XLVII JORNADA SOLACI 16º Región Andina. 16 y 17 de Noviembre de 2023. Lima-Perú

Un Caso – Una Enseñanza

Dr. A. Ricardo Quizhpe

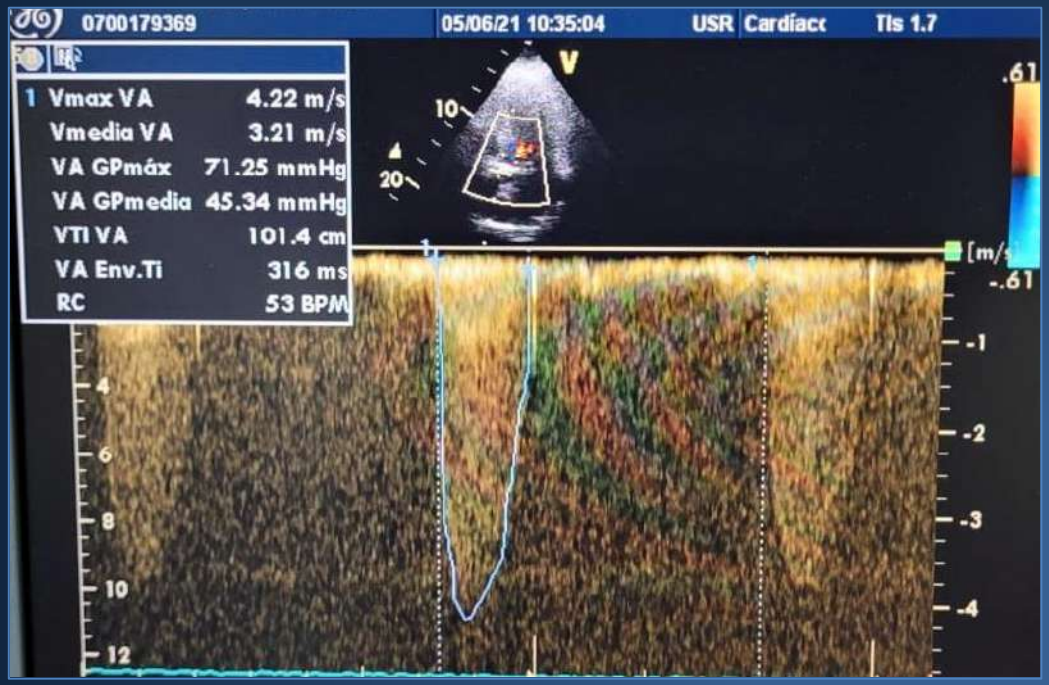
UNIDAD DE HEMODINÁMICA

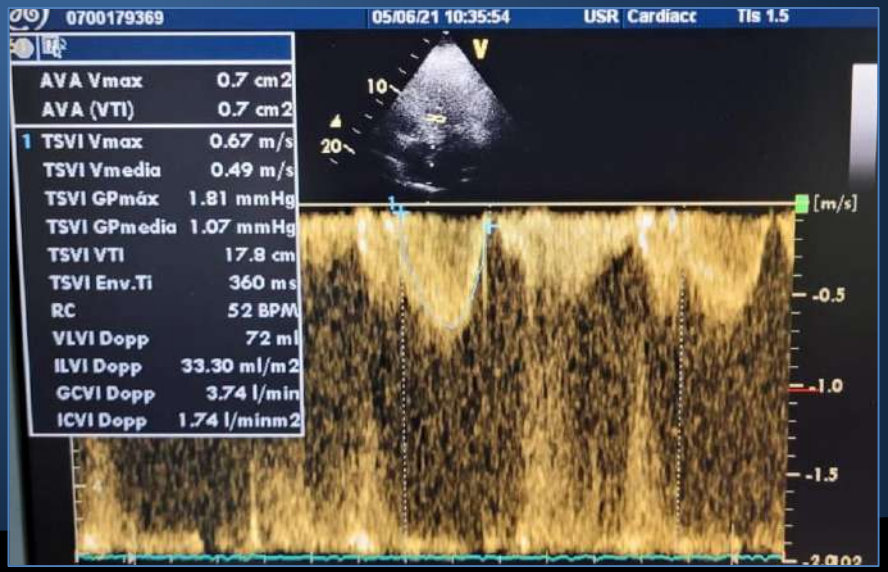
Cuenca - Ecuador

Case Presentation

- Male 65 y/o
- Current complain: progressive exertional dyspnea (Class II NYHA)
- Past medical history: current smoker, systemic hypertension, hypercholesterolemia
- Current Medication: valsartan/HCT, atorvastatin/ezetimibe.
- Clinical diagnosis: Severe aortic stenosis.

