CSC 2024
CORONARY AND STRUCTURAL COURSE
CURSO CORONARIO Y ESTRUCTURAL
MADRID

10º ANIVERSARIO
6, 7 y 8 NOVIEMBRE
HOTEL RIU PLAZA DE ESPAÑA

TAVI EN ESCENARIOS COMPLEJOS

Tips and tricks

TAVI en bioprótesis degeneradas : conceptos básicos

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ESC European Society of Cardiology
European Heart Journal (2022) **43**, 561–632
https://doi.org/10.1093/eurheartj/ehab395

2021 ESC/EACTS Guidelines for the management of valvular heart disease

Bioprosthetic failure		
Reoperation is recommended in symptomatic patients with a significant increase in transprosthetic gradient (after exclusion of valve thrombosis) or severe regurgitation.	I	C
Transcatheter, transfemoral valve-in-valve implantation in the aortic position should be considered by the Heart Team depending on anatomic considerations, features of the prosthesis, and in patients who are at high operative risk or inoperable.[529]	IIa	B

A. Stented

Perimount (Edwards Lifsciences)

Epic (St. Jude Medical)

Hancock II (Medtronic)

B. Stented, Supraanular position

Magna (Edwards Lifsciences)

Mosaic (Medtronic)

C. Stented, Externally Mounted Leaflets

Mitroflow (Sorin)

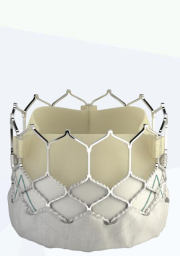
Trifecta (St. Jude Medical)

D. Stentless

Freedom (Sorin)

Toronto SPV (St. Jude Medical)

Freestyle (Medtronic)



Danny Dvir, TCT 2016

"~~Anillo aórtico~~"

