



*Instituto de Cardiología de Corrientes "Juana F. Cabral"*

# VISTA DEL CIRUJANO IMPLANTE ENDOVASCULAR DE LA VALVULA AORTICA

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## Concepto

**Es un método de tratamiento para la estenosis aórtica severa en la cual se implanta un válvula biológica de forma endovascular y a través de catéteres (IVAE –IVAT)**

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**Es Incorrecto**

**Reemplazo aórtico endovascular o percutáneo  
Implante aórtico percutáneo**

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## Evolución Histórica

En 1912, Tuffier in Paris intenta dilatación digital

En 1947, Smithy y Parker en la University of South Carolina describe valvotomia

En 1950 in Philadelphia, Bailey reportó valvulotomía por inserción de un dilatador mecánico

En 1952, Hufnagel and Harvey en Georgetown University implantaron la primera prótesis a bola en la aorta descendente.

En 1954 desarrollo de la circulación extracorporea por Gibbon

En 1955, Swann la primera valvotomía usando hipotermia y parada circulatoria

Harken en Boston in 1960 y Starr en Portland in 1963, reportaron el reemplazo de la valvula aórtica con una prótesis de balon

En 1962, Ross en Londres desarrollo homograft valve replacement

In 1967, Ross performed el primer pulmonary autograft procedure

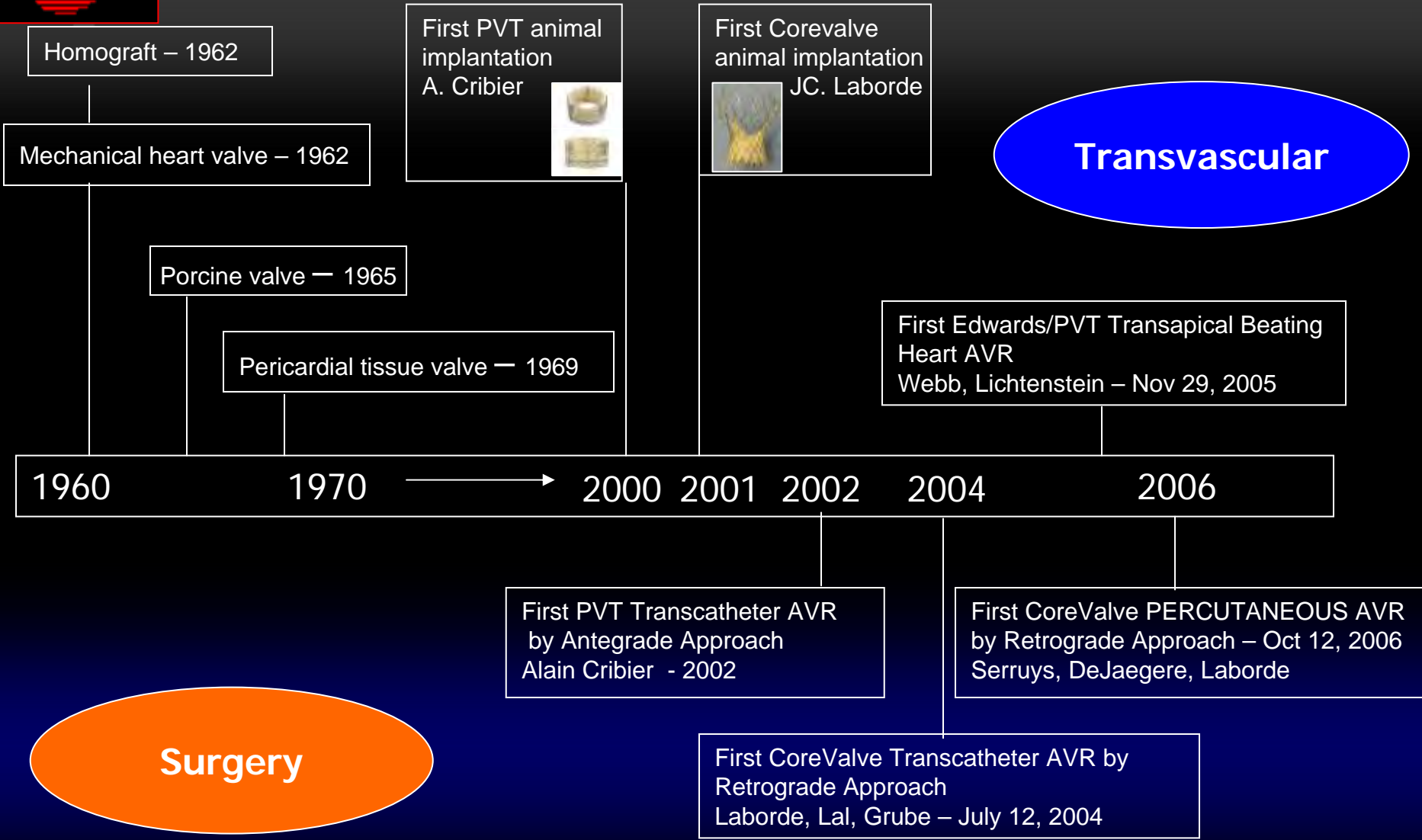
En 1974, Carpentier en Paris reportó superior longevidad con las válvulas preservadas con glutaraldehido.

Angioplastia aortica 80 Alain Cribier

H. Andersen en 1992 en un modelo porcino.

Bonhoffer implantó la primera válvula pulmonar endovascular en humanos en 2000

~~La primera experiencia IEVA en humanos la realizó Cribier en 2002~~



## Pionero: Alain Cribier



Jefe Departamento de Cardiología, Hospital Universitario Charles Nicolle, Rouen

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# EPIDEMIOLOGIA DE LA ESTENOSIS AORTICA SEVERA

2 a 4% > de 65 años

Etiología degenerativa senil

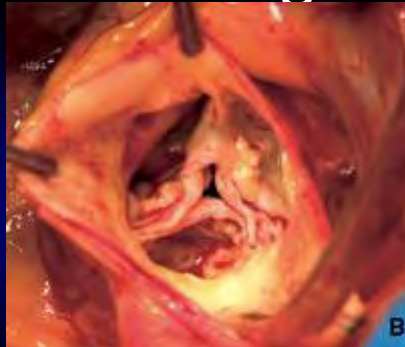
2 causa de intervención quirúrgica

La mitad de los pacientes tienen 70

Mortalidad operatoria RVA 3%

> 80 años entre 10% mortalidad

Un 30 a 40% negaran la RVA



# EPIDEMIOLOGIA DE LA ESTENOSIS AORTICA SEVERA

**At least 30-40% of patients with degenerative and symptomatic AS are not operated on**



**EuroHeart Survey, 2004**  
 5001 Patients in 92 centers at 25 countries  
 No operation in 31.8%

« Survival after onset of symptoms  
 50% at 2 years and 20% at 5 years »

« Need for AVR as soon as possible after the onset of Symptoms »

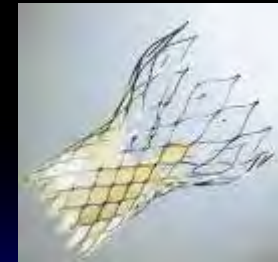
Ross J Jr, Braunwald E. Aortic stenosis, Circulation 1968

## Opciones terapéuticas en la Estenosis Aórtica Severa

Reemplazo valvular: Válvula mecánica  
 Válvula biológica  
 Injerto Cadavérico  
 Autoinjerto

Implante transcater: Transfemoral  
 Transaxilar  
 Apical

Angioplastías



# Objetivos de la terapéutica

Aumentar el área valvular

Disminuir el gradiente

Mejorar la función ventricular

Mejorar la clase funcional

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### THE ANNALS OF THORACIC SURGERY

▶HOME

V. H. Thourani, W. B. Keeling, R. A. Guyton, A. Dara, S. D. Hurst, and O. M. Lattouf

**Outcomes of off-pump aortic valve bypass surgery for the relief of aortic stenosis in adults.**

Ann. Thorac. Surg., January 1, 2011; 91(1): 131 - 136.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### Interactive CardioVascular and Thoracic Surgery

▶HOME

S. Folkmann, M. Gorlitzer, G. Weiss, M. Harrer, M. Thalmann, P. Posluszny, and M. Grabenwoger

**Quality-of-life in octogenarians one year after aortic valve replacement with or without coronary artery bypass surgery**

Interactive CardioVascular and Thoracic Surgery, December 1, 2010; 11(6): 750 - 753.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### Interactive CardioVascular and Thoracic Surgery

▶HOME

A. Saito, N. Motomura, H. Miyata, S. Takamoto, S. Kyo, M. Ono, and Japan Cardiovascular Surgery Database Organization

**Age-specific risk stratification in 13488 islet-protected coronary artery bypass grafting procedures**

Interactive CardioVascular and Thoracic Surgery, April 1, 2011; 12(4): 575 - 581.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### THE ANNALS OF THORACIC SURGERY

▶HOME

V. H. Thourani, G. Ailawadi, W. Y. Szeto, T. M. Dewey, R. A. Guyton, M. J. Mack, J. L. Keon, P. Kilgo, and J. E. Bavaria

**Outcomes of urgent aortic valve replacement in high-risk patients: a multinstitutional study.**

Ann. Thorac. Surg., January 1, 2011; 91(1): 49 - 56.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

Rva 10% mortalidad  
Cirugía no debería ser negada solo por la edad



### THE ANNALS OF THORACIC SURGERY

▶HOME

F. G. Bakaeen, D. Chu, J. Huh, and B. A. Carabello

**Is an Age of 80 Years or Greater an Important Predictor of Short-Term Outcomes of Isolated Aortic Valve Replacement in Veterans?**

Ann. Thorac. Surg., September 1, 2010; 90(3): 769 - 774.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### Journal of the American College of Cardiology: Cardiovascular Interventions

▶HOME

I. Ben-Dor, A. D. Pichard, L. F. Satler, S. A. Goldstein, A. I. Syed, M. A. Gaglia Jr, G. Weissman, G. Maluenda, M. A. Gonzalez, K. Wakabayashi, et al.

