ManejoAnestésico ImplantaciónVálvula Aortica Transcateter (TAVI)

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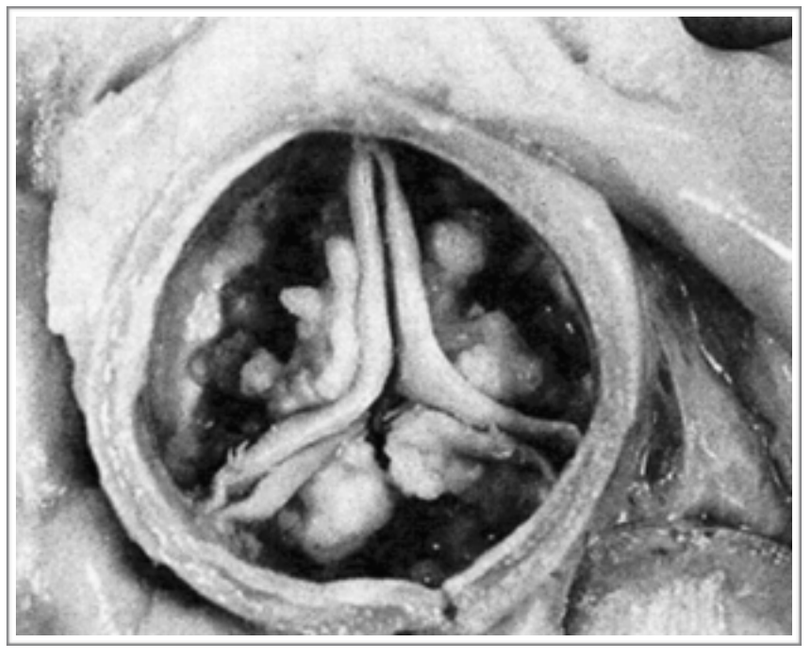
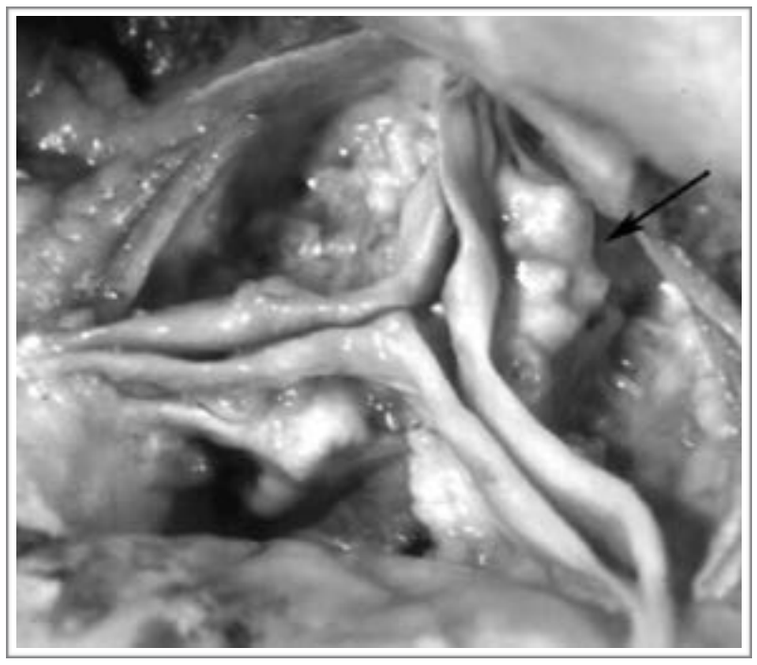
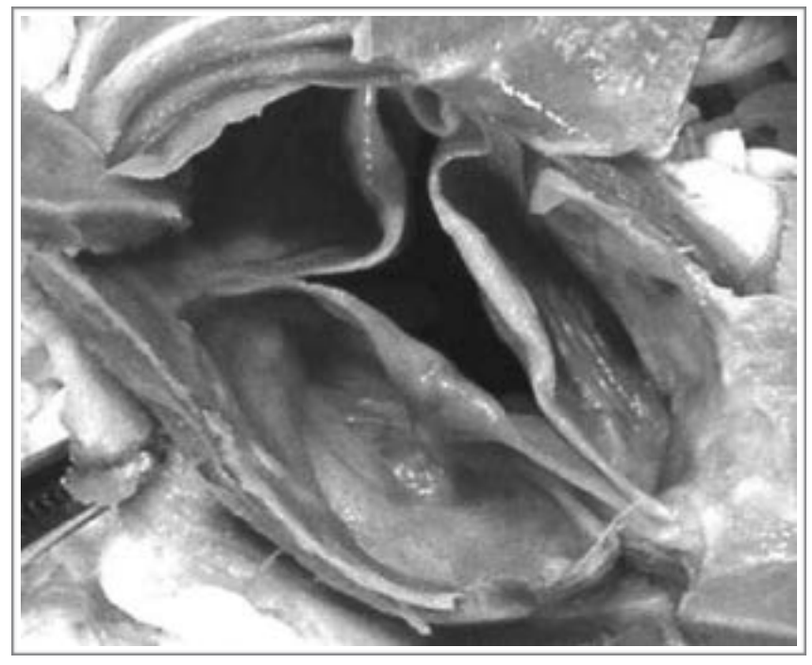
Valencia 16 de Junio de 2015

Estenosis Aortica es la enfermedad válvular mas frecuente.







2 -7 %

En mayores de 65 años

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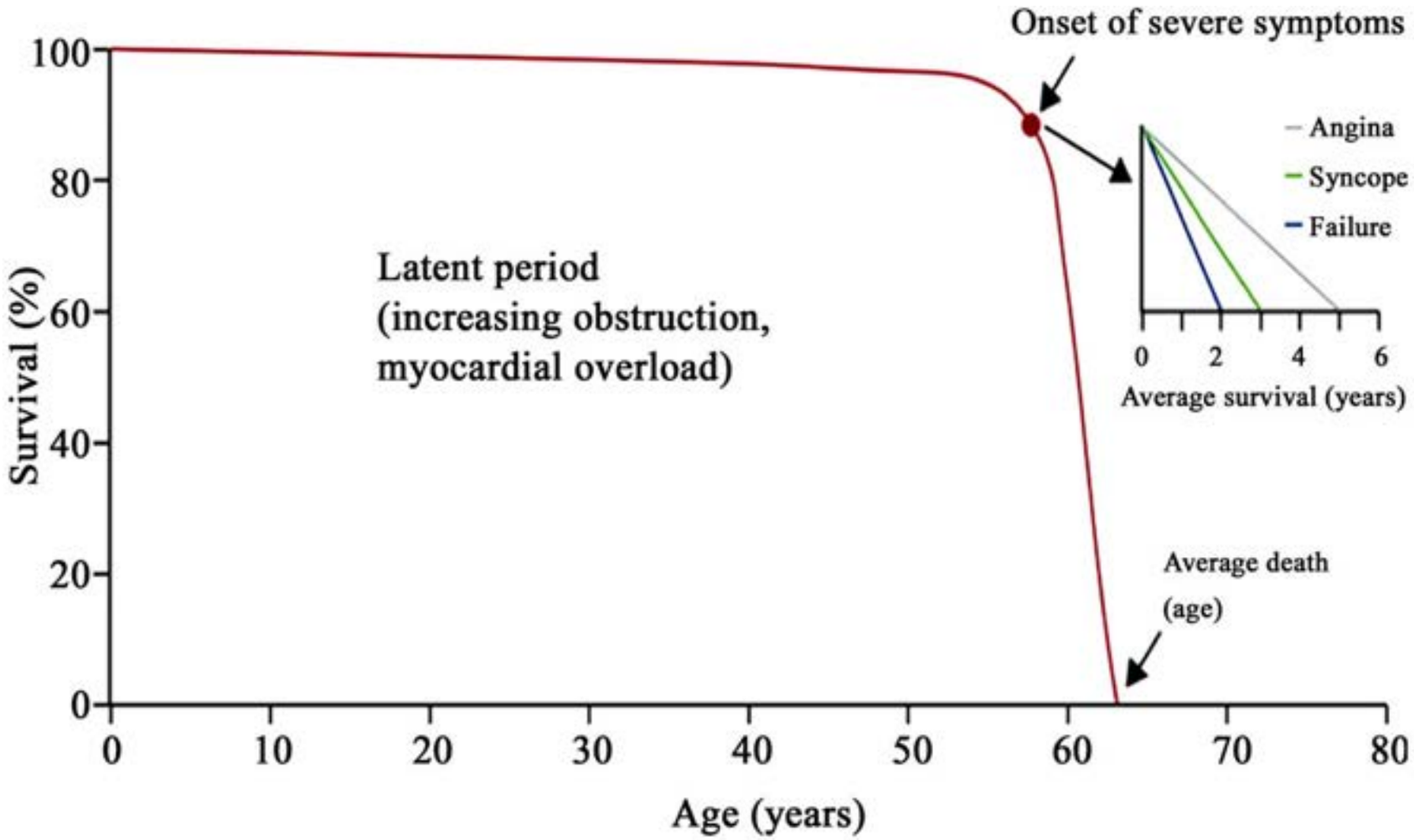
Fisiopatologia

↑ Demanda O2
↓Aporte 02

Isquemia subendocardica.

Enfermedad de progresión lenta, asintomática durante un largo periodo de latencia.



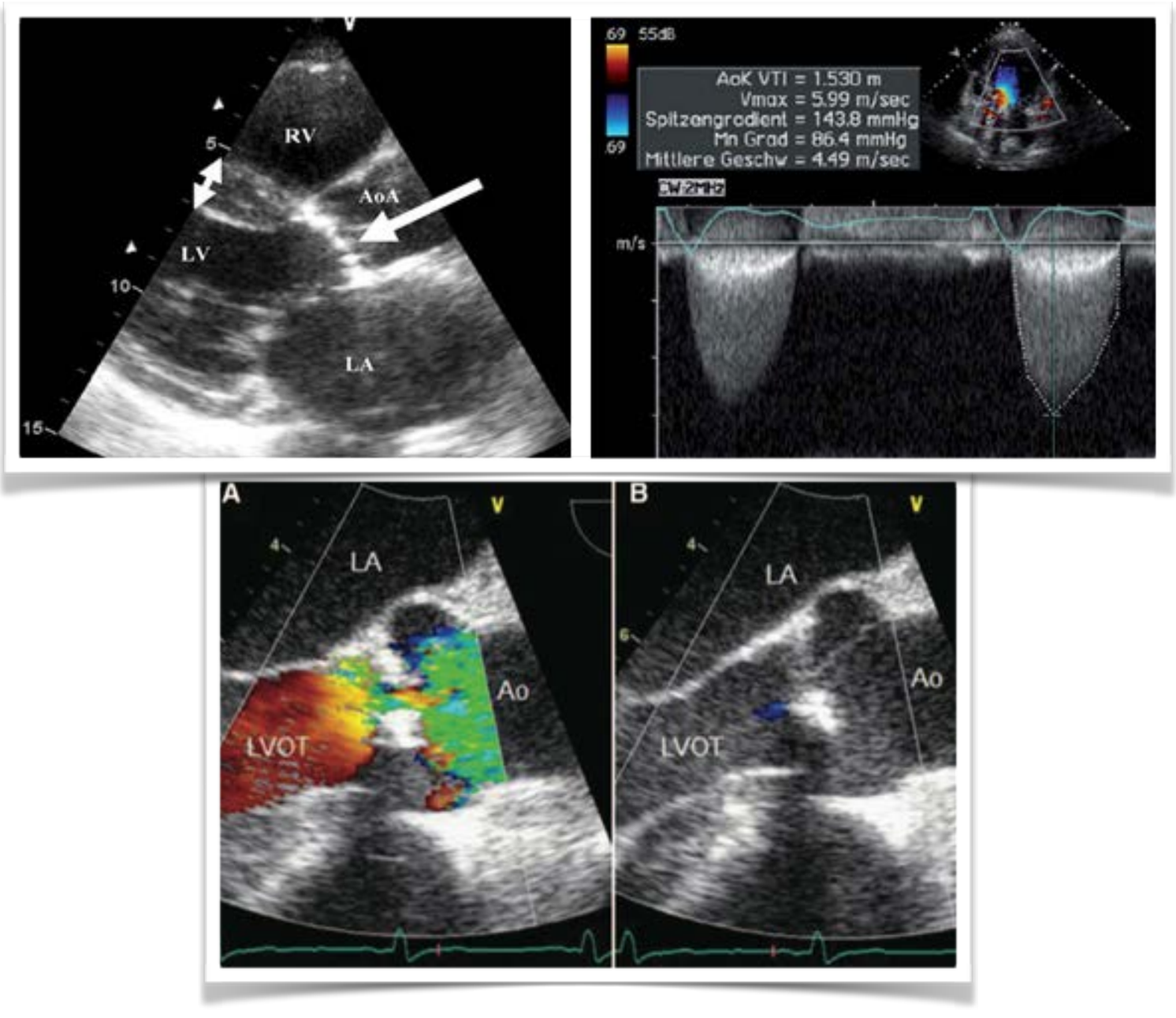
Cuando aparecen los síntomas el pronostico es pésimo, con una tasa de supervivencia de 15 - 50 % a los 5 años

