

Valve in Valve

Paso a paso

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Introducción

- Aumento válvulas cardíacas bioprotésicas (**SAV**/THV) vs. mecánicas.
- American Heart Association:
 - Mecánica < **50 años** (IIa- B).
- European Society of Cardiology
 - Mecánica < **60 años** (IIa-B)
- Deterioro valvular estructural (SVD): necesidad de reintervención.
- redo-SAVR se asocia con una mayor morbilidad y mortalidad
- ViV TAVR

	Stented ViV TAVI	Stentless ViV TAVI	Native TAVI
Residual elevated gradient	+++	+	+
Clinical thrombosis	++	+	+
Coronary obstruction	++	+++	+
Device malpositioning	+	++	+
Paravalvular leak	—	++	+
Annular rupture	—*	+	+

Characteristics	Redo SAVR favoured	TAV-in-SAV favoured
Patient		
Low/intermediate surgical risk	✓	
High/extreme surgical risk		✓
Age ≥80		✓
Young age (<75) where valve durability is important	✓	
Concomitant diseases needing surgical intervention	✓	
Significant paravalvular leak not amenable to percutaneous closure	✓	
Patient preference	✓	✓
Surgical valve		
Small size where severe PPM cannot be addressed	✓	
Large size without severe PPM		✓
Balloon valve fracture feasible and low risk		✓
Severe PPM when balloon valve fracture is not feasible or high risk	✓	
Anatomic		
High risk of coronary obstruction	✓	
High risk of THV malposition	✓	
High risk of aortic root injury	✓	
Favourable coronary anatomy		✓
Calcified aortic root or hostile chest		✓

Caso clínico

- 83a SF
- FRCV: HTA, DM2
- AP: Anemia crónica, Hipotiroidismo, Asma. Trombofilia. Prótesis de rodilla.
- **SVAo 2018 Crown No. 21**
- DE CF II-III. Síncope de esfuerzo. Niega angor.
- ETT/*ETE*:
 - HVI moderada FEVI 60%
 - Prótesis biológica aórtica con valvas finas calcificadas,
 - Grad pico/medio 70/42 mmHg (37/22), AVA 0,9cm² (indexada 0.55cm²/m²) , DVI 0.27. PPM moderado .
 - Sin insuficiencia ni fugas paravalvulares.
 - PSAP 30mmHg.
- CACG:
 - sin lesiones angiográficamente significativas.
- STS Mortalidad: 5.2 %c STS Morbi-Mortalidad: 18.8 %

Planificación procedimiento

Determinar: tipo SVD

Etiologías disfunción SAV

Structural valve deterioration (SVD)
Non-structural valve dysfunction
Paravalvular regurgitation
Prosthesis-patient mismatch
Valve thrombosis
Endocarditis

SVD
EAPCI/ESC/EACTS 2017

	Echocardiographic findings
Stage 0 (no SVD)	Normal valve morphology and function
Stage 1 (morphological SVD)	Intrinsic permanent structural changes to the prosthetic valve (leaflet integrity or structure abnormality, leaflet function abnormality, strut/frame abnormality)
Stage 2 (moderate haemodynamic SVD)	Mean transprosthetic gradient ≥ 20 mmHg and < 40 mmHg Mean transprosthetic gradient ≥ 10 and < 20 mmHg change from baseline Moderate intraprosthetic aortic regurgitation, new or worsening ($\geq 1+/4$) from baseline
Stage 3 (severe haemodynamic SVD)	Mean transprosthetic gradient ≥ 40 mmHg Mean transprosthetic gradient ≥ 20 mmHg change from baseline Severe intraprosthetic aortic regurgitation, new or worsening ($> 2+/4$) from baseline

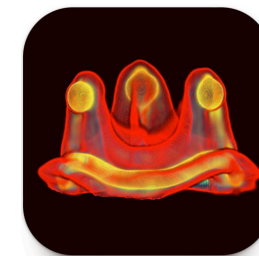
SVD vs. noSVD

Normal function	PPM	Obstruction
Normal valve structure and motion	Normal valve structure and motion	Abnormal valve structure and motion
VPeak < 3 m/s, MeanG < 20 mmHg	VPeak > 3 m/s, MeanG > 20 mmHg	VPeak > 3 m/s, MeanG > 20 mmHg
EOA > 1 cm ² ; DVI ≥ 0.35	EOA > 1 cm ² ; DVI 0.25-0.34	EOA variable; DVI < 0.25
EOA within normal range	EOA normal	EOA reduced
EOAi > 0.85 cm ² /m ²	EOAi ≤ 0.85 cm ² /m ²	EOAi ≤ 0.85 cm ² /m ²
Increase in MeanG < 10 mmHg and decrease in EOA < 0.3 cm ² during follow-up	Increase in MeanG < 10 mmHg and decrease in EOA < 0.3 cm ² during follow-up	Increase in MeanG ≥ 10 mmHg and decrease in EOA ≥ 0.3 cm ² during follow-up

DVI: Doppler velocity index; EOA: effective orifice area; EOAi: indexed effective orifice area; MeanG: mean gradient; PPM: prosthesis-patient mismatch; Vpeak: peak velocity

Planificación procedimiento

Determinar: modelo, tamaño SAV



ViV Aortic

- Stented**
- Stentless
- Sutureless
- Rings
- TAVR Devices
- Bookmarks
- Case of the Month
- Identify a Valve
- Valve Fracture
- More

< Stented Crown

Corcym (Sorin)
Bovine pericardial leaflets
Leaflets sutured outside the stent

Fluoroscopic Markers
Sewing ring

19 **21** 23 25 27

29

< Back Size: 21

Stent ID	Height	True ID
17.3	13	17

Fracturable
True Balloon Size: 20mm
THV size needed may be larger

THV CURRENT THV ARCHIVED

< Back THV Selector: Current

Acurate NEO
USE WITH CAUTION

Allegra
USE WITH CAUTION

Evolut 23

S3 20

Portico
USE WITH CAUTION

Use With Caution

< Back Evolut Ideal Placement

If recommendation is two sizes, choose the valve sizes depending on the size of sinus of Valsalva. Place Evolut 4mm below the fluoroscopic marker in the sewing ring.