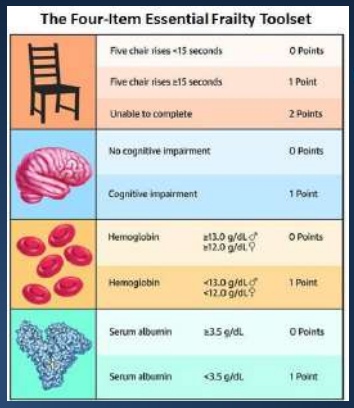
Imaging - Echocardiography





Risk stratification

- Fragility 0
- STS Score 0.5%



STS Short-term / Operative Risk Calculator

Adult Cardiac Surgery Database - All Procedures

Answer All Questions that Apply for Accurate Estimates

Planned Surgery: Isolated AVR
Surgery Incidence: First CV surgery
Surgical Priority: Elective

Demographics

Sex	Male
Age (years)	65
Height (cm)	176
Weight (kg)	80
BMI (kg/m²)	25.8
Race	Hispanic
Payor / Insurance	Select a maximum of 2

Laboratory Values

Creatinine (mg/dL)	0.9
Hematocrit (%)	45
WBC Count (10³/µL)	7
Platelet Count (cells/µL)	250000

Preoperative Medications

- [x] ACE Inhibitors/ARBs ≤ 48 hrs
- [ ] GP IIb/IIIa Inhibitor ≤ 24 hrs
- [ ] Inotropes ≤ 48 hrs
- [ ] Steroids ≤ 24 hrs
- [ ] ADP Inhibitors ≤ 5 days

Risk Factors/Comorbidities

Diabetes: Select

- [ ] Family Hx of CAD
- [x] Hypertension
- [ ] Liver Disease
- [ ] Mediastinal Radiation
- [ ] Unresponsive State
- [ ] Dialysis
- [ ] Cancer ≤ 5 yrs
- [ ] Syncope
- [ ] Immunocompromised

Endocarditis	No
Illicit Drug Use	No
Alcohol Use	None
Tobacco Use	Current smoker

Pulmonary

Chronic Lung Disease	No

- [ ] Recent Pneumonia
- [ ] Sleep Apnea
- [ ] Home O_2

Vascular

Cerebrovascular Dis.	No

- [ ] Peripheral Artery Disease
- [ ] Right Carotid Sten. ≥ 80%
- [ ] Prior Carotid Surgery
- [ ] Left Carotid Sten. ≥ 80%

Cardiac Status

Heart Failure	None
NYHA Classification	Class II
PreOp Mech Circ Support	Select all that apply
Ejection Fraction (%)	60

- [ ] Cardiogenic Shock
- [ ] Resuscitation ≤ 1hr

Coronary Artery Disease

Prim. Coronary Symptom	No coronary symptoms
Myocardial Infarction-when	No MI
No. of Diseased Vessels	None

Valve Disease

- [x] Aortic Stenosis
- [ ] Mitral Stenosis
- [ ] Aortic Root Abscess

Aortic Regurgitation	Trivial/Trace
Mitral Regurgitation	Trivial/Trace
Tricuspid Regurgitation	Trivial/Trace

Arrhythmia

Atrial Fibrillation	None
Atrial Flutter	None
V. Tach / V. Fib	None
Sick Sinus Syn.	None
2nd Degree Block	None
3rd Degree Block	None

Previous Cardiac Interventions (Select all that apply)

- [ ] CABG
- [ ] Valve
- [ ] PCI
- [ ] Other

Clinical Summary | About

Simulated Patient Summary

Procedure Type: Isolated AVR

Perioperative Outcome	Estimate %
Operative Mortality	0.544%
Morbidity & Mortality	3.67%
Stroke	0.585%
Renal Failure	0.485%
Reoperation	2.55%
Prolonged Ventilation	1.5%
Deep Sternal Wound Infection	0.035%
Long Hospital Stay (>14 days)	1.02%
Short Hospital Stay (<6 days)*	73.3%

