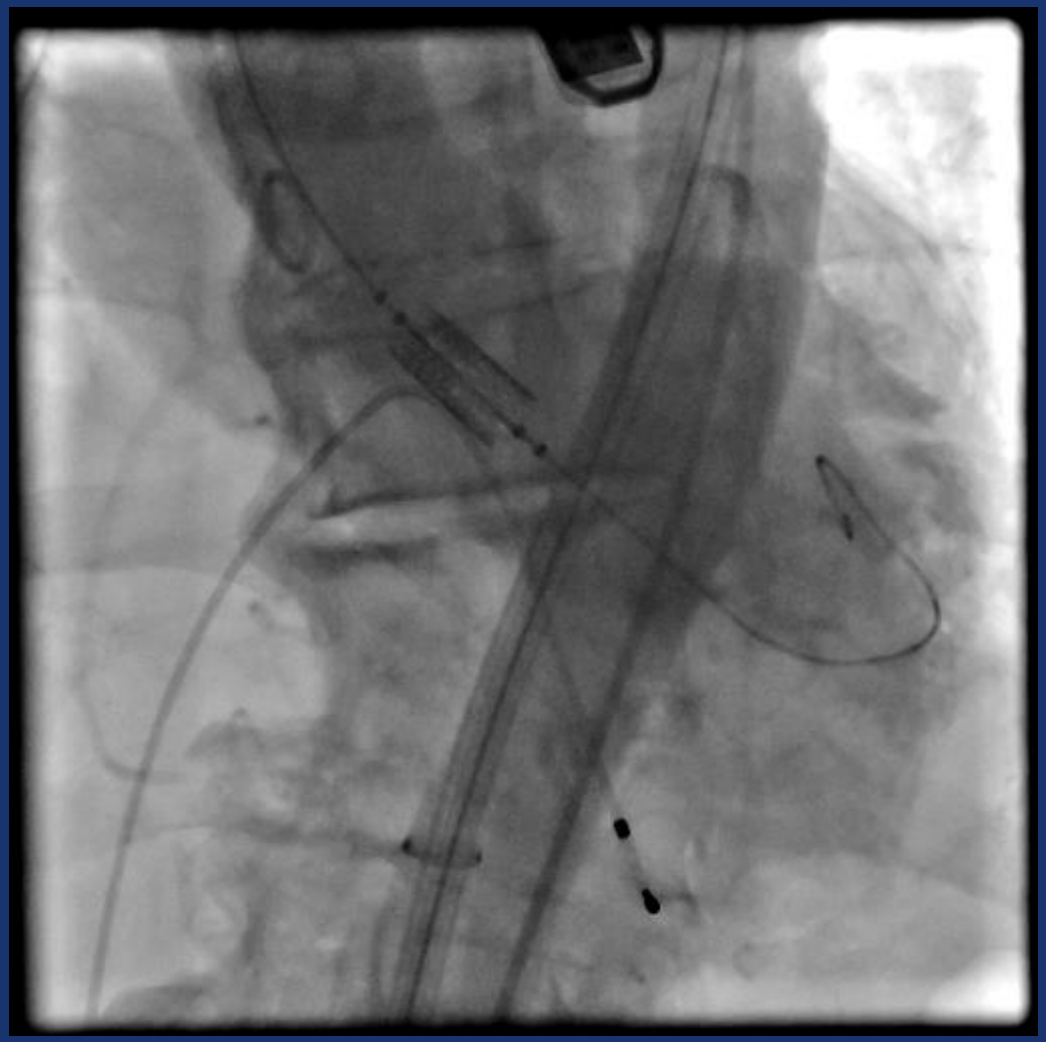
TAVI

Posizionamento transfemorale

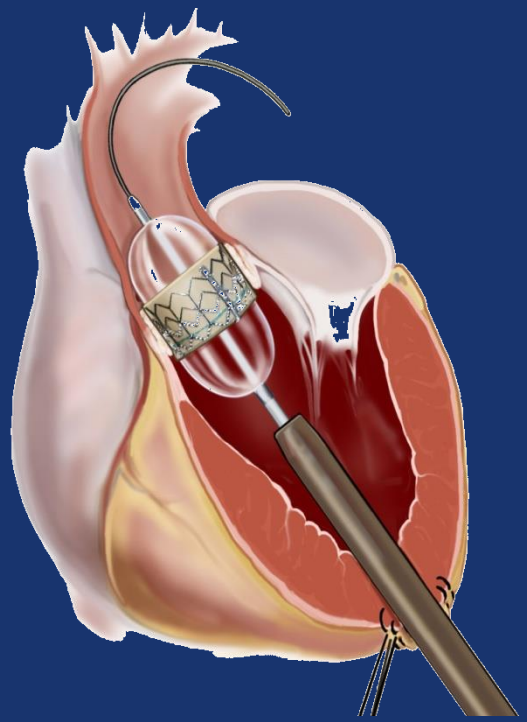
SISTEMA DI RILASCIO TRANSFEMORALE