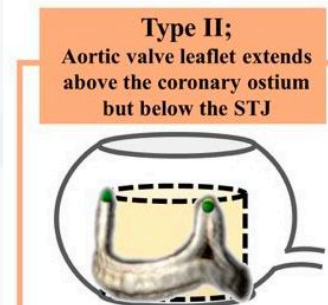
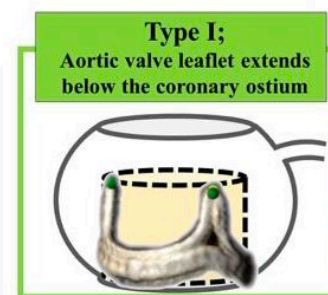
Video Guidance

Not Available

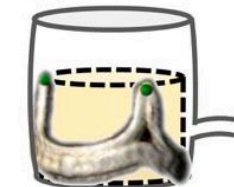
Valve Fracture

Planificación procedimiento *AngioTAC*

- posición de la válvula con respecto al plano valvular aórtico
- diámetro interno real
- Riesgo obstrucción coronaria (ViV TAVR > TAVI):
 - **VTC**
 - ≤ 4 mm mayor riesgo de obstrucción coronaria
 - ≤ 3 mm alto riesgo.
 - **VTSTJ**
 - $\leq 2,5$ mm
 - **Altura prótesis/STJ**
 - ≥ 2 mm
 - **Altura coronaria**



IIA; Wide sinuses



IIB; Effaced sinuses



IIIA; Wide STJ/Sinuses



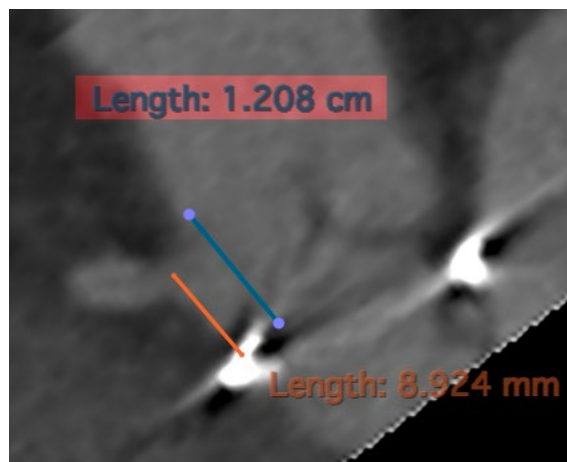
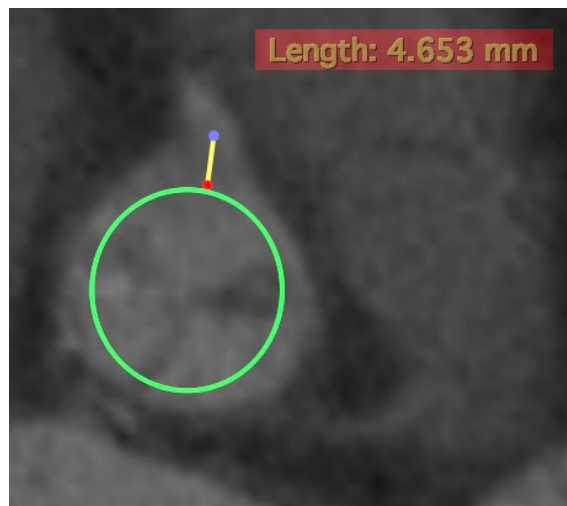
IIIB; Effaced sinuses



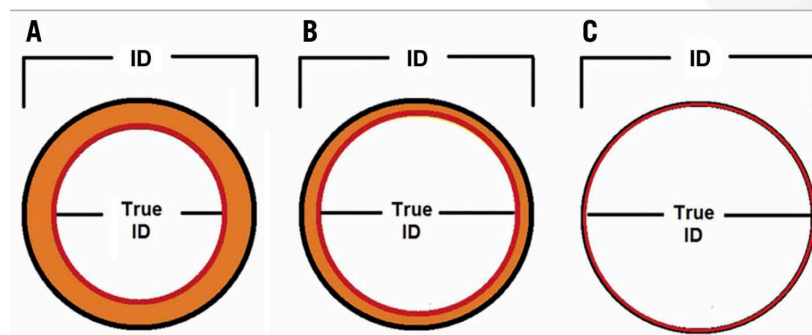
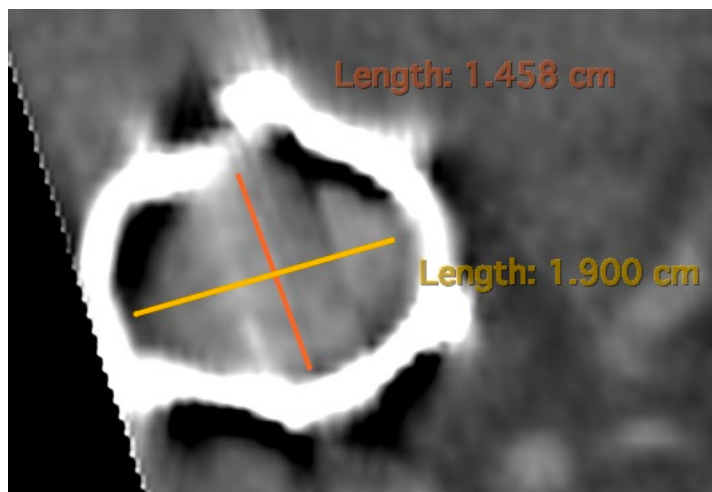
IIIC; Narrow STJ