*higher values reflect a better outcome

Copy

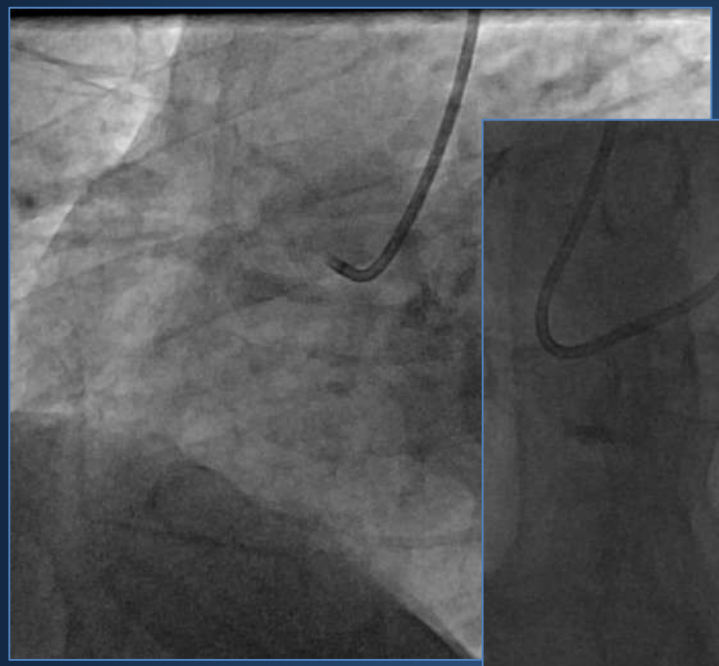
Clinical Summary

Planned Surgery:	Isolated AVR, Elective, First cardiovascular surgery
Demographics:	65 year old, Hispanic, male, 80kg, 176cm, BMI: 25.8 kg/m²
Lab Values:	Creatinine: 0.9 mg/dL, Hematocrit: 45%, WBC Count: 7 10³/µL, Platelet Count: 250000 cells/µL
PreOp Medications:	ACE Inhibitors/ARBs ≤ 48 hrs
Substance Abuse:	Current smoker
Risk Factors / Comorbidities:	Hypertension
Cardiac Status:	NYHA Class II, Ejection Fraction = 60%
Coronary Artery Disease:	No coronary symptoms
Valve Disease:	Aortic Stenosis, Trivial/Trace AR, Trivial/Trace MR, Trivial/Trace TR