TAVR: transfemoral implantation



Posizionamento transapicale



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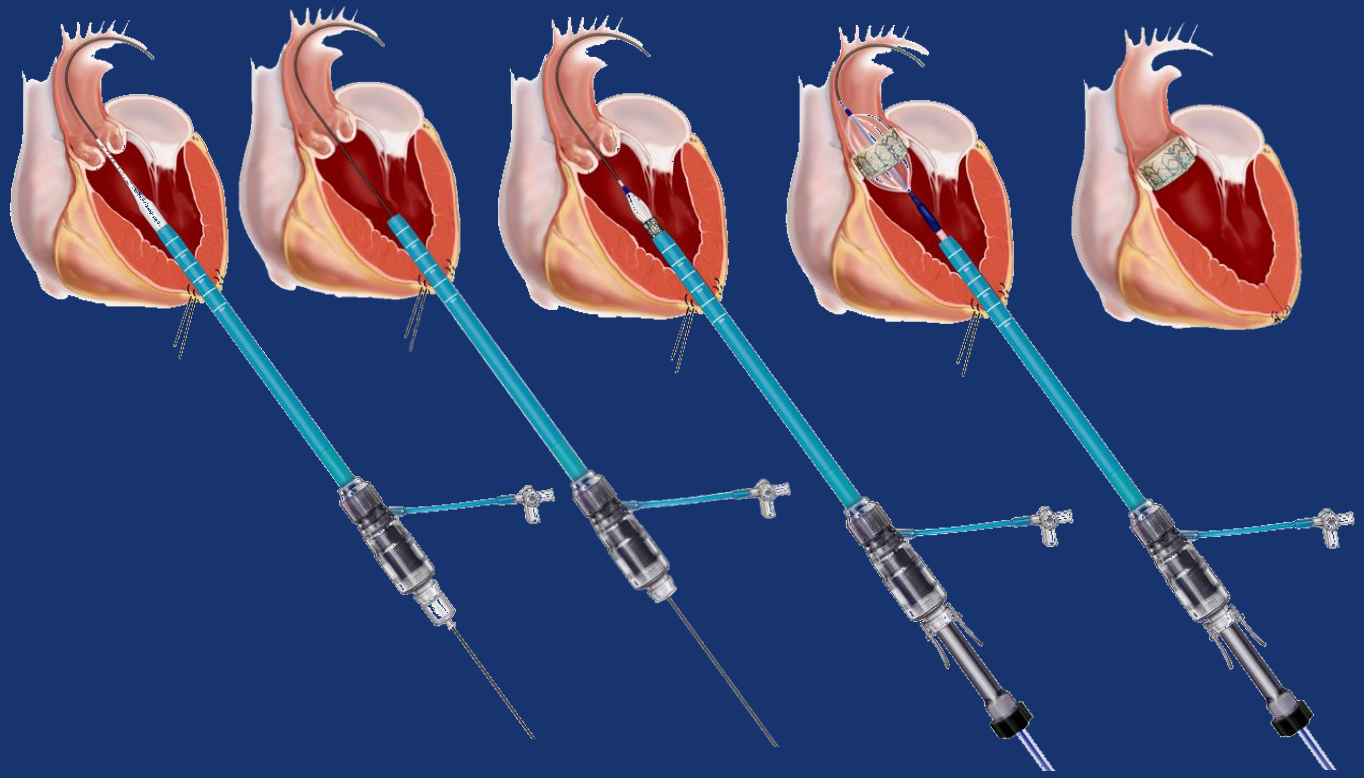