Planificación procedimiento *AngioTAC*

ACD



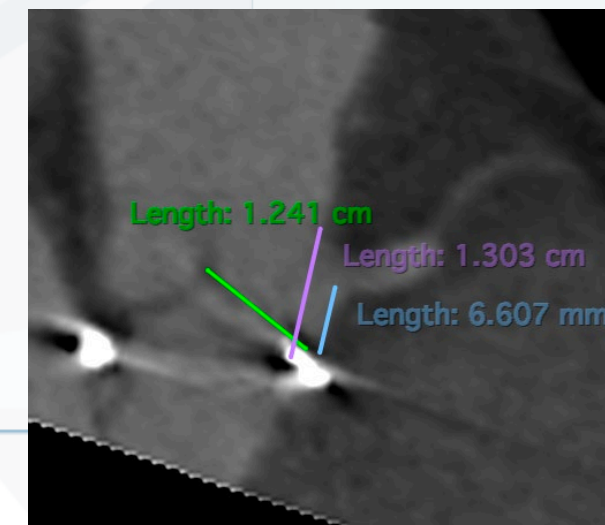
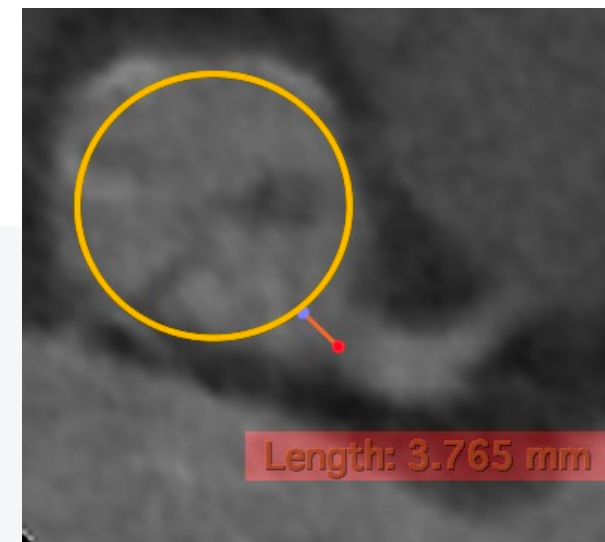
AngioTAC



True ID vs. N° SAVR

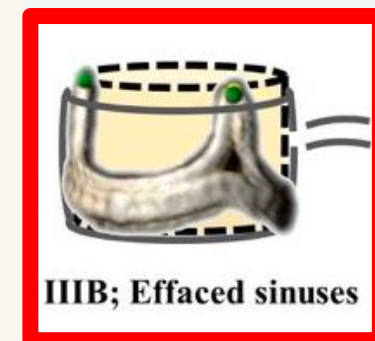
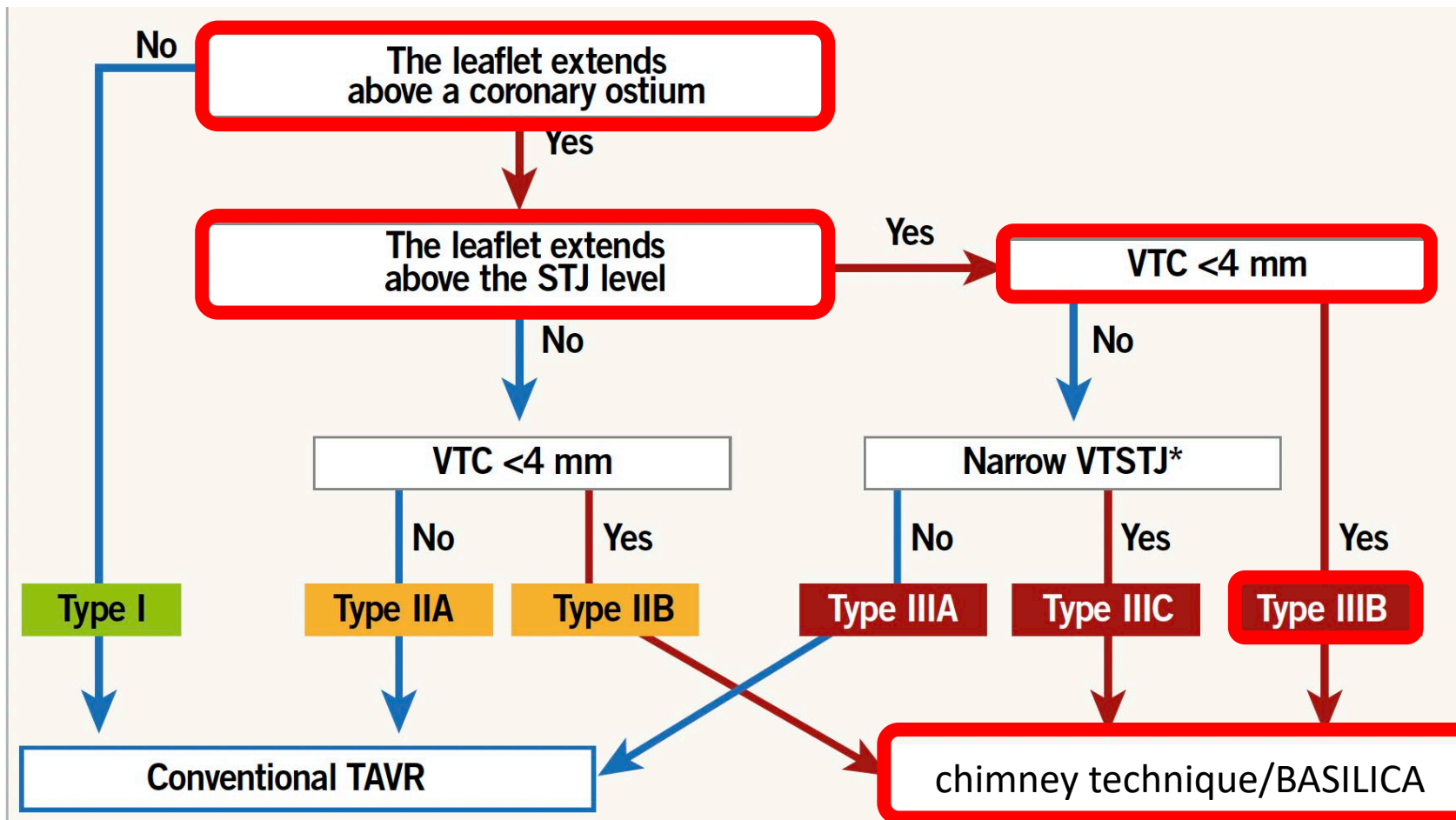
A) porcina: <2mm B) bovina interna: <1mm C) bovina externas: =