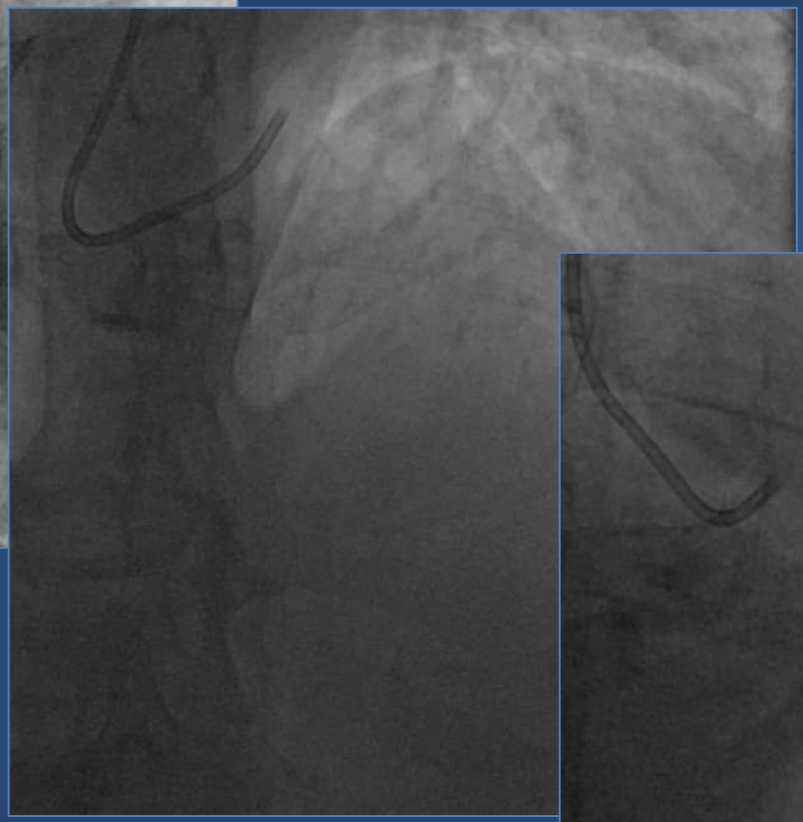
PDF/Patient Summary | Copy

Coronary angiography

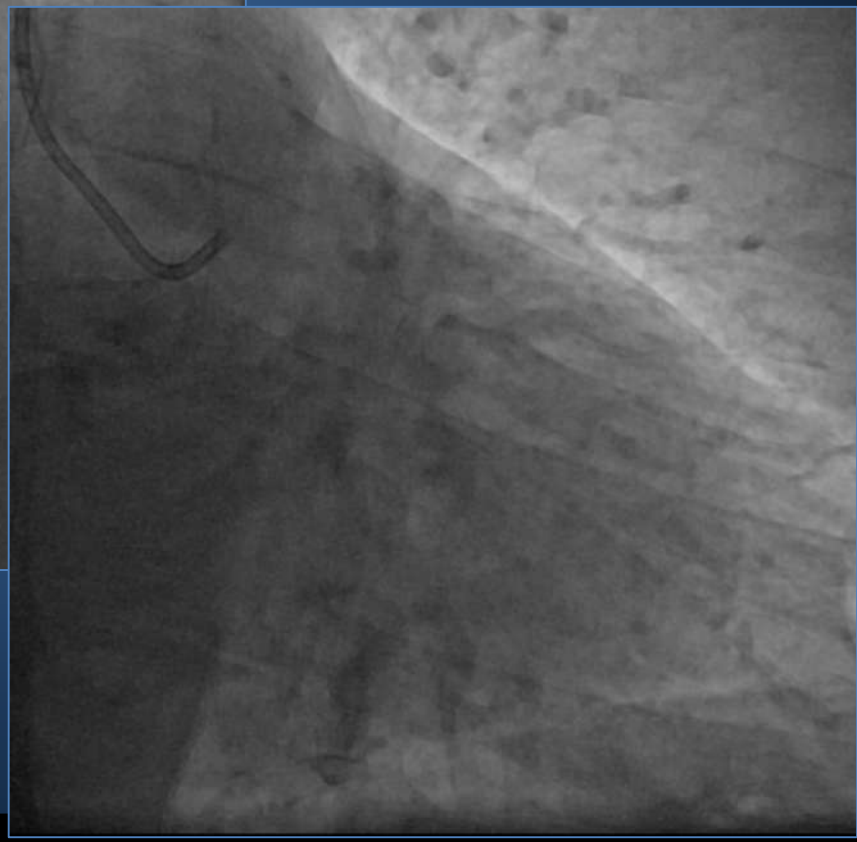
RCA



LAD



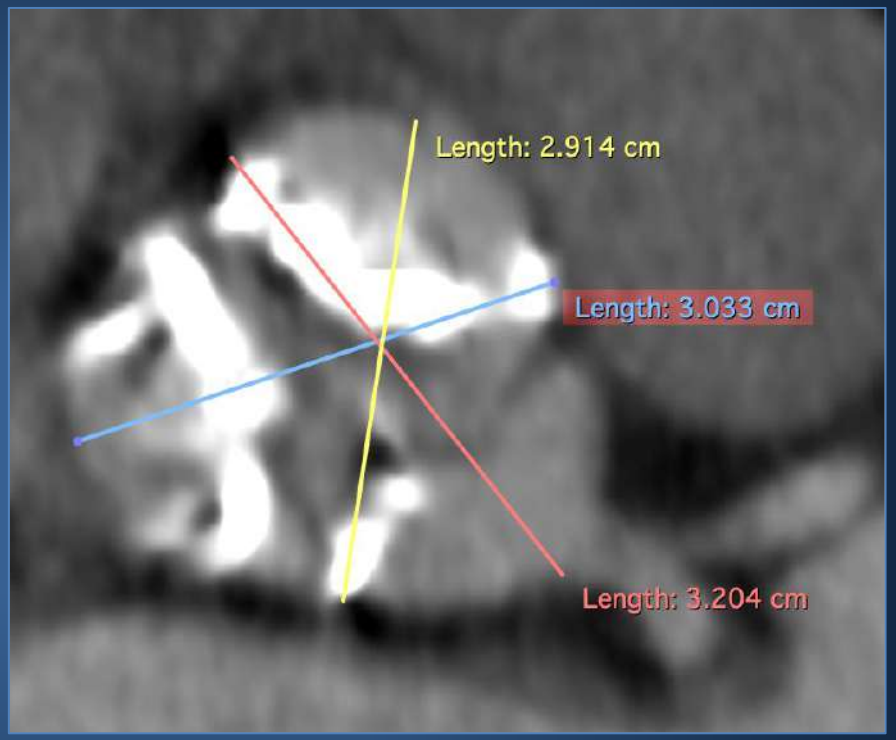
LCx