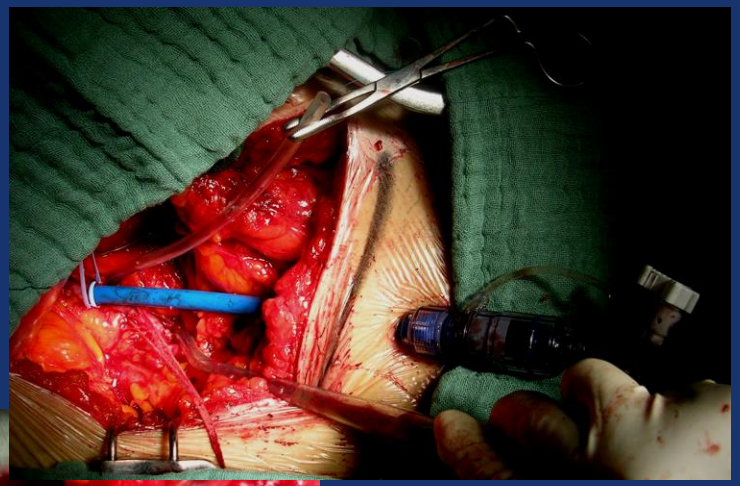
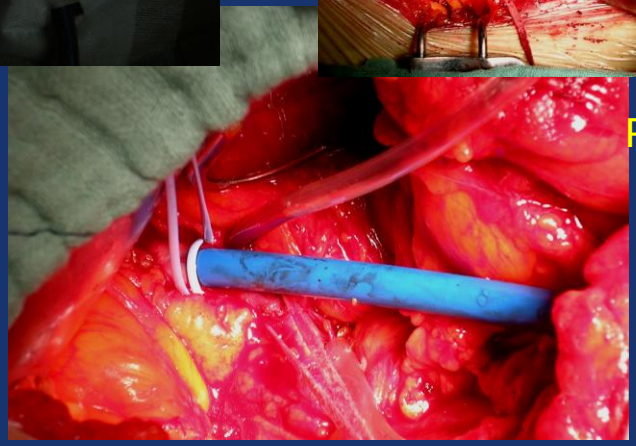
SISTEMA DI RILASCIO TRANSAPICALE ASCENDRA™