**Complications and Outcome of Balloon Aortic Valvuloplasty in High-Risk or Inoperable Patients**

J. Am. Coll. Cardiol. Interv., November 1, 2010; 3(11): 1150 - 1156.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### Circulation

▶HOME

I. Ben-Dor, A. D. Pichard, M. A. Gonzalez, G. Weissman, Y. Li, S. A. Goldstein, P. Okubagzi, A. I. Syed, G. Maluenda, S. D. Collins, et al.

**Correlates and Causes of Death in Patients With Severe Symptomatic Aortic Stenosis Who Are Not Eligible to Participate in Clinical Trial of Transcatheter Aortic Valve Implantation**

Circulation, September 14, 2010; 122(11\_suppl\_1): S37 - S42.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY

E. Ferrari, P. Tozzi, M. Hurni, P. Ruchat, F. Stumpe, and L. K. von Segesser

**Primary isolated aortic valve surgery in octogenarians**

Eur. J. Cardiothorac. Surg., August 1, 2010; 38(2): 128 - 133.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY

▶HOME

G. Rizzoli, J. Bejko, T. Bottio, V. Tarzia, and G. Gerosa

**Valve surgery in octogenarians: does it prolong life?**

Eur. J. Cardiothorac. Surg., May 1, 2010; 37(5): 1047 - 1055.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



### THE ANNALS OF THORACIC SURGERY

▶HOME

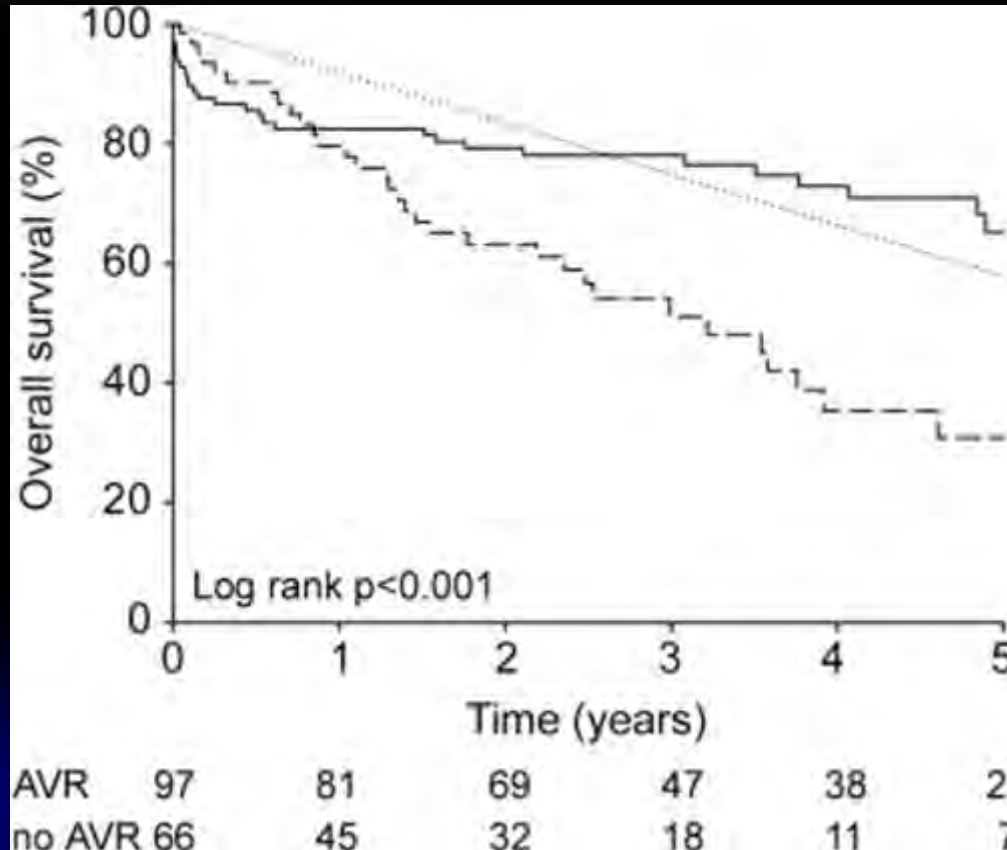
M. E. Halkos, P. Kilgo, O. M. Lattouf, J. D. Puskas, W. A. Cooper, R. A. Guyton, and V. H. Thourani

**The effect of diabetes mellitus on in-hospital and long-term outcomes after heart valve operations.**

Ann. Thorac. Surg., July 1, 2010; 90(1): 124 - 130.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)

# EPIDEMIOLOGIA DE LA ESTENOSIS AORTICA SEVERA



Mortalidad 9%  
Sobrevivida a 5 años  
66% vs 31%

# EPIDEMIOLOGIA DE LA ESTENOSIS AORTICA SEVERA

Referencia	Nº pacientes	Características	Mortalidad hospitalaria
De Vincentis (2008)	345	≥ 80 años (70% CABG)	7,5%
Gulbins (2008)	236	≥ 80 años (91% CABG)	9,3%
Melby (2007)	245	≥ 80 años (57% CABG)	9,0%
Kolh (2007)	220	≥ 80 años (26% CABG)	9,0%
Langanay (2006)	442	≥ 80 años (19% CABG)	7,5%
Asimakopoulos (97)	1100	≥ 80 años	6,6%
Edwards (2003)	35	≥ 90 años	17%
STS database (2006)	6290	≥ 65 años	5,6%

# EPIDEMIOLOGIA DE LA ESTENOSIS AORTICA SEVERA

Referencia	Nº pacientes	Características	Mortalidad intrahospitalaria
Powell (2000)	55	FEVI $\leq$ 30%	18%
Pereira (2002)	68	FEVI $\leq$ 35%	8%
		Gradiente medio: $\leq$ 30 mmHg	
Tarantini (2003)	52	FEVI $\leq$ 35%	8%
Sharony (2003)	260	FEVI $\leq$ 40%	9,6%
Quere (2006)	66	FEVI $\leq$ 40% Gm $\leq$ 40 mmHg	6 % (+)
		Reserva contráctil (+) o (-)	33% (-)
Subramanian (2008)	14 estudios	FEVI $\leq$ 40%, Gm $\leq$ 30 mmHg y sin reserva contráctil	30%
Levy (2008)	217	FEVI $\leq$ 35% gradiente medio $\leq$ 30 mmHg	16%

# Conclusiones

**/Conclusions.** When appropriately applied in selected octogenarians, **cardiac surgery can be performed with acceptable mortality and excellent 5-year survival.** (Ann Thorac Surg 1999;67:1104 –10)/

**/Conclusions—**Survivorship among octogenarians is favorable, with **more than half the patients surviving more than 6 years after their surgery.** Concomitant CABG surgery does not diminish median survivorship among patients **\_80 years of age.** (*Circulation.* 2009;120[suppl 1]:S127–S133.)/

**/Conclusions:** Long-term survival and quality of life after non elective cardiac surgery can equal that of the general elderly population. **Age alone should not disqualify a patient for urgent or emergent cardiac surgery.** (JThorac CardiovascSurg2010;140:103-9)/

**/Conclusions:** Our experience shows good short-term results after primary isolated standard AVR **in patients more than 80 years of age.** The FU suggests that aortic valve surgery in octogenarians **guarantees satisfactory long-term survival rates and a good quality of life,** free from cardiac re-operations. **In the era of catheter-based aortic valve implantation, open-heart surgery for AVR remains the standard of care for healthy octogenarians.** European Journal of Cardio-thoracic Surgery 38 (2010) 128—133/

## Definición de riesgo quirúrgico elevado

Son aquellas intervenciones quirúrgicas que tienen una mortalidad a 30 días de mas 15%.