Computed tomography – Measurements

Annulus in systole

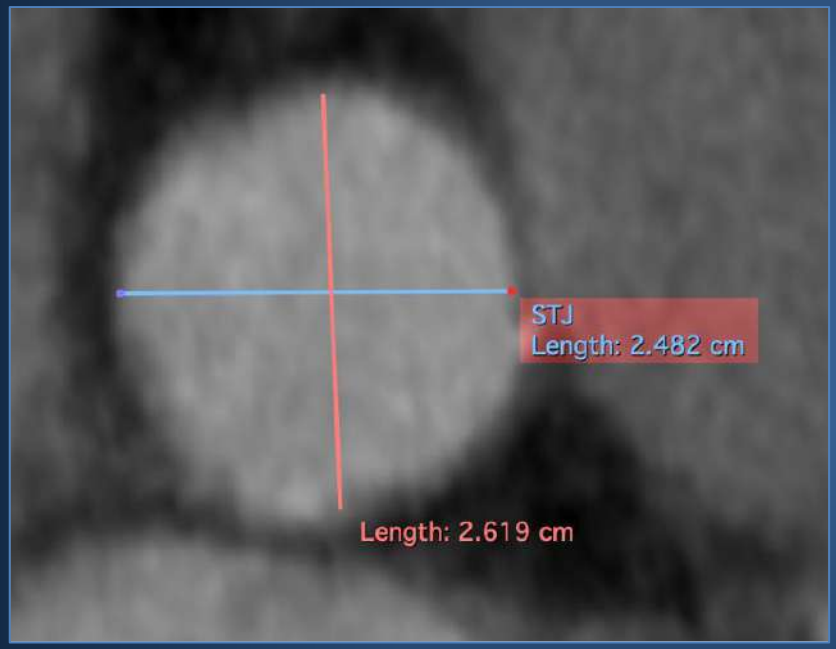
SOV at widest position



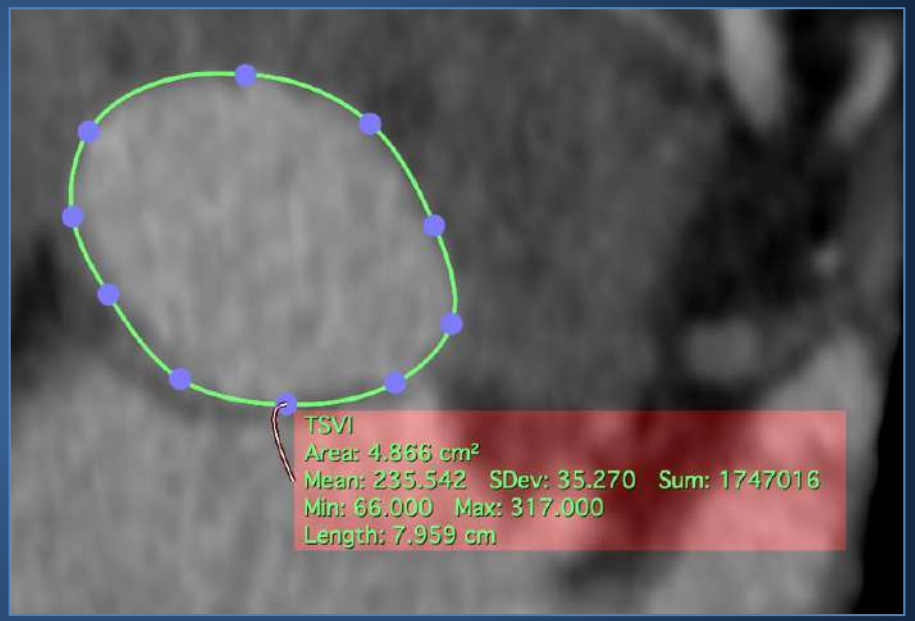
Annulus area, sinus of Valsalva diameters