TCI



Planificación procedimiento

Evaluación del riesgo de obstrucción coronaria



Planificación procedimiento

Selección tipo de THV

BES vs. SEV

Factors	Balloon-expandable valve preferred	Self-expanding valve preferred
Smaller SAV (true ID <23 mm)		✓
Need for coronary re-access	✓	
Pure aortic regurgitation in a stentless SAV	✓	✓
BVF feasible	✓	
BVF not feasible or safe		✓



Planificación procedimiento

Protección embolia cerebral

- ViV > embolia vs. TAVI
- SAVR: calcificadas, friables, aumento manipulación del catéter, múltiples maniobras de reposicionamiento de la válvula, BVF, BASILICA
- Evidencia a favor



Planificación procedimiento *General*

Anestesia:	Sedación consciente
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Eco:	ETT
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Acceso 1ario:	Femoral derecho
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Acceso 2ario.:	Femoral izquierdo (Pigtail) - Radial Izquierda (EBU 3,5)
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Implante:	Evolut Pro 23
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Postdilatación:	Balón ATLAS N° 20
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ECG:	Ritmo Sinusal; PR 160 mseg
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Marcapaseo:	Por Guía VI
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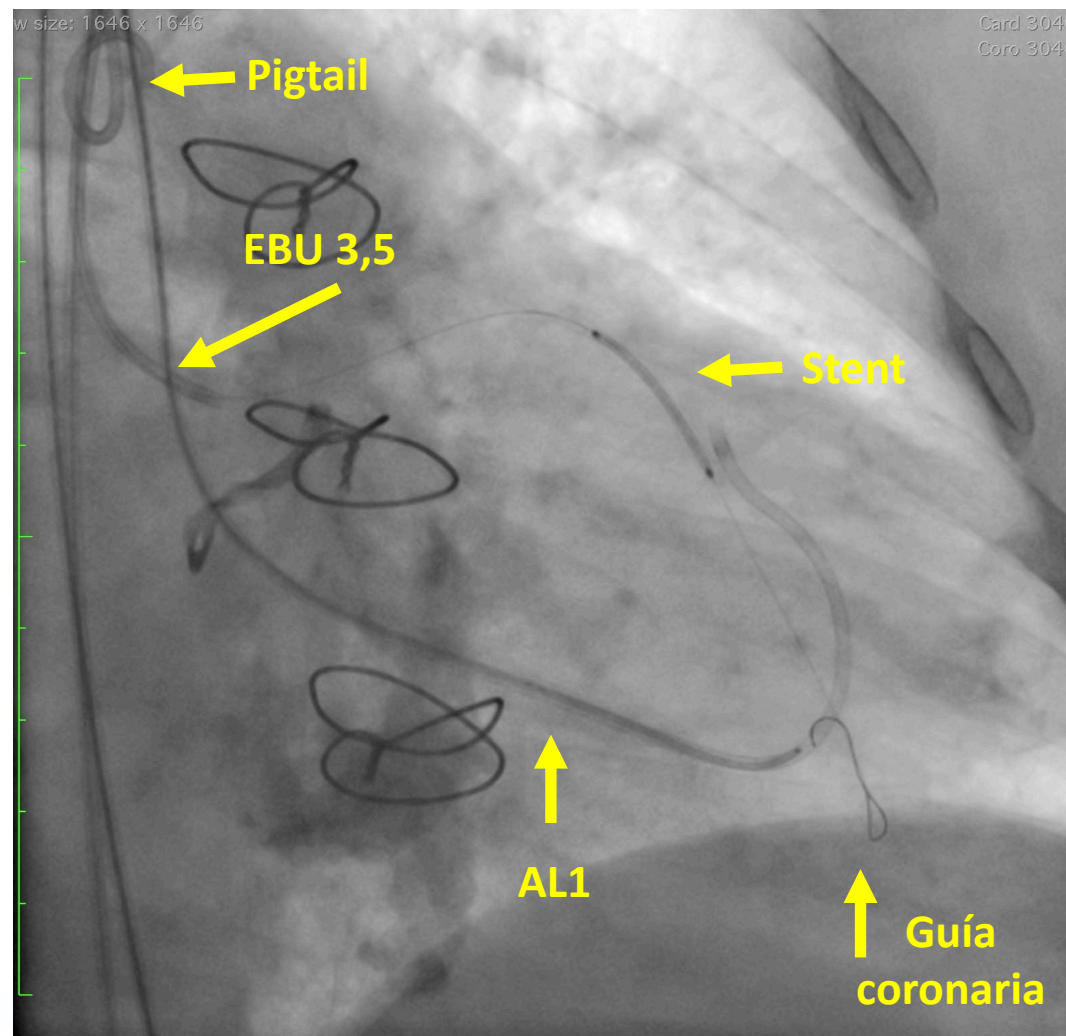
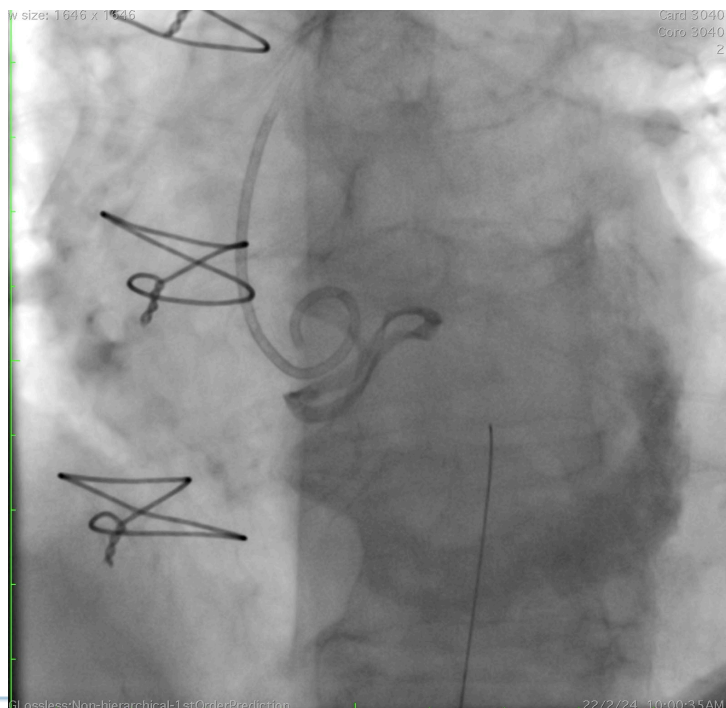
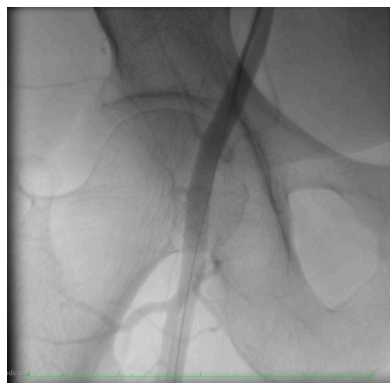
Guía:	Confida
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Ø ilíaca derecha:	10 mm
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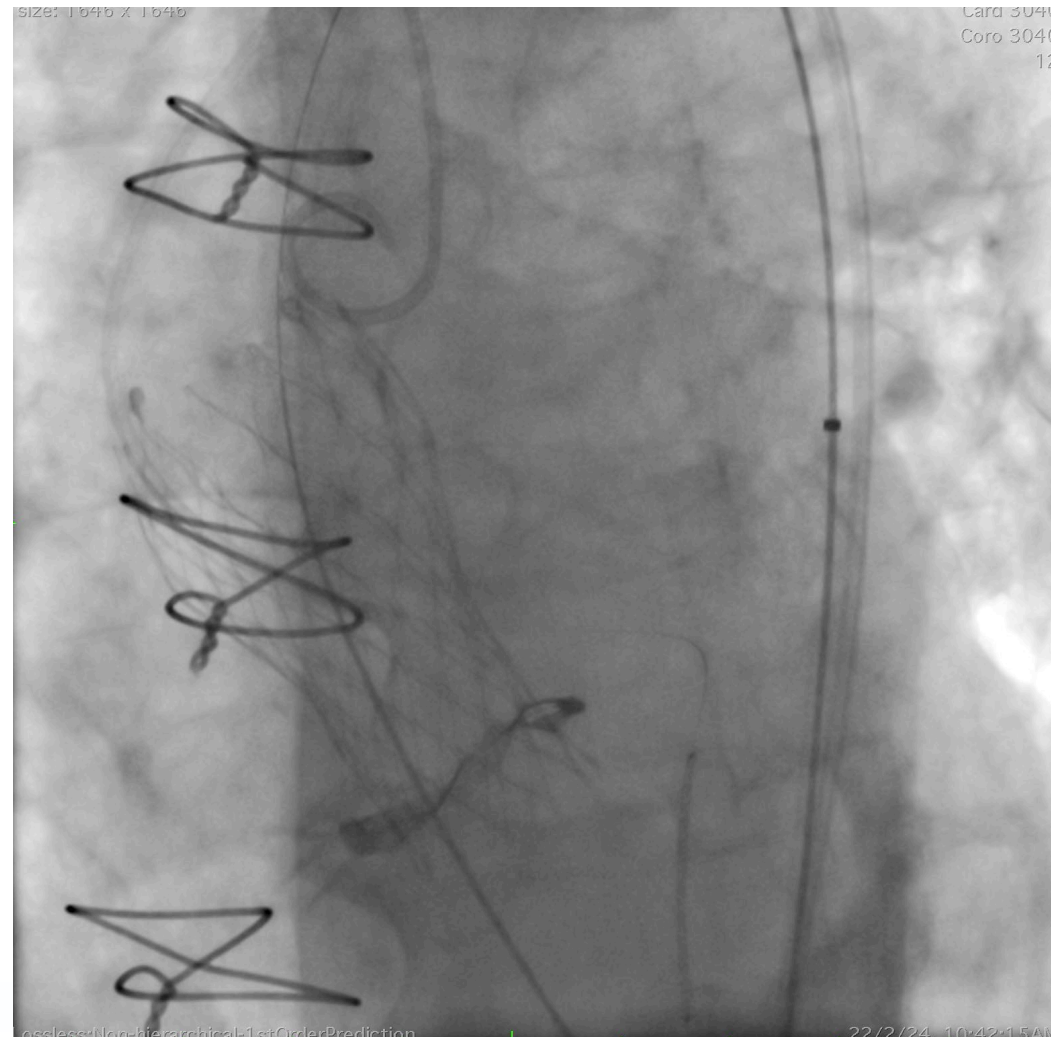
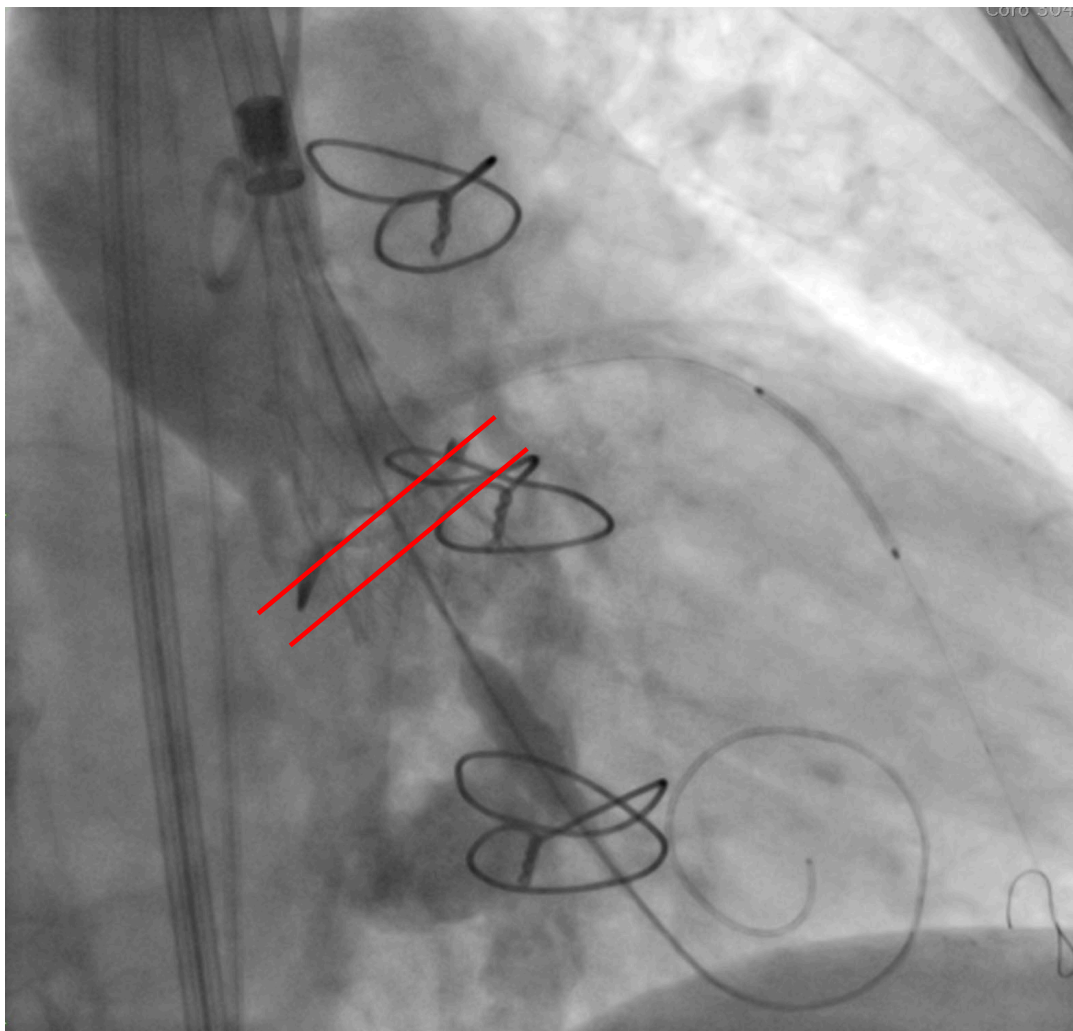
Ø femoral derecha:	9 mm
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Tips:	<i>protección coronaria izquierda</i>
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Procedimiento