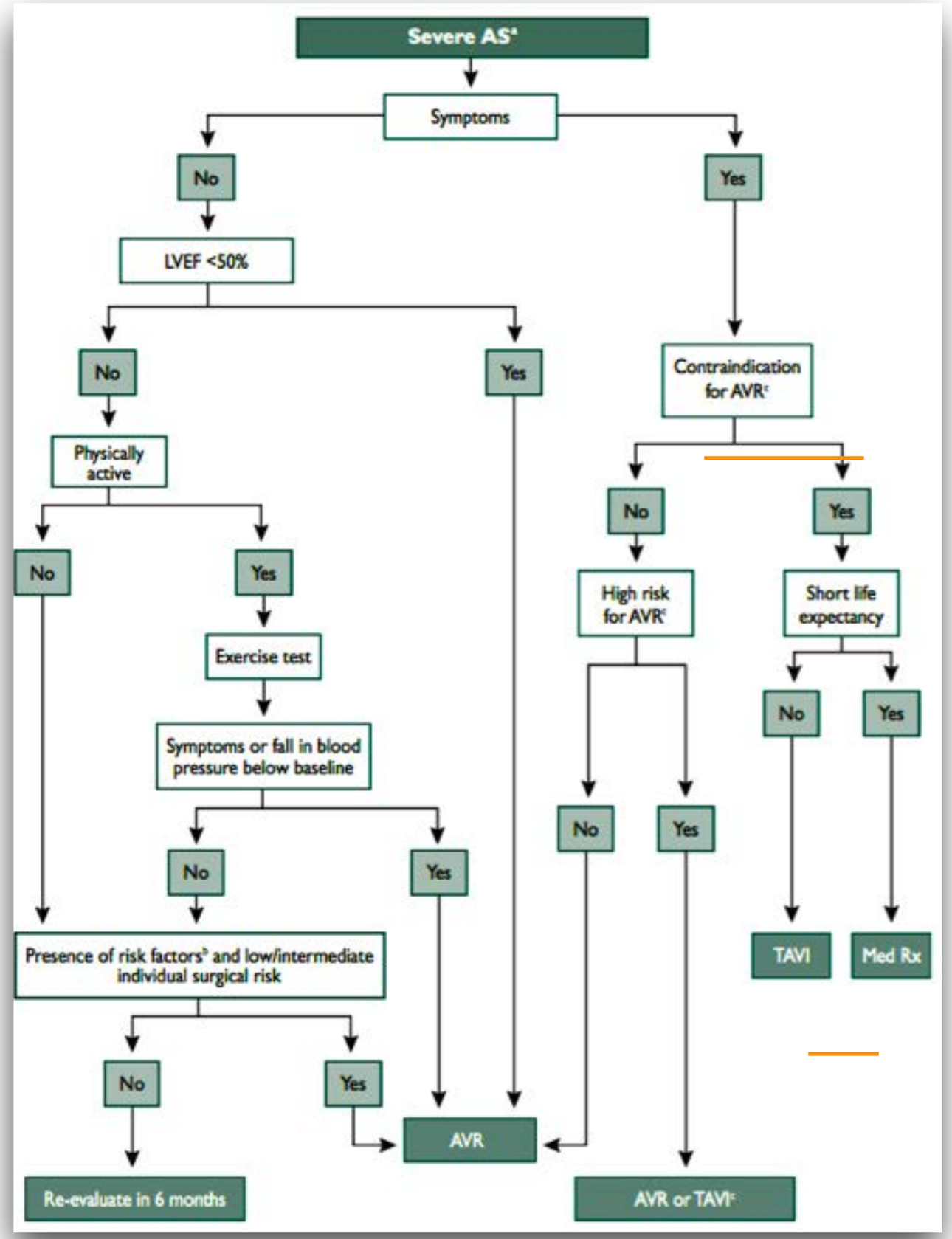
Lancet. 2009 Mar 14;373(9667):956-66. doi: 10.1016/S0140-6736(09)60211-7. Epub 2009 Feb 21.

Aortic stenosis.

Carabello BA[1], Paulus WJ.

	normal	leve	Moderada	severa
Area Valvular	3-4	>1.5	1-1.5	< 1 cm2
Area valvular indexada		>0.85	06-0.85	<0.6 cm/ BSA
Gradiente medio	<5	<25	25-40	> 40 mmhg
Vel. max Jet	<2	<3	3-4	> 4 m/ s

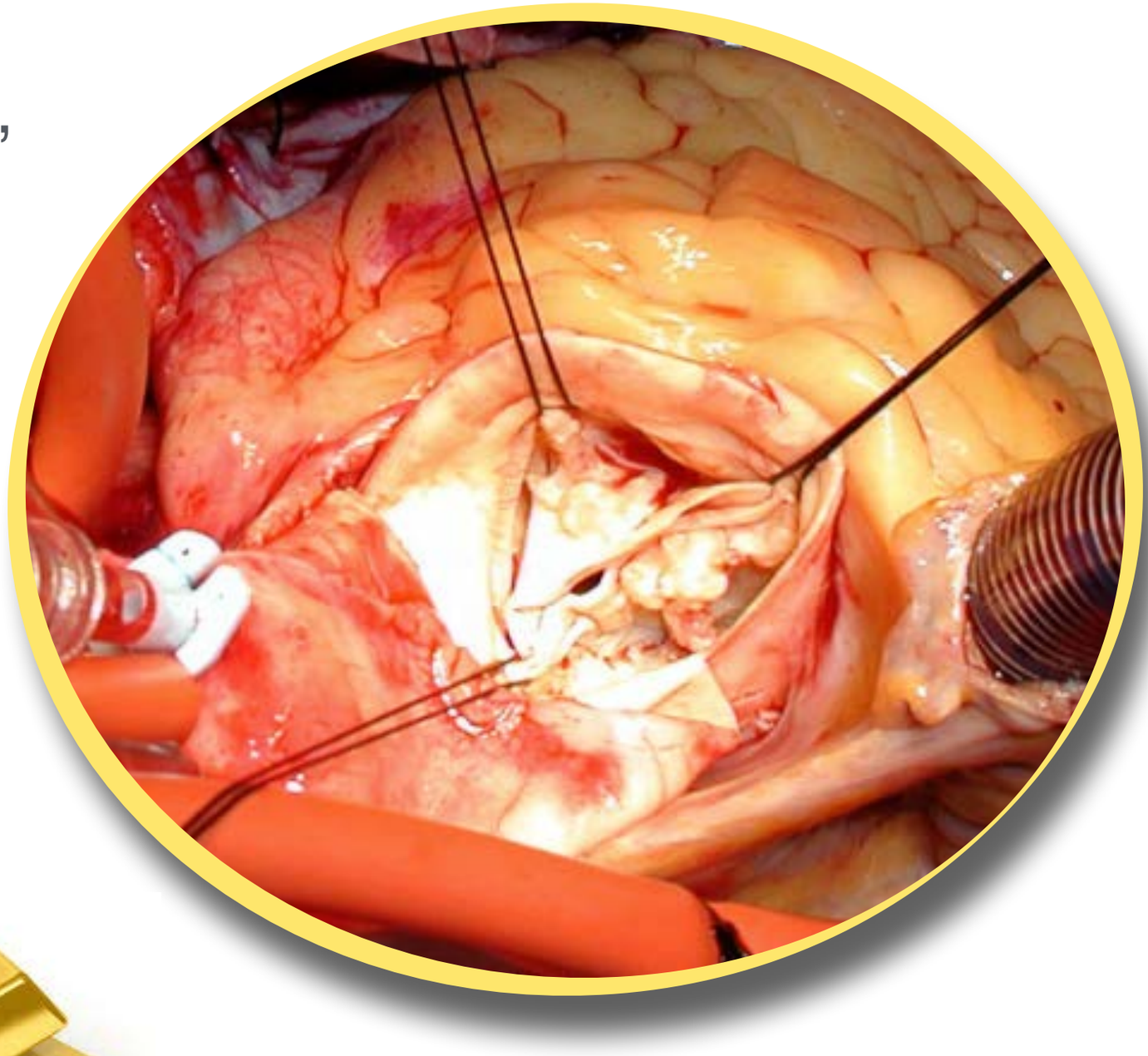



Severe AS[a]
Symptoms
No
Yes
LVEF <50%
No
Yes
Physically active
No
Yes
Exercise test
Symptoms or fall in blood pressure below baseline
No
Yes
Presence of risk factors[b] and low/intermediate individual surgical risk
No
Yes
Re-evaluate in 6 months
AVR
Contraindication for AVR[c]
No
Yes
High risk for AVR[c]
Short life expectancy
No
Yes
No
Yes
No
Yes
TAVI
Med Rx
AVR or TAVI[c]

Reemplazo válvular quirúrgico “Gold standard” mejora los síntomas y prolonga la supervivencia. (Recomendación IA).

Mortalidad quirúrgica 1-3 % en < 70 años y 4-8 % en mayores.

+30% no son llevados a cirugia.



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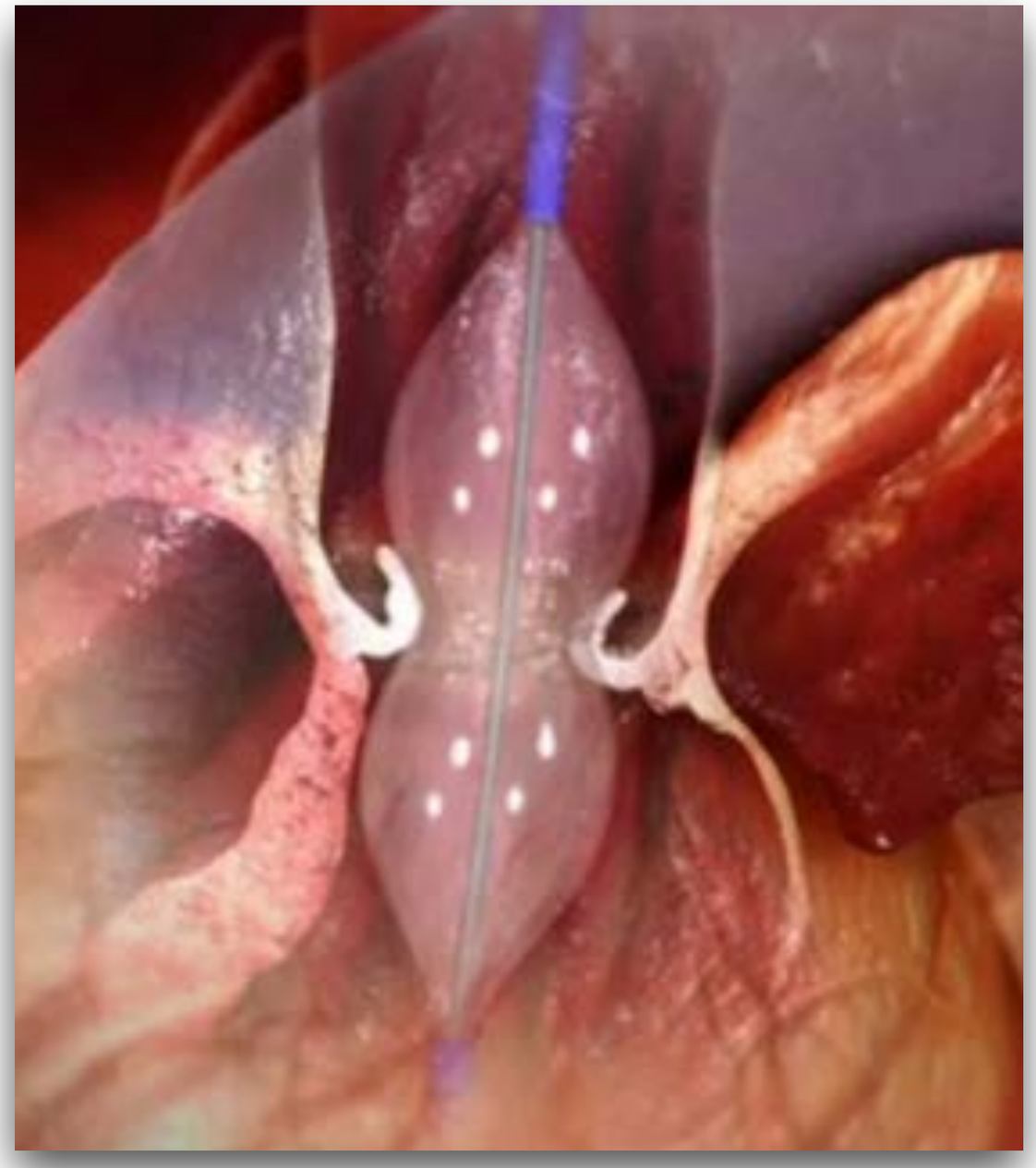
Valvuloplastia con balón