Computed tomography – Measurements

Sinus tubular junction



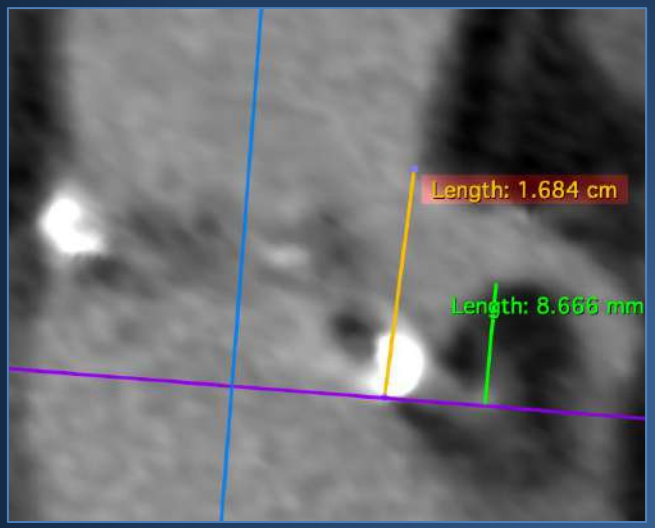
LVOT



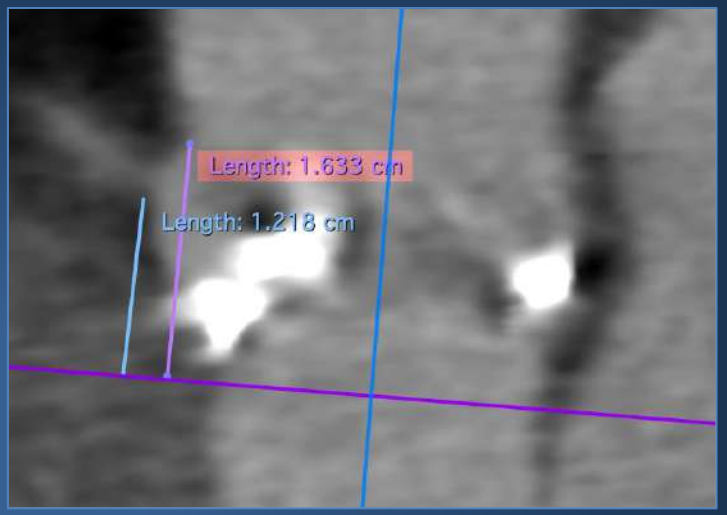
Left ventricular outflow tract area, sinus tubular junction diameters