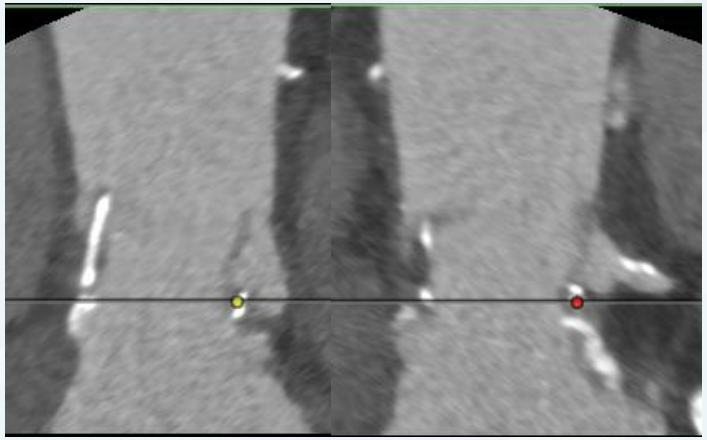
± Anatomía alterada

MALPOSICIÓN

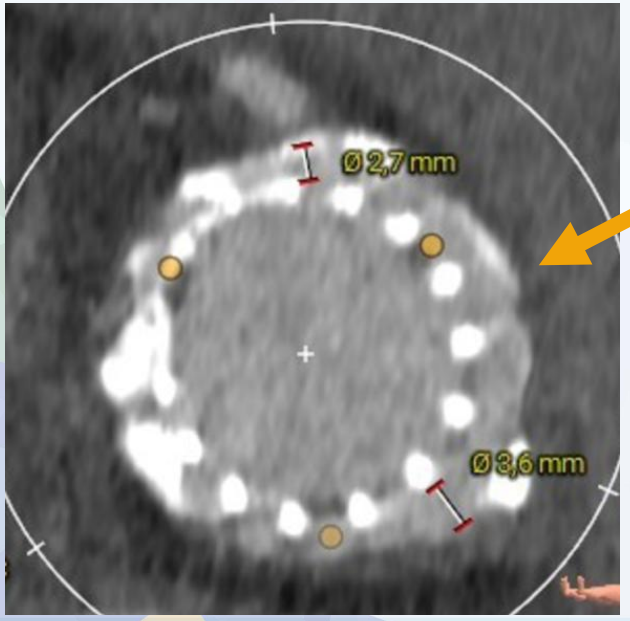
OCLUSIÓN CORONARIA

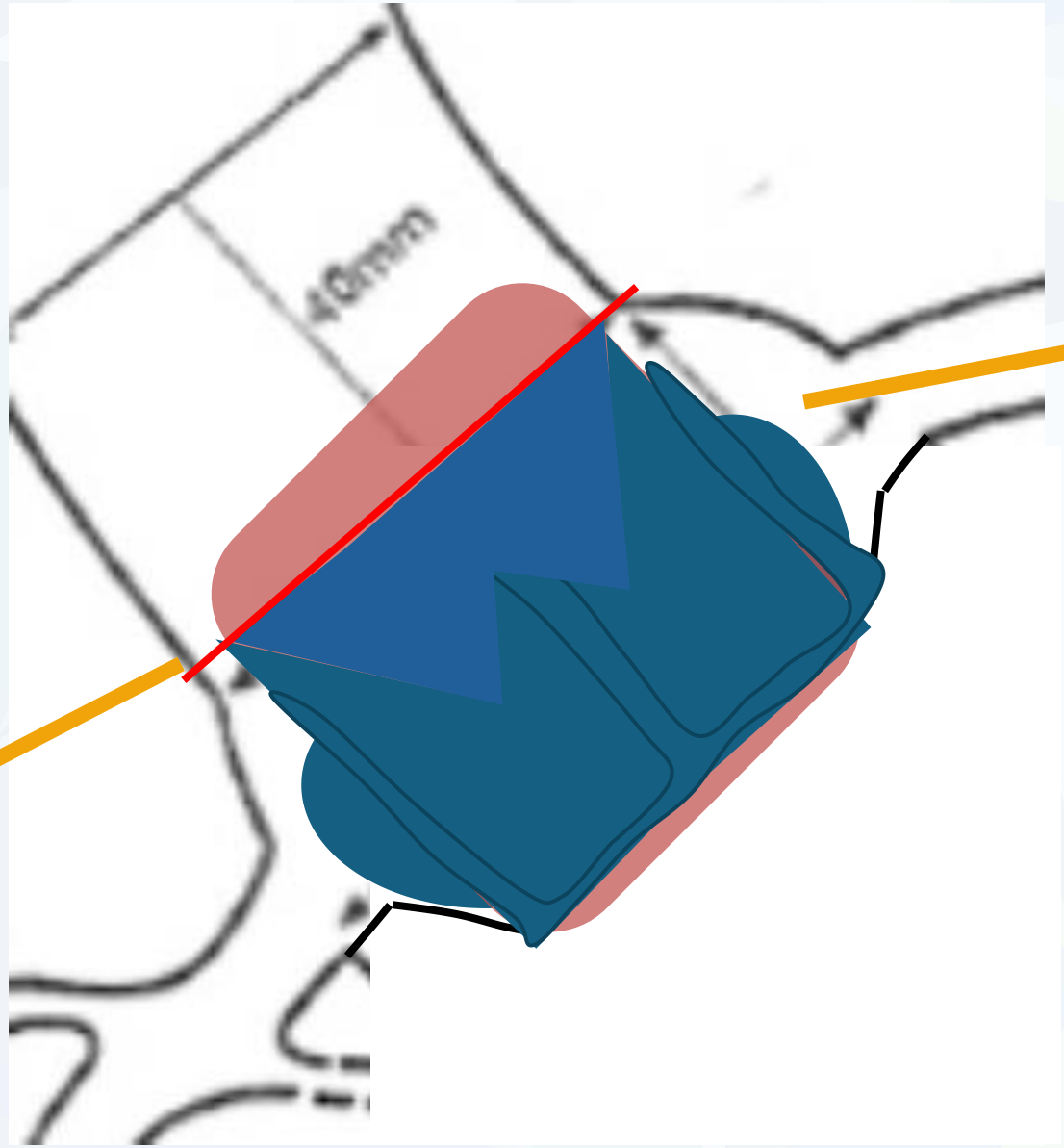
Segunda prótesis ocupa espacio

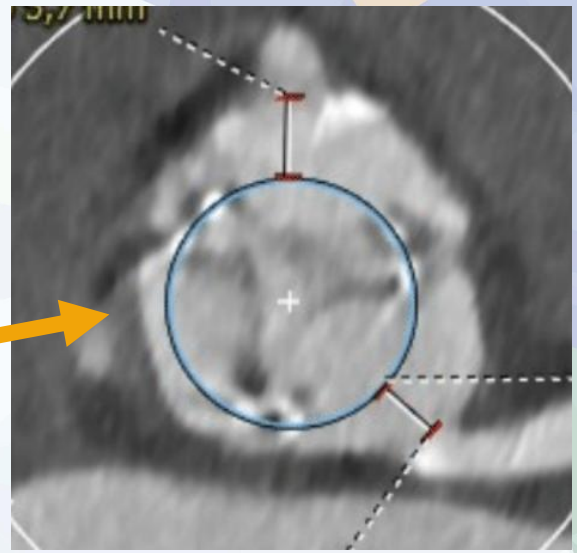
GRADIENTES



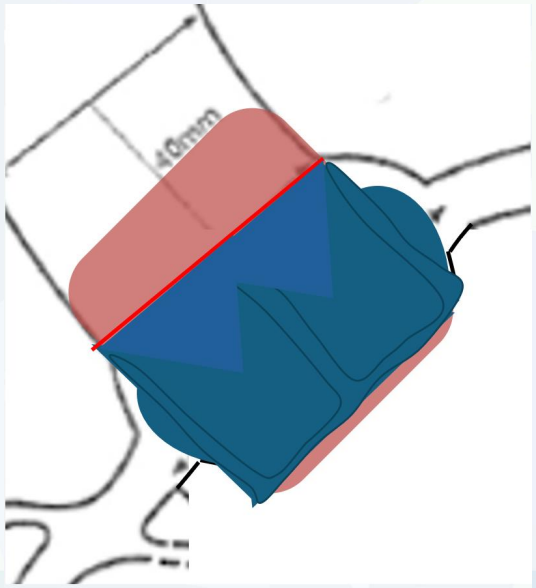
Unión Sinotubular

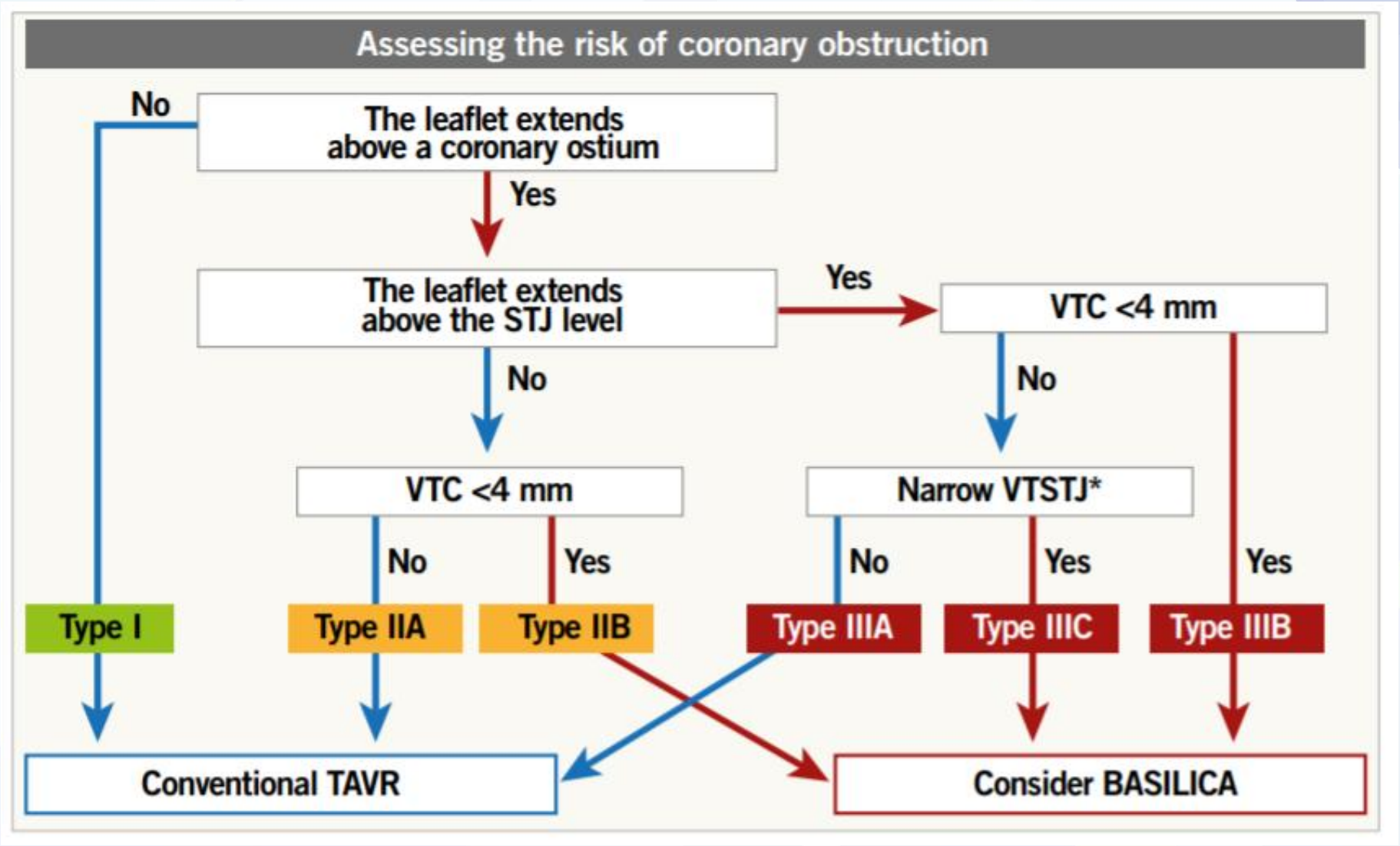






Coronarias





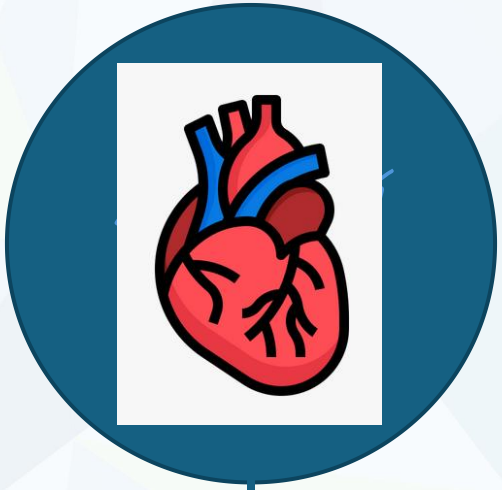
EuroIntervention 2021;17:709-719

Valve-in valve: riesgos

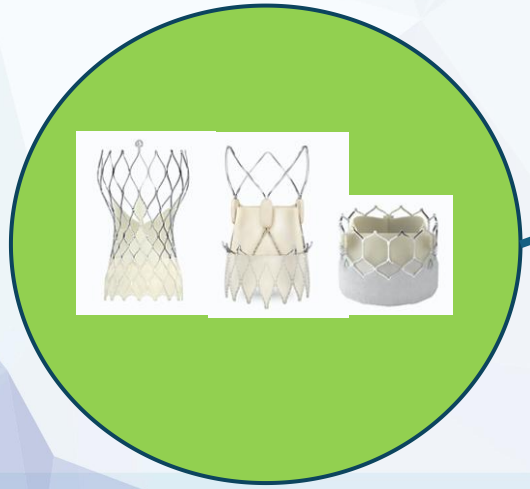
Menos

↓

Regurgitación paravalvular
Trastornos conducción
Rotura de anillo y taponamiento

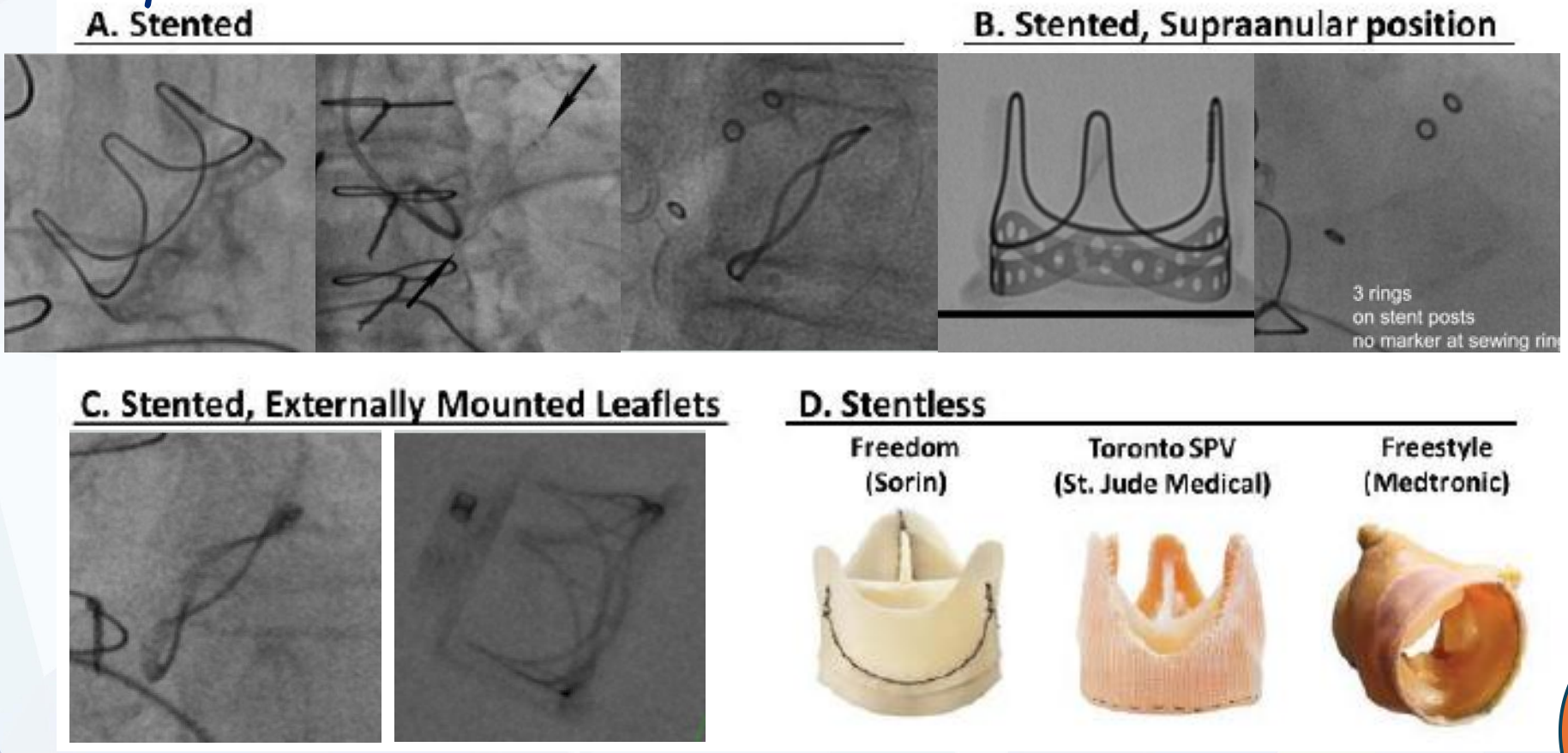


Malposición