TAVI – transapical approach

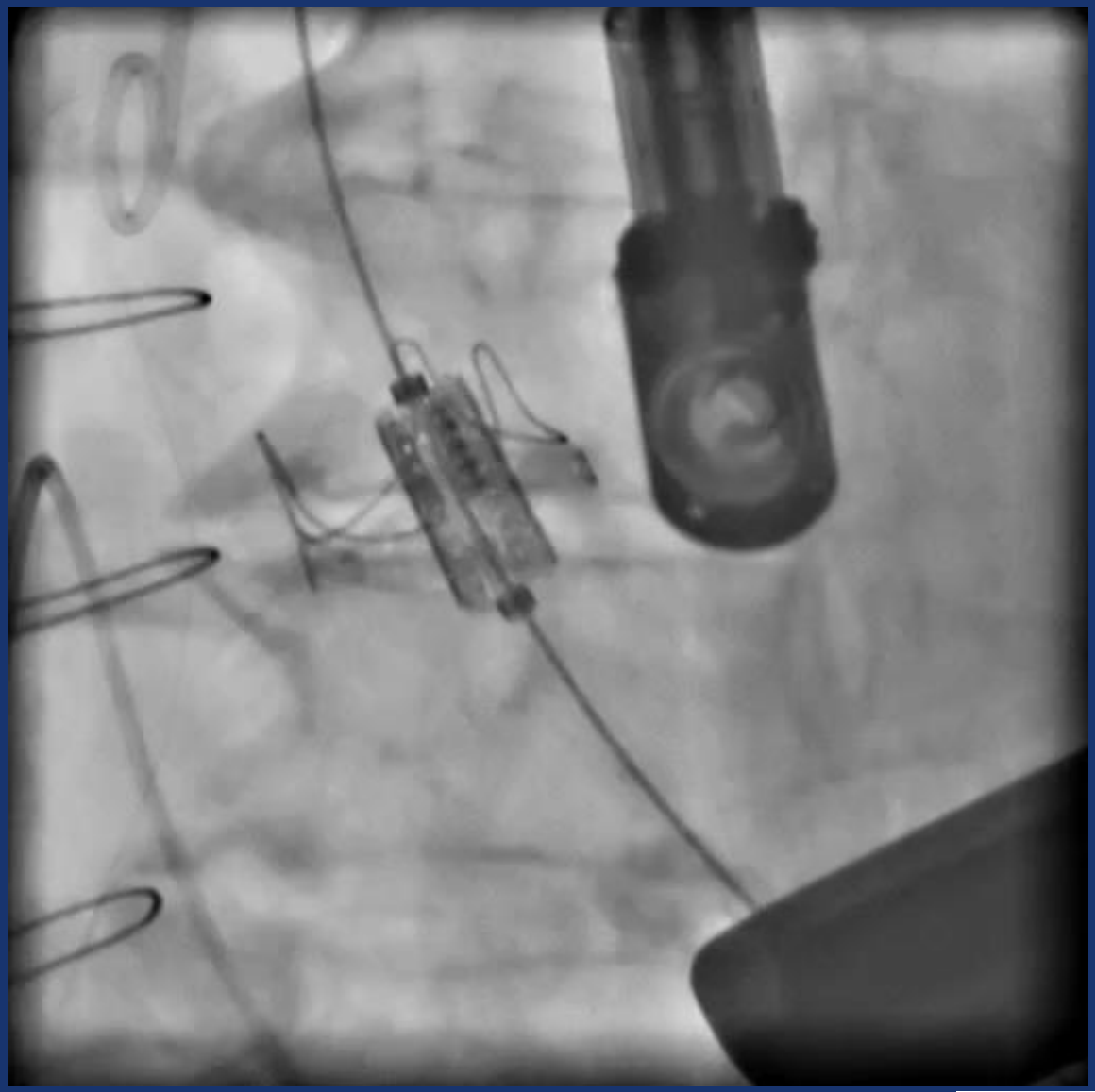
ACCESSO TRANSILIACO RETROPERITONEALE: MINIALBARAN





Puntura percutanea

TAVI - VALVE IN VALVE procedure



TAVI : COMPLICATIONS

- Iliac vein perforation
- SVC perforation
- Compartimental syndrome of lower extremity
- Aortic dissection
- Rupture of the ascendig aorta
- Femoral artery occlusion
- Embolisation/covering of coronary arteries
- Near crash: overinflation of endobaloon
- Oversizing of AV prothesis
- Aortic root hematoma
- …

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TAVI : Patient-Focused Multidisciplinary Heart Team approach

PRELIMINARY EVALUATION:

- Echocardiogram
- TC anulus + vascular access
- Coronarography/Cardiac TC
- Clinical evaluation
- Risk stratification (STS score + frialty)

Need of **excellence** in each department

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TAVI : Patient-Focused Multidisciplinary Heart Team approach

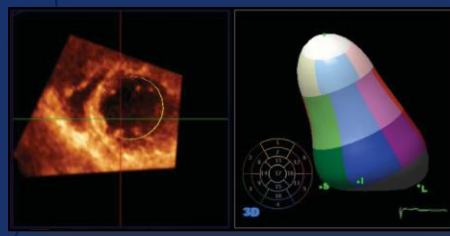
Anesthesiologist

General anesthesia or not…
Live intra-op TEE or not...

Radiologist

Patient Selection

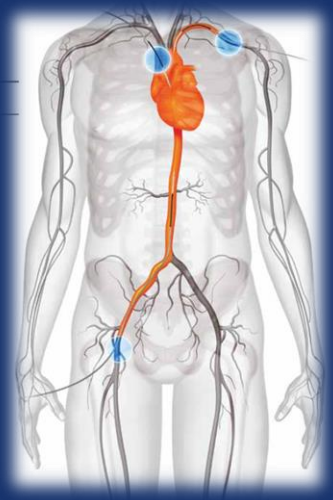
Echocardiographist



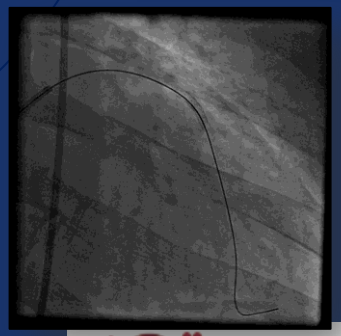
Successful THV PROGRAM

Excellent Visualization

Cardiac Surgeon



Procedure Planning



Cardiologist

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Heart Team ?!?!?