Procedimiento



Gradiente pico/medio: 47/32 mmHg

Planificación procedimiento

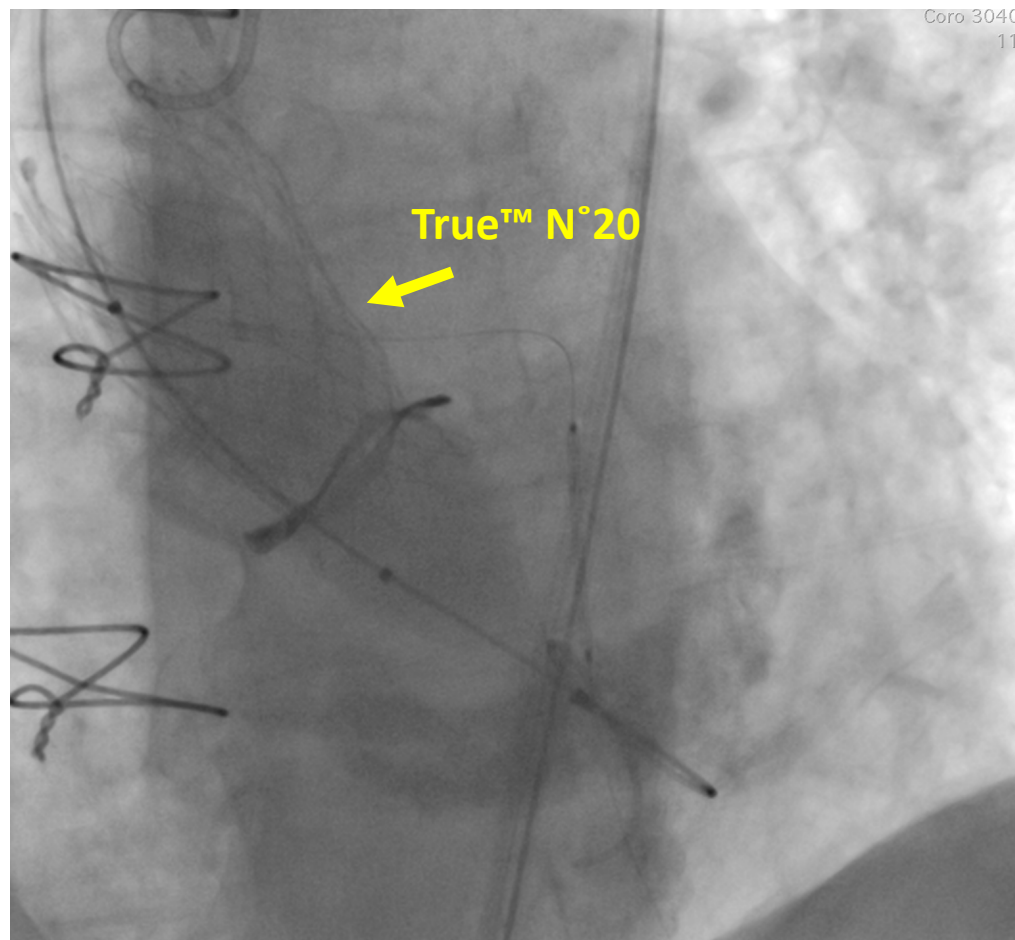
Remodelación – fractura de la SAV con balón (BVF)