Euroscore logístico >20%

STS score >10%

Parsonnet con mas 30 puntos

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# Euroscore

## EuroSCORE (European System for Cardiac Operative Risk Evaluation)

Variables (help)	Values	Beta (Logistic EuroSCORE)	Points (EuroSCORE)
Age (years)	0 <input type="text" value="Enter"/>		0
Female gender	<input type="checkbox"/>	0	0
Emergency	<input type="checkbox"/>	0	0
Serum creatinine > 200 µmol/ L	<input type="checkbox"/>	0	0
L.V.E.F.	<input type="checkbox"/>	0	0
C.O.P.D.	<input type="checkbox"/>	0	0
Surgery on thoracic aorta	<input type="checkbox"/>	0	0
Extracardiac arteriopathy	<input type="checkbox"/>	0	0
Neurological dysfunction	<input type="checkbox"/>	0	0
Active endocarditis	<input type="checkbox"/>	0	0
Critical preoperative state	<input type="checkbox"/>	0	0
Unstable angina	<input type="checkbox"/>	0	0
Recent myocardial infarction (< 90 days)	<input type="checkbox"/>	0	0
Systolic PAP > 60 mmHg	<input type="checkbox"/>	0	0
Previous cardiac surgery	<input type="checkbox"/>	0	0
Postinfarct. septal rupture	<input type="checkbox"/>	0	0
Other than isolated C.A.B.G.	<input type="checkbox"/>	0	0
		Logistic EuroSCORE:	EuroSCORE:

# Parsonnet

## Initial PARSONNET

(Predictive score for acquired adult heart surgery : Additive and Logistic Regression models)

Sex	Age	Morbid obesity
<input type="radio"/> Male <input type="radio"/> Female	<input type="radio"/> < 70 years <input type="radio"/> 70 - 74 years <input type="radio"/> 75 - 79 years <input type="radio"/> >= 80 years	<input type="radio"/> Yes (>=1.5 * ideal weight) <input type="radio"/> No
<b>Diabetes</b> <input type="radio"/> Yes (unspecified type) <input type="radio"/> No	<b>Ejection Fraction</b> <input type="radio"/> >= 50% <input type="radio"/> 30 - 49 % <input type="radio"/> < 30 %	<b>Hypertension</b> <input type="radio"/> Yes (BP > 140/90 mmHg) or antihypertensive medications <input type="radio"/> No
<b>Reoperation</b> <input type="radio"/> None <input type="radio"/> First <input type="radio"/> Second	<b>Preoperative IABP</b> <input type="radio"/> Yes <input type="radio"/> No	<b>Left ventricular aneurysm</b> <input type="radio"/> Yes <input type="radio"/> No
<b>Emergency surgery</b> <input type="radio"/> Yes (following PTCA catheterization complications) <input type="radio"/> No	<b>Dialysis</b> <input type="radio"/> Yes (hemodialysis or peritoneal) <input type="radio"/> No	<b>Aortic valve surgery</b> <input type="radio"/> Yes <input type="radio"/> Yes (with gradient >= 120 mmHg) <input type="radio"/> No
<b>CABG at time of valve surgery</b> <input type="radio"/> Yes <input type="radio"/> No	<b>"Additive Model"</b> Univariate analysis: Predicted probability of operative mortality = SUM ((weight for risk factor) * (1 if factor present, 0 if absent)) =	<b>Mitral valve surgery</b> <input type="radio"/> Yes <input type="radio"/> Yes ( with Systolic PAP >=60 mmHg) <input type="radio"/> No
<b>Catastrophic states</b> e.g. acute structural defect, cardiogenic shock acute renal failure or other conditions (select the level of severity)	<input type="radio"/> Zero <input type="radio"/> One <input type="radio"/> Two <input type="radio"/> Three <input type="radio"/> Four <input type="radio"/> Five	<b>Other rare circumstances</b> Paraplegia, <input type="radio"/> Zero pacemaker dependency, <input type="radio"/> One congenital heart disease <input type="radio"/> Two in adult <input type="radio"/> Three severe asthma <input type="radio"/> Four or other conditions <input type="radio"/> Five (select the level of severity)

Clear

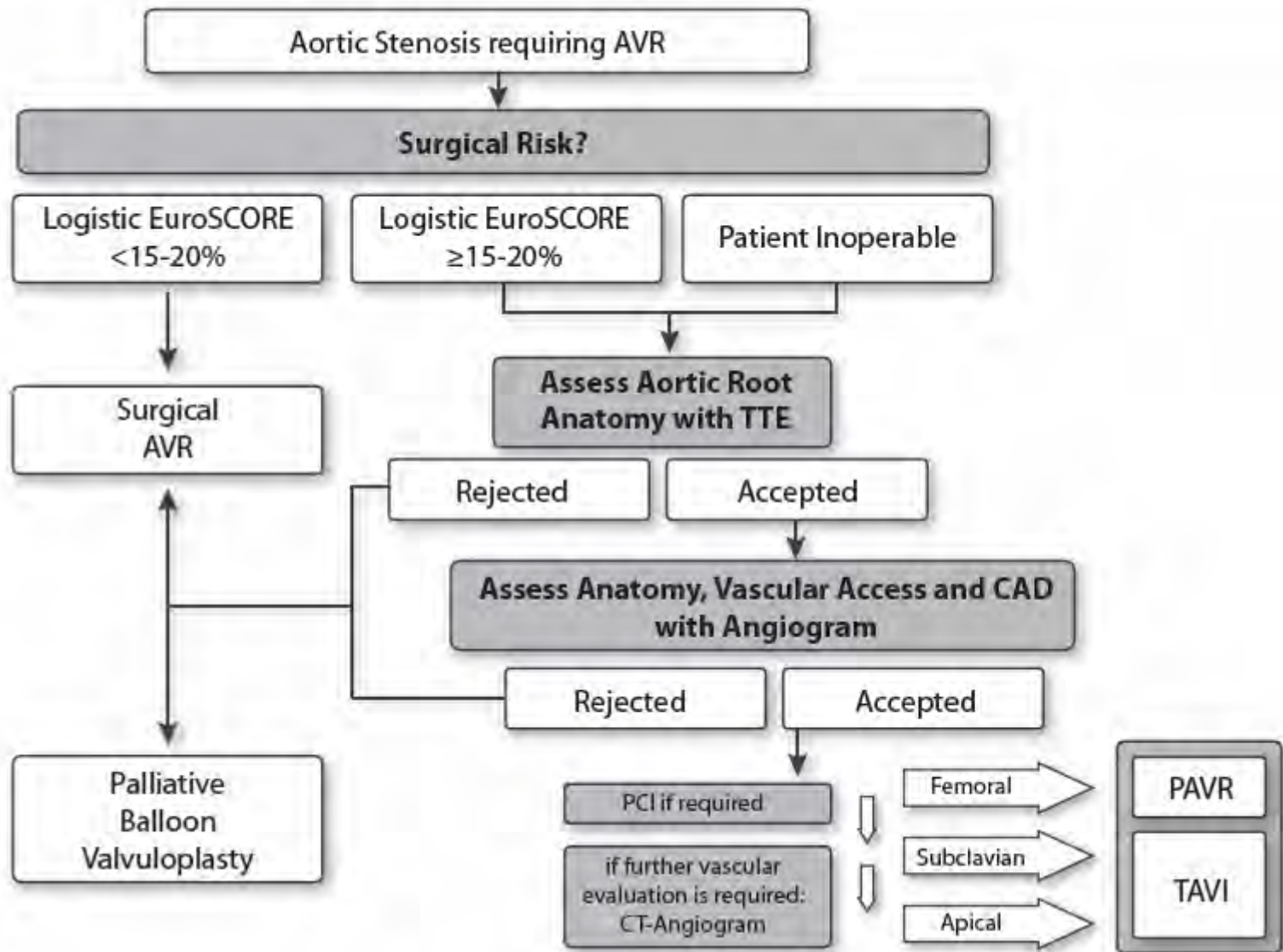
# Alto riesgo quirúrgico

Reoperaciones

Aorta en porcelana

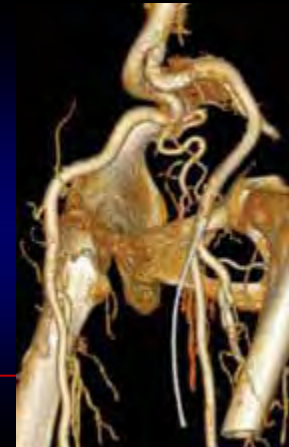
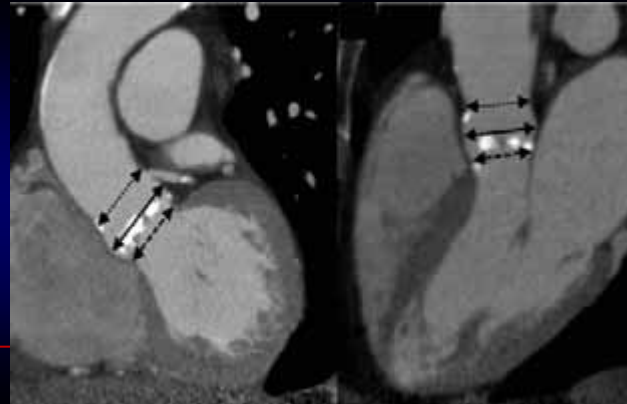
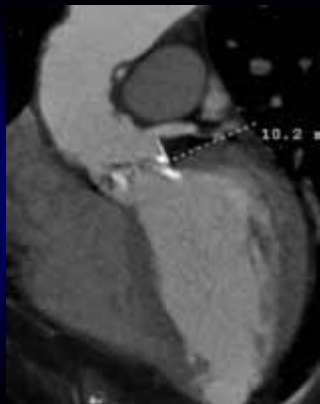
Radiación torácica