Baja eficacia, alta tasa de complicaciones 10%

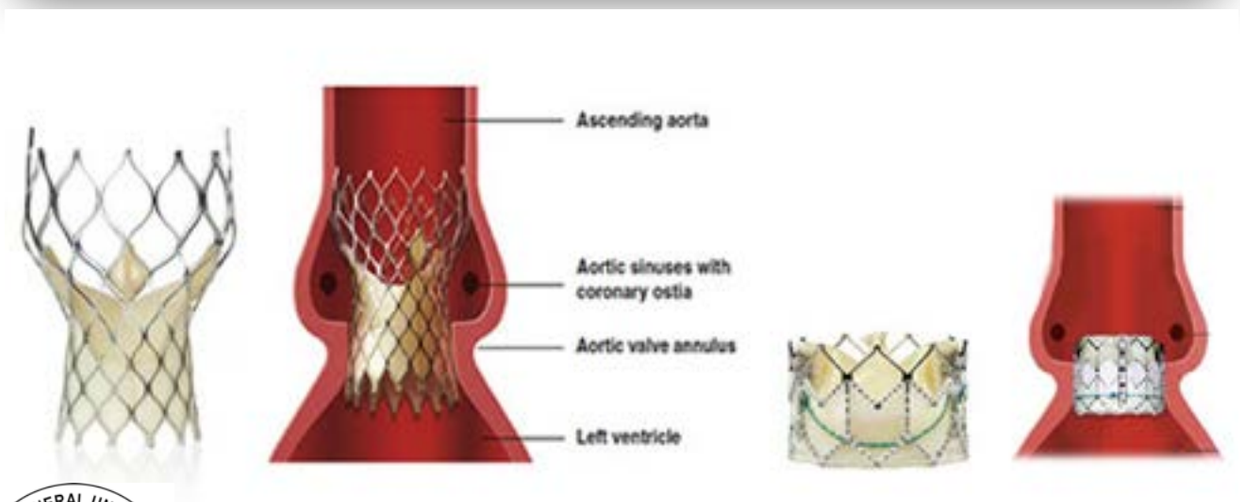
Reestenosis ocurre dentro de 6- 12 meses en la mayoría de los pacientes,

Resultados a mediano y largo plazo similares a la evolución natural de la enfermedad.



TAVI

Representa una alternativa para pacientes con alto riesgo que son inoperables.



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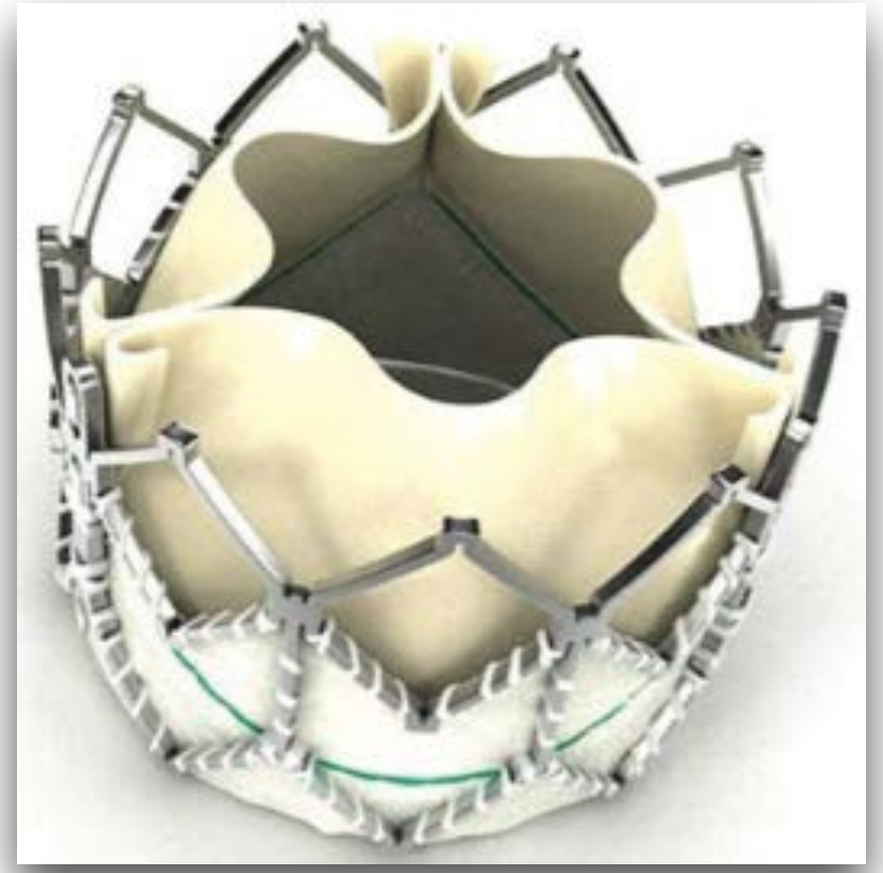
Evolución…

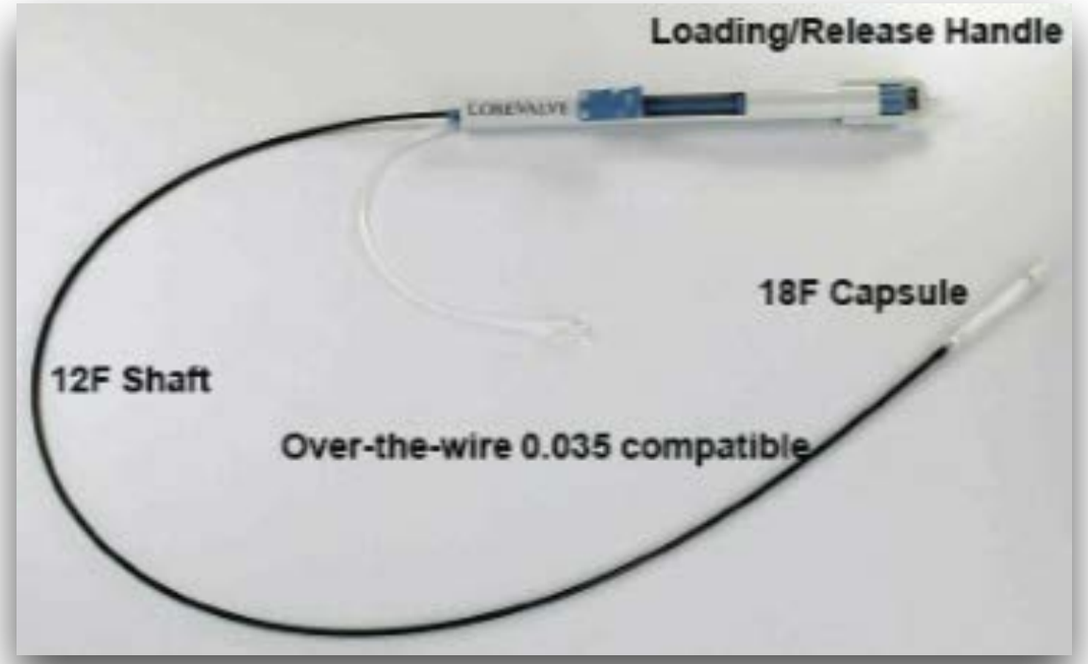
- 2002 Cribier, primera válvula implantada en humanos

2007 Aprobación en Europa

2011 aprobación en estados unidos por la FDA.




A


Loading/Release Handle
18F Capsule
12F Shaft
Over-the-wire 0.035 compatible

	SAPIEN XT	CoreValve
Frame	Cobalt chromium	Nitilol
Leaflets	Bovine pericardial	Porcine pericardial
Expansion	Balloon-expandable	Self-expanding
Prior balloon valvuloplasty	Yes	No
Retrievable	No	Prior to complete release
Fixation	Annulus	Annulus/ascending aorta
Prosthesis diameter	23, 26, and 29 mm	26 and 29 mm
Length	15, 17, and 19 mm	53–55 mm
Annulus diameter	18– 28 mm	20–27 mm
SOV	NA	≥27–28
STJ	NA	≤40–43
AVA–coronary ostial height	>10–11	≥14
Delivery system diameter	18 and 19 Fr	18 Fr
Sheath external diameter	7.3 mm	7.3 mm
Minimum arterial diameter	6 mm	6 mm
Access	TF and TA	TF and TAx

	SAPIEN	CoreValve
Mortalidad	4.1%	5.1 %
Complicaciones Vasculares	9.9%	11.1%
ACV/AIT	5.8	2.6%
Mejoria NYHA	94.3%	86.7% (p=0.001)
Implante	95.9%	77.5% (p<0.001)
Nuevo	17.3%	37.65 (p=0.001)

JAMA. 2014 Apr 16;311(15):1503-14. doi: 10.1001/jama.2014.3316.

Comparison of balloon-expandable vs self-expandable valves in patients undergoing transcatheter aortic valve replacement: the CHOICE randomized clinical trial.

Abdel-Wahab M[1], Mehilli J[2], Frerker C[3], Neumann FJ[4], Kurz T[5], Tölg R[1], Zachow D[6], Guerra E[7], Massberg S[2], Schäfer U[8], El-Mawardy M[1], Richardt G[1]; CHOICE investigators.

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

CONCLUSIONS

In patients with severe aortic stenosis who were not suitable candidates for surgery, TAVI, as compared with standard therapy, significantly reduced the rates of death from any cause, the composite end point of death from any cause or repeat hospitalization, and cardiac symptoms, despite the higher incidence of major strokes and major vascular events. (Funded by Edwards Lifesciences; ClinicalTrials.gov number, NCT00530894.)

The NEW ENGLAND JOURNAL of MEDICINE

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Transcatheter versus Surgical Aortic-Valve Replacement in High-Risk Patients

CONCLUSIONS

In high-risk patients with severe aortic stenosis, transcatheter and surgical procedures for aortic-valve replacement were associated with similar rates of survival at 1 year, although there were important differences in periprocedural risks. (Funded by Edwards Lifesciences; Clinical Trials.gov number, NCT00530894.)