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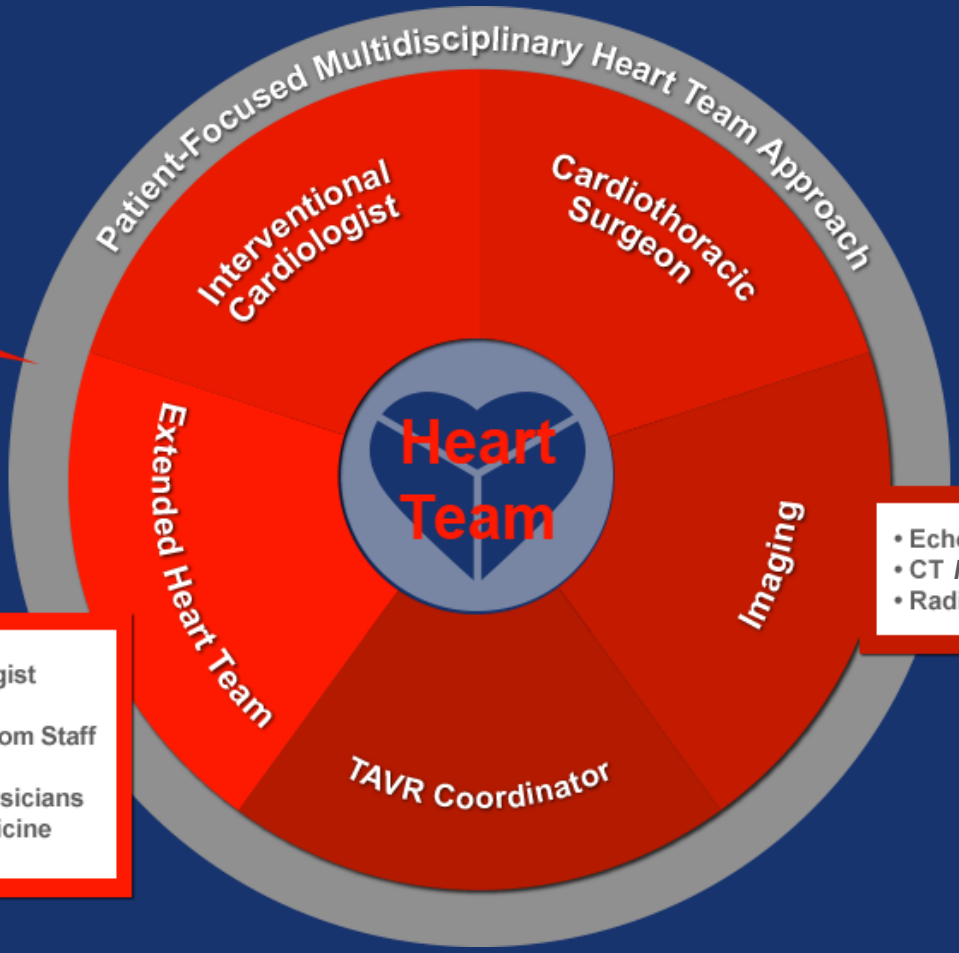
Real Heart Team

A TAVR Heart Team is founded on a multidisciplinary approach to patient selection, leveraging the expertise of Interventional Cardiologists, Cardiothoracic Surgeons, TAVR Coordinators, Imaging Specialists and other healthcare professionals.

Each patient is reviewed by this multidisciplinary team to determine appropriateness for TAVR.