Infraexpansión (gradientes altos)
Obstrucción coronaria



Planificación: prótesis quirúrgica

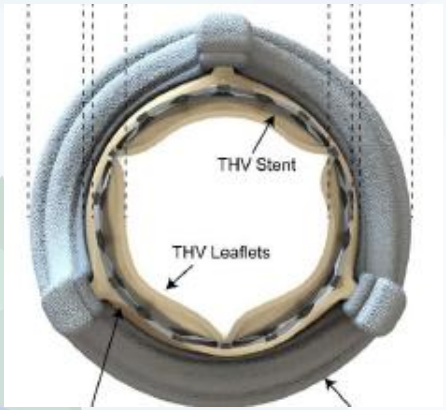
Identificar marcador radio-opaco… si se puede

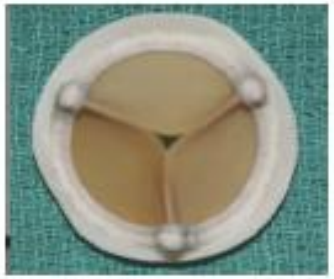
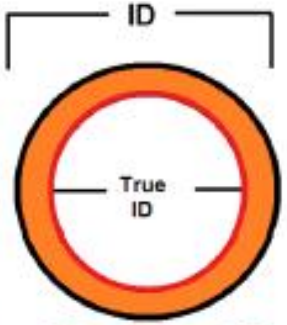
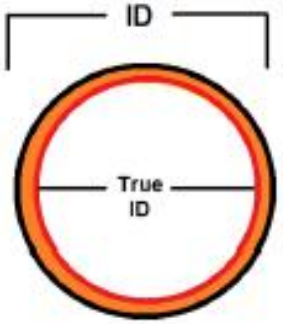
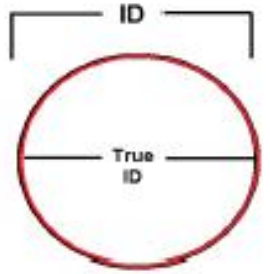


Danny Dvir, TCT 2016

Prótesis quirúrgica

Choosing TAVI size: True ID in surgical valves



Porcine leaflets INSIDE the frame	Pericaldial leaflets INSIDE the frame	Pericaldial leaflets OUTSIDE the frame
		
		
True ID = Stent ID – 2mm	True ID = Stent ID – 1mm	Stent ID = True ID

Dr. Vinayak Bapat , TCT

Planificación: prótesis transcatéter:

A tratar o a implantar

	Balloon Expandable Valves (BEV)								
	Edwards Lifesciences								
	Sapien		Sapien XT			Sapien 3 / Ultra			
									
	23mm	26mm	23mm	26mm	29mm	20mm	23mm	26mm	29mm
Frame Height (mm)	14	16	14	17	19	15.5	18	20	22.5
Skirt Height (mm)	7.7	8.6	6.7	8.7	11.6	7.9	9.3	10.2	11.6
Outflow (mm)	23	26	23	26	29	20	23	26	29
Center/Waist (mm)	-	-	-	-	-	-	-	-	-
Inflow (mm)	23	26	23	26	29	20	23	26	29

	Self Expanding Valves (SEVs)										
	Medtronic								Boston Scientific		
	Corevalve				Evolut R/Pro				ACURATE neo(2)		
											
	23mm	26mm	29mm	31mm	23mm	26mm	29mm	34mm	23mm	25mm	27mm
Frame Height (mm)	45	55	53	52	45	45	45	45	48	49	51
Skirt Height (mm)	-	-	-	-	13	13	14	14	13.5	14.5	15.5
Outflow (mm)	34	40	43	43	34	32	34	38	28	30	32
Center/Waist (mm)	20	22	24	24	20	22	23	24	23	25	27
Inflow (mm)	23	26	29	31	23	26	29	34	26	28	30

	Self Expanding Valves (SEVs)										
	Abbott								NVT		
	Portico				Navitor				Allegra		
											
	23mm	25mm	27mm	29mm	23mm	25mm	27mm	29mm	23mm	27mm	31mm
Frame Height (mm)	50	53	49	50	47	48	48	48	37.3	41.3	43
Skirt Height (mm)	9	9	10	10	9	9	10	10	12	12	12
Outflow (mm)	39	41	42	44	41	43	44	46	20.8	24	24
Center/Waist (mm)	23	25	27	29	23	25	27	29	23	26	27
Inflow (mm)	23	25	27	29	23	25	27	29	23.8	27.4	31

	Self Expanding Valves			Mechanically Expanding Valves (MEVs)			
	JenaValve			Boston Scientific			Direct Flow
	JenaValve Trilogy			LOTUS			Direct Flow
							
	23mm	25mm	27mm	23mm	25mm	27mm	23-29mm
Frame Height (mm)	31.3	33.7	35.7	19	19	19	N/A
Skirt Height (mm)	-	-	-	9	9	9	
Outflow (mm)	N/A	N/A	N/A	23	25	27	
Center/Waist (mm)	26	28	30	-	-	-	
Inflow (mm)	28	30	32.4	23	25	27	

TAV

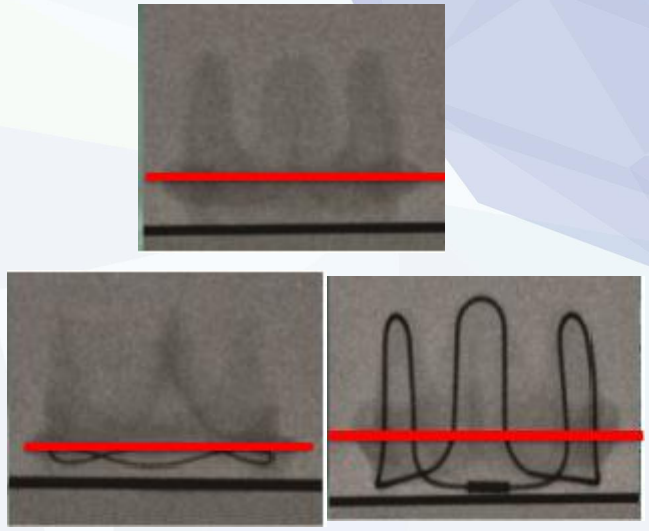
Tarantini et al. Am J Cardiol 2023;192:228-244

Malposición

Stentless 14,8%
Mosaic 14%
Stented 8,8%

Dr. Vinayak Bapat , TCT 2016

- Ausencia de calcio
- Insufic. aórtica



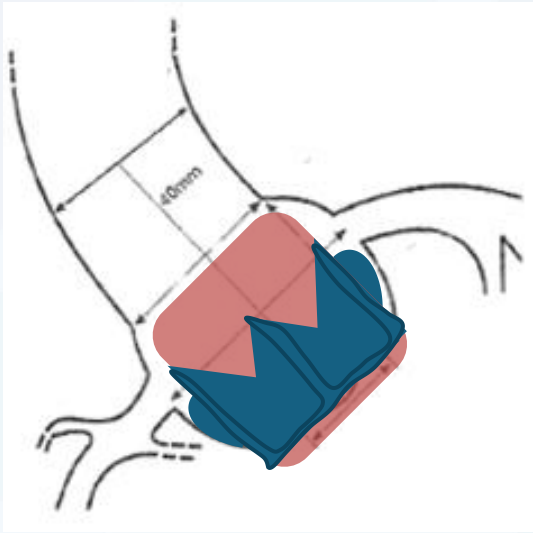
Malposición: 15%
(8% second valve)

Circulation. 2012;126:2335-2344

- Relación con anillo quirúrgico
- Capacidad reposiciona miento

- Anillo no visible
- No estentada

Oclusión coronaria



- Coronarias bajas
- Senos bajos y estrechos
- UST estrecha

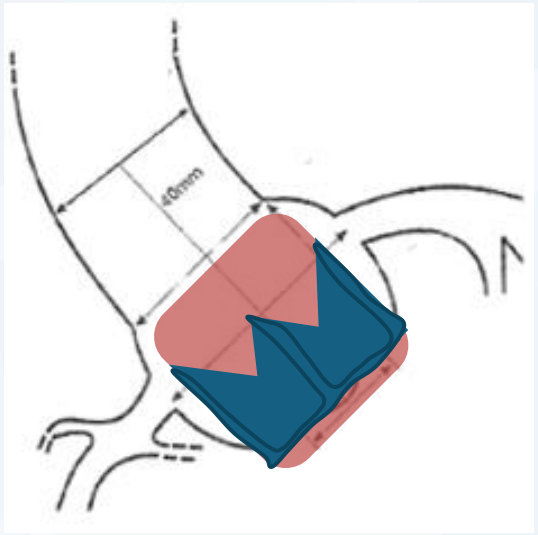
External leaflets 6,4%
Stentless 3,7%
Internal leaflets 0,7%
Eur Heart J. 2018:39, 687–695