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Table 2. Clinical Outcomes at 30 Days and 1 Year.*

Outcome	30 Days			1 Year		
	TAVI (N=179)	Standard Therapy (N=179)	P Value†	TAVI (N=179)	Standard Therapy (N=179)	P Value†
	no. of patients (%)			*no. of patients (%)*		
Death						
From any cause	9 (5.0)	5 (2.8)	0.41	55 (30.7)	89 (49.7)	<0.001
From cardiovascular cause‡	8 (4.5)	3 (1.7)	0.22	35 (19.6)	75 (41.9)	<0.001
Repeat hospitalization§	10 (5.6)	18 (10.1)	0.17	40 (22.3)	79 (44.1)	<0.001
Death from any cause or repeat hospitalization§	19 (10.6)	22 (12.3)	0.74	76 (42.5)	126 (70.4)	<0.001
Stroke or TIA						
All	12 (6.7)	3 (1.7)	0.03	19 (10.6)	8 (4.5)	0.04
TIA	0	0	—	1 (0.6)	0	1.00
Stroke						
Minor	3 (1.7)	1 (0.6)	0.62	4 (2.2)	1 (0.6)	0.37
Major	9 (5.0)	2 (1.1)	0.06	14 (7.8)	7 (3.9)	0.18
Death from any cause or major stroke	15 (8.4)	7 (3.9)	0.12	59 (33.0)	90 (50.3)	0.001
Myocardial infarction						
All	0	0	—	1 (0.6)	1 (0.6)	1.00
Periprocedural	0	0	—	0	0	—
Vascular complications						
All	55 (30.7)	9 (5.0)	<0.001	58 (32.4)	13 (7.3)	<0.001
Major	29 (16.2)	2 (1.1)	<0.001	30 (16.8)	4 (2.2)	<0.001
Acute kidney injury						
Creatinine >3 mg/dl (265 μmol/liter)¶	0	1 (0.6)	1.00	2 (1.1)	5 (2.8)	0.45
Renal-replacement therapy‖	2 (1.1)	3 (1.7)	1.00	3 (1.7)	6 (3.4)	0.50
Major bleeding	30 (16.8)	7 (3.9)	<0.001	40 (22.3)	20 (11.2)	0.007
Cardiac reintervention						
Balloon aortic valvuloplasty	1 (0.6)**	2 (1.1)	1.00	1 (0.6)	66 (36.9)††	<0.001
Repeat TAVI‡‡	3 (1.7)	NA	—	3 (1.7)	NA	—
Aortic-valve replacement	0	3 (1.7)	0.25	2 (1.1)**	17 (9.5)	<0.001
Endocarditis	0	0	—	2 (1.1)	1 (0.6)	0.31
New atrial fibrillation	1 (0.6)	2 (1.1)	1.00	1 (0.6)	3 (1.7)	0.62
New pacemaker	6 (3.4)	9 (5.0)	0.60	8 (4.5)	14 (7.8)	0.27

Table 2. Clinical Outcomes at 30 Days and 1 Year in the Intention-to-Treat Population.*

Outcome	30 Days			1 Year		
	Transcatheter Replacement (N=348)	Surgical Replacement (N=351)	P Value	Transcatheter Replacement (N=348)	Surgical Replacement (N=351)	P Value
	no. of patients (%)			*no. of patients (%)*		
Death						
From any cause	12 (3.4)	22 (6.5)	0.07	84 (24.2)	89 (26.8)	0.44
From cardiac causes	11 (3.2)	10 (3.0)	0.90	47 (14.3)	40 (13.0)	0.63
Repeat hospitalization	15 (4.4)	12 (3.7)	0.64	58 (18.2)	45 (15.5)	0.38
Death or repeat hospitalization	25 (7.2)	33 (9.7)	0.24	120 (34.6)	119 (35.9)	0.73
Stroke or transient ischemic attack						
Either	19 (5.5)	8 (2.4)	0.04	27 (8.3)	13 (4.3)	0.04
Transient ischemic attack	3 (0.9)	1 (0.3)	0.33	7 (2.3)	4 (1.5)	0.47
Stroke						
Minor	3 (0.9)	1 (0.3)	0.34	3 (0.9)	2 (0.7)	0.84
Major	13 (3.8)	7 (2.1)	0.20	17 (5.1)	8 (2.4)	0.07
Death from any cause or major stroke	24 (6.9)	28 (8.2)	0.52	92 (26.5)	93 (28.0)	0.68
Myocardial infarction	0	2 (0.6)	0.16	1 (0.4)	2 (0.6)	0.69
Vascular complication						
Any	59 (17.0)	13 (3.8)	<0.001	62 (18.0)	16 (4.8)	<0.001
Major	38 (11.0)	11 (3.2)	<0.001	39 (11.3)	12 (3.5)	<0.001
Acute kidney injury						
Creatinine >3 mg/dl (265 μmol/liter)	4 (1.2)	4 (1.2)	0.95	12 (3.9)	8 (2.7)	0.41
Renal-replacement therapy	10 (2.9)	10 (3.0)	0.95	18 (5.4)	20 (6.5)	0.56
Major bleeding	32 (9.3)	67 (19.5)	<0.001	49 (14.7)	85 (25.7)	<0.001
Endocarditis	0	1 (0.3)	0.32	2 (0.6)	3 (1.0)	0.63
New-onset atrial fibrillation†	30 (8.6)	56 (16.0)	0.006	42 (12.1)	60 (17.1)	0.07
New pacemaker	13 (3.8)	12 (3.6)	0.89	19 (5.7)	16 (5.0)	0.68

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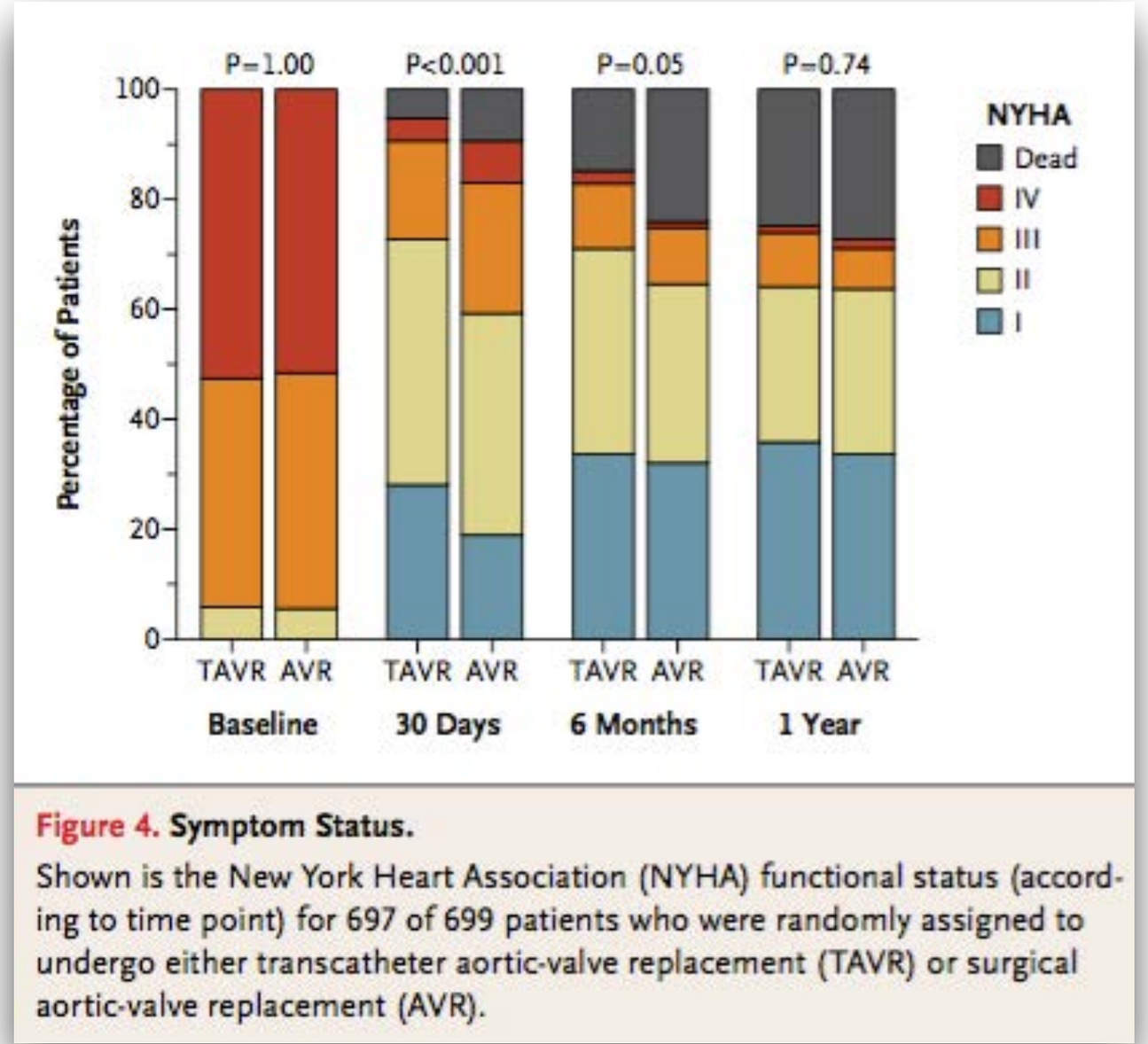


Figure 4. Symptom Status.

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).

Recommendations	Class [a]	Level [b]	Ref [c]
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	99
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	97

European Heart Journal (2012) 33, 2451–2496
doi:10.1093/eurheartj/ehs109

Valoración de los pacientes

Estimación del riesgo quirúrgico

EueroScore (>20 %)
STS (>10%)

Comorbilidad
Factores conocidos de inestabilidad (HTA, HTP, Disfunción ventricular, Enf, coronaria, EPOC;

Equipo Multidiclipinar
Ante la auscencia de un metodo perfecto de valoración objetiva del riesgo, debemos

No incluyen características clínicas que impactan la mortalidad.

No están validados para TAVI

Test de Fragilidad

Aspectos técnicos

ETE, RMN, Angiografia/ Agio TAC

Tiene contraindicaciones para TAVI ?

Tiene un anillo aórtico adecuado ?

El eje iliofemoral permite acceso TF ?

Cual es el diámetro de la arteria axilar izquierda ?

Es posible el acceso TAo ?

La anatomía y antecedentes permiten un acceso TA ?