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## Que Buscar en los exámenes

- Diámetros de los accesos vasculares
- Diámetro del anillo
- Grado de calcificación valvular
- Distancia anillo – ostium coronarios
- Diámetro de la aorta ascendente
- Angulación del TSVI – aorta ascendente



# Anatomía favorable

Accesos: Vasos de 6mm – 18/19F

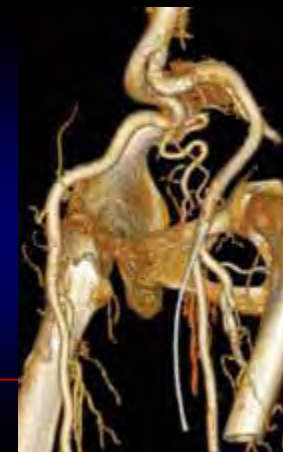
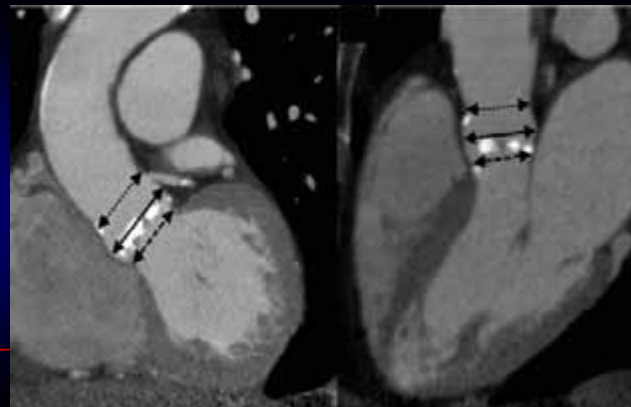
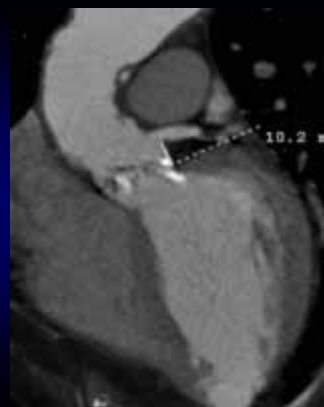
Vasos de 7-8mm – 21/24F

Anillo aórtico: 18 -25mm (ES)

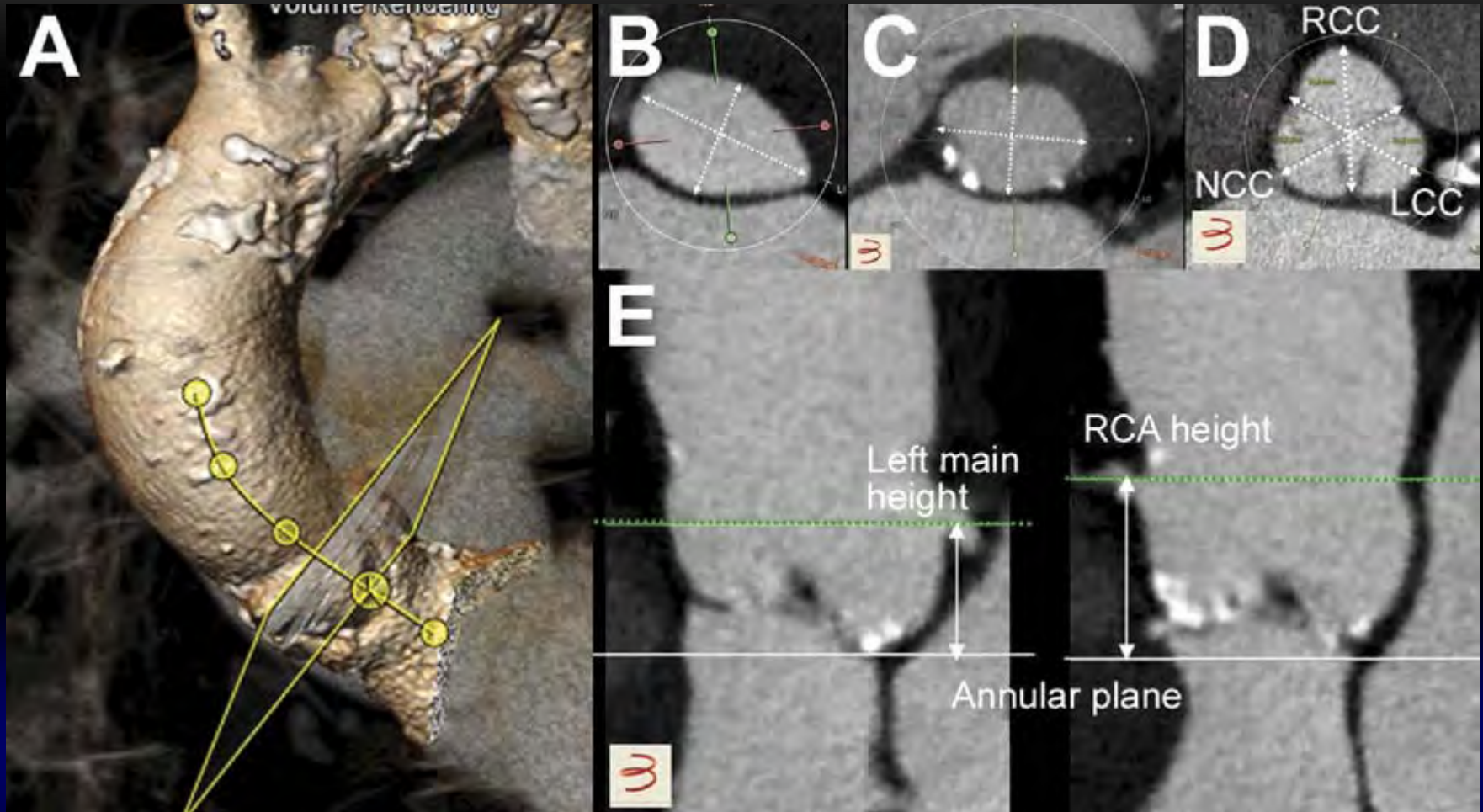
20 – 27mm (CV)

Distancia anillo – coronarias: > 10mm

UST y aorta ascendente: < 45mm (CV)



# Anatomía favorable



## Vías de abordajes

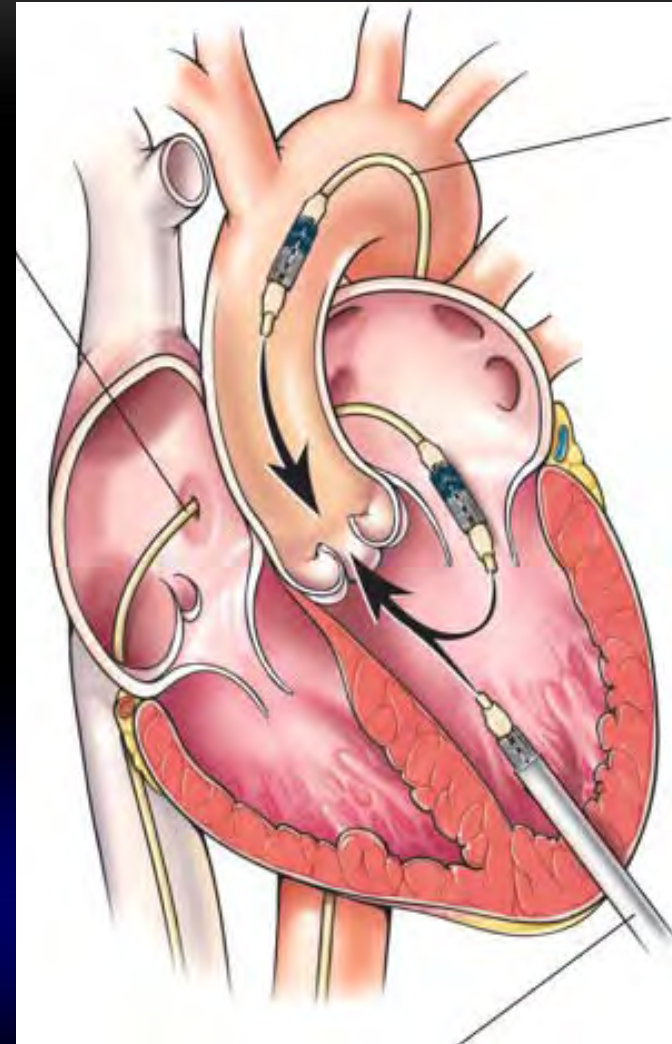
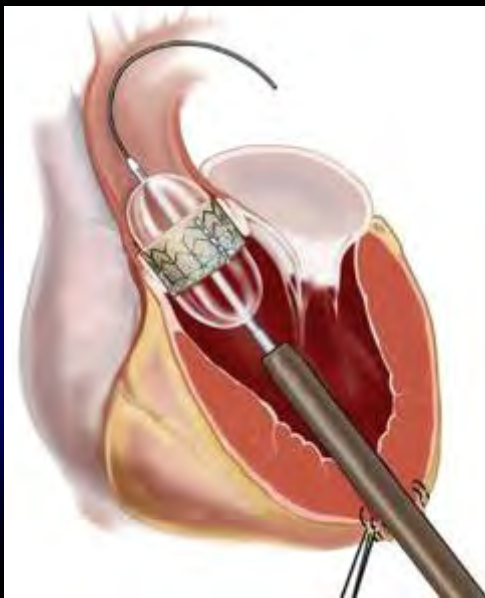