Oclusión TCI 3,5 %
Mortalidad 57,1%
Circulation. 2012;126:2335-2344

- Falda/ "neoskirt" alta
- oversize
- implantación alta

- Supra-anular
- Velos altos
- Velos por fuera o no stentada

Gradientes elevados



- PPM
- Gradientes altos

Mean G ≥20 mm Hg = 26.8% patients
Severe PPM = 31.8%

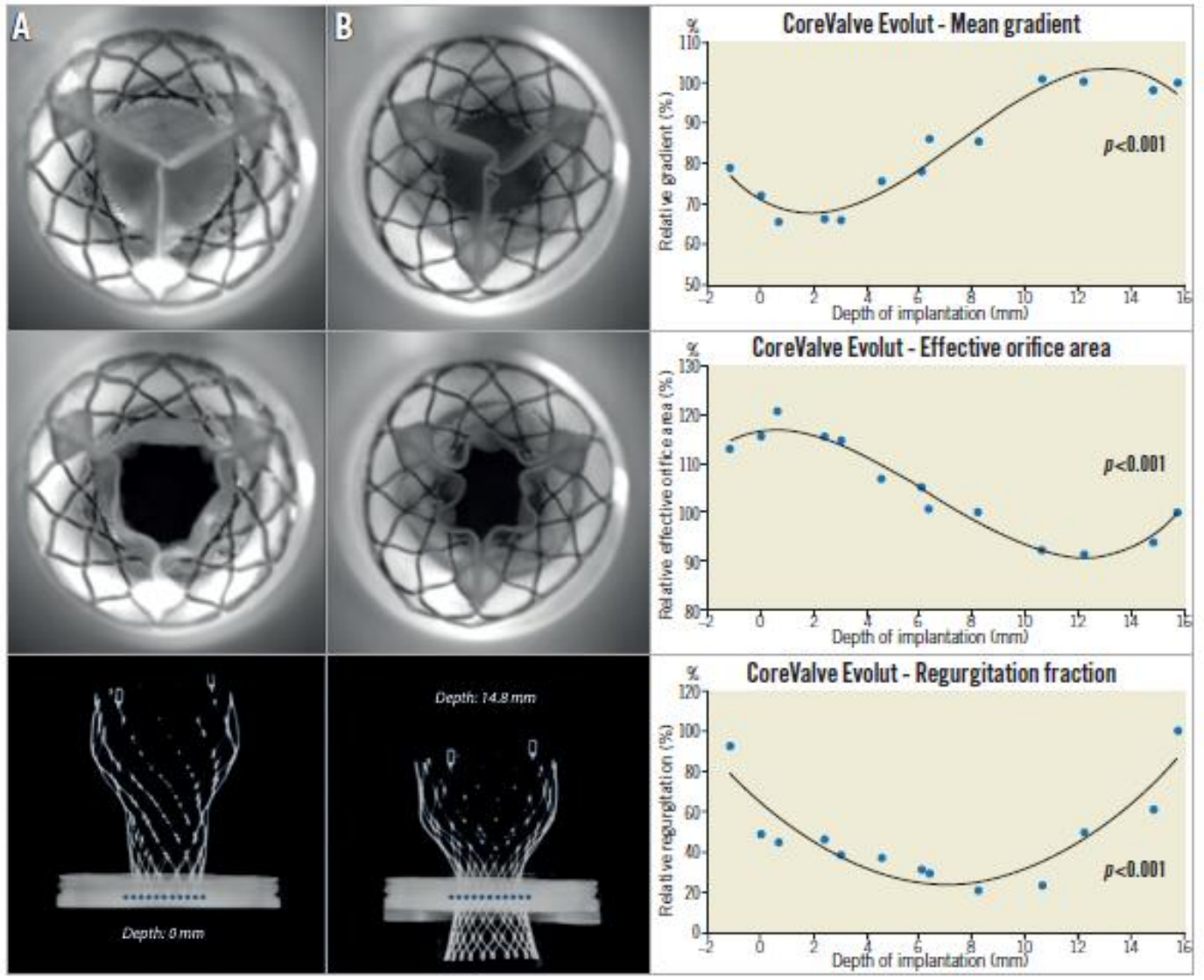
Circulation. 2012;126:2335-2344

- Balón exp.
- Intraanular
- Implante bajo
- Oversize

→ Infraexpansión ←

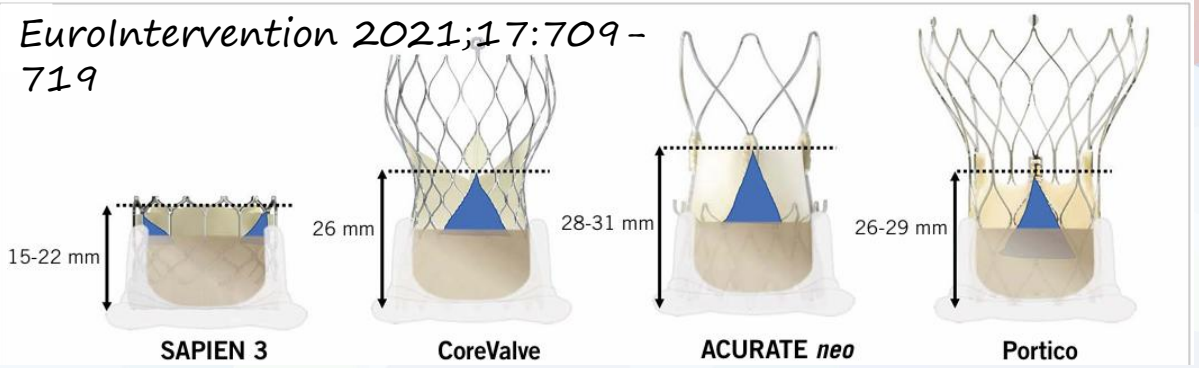
- Prótesis pequeña
- Estenotica

Profundidad de implante

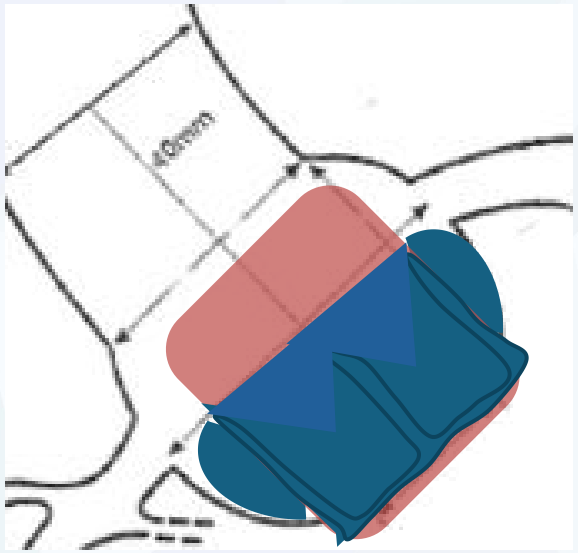


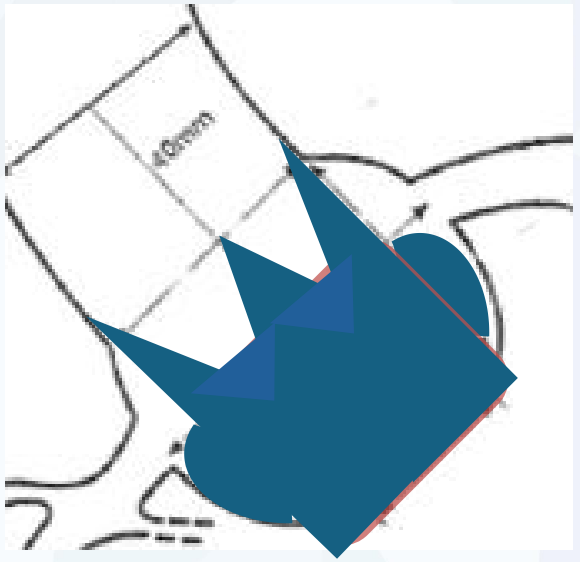
Simonato et al., EuroIntervention 2016;12:909-917