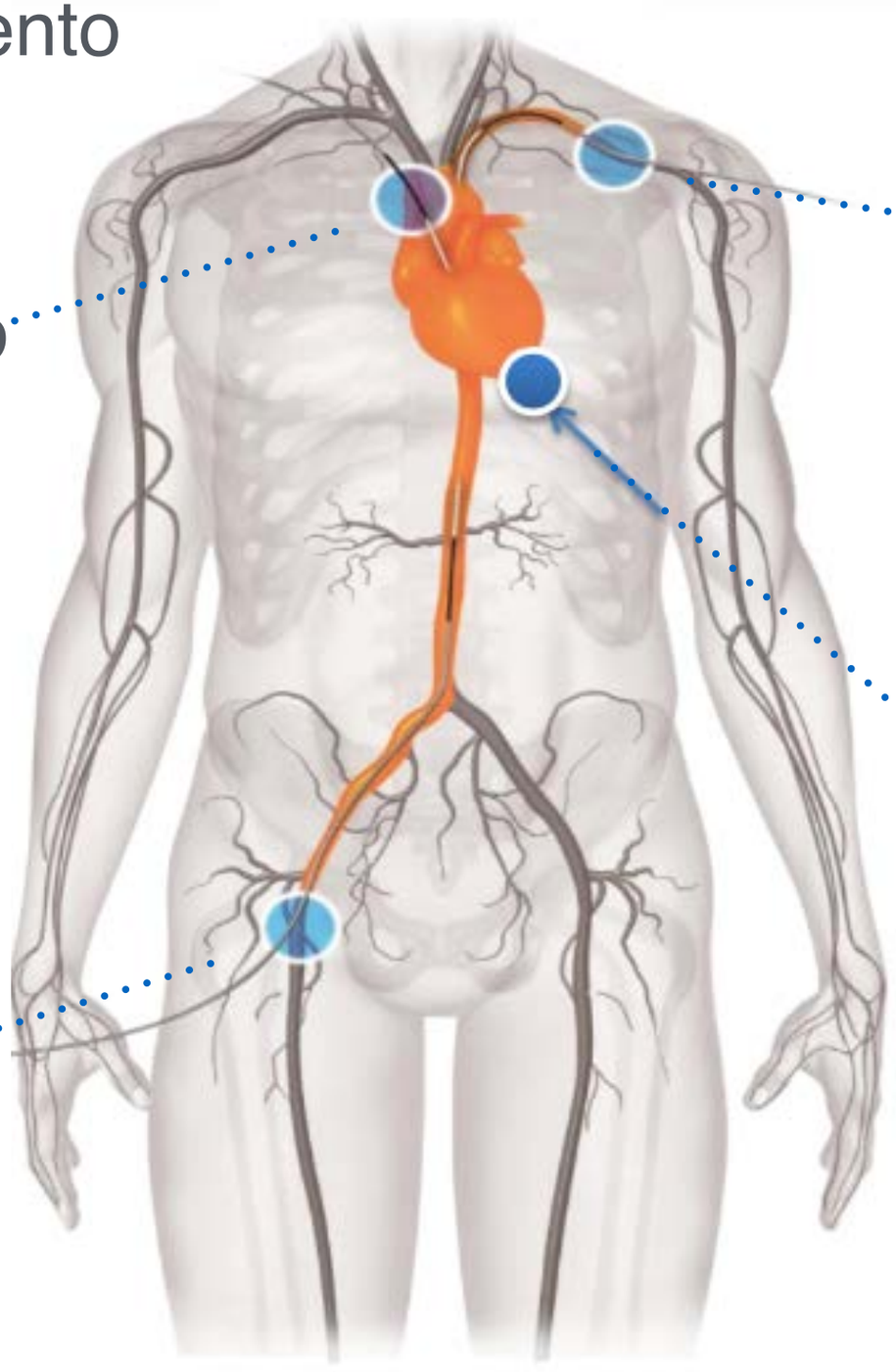
Distancia a ostium, masas de calcio ?

Que prótesis es la más favorable en éste caso ?

European Heart Journal (2012) **33**, 2451–2496
doi:10.1093/eurheartj/ehs109

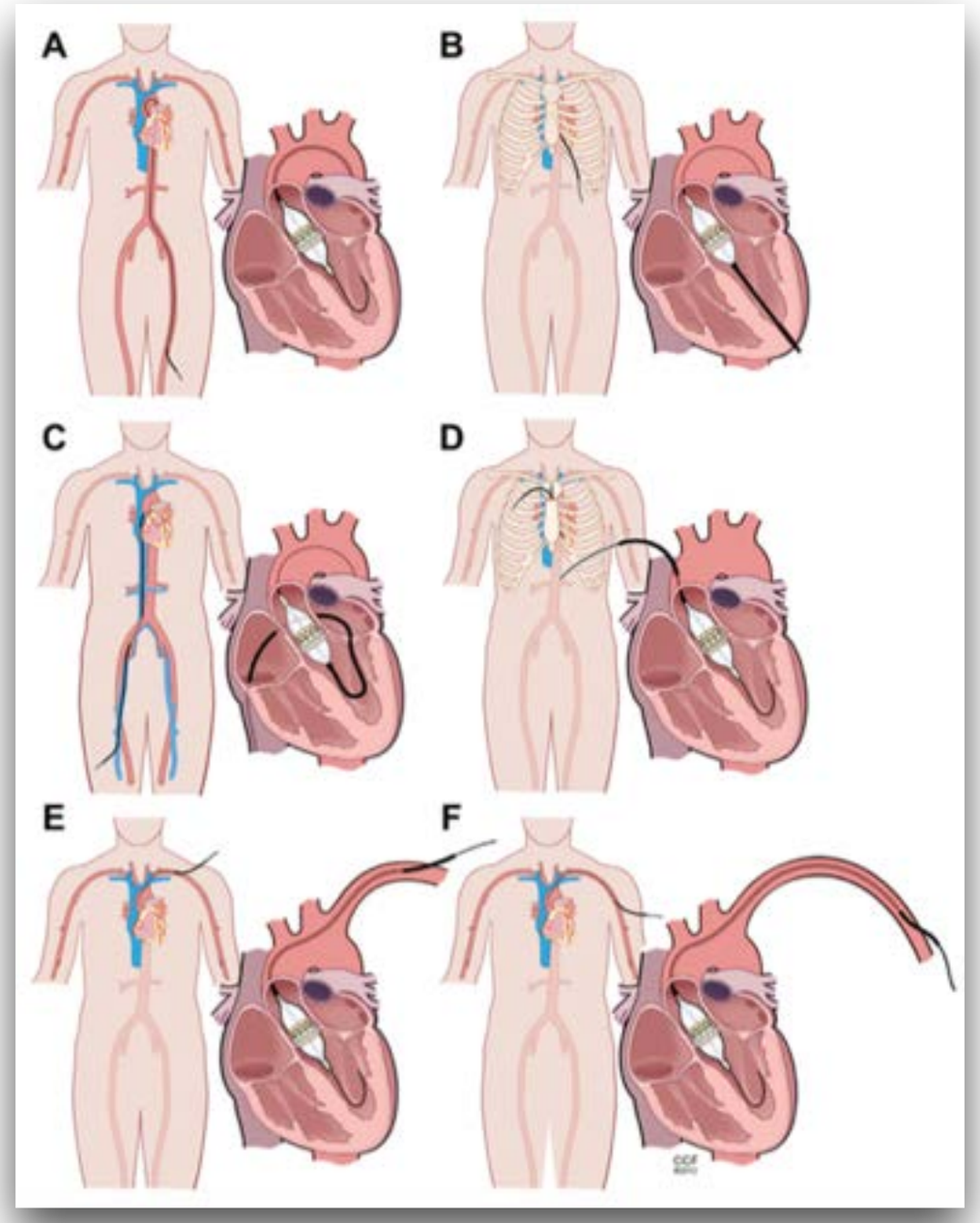
Absolute contraindications
Absence of a 'heart team' and no cardiac surgery on the site
Appropriateness of TAVI, as an alternative to AVR, not confirmed by a 'heart team'
Clinical
Estimated life expectancy <1 year Improvement of quality of life by TAVI unlikely because of comorbidities Severe primary 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 mm²)
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)
Relative contraindications
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 procedimiento



La via transfemoral representa el abordaje estandar en el 80% de los casos.

TAVI procedimiento



La via transfemoral representa el abordaje estandar en el 80% de los casos.

nfraestructura

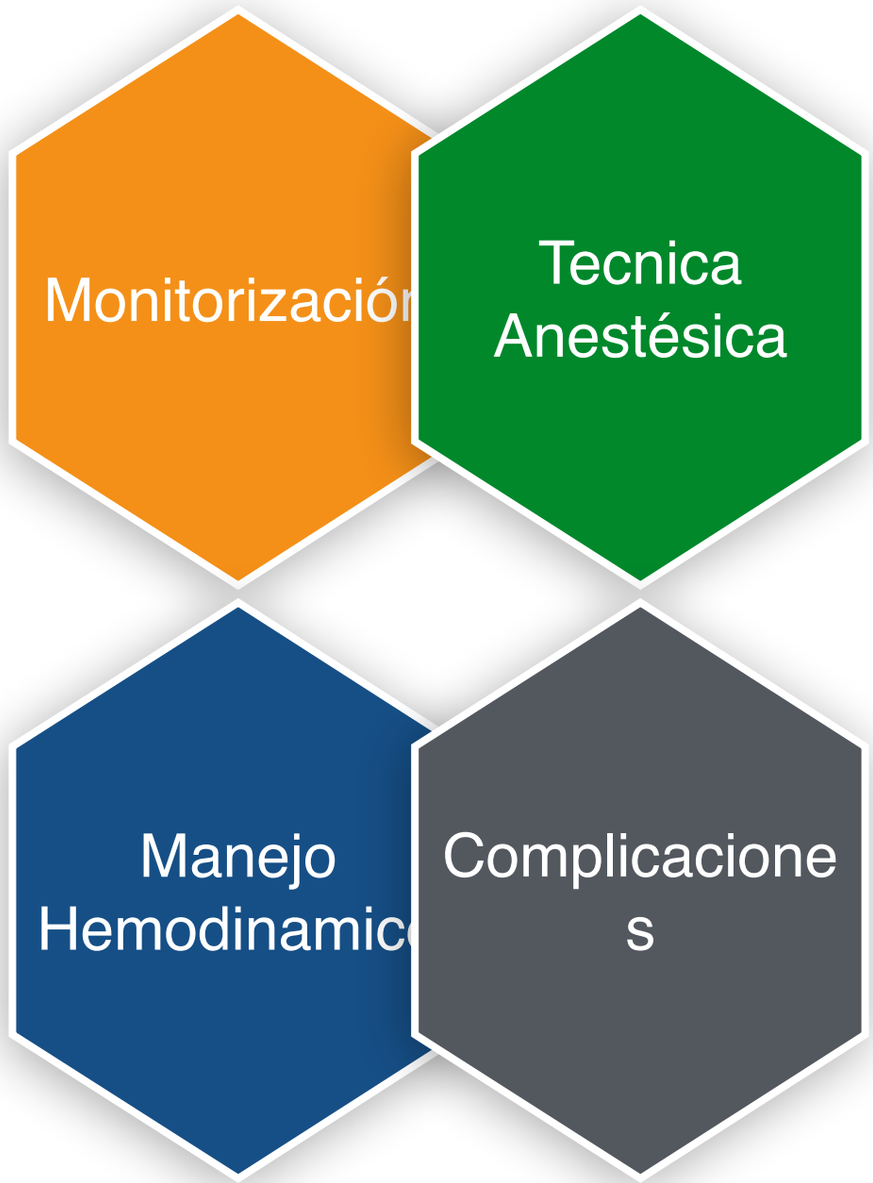
Expertos sugieren que las TAVI deberían idealmente realizarse en salas híbridas (sala de hemodinámica + sala de operaciones, incluyendo derivación cardiopulmonar por posibilidad de conversión).

nfraestructura

Expertos sugieren que las TAVI deberían idealmente realizarse en salas híbridas (sala de hemodinámica + sala de operaciones, incluyendo derivación cardiopulmonar por posibilidad de conversión).