- Posdilatación/BVF:
 - SAVR ≤ 23 mm
 - porcinas ≤ 25 mm
- BVF
 - balón no complaciente Atlas™ Gold, True™
 - tamaño > true ID
 - complicaciones IAo grave aguda, migración de la válvula, obstrucción coronaria, lesión de la raíz aórtica

BVF pre vs. post

	BVF before TAVI	BVF after TAVI
Advantages	<ul style="list-style-type: none"> – Easier to implant self-expanding valve with less sizing mismatch – Can confirm successful fracture before finalising TAV size 	<ul style="list-style-type: none"> – Better TAV expansion, especially in balloon-expandable valves – Less risk of acute severe aortic regurgitation
Disadvantages	<ul style="list-style-type: none"> – Acute severe aortic regurgitation causing haemodynamic collapse – May need to post-dilate to optimise haemodynamics 	<ul style="list-style-type: none"> – TAV migration or embolisation – Acute TAV failure from leaflet injury – Unknown effect on TAV durability

Procedimiento

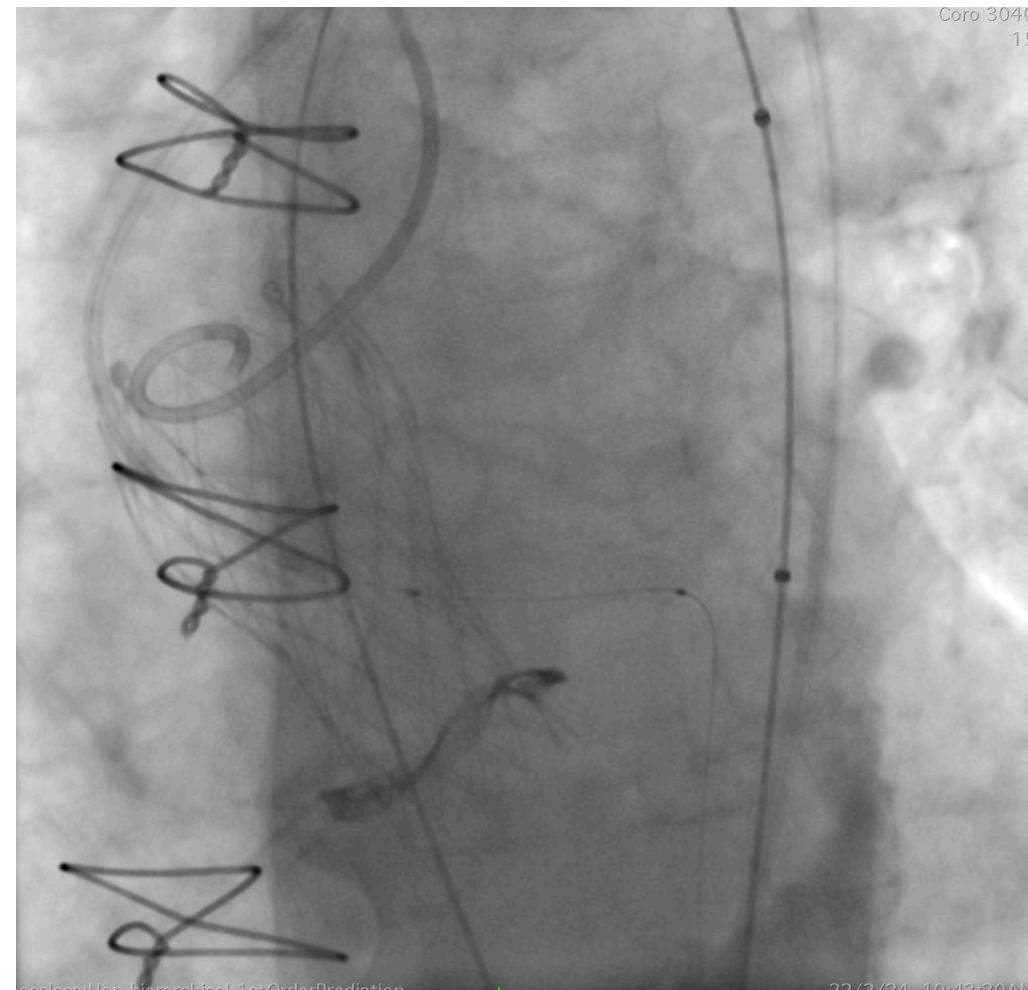
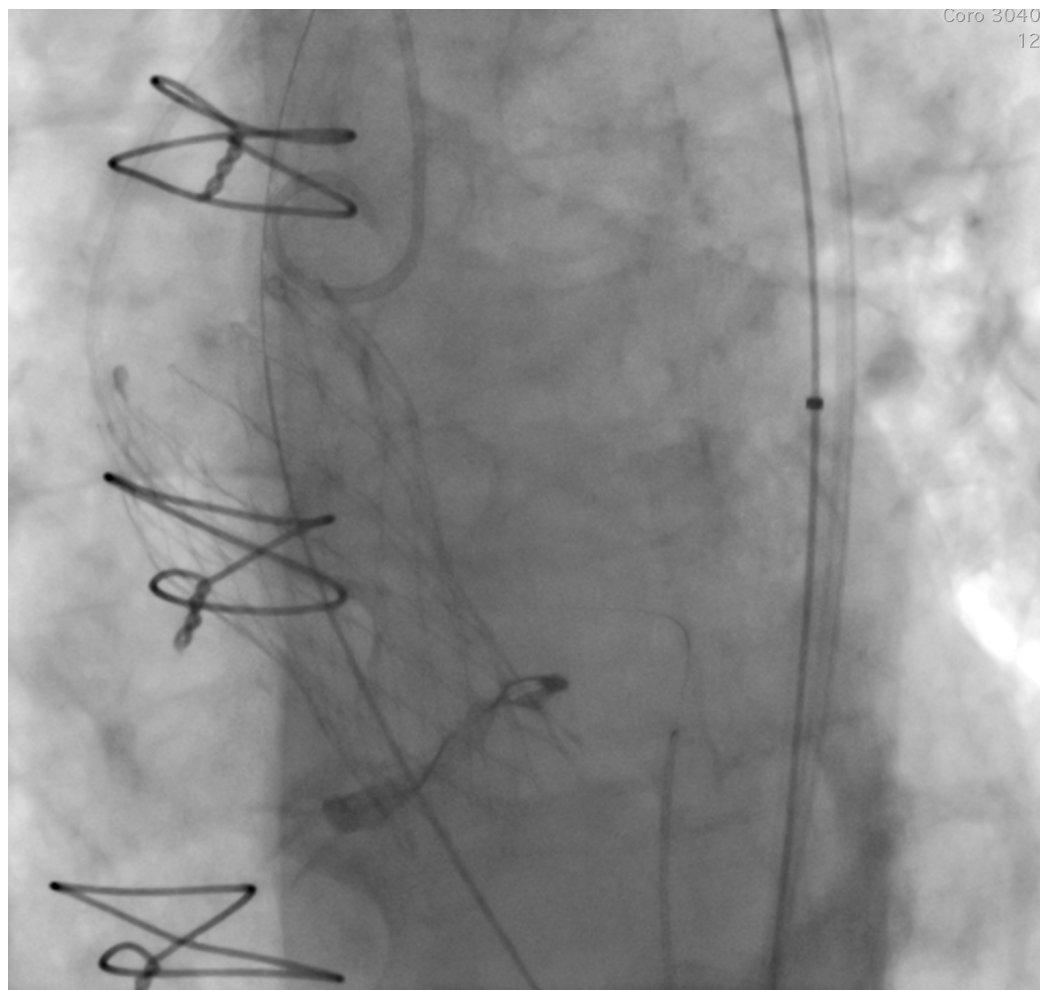