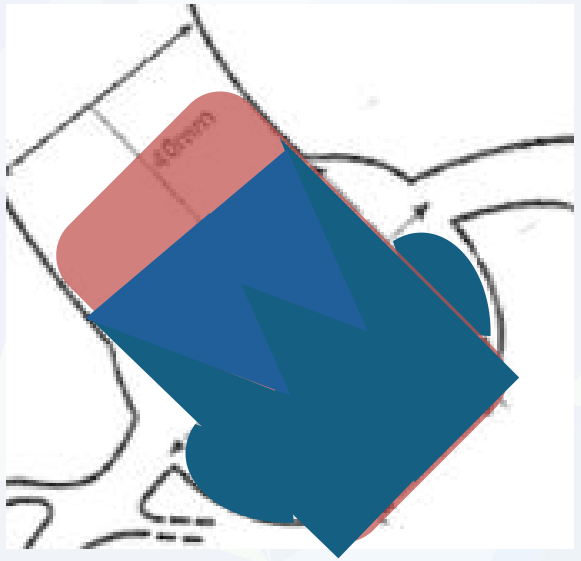
EuroIntervention 2021;17:709-719



~~"Anillo aórtico"~~





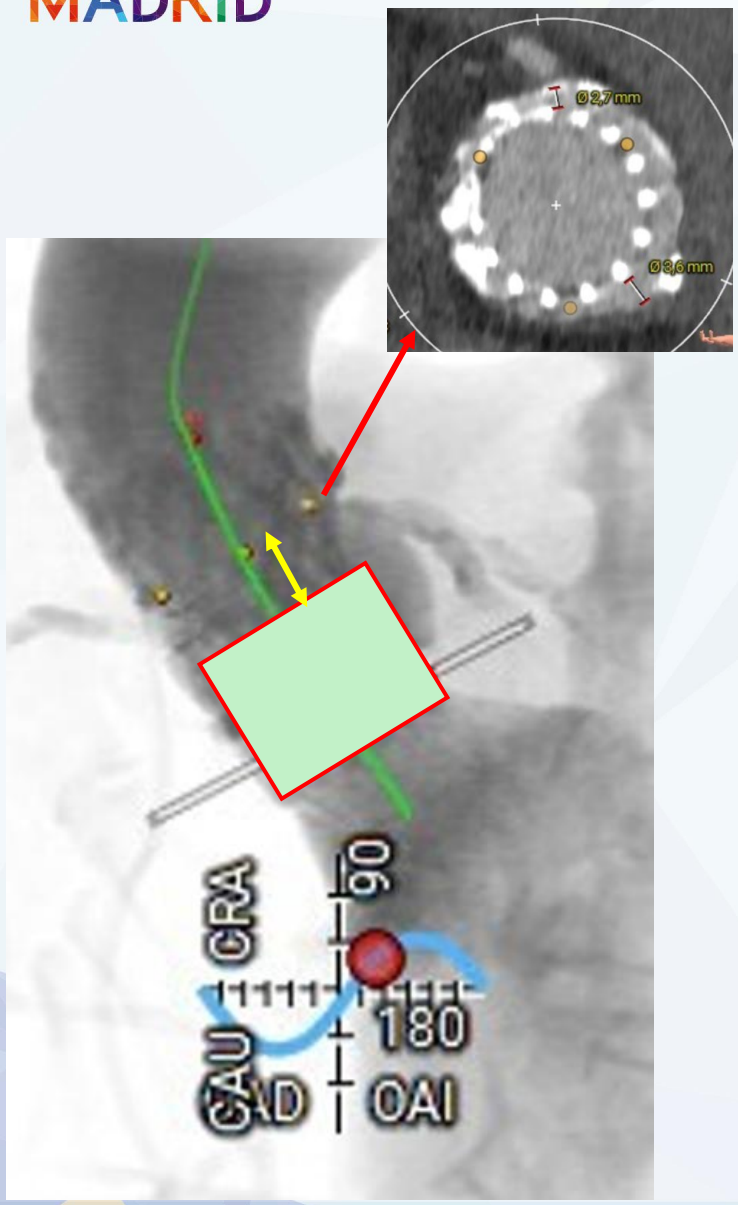


Segunda prótesis ocupa espacio

MALPOSICIÓN

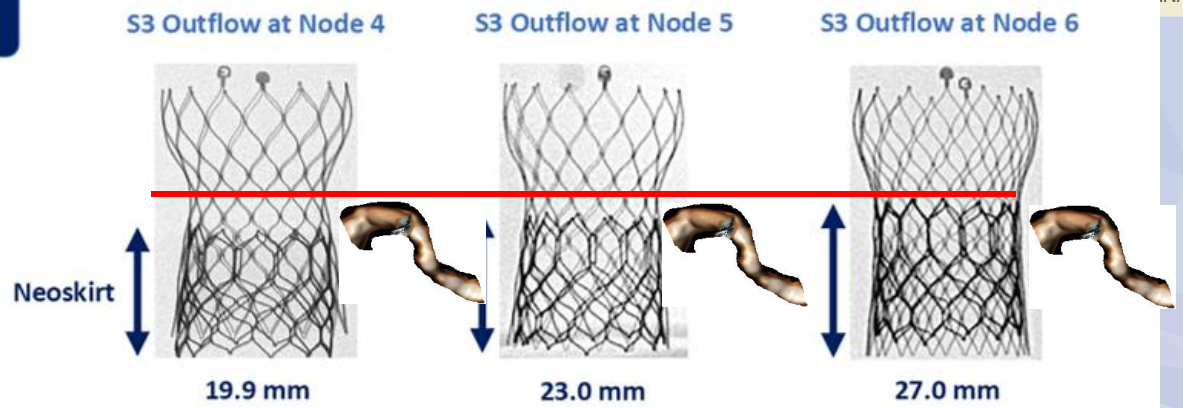
GRADIENTES ELEVADOS

OCLUSIÓN CORONARIA



NEOSKIRT HEIGHT

29mm S3 in 34mm Evolut



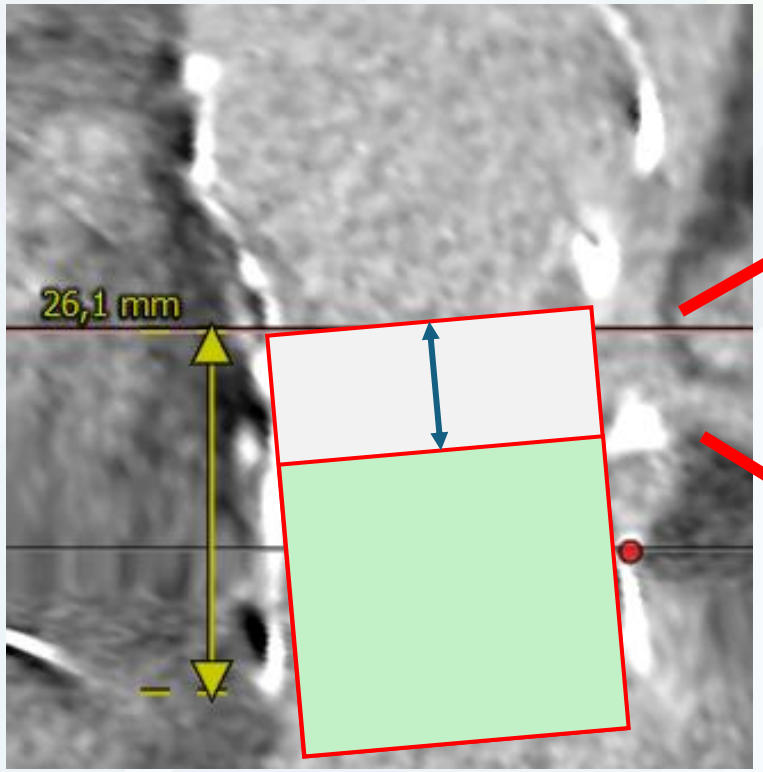
LEAFLET OVERHANG