Vía anterógrada

Vía retrograda

Femoral  
subclavia

Vía apical





# Dispositivos



	<b>Edwards Sapiens XT</b>	<b>Core Valve Medtronic</b>
Soporte	Cromo-cobalto	Nitinol (níquel-titanio)
Tejido	Pericardio bovino	Pericardio porcino
Liberación	Balón expandible	Auto expandible
Tamaños	23 -26	26 - 29
Abordajes	Transfemoral - apical	Femoral - subclavia

# Tamaños

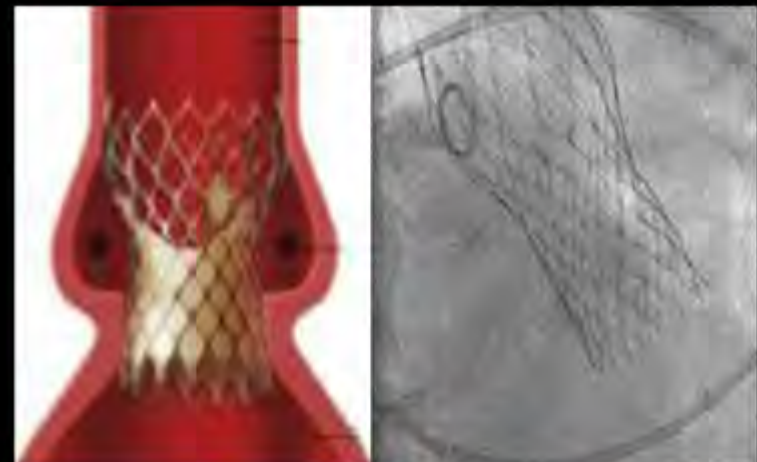
	Stent Ø	Height	Annulus Ø
<b>Edwards-Sapien™</b>	23 mm	14.5mm	18-21 mm
	26 mm	16 mm	21-25 mm
<b>CoreValve Revalving™</b>	26 mm	53 mm	20-23 mm
	29 mm	55 mm	23-27 mm



**Edwards-Sapien**

**Transfemoral (22F or 24F)**

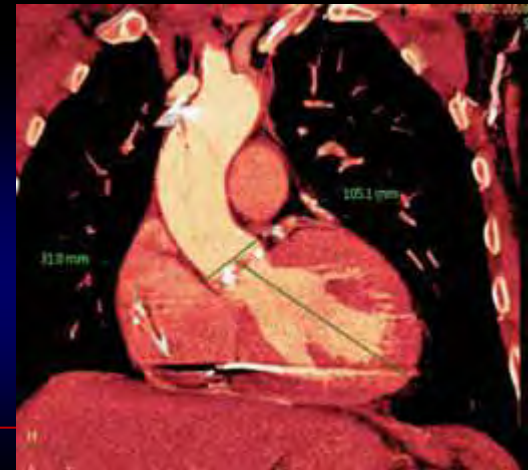
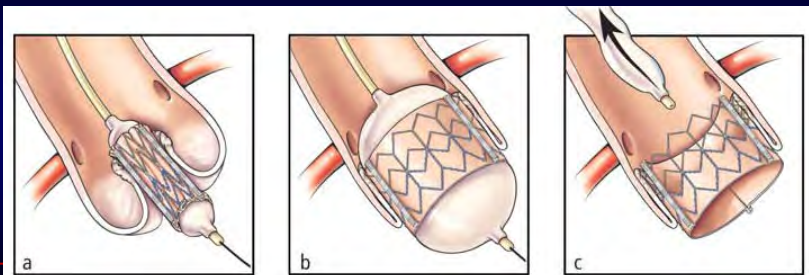
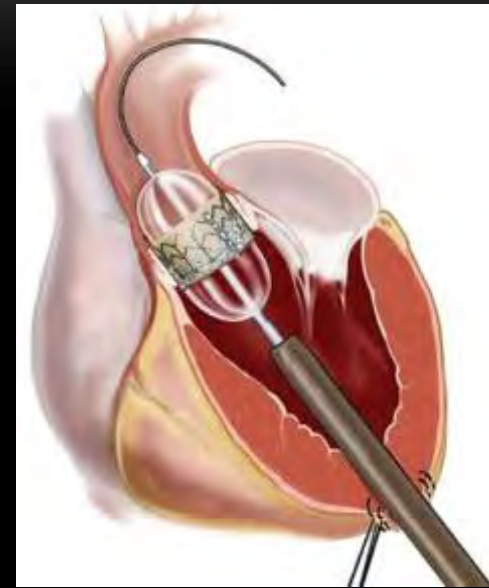
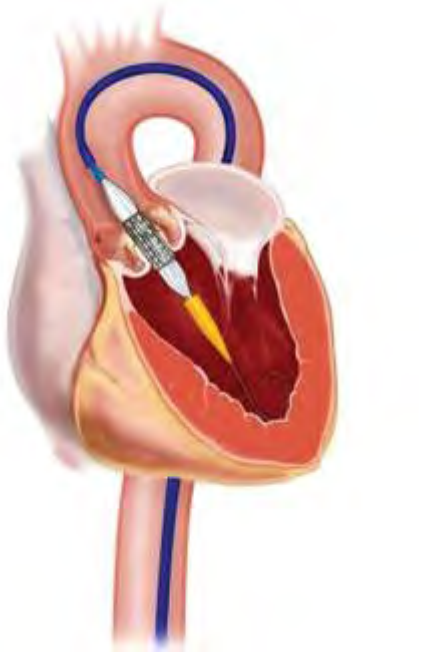
**Trans-apical**



**CoreValve Revalving**

**Transfemoral (18F)**

# Edwards Sapiens



# Balloon Expandable Valve

2000 (FIM 2002)

Percutaneous Heart Valve



Bovine pericardium  
Stainl. steel frame  
23mm  
Exp. and F.I.M.