Postdilatación

Gradiente pico/medio:

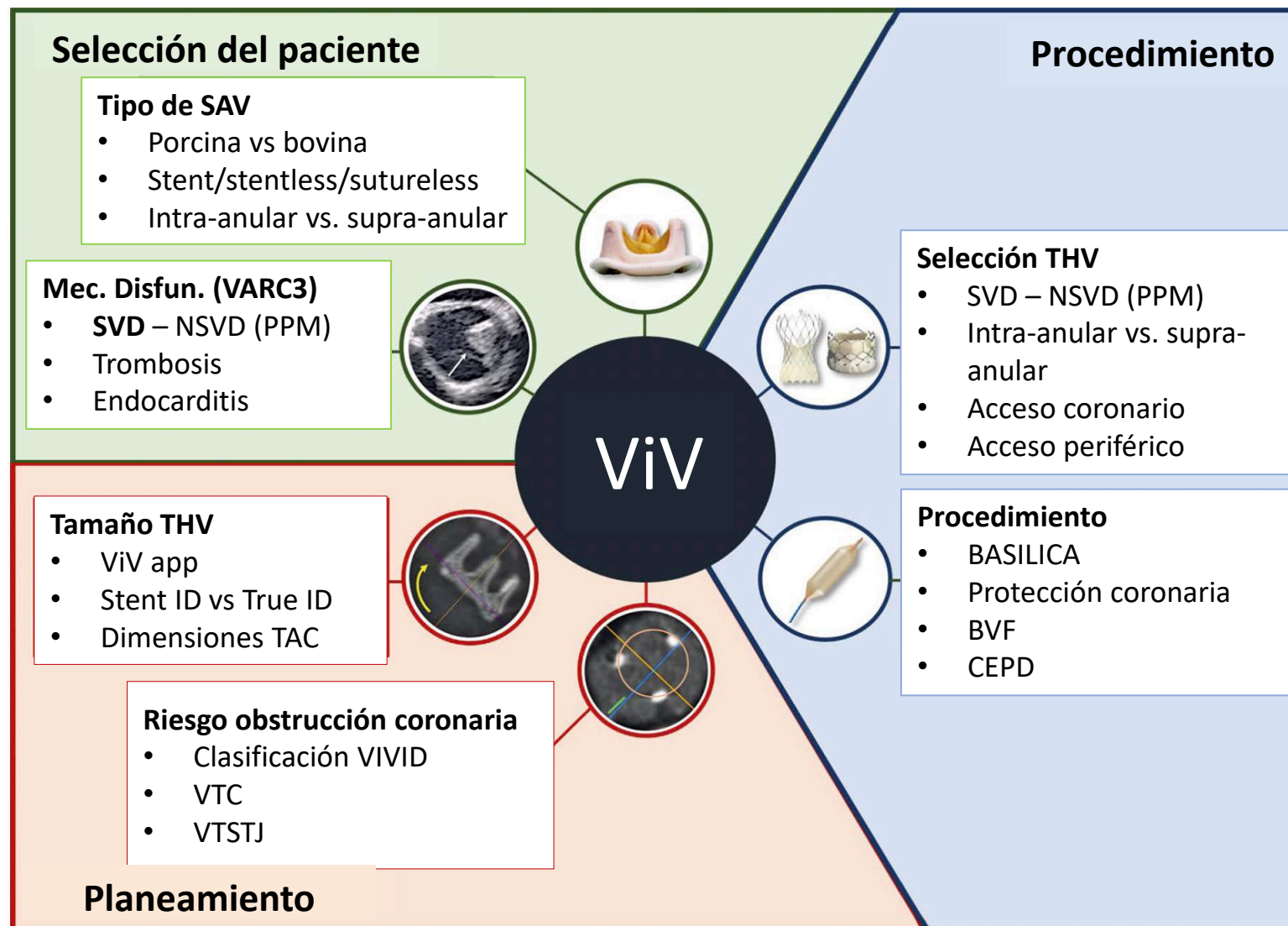
- 30/22 mmHg

Procedimiento



Procedimiento





Save the date!!



Cardio SUC 2025

41° Congreso Uruguayo de Cardiología

6 al 9 de mayo

Radisson Montevideo Victoria Plaza Hotel