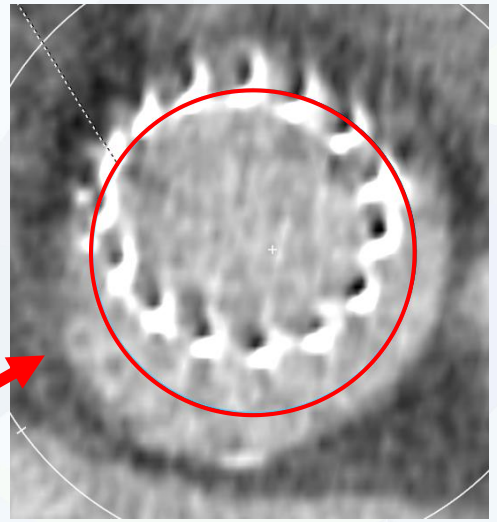
29mm S3 in 34mm Evolut

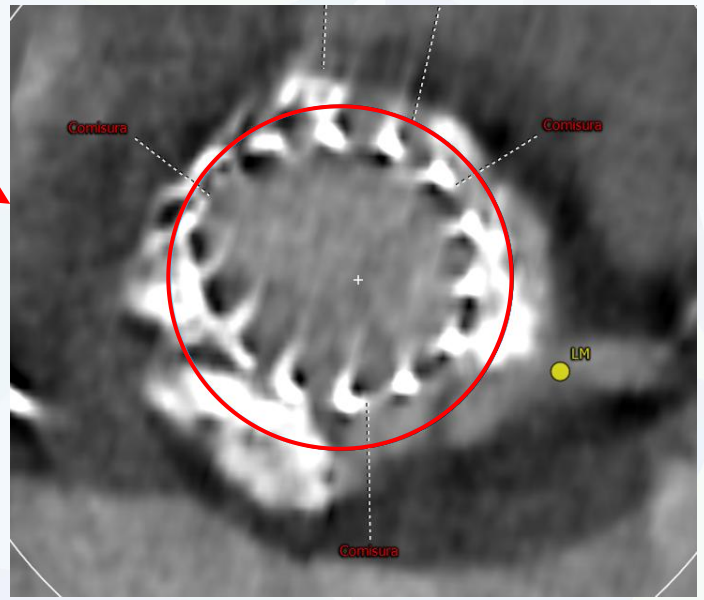
INDEX THV EXPANSION

29mm S3 in 34mm Evolut

Am J Cardiol 2023;192:228-244)





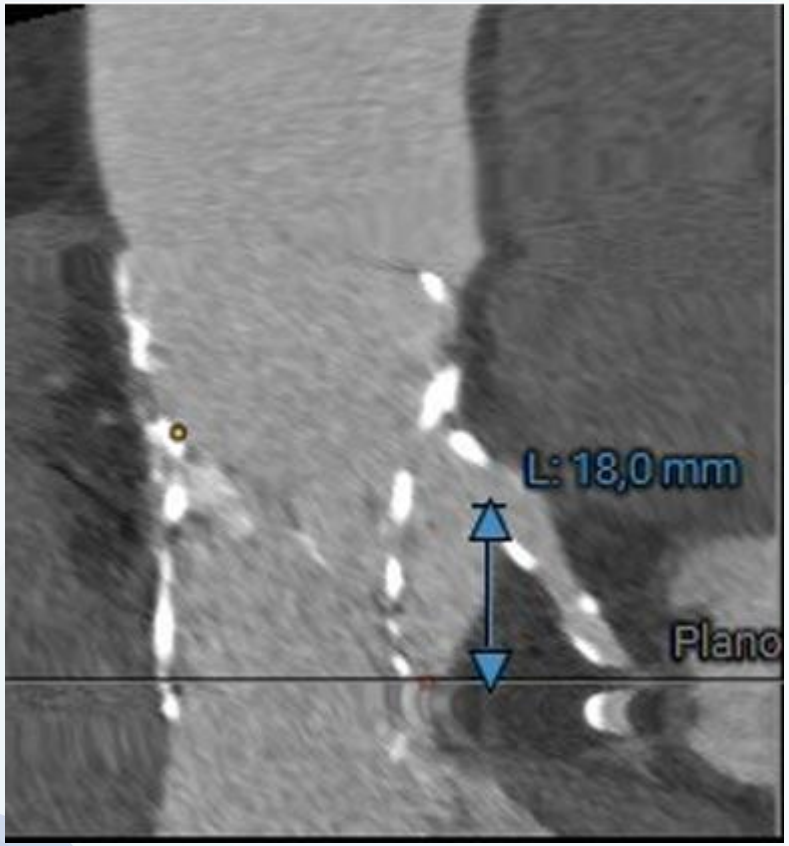


Corevalve
29

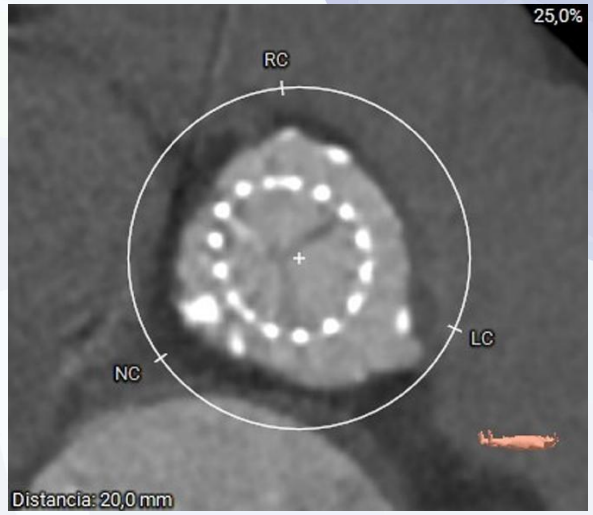
"Neoskirt"

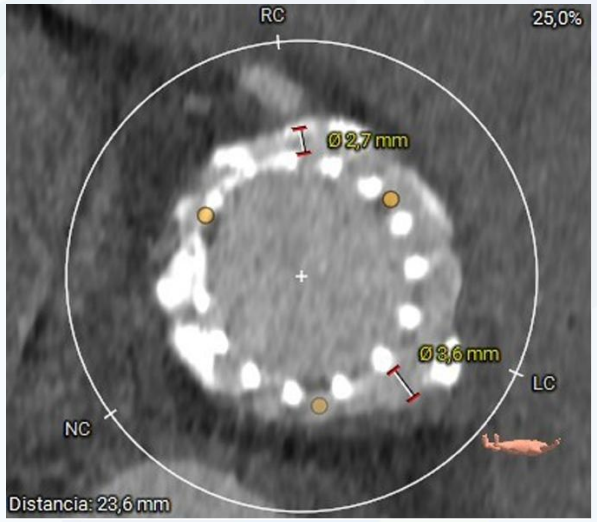
"Leaflet overhang"

"Index THV expansion"