ManejoAnestesico

- PAI
- Desfibrilador Externo
- Electrocardiograma 5 derivadas
- Temperatura
- Sondaje Urinario
- Cateter venoso central
- Cat. Arteria Pulmonar? (HTP, FV severo)
- ETE*



- Llenado ventricular
- Ritmo sinusal
- Manetener TA

- Anestesia general
- Sedación Monitorizada

- Lesion vascular
- lesion pericardica
- Ictus
- Mala posición valvular
- Arritmias cardiaca
- Lesion renal Aguda

TecnicaAnestesica

Anestesia General

- Control via aerea
- Utilización del ETE
- No movimiento del paciente
- Facilidad de manejo de

VS

Anestesia Local/Sedación

- Mejor estabilidad Hemodinámica
- Valoración estado neurologico
- Recuperación Rápida
- Menos tiempo de estancia UCI

Mas inestabilidad hemodinámica
No valoración neurologica
Mas tiempo de estancia hospitalaria

No control de la via aerea
Imposibilidad para utilizar ETE
Movimiento del paciente y ansie

Table 2. Summary of Evidence Comparing General Anesthesia and Monitored Anesthesia Care

Author, year	Access, prosthesis	N	General anesthetic	Other anesthetic	Comments
Guarracino, 2011[27]	TAx, CV, or ES	22	GA (propofol or sevoflurane + remifentanil) = 8	Local infiltration (ropivacaine) + MAC (remifentanil) = 14	
Durand, 2012[24]	TF, ES	151		Local infiltration (lidocaine) + MAC (midazolam + haloperidol)	Fluoroscopy instead of TEE 3 patients (larger sheath) converted to GA
Dehedin, 2011[26]	TF, CV, or ES	125	GA (propofol or sevoflurane/isoflurane/desflurane + opioid) = 91	Local infiltration + block (ilio-hypogastric or ilio-inguinal with ropivacaine) + MAC (remifentanil)	Similar outcome, TEE in GA, mini-TEE probe in some MAC
Fassl, 2009[54]	TA, ES	100	GA (sevoflurane + remifentanil)		CPB (1st–10th), off CPB (11th–100th)
Covello, 2010[67]	TF, Tscl, ES, or CV	69	GA (sevoflurane + remifentanil) = 27	Lidocaine + block (ilio-hypogastric or ilio-inguinal or superficial cervical plexus with ropivacaine) + sedation (remifentanil) = 42 (3 converted to GA)	
Ree, 2008[68]	TF, ES	40	GA = 36 (5th–40th)	MAC = 4 (1st–4th)	Complications prompted change of technique
Grube, 2007[69]	TF, Tscl, CV	86	GA	MAC in at least 9/36 patients with 18F sheath	Prospective, observational, comparing 18F and 21F
Guinot, 2010[70]	TF = 62, TA = 28, ES or CV	90	GA (propofol or sevoflurane/isoflurane/desflurane + opioid)		
Covello, 2009[71]	TF, ES	18	GA (sevoflurane + remifentanil) = 15	MAC (remifentanil + lidocaine) = 3	
Mukherjee, 2009[30]	TA, ES	1		Thoracic epidural at T2-3 with ropivacaine+fentanyl	Inserted the day before
Motloch, 2012[25]	TF, ES	74	GA (desflurane/isoflurane or propofol/etomidated + remifentanil) = 33	MAC (midazolam + piritramide) + local (lidocaine) = 41	Higher risk patients received MAC
Bergmann, 2011[23]	TF, ES, or CV	100	GA = 17 (converted from MAC due to complications)	MAC (midazolam + remifentanil) + local (lidocaine)	Conversion to GA due to procedural complications
Petridis, 2012[29]	TA, ES	1		Thoracic epidural at T2-3 with bupivacaine+fentanyl	Inserted the day before
Yamamoto, 2013[28]	TF, ES, or CV	174	GA (propofol + remifentanil) = 44	MAC (remifentanil+propofol) + local (lidocaine) = 130	6 conversions to GA due to procedural complications
Oguri, 2014[31]	TF, ES, or CV	2326	GA 1377 patients (technique not specified)	Local anesthetic +/- sedation (MAC) 949 patients	Incidence of postprocedural aortic regurgitation≥mild was significantly lower in GA than in MAC (15.0% vs 19.1%; $P = 0.015$). No difference in 30-day survival.

Anesth Analg. 2014 Oct;119(4):784-98. doi: 10.1213/ANE.0000000000000400.

Controversies and complications in the perioperative management of transcatheter aortic valve replacement.

Klein AA[1], Skubas NJ, Ender J.

TecnicaAnestesica

Elección depende las comorbilidad y las practicas institucionales.

No hay un claro beneficio en cuanto un fármaco u otro en la inducción y mantenimiento de la anestesia. Fármacos de acción corta si se planea extubación al final del procedimiento.

ManejoHemodinamico

Llenado ventricular adecuado

Evitar taquicardia

Mantener ritmo sinusal

Mantener TA adecuada

Mantener la presión de perfusion tisular durante la estimulación del marcapaso ventricular

Limitar la eyección cardiaca durante el

Fases de la TAVI con potenciales consecuencias

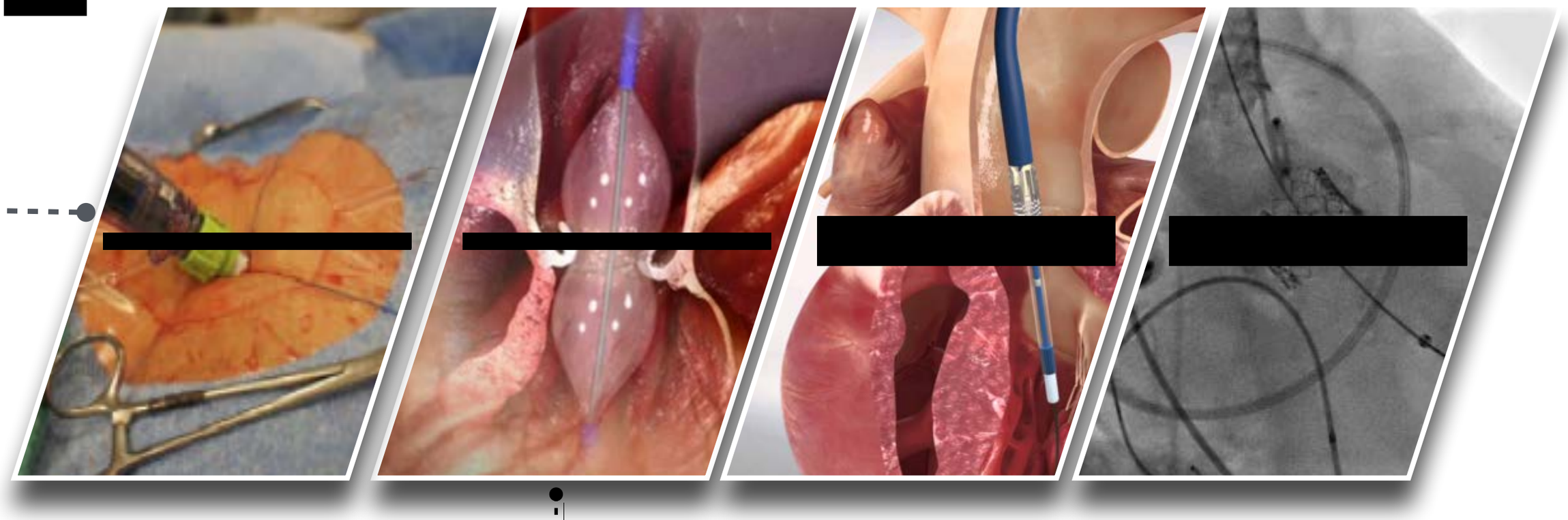
1. Pre-despliegue

Antiagregación clopidogrel 300 mg

Anticoagulación ACT >250 -300

Marcapaso Ventricular

[redacted]



2. Valvuloplastia

Marcapaso

Ventricular

3. Posicionando y Despliegue

Marcapaso Ventricular

4. Post-Despliegue

Se incrementa el gasto cardiaco en algunos pacientes.

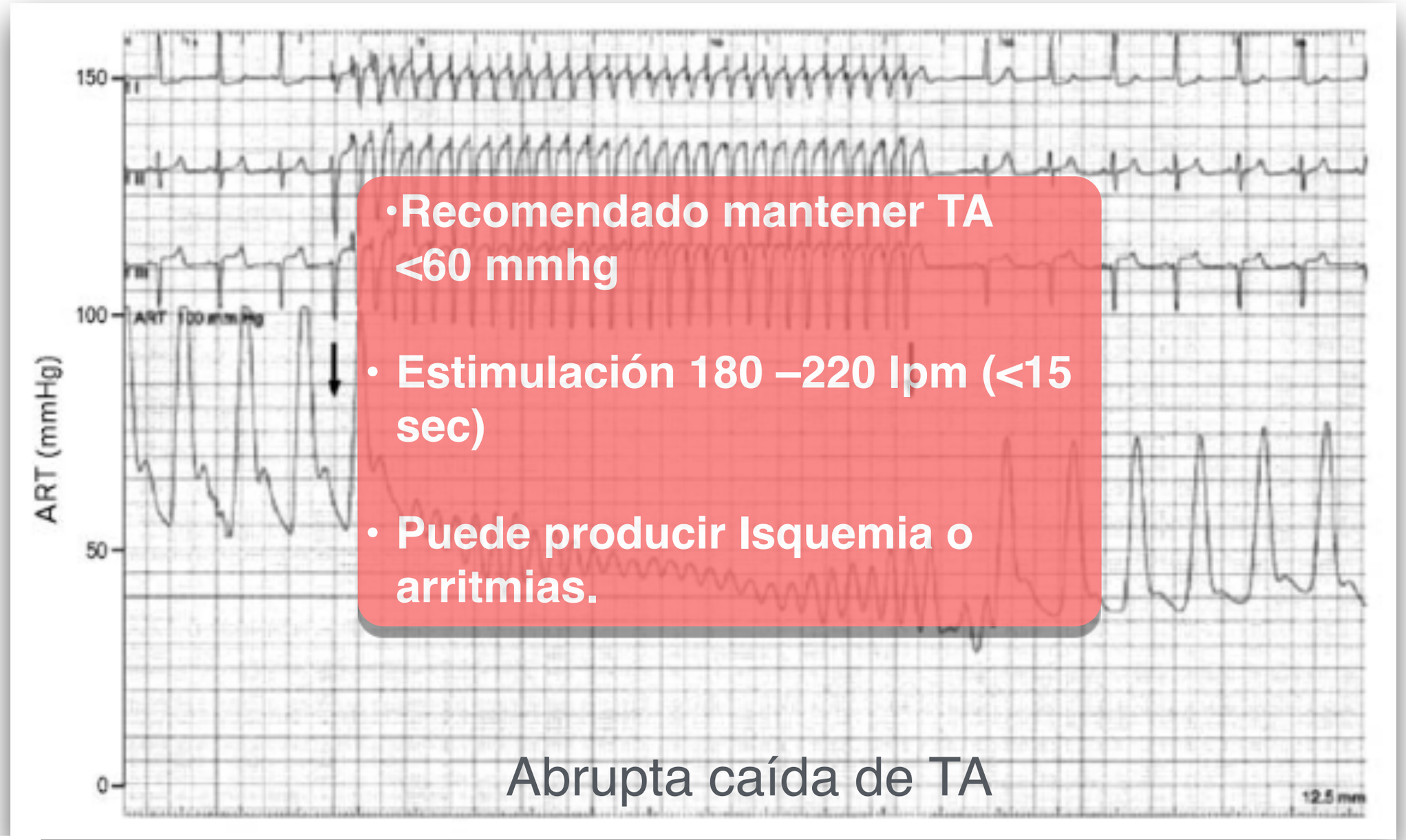
Fases de la TAVI con potenciales consecuencias

Inestabilidad Hemodinámica durante TAVI

- Obstrucción coronaria (embolismo, prótesis, o válvula nativa
- Ruptura Anillo valvular
- Taponamiento cardiaco

Marcapaso

Cese transitorio y reversible del gasto cardiaco para favorecer el posicionamiento de la valvula.



Abrupta caída de TA

Complicaciones

Lesion Vascular

Lesion pericardica

Arritmias cardiacas

Compresión mecánica

Corevalve

Pueden aparecer inmediatamente tras la

Ictus

Nuevos deficits 58–91% de los pacientes.

No se correlacionan con manifestaciones neurológicas clínicamente evidentes.