24F

TF sheath sizes

2003

Cribier Edwards



Equine pericardium  
Stainl. steel frame  
23mm  
2003-2006

22F

2006

Edwards Sapien



Treated bovine peric.  
Stainl. steel frame  
23 and 26mm  
From 2006

22F, 24F

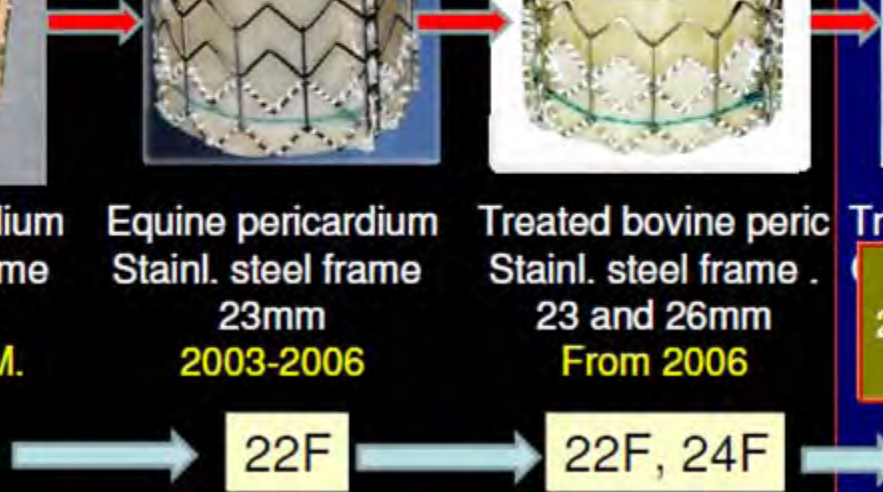
2009

Edwards Sapien XT



Treated bovine peric.  
Next to come  
20mm and 29mm  
THV sizes

18F, 19F



# Modificaciones

## Edwards SAPIEN XT Valve Refinement



**Cribier-Edwards THV**

- 23 mm Valve
- Untreated Equine Tissue



**Edwards SAPIEN THV**

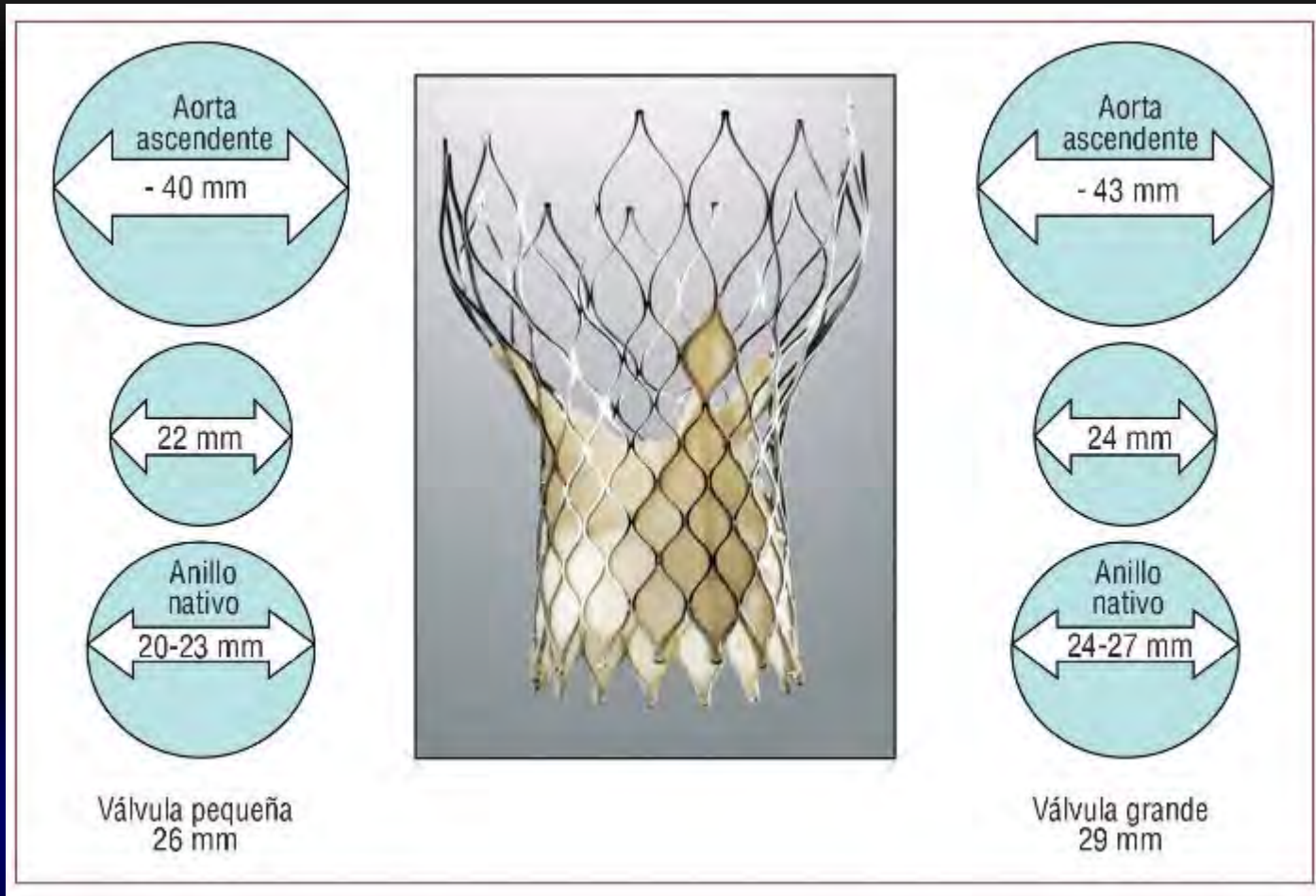
- 23 and 26 mm Valves
- Bovine Pericardial Tissue
- Carpentier-Edwards ThermaFix Process™
- Leaflet Matching Technology



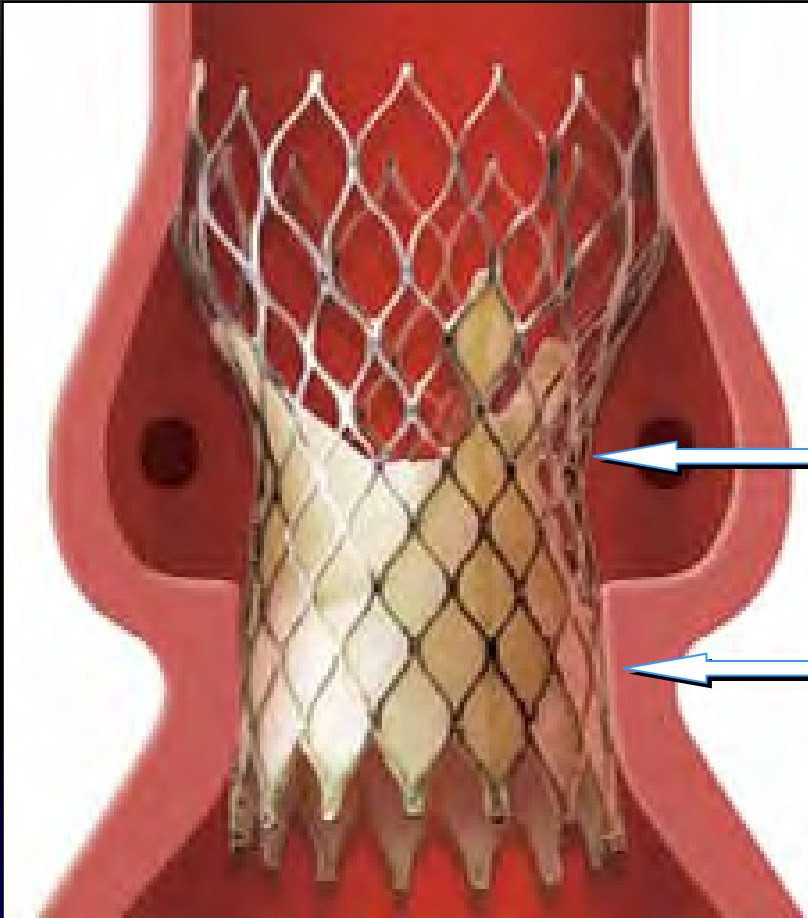
**Edwards SAPIEN XT THV**

- 23 and 26 mm Valves
- 20mm and 29mm Under Development
- Bovine Pericardial Tissue
- Carpentier-Edwards ThermaFix Process
- Leaflet Matching Technology
- Product Design Updates**
- New Frame Design
- Lower Crimp Profile Geometry
- Cobalt-chromium Material
- New Valve and Leaflet Design
- Surgical Leaflet Design
- Semi-closed Design
- Increased Leaflet Coaptation

# Core Valve Medtronic



## Core valve posicionada



✚ Supra-annular valve function

✚ Intra-annular implantation and sealing skirt

# CoreValve

Generation 1  
25F

Generation 2  
21F

Generation 3  
18F

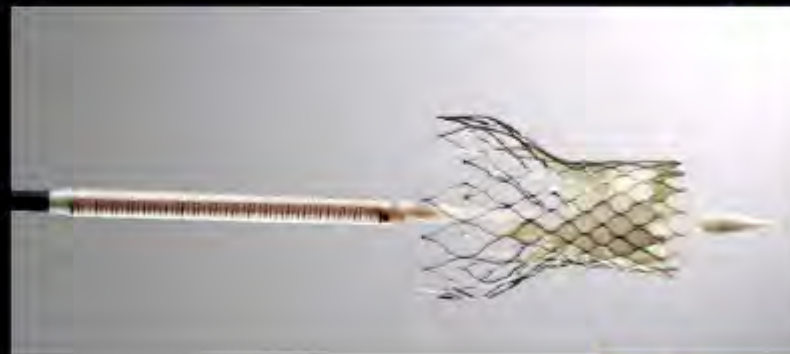
Generation 4  
?

2004-2005

2005-2006

From 2006

2010



Improved  
positioning ?