- Anesthesiologist
- Cath Lab and Operating Room Staff
- Nurses
- Referring Physicians
- Geriatric Medicine

- Echocardiographer
- CT MRI
- Radiology

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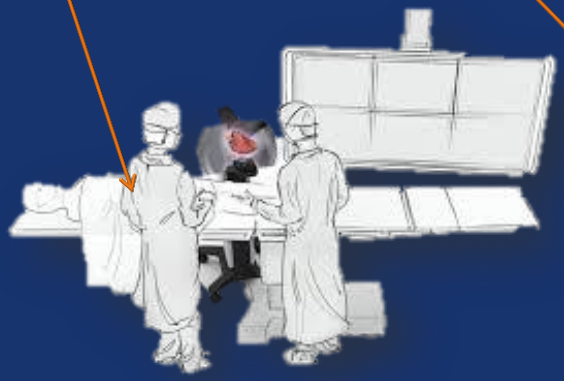
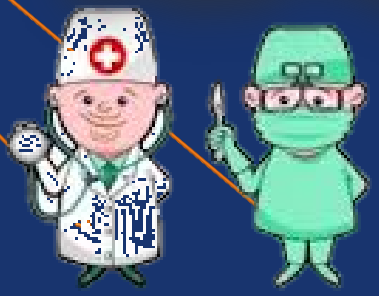
TAVI

TRAUMA





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TAVI : OUTCOME

Long-Term Outcomes After Transcatheter Aortic Valve Implantation

Insights on Prognostic Factors and Valve Durability From the Canadian Multicenter Experience

Josep Rodés-Cabau, MD,* John G. Webb, MD,† Anson Cheung, MD,† Jian Ye, MD,† Eric Dumont, MD,* Mark Osten, MD,‡ Christopher M. Feindel, MD,‡ Madhu K. Natarajan, MD,§ James L. Velianou, MD,§ Giussepe Martucci, MD,‖ Benoît DeVarennes, MD,‖ Robert Chisholm, MD,¶ Mark Peterson, MD,¶ Christopher R. Thompson, MD,† David Wood, MD,† Stefan Toggweiler, MD,† Ronen Gurvitch, MD,† Samuel V. Lichtenstein, MD,† Daniel Doyle, MD,* Robert DeLarochellière, MD,* Kevin Teoh, MD,§ Victor Chu, MD,§ Kevin Bainey, MD,§ Kevin Lachapelle, MD,‖ Asim Cheema, MD,¶ David Latter, MD,¶ Jean G. Dumesnil, MD,* Philippe Pibarot, PHD,† Eric Horlick, MD‡

Quebec City and Montreal, Quebec; Vancouver, British Columbia; and Toronto and Hamilton, Ontario; Canada

- follow-up of 42 ±15 months
  - Approximately one-half of the patients who underwent TAVI because of a high or prohibitive surgical risk profile had died at a mean follow-up of 3.5 years.
  - Late mortality was due to noncardiac comorbidities in more than one-half of patients.
  - No clinically significant deterioration in valve function was observed throughout the follow-up period (?)

J Am Coll Cardiol 2012;60:1864–75

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TAVI : OUTCOME

JACC: Cardiovascular Interventions
Volume 8, Issue 5, 27 April 2015, Pages 645–653
TAVR Focus Issue

TAVR Focus Issue

Long-Term Outcomes After Transcatheter Aortic Valve Replacement in High-Risk Patients With Severe Aortic Stenosis : The U.K. Transcatheter Aortic Valve Implantation Registry

Alison Duncan, MB BS, BSc, PhD*, Peter Ludman, MA, MD†, Winston Banya, MSc*, David Cunningham, MA‡, Damian Marlee, MA‡, Simon Davies, MA, MB BS*, Michael Mullen, MD§, Jan Kovac, MD‖, Thomas Spyt, MD‖, Neil Moat, MB, BS, MS*·

Conclusions

In the large U.K. Transcatheter Aortic Valve Implantation Registry, long-term outcomes after TAVR are favorable with 3- and 5-year survival rates of 61.2% and 45.5%, respectively. Long-term survival after TAVR is largely determined by intrinsic patient factors. Other than stroke, procedural variables, including paravalvular aortic leak, did not appear to be independent predictors of long-term survival.