Mal posición valvular

Lesion Renal Aguda

Hipotension, Contraste, Transfusiones, Trombocitopenia
SIRS
Fármacos

Table 3. Key steps of the transcatheter aortic valve implantation procedure, typical complications, and management options

Transfemoral access	Transapical access	Typical complications	Management options
Placement of vascular sheaths in femoral artery and vein	Placement of vascular sheaths in femoral artery and vein	Bleeding, rupture, dissection, retroperitoneal hemorrhage, distal embolization, ischemia	Endovascular repair, surgery, thrombectomy, hemodynamic support
Retrograde placement of pigtail catheter in the noncoronary sinus (serves as landmark to depict the level of the aortic annulus)	Retrograde placement of pigtail catheter in the noncoronary sinus (serves as landmark to depict the level of the aortic annulus)	Intraventricular position with provocation of arrhythmias	Correction of catheter position, antiarrhythmic therapy
	Anterolateral minithoracotomy, pericardiotomy	Pneumothorax	Chest drain
		Lung injury	Lung surgery
		Pleural bleeding	Surgical hemostasis
		Postoperative pain	Pain therapy
Placement of temporary transvenous (transjugular or transfemoral) pacemaker in the right ventricle, testing of capture	Placement of epicardial pacemaker electrodes, testing of capture	Transfemoral: ventricular perforation by pacemaker	Pericardial drainage, surgical closure of perforation
		Transapical: bleeding	Hemostasis
		Transfemoral and transapical: hemodynamic deterioration by VVI pacing	Stop pacing, vasopressors
	Placement of purse-string sutures at the anterolateral left ventricular wall, myocardial puncture, placement of delivery sheath	Bleeding, cardiac tamponade	Surgical hemostasis, drain
		Air embolism	Unspecific
		Damage to the mitral valve apparatus	Surgery
Retrograde placement of a guidewire across the aortic valve	Antegrade placement of a guidewire across the aortic valve	Arrhythmias	Correction of catheter position, antiarrhythmic therapy
Start of rapid ventricular pacing (160–220 bpm) to ensure a stable balloon position during BAV	Start of rapid ventricular pacing (160–220 bpm) to ensure a stable balloon position during BAV	Hemodynamic deterioration, shock	Vasopressor/inotropic support, IABP, CPB
		Myocardial ischemia	
		Worsening of mitral regurgitation	
		Ventricular fibrillation	Defibrillation
BAV	BAV	Calcific embolism from the native aortic valve with myocardial or cerebral infarction	PCI; reconalization of cerebral arteries by interventional neuroradiologists
		Aortic regurgitation	Symptomatic, TAVI
		Rupture of aortic annulus/ LVOT	Pericardiocentesis, surgical repair
		Aortic dissection	Endovascular/open repair
		Atrioventricular block	Pacemaker
Recovery	Recovery		
Retrograde placement of transcather aortic delivery catheter	Antegrade placement of transcather aortic delivery catheter	Arrhythmias	Correction of catheter position, antiarrhythmic therapy

Table 3 (*Continued*)

Transfemoral access	Transapical access	Typical complications	Management options
Start of rapid ventricular pacing (160–220 bpm) to ensure a stable device position during valve deployment	Start of rapid ventricular pacing (160–220 bpm) to ensure a stable device position during valve deployment	Hemodynamic deterioration, shock	Vasopressor/inotropic support, IABP, CPB
		Myocardial ischemia	
		Worsening of mitral regurgitation	
		Ventricular fibrillation	Defibrillation
Valve positioning and deployment	Valve positioning and deployment	Calcific embolism from the native aortic valve with cerebral or myocardial infarction	PCI; recanalization of cerebral arteries by interventional neuroradiologists
		Coronary flow obstruction (by delivery system, valve frame or displaced native aortic leaflet)	PCI or CABG
		Valve embolization	Urgent endovascular or surgical management
		Improper valve position	Deployment of overlapping 2nd device ('valve-in-valve')
		Structural valve failure	Delivery of 2nd valve ('valve-in-valve')
		Paravalvular aortic regurgitation	Postdeployment balloon dilatation
		Transvalvular aortic regurgitation	"Probing" of leaflets with soft wire/catheter, delivery of 2nd device
		Mitral valve damage	Surgery
		Rupture of aortic annulus/LVOT	Pericardiocentesis, surgical repair
		Aortic dissection	Endovascular/open repair
		Atrioventricular block	Pacemaker
Recovery and assessment of regular valve position and function			
Removal of delivery sheath using a vascular closure device or surgical closure; crossover ileofemoral angiogram to assess hemostasis and patency	Retrieval of delivery sheath, closure of apical puncture site and pericardium; closure of surgical incision	Transfemoral: bleeding, dissection, ischemia, atrioventricular fistula, pseudoaneurysm	Endovascular repair, surgery, thrombectomy, hemodynamic support
		Transapical: bleeding, arrhythmias	Surgical hemostasis, hemodynamic support

Curr Opin Anaesthesiol. 2013 Aug;26(4):456-66. doi: 10.1097/ACO.0b013e3283628d1e.

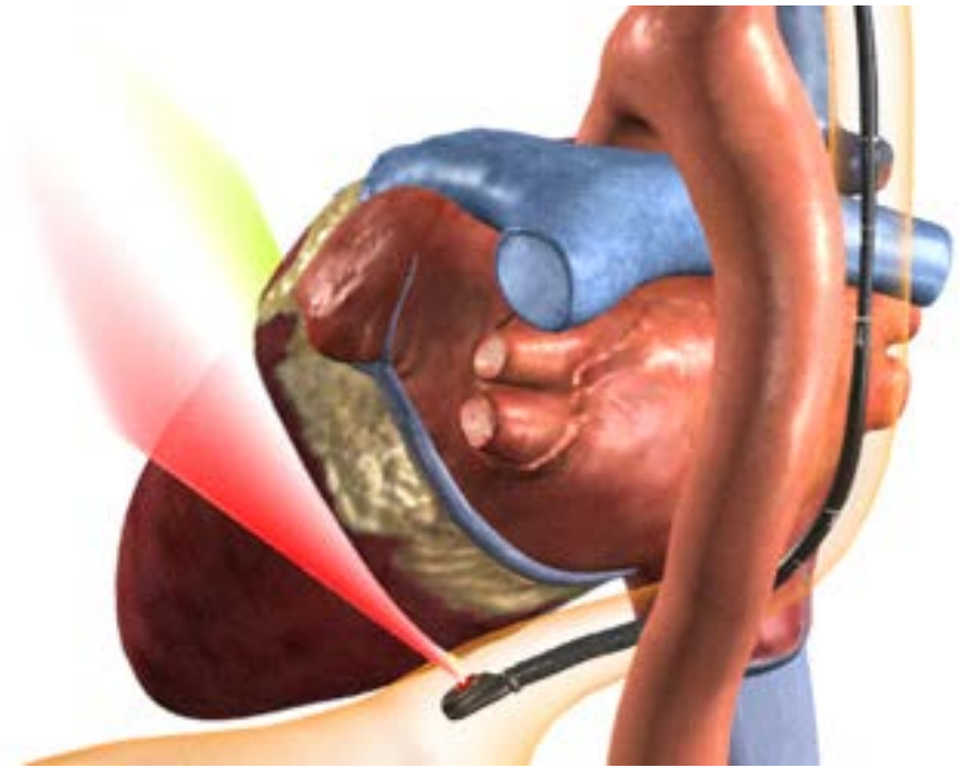
Anesthesia for transcatheter aortic valve implantation: an update.

Rex S[1].

SARTD-CHGUV Sesión de Formación Continuada
Valencia 16 de Junio de 2015

Rol de la Ecocardiografia Transesofagica.

- Confirmar diagnostico preoperatorio
- Excluir anatomía desfavorable
- Ayuda en la elección del tamaño de
- Establecer función ventricular y
- Guía durante el procedimiento y
- Diagnosticar complicaciones
- Reduce el uso de contraste.