## Comparaciones

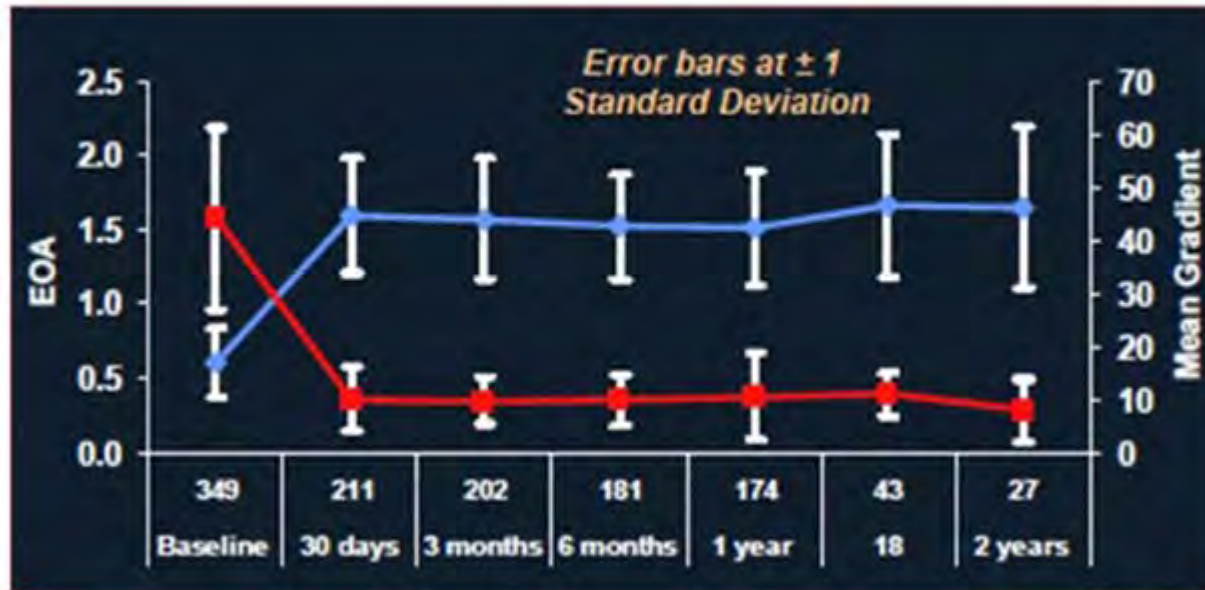
	<b>Sapien - Edwards</b>	<b>CoreValve</b>
<b>Mecanismo de expansión</b>	Balón - expandible	Auto - expandible
<b>Material valvular</b>	Pericardio bovino	Pericardio porcino
<b>Material del stent</b>	Stainless steel	Nitinol
<b>Reposicionable</b>	NO	<b>SI</b>
<b>Sobreestimulación</b>	SI	<b>NO</b>
<b>Tamaño del introductor</b>	18/22/24F (fem) //26F (transapical)	<b>18 French</b>
<b>Posición</b>	Intra-annular anchoring AND function	<b>Intra-annular anchoring Supra-annular function</b>

# Comparaciones

	Sapien - Edwards	CoreValve
<b>Percutáneo</b>	<b>NO</b>	<b>SI</b>
<b>Navegabilidad</b>	<b>+</b>	<b>++++</b>
<b>Cruce válvula aórtica</b>	<b>+</b>	<b>++++</b>
<b>Reposicionable</b>	<b>NO</b>	<b>+++</b>
<b>Sobreestimulación</b>	<b>SI</b>	<b>NO</b>
<b>Compromiso hemodinámico</b>	<b>SI</b>	<b>NO</b>
<b>Insuficiencia Aortica</b>	<b>+ / ++</b>	<b>+ / ++</b>
<b>BAV</b>	<b>+</b>	<b>+++</b>

# Implante Transfemoral

## POOLED\* Monitored Edwards TAVI *Mean Gradients and EOA (Echo)*



\* REVIVE, REVIVAL, TRAVERCE and PARTNER EU

# Implante Transfemoral

## POOLED\*+ Monitored Edwards TAVI

### *LV Ejection Fraction (Echo)*



\* *REVIVE, REVIVAL, TRAVERCE and PARTNER EU*

**Tabla 1: IVAC: Registros multicéntricos, resultados a corto y mediano plazo**

Prótesis SAPIEN	n	EuroSCORE Logístico / STS score	Vía de Abordaje	Éxito de procedimiento (%)	Mortalidad a 30 días (%)	Supervivencia a mediano plazo (%)
<b>Estudio/Registro</b>						
Canadiense (TF) <sup>(15)</sup>	168	ND/9.0	TF	90.5	9.5	75†/65‡
Canadiense (TA) <sup>(15)</sup>	177	ND/10.5	TA	96.1	11.3	78†/64‡
SOURCE (TF) <sup>(16)</sup>	463	25.7/ND	TF	95.2	6.3	81.1† a
SOURCE (TA) <sup>(16)</sup>	575	29.1/ND	TA	92.7	10.3	72.1† a
TRAVERCE <sup>(8)</sup>	168	27/ND	TA	95.8	14.9	63†
Pasic <i>et al.</i> <sup>(17)</sup>	175	38.3/23.5	TA	100	5.1	82.6†
Bélgica	187	30/ND	TA/TF	97	9	72.5†
FRANCE <sup>(18)</sup>	166	26.2/15.5	TA/TF	97	12.7	78.1¶
Gran Bretaña <sup>c</sup>	402	24.5	TA/TF	98.9	6.2	79.5†/72.2‡
<b>CoreValve</b>						
Laborde <i>et al.</i> <sup>d</sup>	1265	22.7/ND	TF/SC	98	9.7	N/A
Grube <i>et al.</i> <sup>(13)</sup>	136	23.1/9.7	TF/SC	70/70.8/91.2*	40/8.3/10.8*	60†/79.2†/84.3†*
Piazza <i>et al.</i> <sup>(19)</sup>	646	23.1	TF	97.2	8	N/A
Belgica <sup>b</sup>	141	25/ND	TF/SC	98	9	79†
FRANCE <sup>(18)</sup>	78	24.7/19.3	TF/SC	97	11.7	78.1¶
Gran Bretaña <sup>c</sup>	460	20.3	TF/SC	98.9	6.2	81.6†/77.6‡
Italiano <sup>(20)</sup>	514	20.1/ND	TF/SC	98.6	7.2	85.1†
Alemán <sup>(21)</sup>	666	20.8/ND	TF/SC	98.4	12.4	N/A

TA: transapical; TF: transfemoral; SC: subclavia; N/D: no disponible. † 12 meses, ‡ 24 meses, ¶ 6-meses de seguimiento.

\* Para sistemas 25F, 21F y 18F, respectivamente.

a. Thomas M. 1 Year Results from Cohort 1 of the SOURCE Registry, EuroPCR May 2010, Paris, Francia.

b. Bosmans J. EuroPCR Mayo 2010, Paris, Francia.

c. Ludman P. EuroPCR Mayo 2010, Paris, Francia.

d. Laborde J-C. Advanced Cardiovascular Intervention, Enero 2009, Londres.

**Tabla 2: IVAC: Complicaciones a 30 días relacionadas al procedimiento**

Prótesis SAPIEN	n	Embolización (%)	Complicaciones Vasculares Mayores (%)	Accidente Cerebro Vascular (%)	Necesidad Hemodiálisis (%)	Marcapasos (%)
<b>Estudio/Registro</b>						
Canadiense (TF) <sup>(15)</sup>	168	3.0	13.1	3.0	1.8	3.6
Canadiense (TA) <sup>(15)</sup>	177	1.1	13.0	1.7	3.4	6.2
SOURCE (TF) <sup>(16)</sup>	463	0	10.6	2.4	1.3	6.7
SOURCE (TA) <sup>(16)</sup>	575	0.5	2.4	2.6	7.1	7.3
TRAVERCE <sup>(8)</sup>	168	3.0	6	2.4	13.4	6
Pasic <i>et al.</i> <sup>(17)</sup>	175	N/D	2.3	0.6	N/D	5.7
Bélgica <sup>a</sup>	160	N/D	N/A	5	N/D	5
FRANCE <sup>(18)</sup>	166	N/D	6	3.5	3.8	5.5
Gran Bretaña <sup>b</sup>	402	N/D	2.5	4	N/D	7
PARTNER <sup>(22)</sup>	179	N/D	16.2	6.7	1.1	3.4
<b>CoreValve</b>						
Laborde <i>et al.</i> <sup>d</sup>	1265	0	4.4	2.2	N/D	18.4
Grube <i>et al.</i> <sup>(13)</sup>	136	N/D	N/D	10/4.2/2.9*	N/D	10/413.6/33.3*
Piazza <i>et al.</i> <sup>(19)</sup>	646	N/D	1.9	1.9	N/D	9.3
Belgica <sup>b</sup>	119	N/D	N/D	4.5	N/D	23
FRANCE <sup>(18)</sup>	78	N/D	7.9	3.6	1.5	25.3
Gran Bretaña <sup>c</sup>	460	N/D	4	4	N/D	26
Italiano <sup>(20)</sup>	772	N/D	6	1.7	N/D	18.5
Alemán <sup>(21)</sup>	666	N/D	16.9	2.6	N/D	42.5


TA: transapical; TF: transfemoral; SC: subclavia; N/D: no disponible, \* Para sistemas 25F, 21F y 18F, respectivamente

a. Bosmans J. EuroPCR Mayo 2010, Paris, Francia.

b. Ludman P. EuroPCR Mayo 2010, Paris, Francia.