L: 18,0 mm
Plano

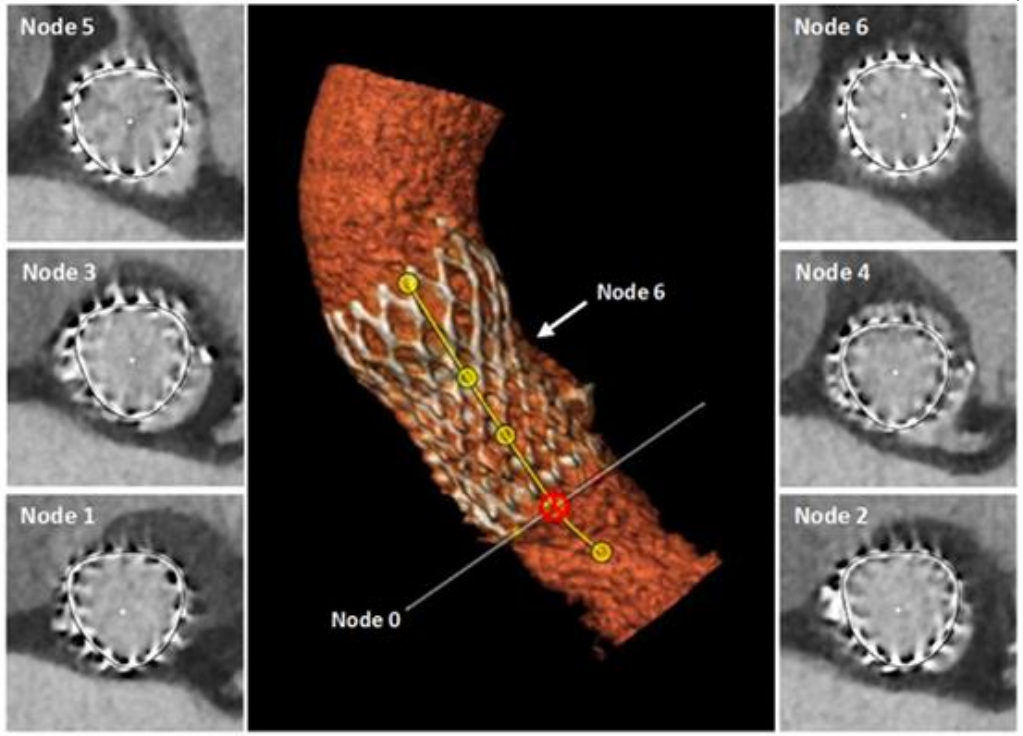

RC
25,0%
LC
NC
Distancia: 19,0 mm


25,0%
RC
LC
NC
Distancia: 20,0 mm


RC
25,0%
Ø 2,7 mm
Ø 3,6 mm
LC
NC
Distancia: 23,6 mm

A. Step-by-step CT analysis of post-index TAVI.

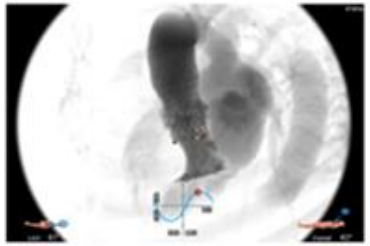
Am J Cardiol
2023;192:228-244



INDEX TAV DETAILS

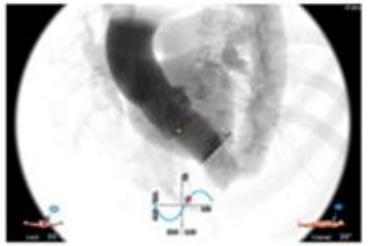
Index TAV	Evolut R 26 mm
Implant depth	Nominal
Failing mechanism	Central AR
Commissural alignment	Yes (Node 5)

RCA ostium lateralization



LAO 85°/CRAN 43°

LCA ostium lateralization



LAO 35°/CRAN 20°

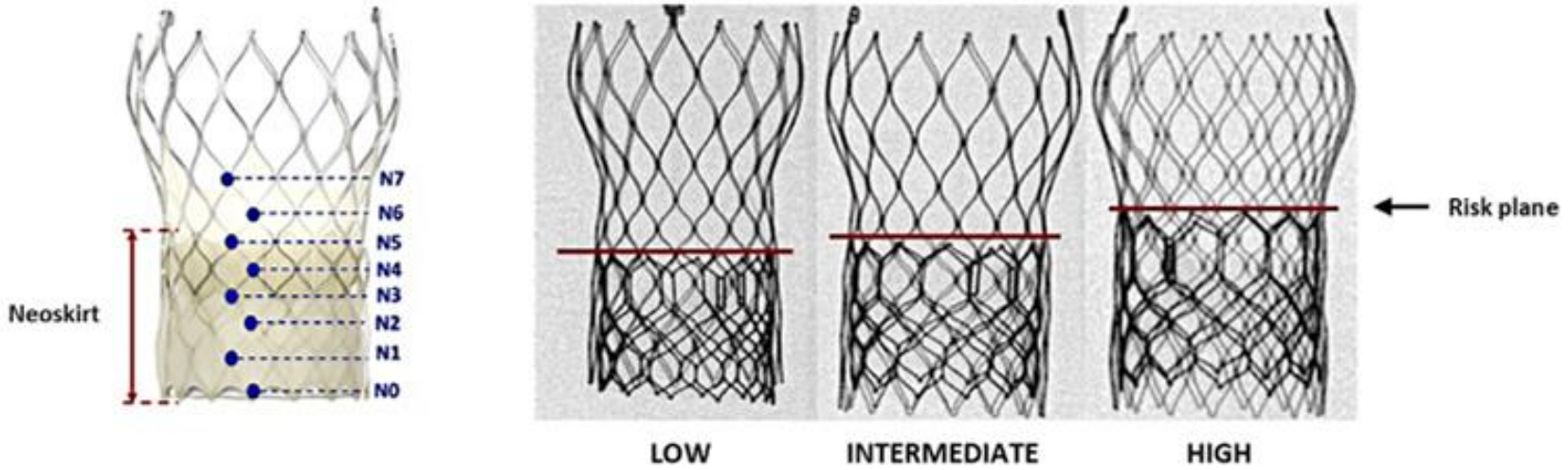
Level	TAV dimensions: Min/max Ø	TAV dimensions: Perimeter/area	Valve-to-Aorta (VTA) distance: RCA	Valve-to-Aorta (VTA) distance: LCA
Node 6	20.4 x 21.4 mm	65.4 mm/ 339 mm²	1.5 (STJ)	2.6 (STJ)
Node 5	20.8 x 22.5 mm	67.8 mm/ 361 mm²	3.8 (ostium)	7.1
Node 4	21.1 x 22.4 mm	68.9 mm/ 371 mm²	4.1	5.7 (ostium)
Node 3	21.5 x 22.5 mm	69.7 mm/ 377 mm²	4.4	4.9
Node 2	21.4 x 23.0 mm	70.1 mm/ 381 mm²	1.1	4.8
Node 1	21.3 x 22.6 mm	70.3 mm/ 381 mm²	0	0
Node 0	21.0 x 23.1 mm	69.1 mm/ 372 mm²	0	0

Summary

RCA
VTSTJ = 1.5 mm
VTC = 3.8 mm
LCA
VTSTJ = 2.6 mm
VTC = 5.7 mm

B. Projected neoskirt height or risk plane – following post-index TAVI

Am J Cardiol 2023;192:228-244



Based on the planned implantation height of the second BE-TAV, one can determine the anticipated **neoskirt height => risk plane** and estimate the neoskirt-to-coronary distance and neoskirt-to-STJ distance.

WARNING. These neoskirt-to-aorta distances may become smaller than the measured valve-to-aorta distances depending on the second TAV size selection and index TAV expansion.

MUCHAS GRACIAS

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