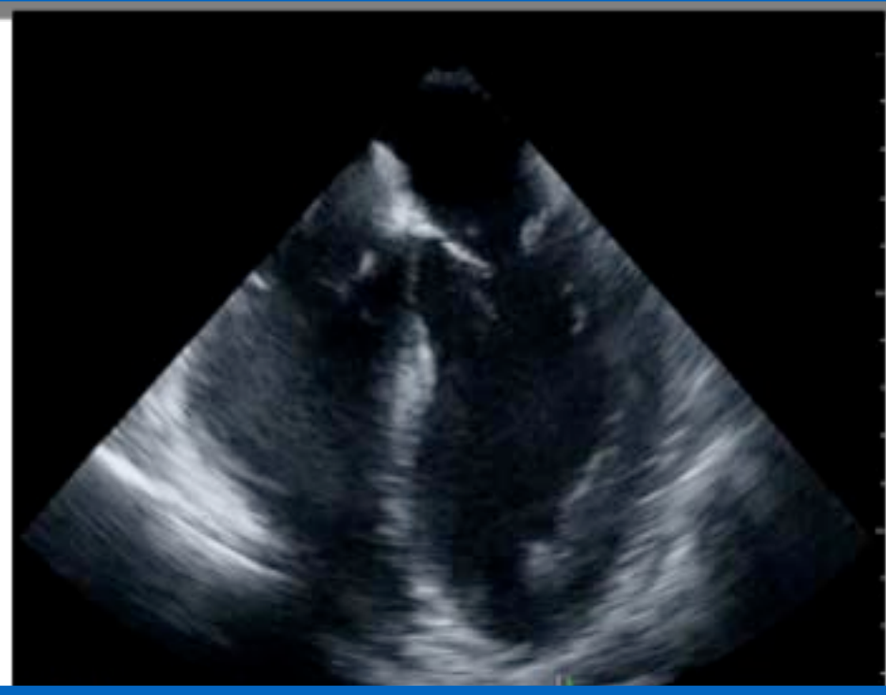


Requiere anestesia general

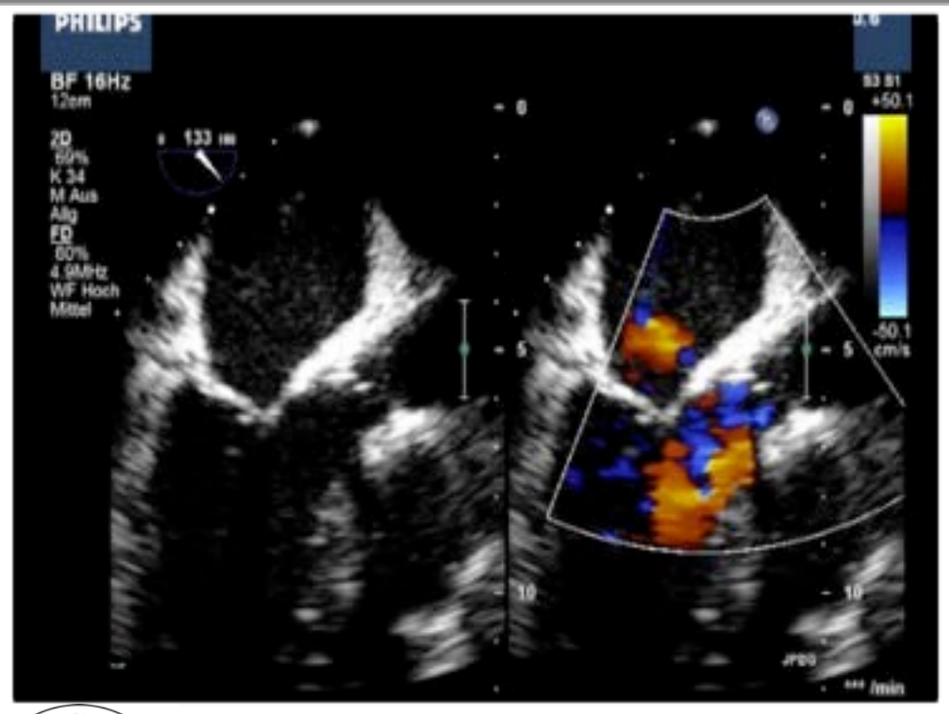
Puede obstruir la vision fluorosocopica

Transgastrico SAX

ME 4 cámaras

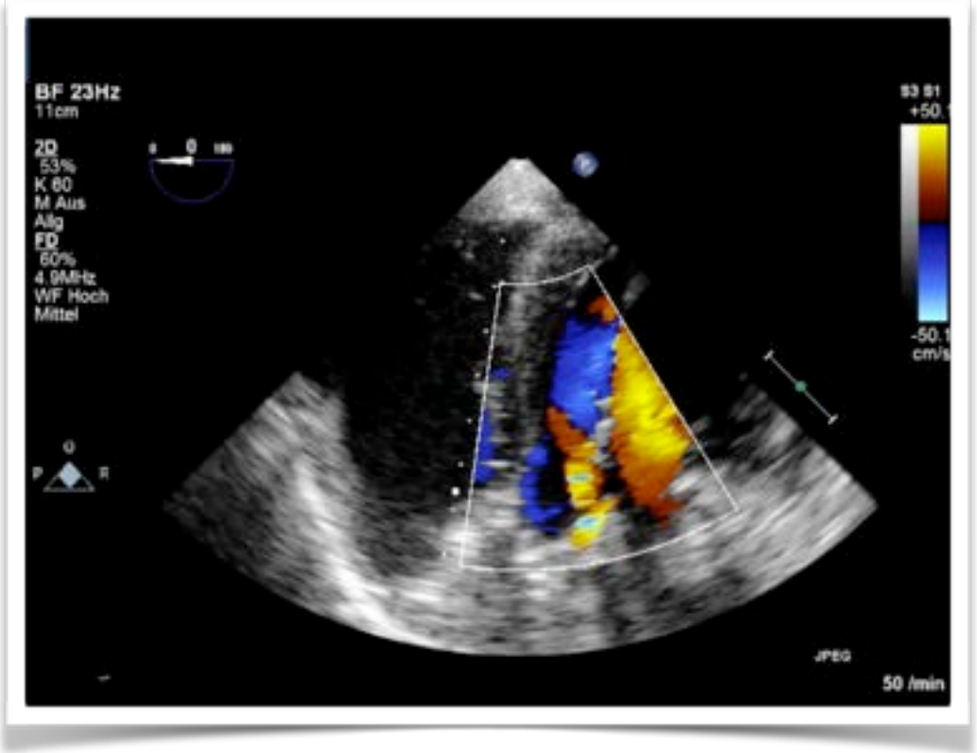


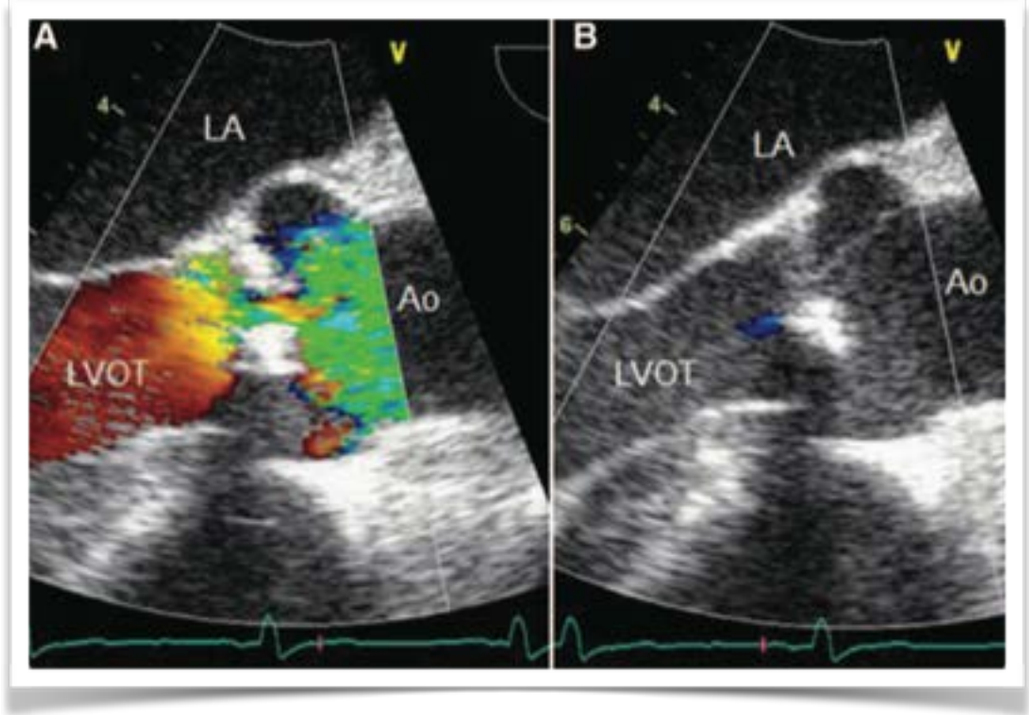
ME AV LAX

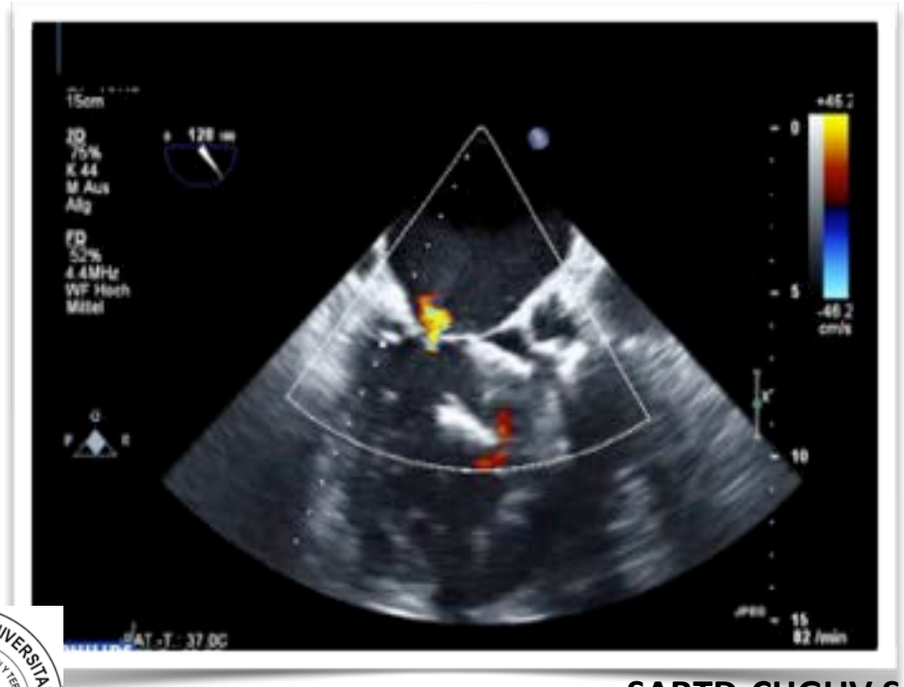


ME AV SAX

Embolización valvular







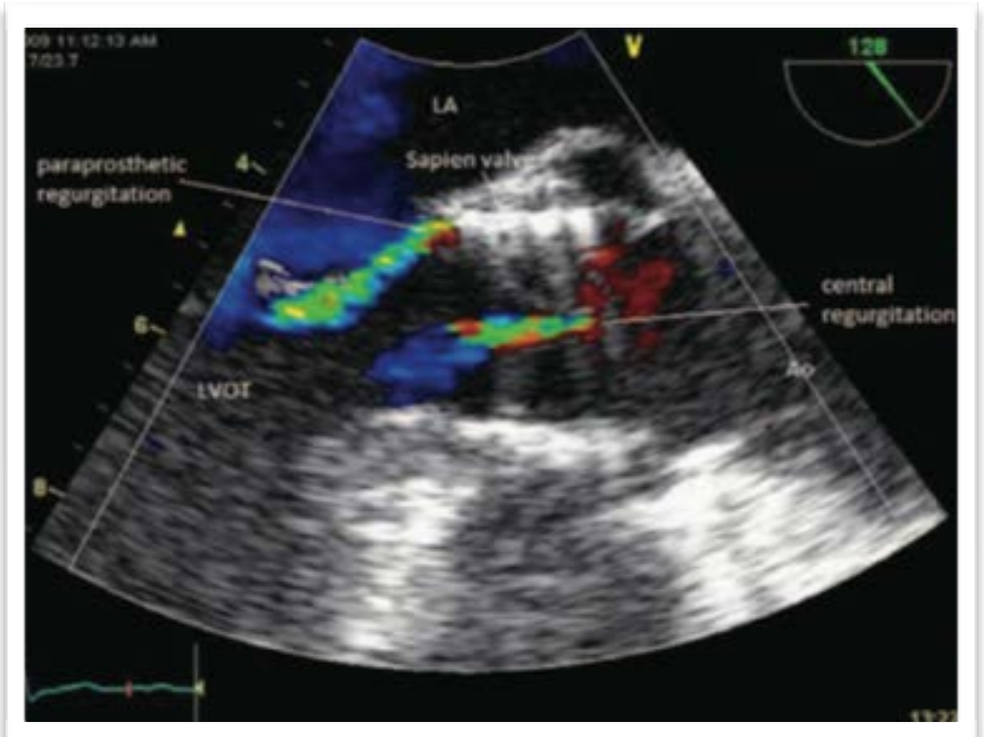


Table 6. Recommendations for intraprocedural guidance by transesophageal echocardiography

Step of TAVI procedure	Aims of TEE
Baseline	Basic evaluation of cardiac function, confirmation of preprocedurally determined annulus size, evaluation of the LVOT/upper septum (presence of septal bulging might impair proper seating of the prosthesis), evaluation of the aorta (presence of aortic arch atheroma may favor a transapical approach)
Guidewire placement	Confirmation of guidewire passage through the aortic valve, avoiding the hypertrophied septum and the mitral valve apparatus (transapical TAVI)
Balloon aortic valvuloplasty	Positioning of the balloon relative to the aortic valve, confirmation of stable balloon position during rapid ventricular pacing
Valve placement/deployment	Confirmation of the correct position of the prosthesis (SAPIEN valve: ventricular side of the prosthesis positioned 2–4 mm below the annulus in the LVOT; CoreValve: ventricular edge of the prosthesis 5–10 mm below the aortic annular plane)
Postdeployment	Assessment of valve positioning and valve function
Periprocedural	Assessment of complications:
	Aortic prosthesis misplacement
	Embolization of the prosthesis (toward aorta or left ventricle)
	Postdeployment aortic regurgitation (trans- vs. paravalvular)
	Mitral regurgitation
	impingement of the anterior mitral valve leaflet by the aortic prosthesis
	left ventricular asynchrony due to right ventricular pacing
	damage to the mitral valve apparatus by delivery device
	New regional wall motion abnormalities (acute coronary occlusion)
	Global biventricular hypokinesia (stunning)
	Dynamic LVOT obstruction
	Cardiac tamponade (perforation of the left/right ventricle)
	Air embolism
	Aortic dissection
	Dissection/rupture of LVOT/aortic root

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Anesthesia for transcatheter aortic valve implantation: an update.

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Consorcio Hospital General Universitario de Valencia

Selección de pacientes

El estudio preoperatorio del paciente debe ser cuidadoso para elegir a los candidatos idóneos:

1. Indicación clínica: Estenosis aórtica severa (< 0,8 cm) y sintomática.
2. Riesgo: Edad igual o superior a 80 años, con factores de riesgo añadidos que eleven la mortalidad esperada de la cirugía estándar valorada por el sistema EUROSCORE por encima del 20 %.
3. Factores morfológicos: a) Anillo aórtico de diámetro inferior o igual a 24 mm incluyendo las calcificaciones y midiendo éste desde los puntos de inserción de los velos. Las mediciones deben ser repetidas y con distintas técnicas de diagnóstico por imagen: TAC, ecocardiografia transtorácica (ETT) y ecocardiografia transesofágica (ETE). b) calcificación valvular distribuida simétricamente, sin masas abultadas. c) distancia entre anillo valvular y ostium coronarios superior a 15 mm. d) otras mediciones de interés: diámetros de aorta ascendente en senos, unión sinotubular y aorta ascendente. e) evitar pacientes con hipertrofia septal severa. d) valorar la coexistencia de insuficiencia mitral significativa.
4. Cirugía cardiaca previa: no contraindica el IVA-TC. El ápex suele presentar escasas adherencias. En caso de cirugía coronaria previa la demostración de los injertos coronarios permeables aporta "seguridad" ante la eventual oclusión de los ostium coronarios por la prótesis.
5. Otros factores de riesgo: valoración de posibilidades ante disfunción ventricular izquierda preoperatoria, coronariopatia no revascularizable, trastornos de la coagulación, insuficiencia renal, limitaciones de la función pulmonar, función cognitiva, y apoyo social y familiar.

Conclusiones

1

TAVI es el nuevo standard en pacientes con estenosis aortica severa inoperables y una alternativa

2

El éxito en su realización requiere un equipo multidisciplinar.

3

Una correcta selección de los pacientes es esencial.

4

La ecografía juega un papel importante no solo, en el diagnostico pre y post sino también como

¡Gracias!

SARTD-CHGUV Sesión de Formación Continuada Valencia, 16 de Junio de 2015