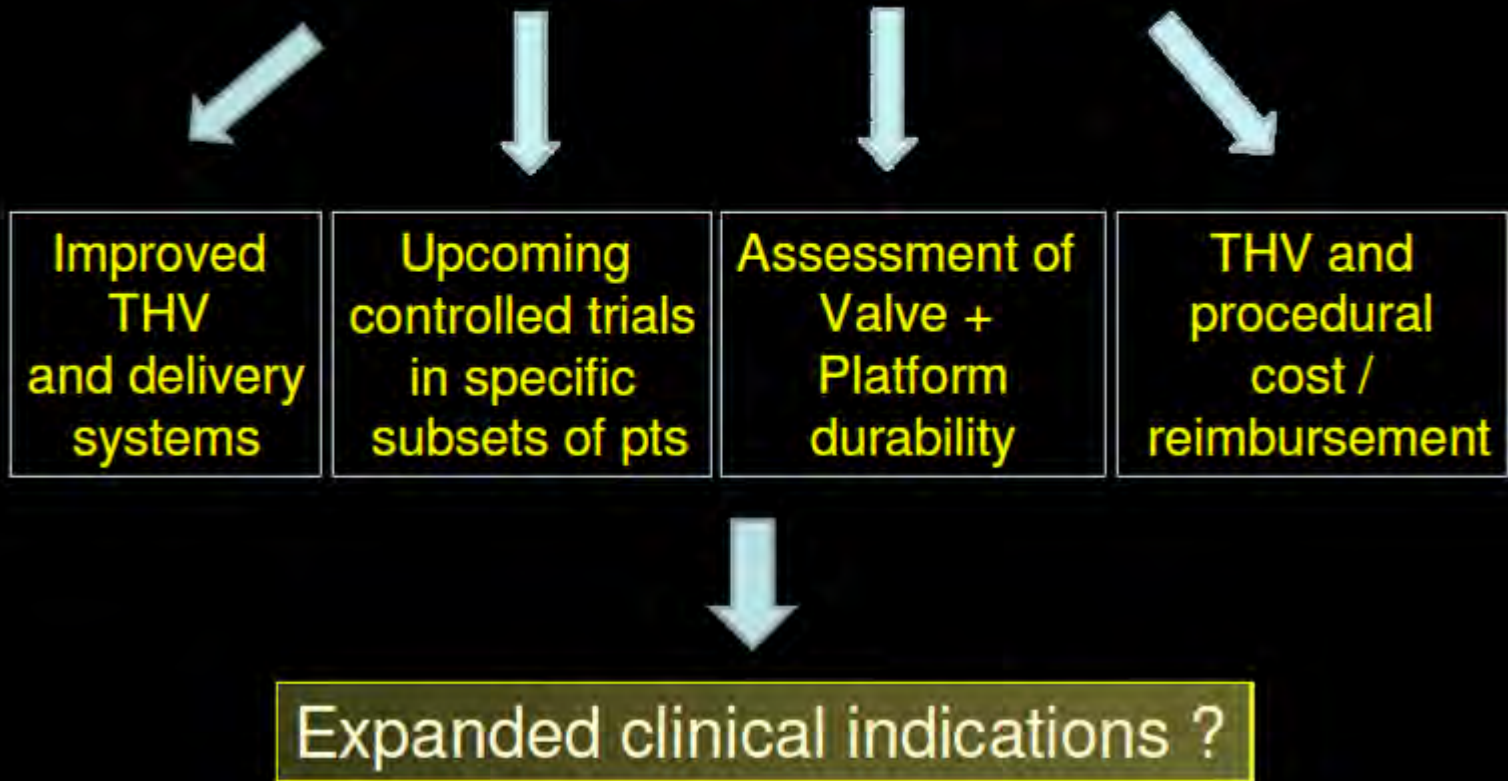
c. Laborde J-C. Advanced Cardiovascular Intervention, Enero 2009, Londres.



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- ¿constituye la ancianidad un obstáculo insuperable de afrontar con posibilidades de éxito el trauma de una cirugía cardiaca?
- ¿resultaría justificado, ético, realizar cuantiosos gastos en este sector de la población?
- ¿mejora lo suficiente la calidad de vida ya mermada por el hecho biológico como para emprender un acto tan costoso?
- ¿La prolongación de la vida del paciente anciano o de alto riesgo, es un objetivo esencial de la indicación quirúrgica?
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# PERSPECTIVES

Where do we go?



# Futuro

Recomendación de tratamiento de la válvula  
aórtica con estenosis severa con ITVA

Clase I: Pacientes jóvenes

Cuando se tengan estudios a largo plazo y  
mejoras en la preservación de los tejidos  
valvulares

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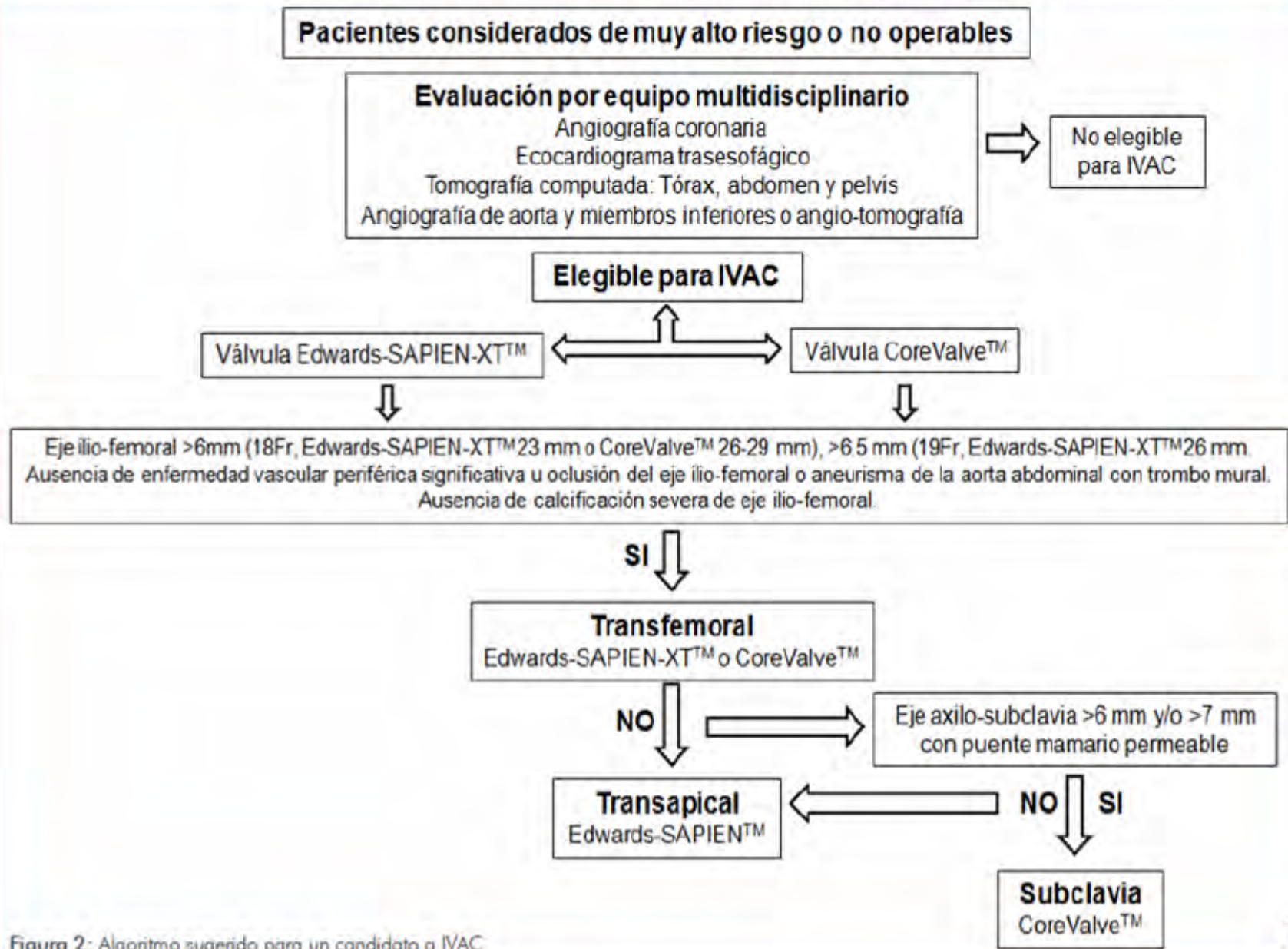


Figura 2: Algoritmo sugerido para un candidato a IVAC