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OUR NUMBERS

IRCCS – CENTRO CARDIOLOGICO MONZINO

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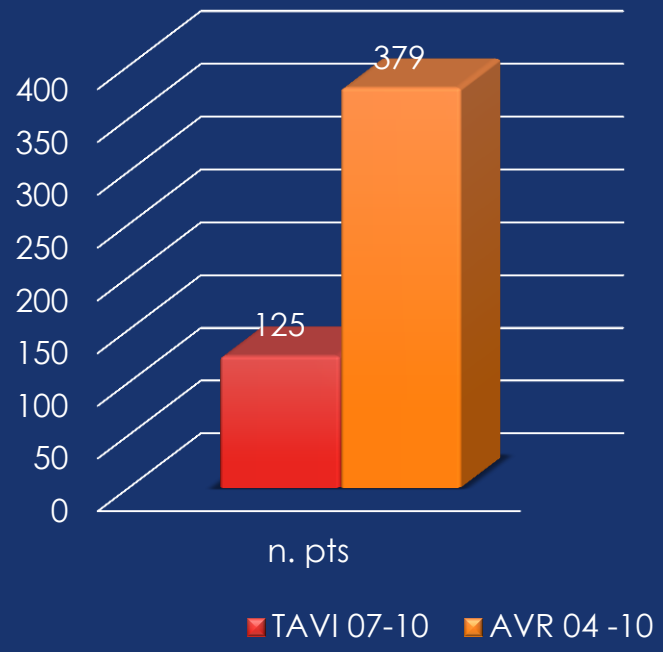
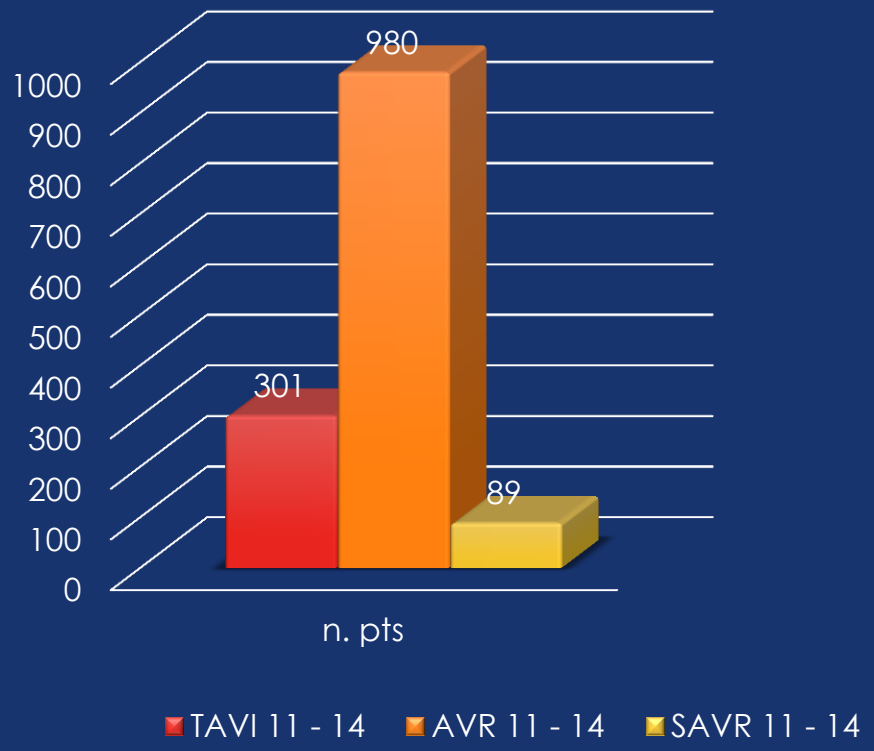
IRCCS – CENTRO CARDIOLOGICO MONZINO (MI)

Isolated Aortic Valve Procedure





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TAKE HOME MESSAGE

- La stenosi aortica è un killer, data la storia naturale bisogna sempre valutare la terapia chirurgica
- Al momento attuale l'AVR (rimozione valvola nativa e sostituzione con protesi)è il gold standard perché ha come vantaggi:
  - Rimozione valvola
  - Ottima emodinamica (RDV)
  - Durata protesi consolidata
- In pz con «ridotta» aspettativa di vita (anziani e comorbidità) l'intervento «perfetto» e «rischioso» può lasciare lo spazio alla TAVI
- V-in-V va considerato una valida procedura per i reinterventi nei pz con bioprotesi degenerate ed è una strategia che va costruita al primo intervento e discussa con il pz
- HEART TEAM deve essere vero e non 4 firme su un foglio
- Gli scores e le linee guida vanno bene ma è necessario il giudizio clinico su ogni pz da parte Heart team

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