Computed tomography – Measurements

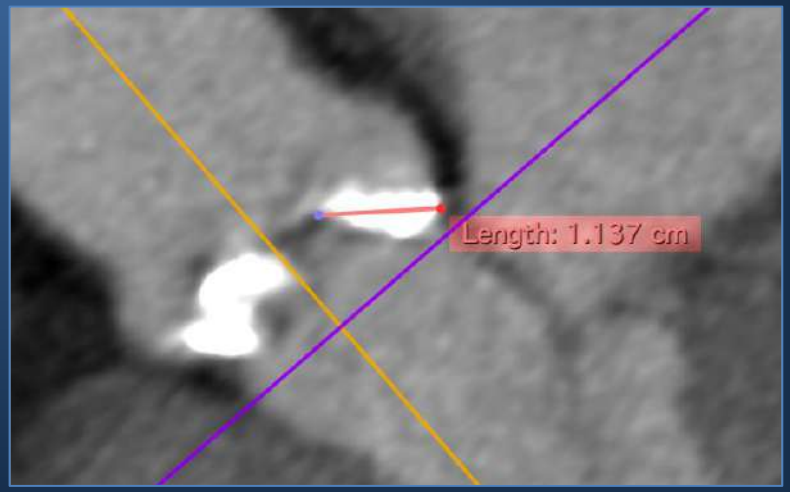
Coronary anatomy and leaflet length



Left main trunk



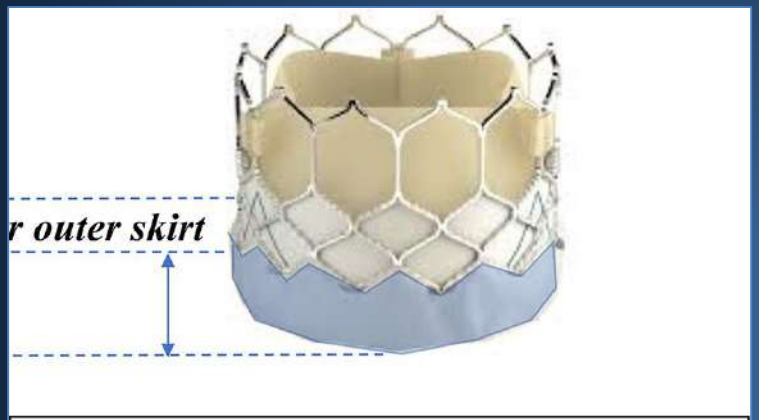
Right coronary artery



Coronary base height distance

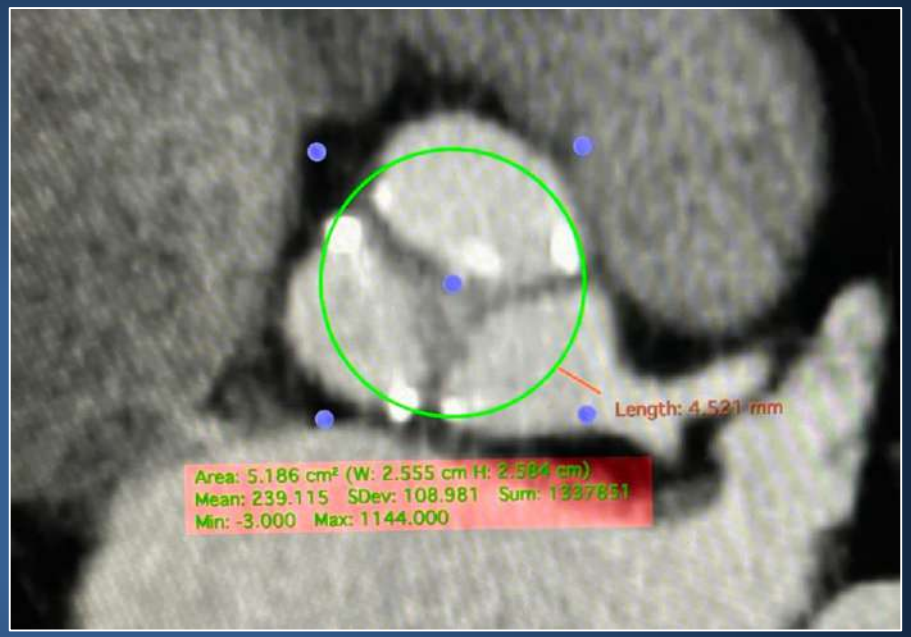
Computed tomography – Measurements

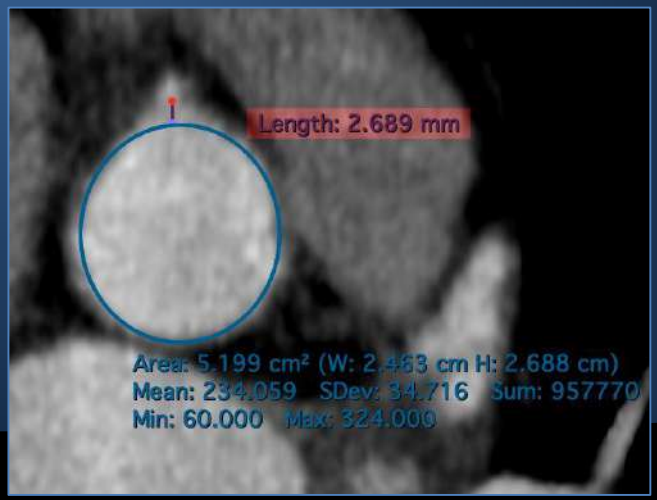
Recommended S3 valve size based on CT annulus area



SAPIEN 3 system (S3)			
20-mm	23-mm	26-mm	29-mm
5.2	6.6	7.0	8.1
14	14	14	16
328	409	519	649
7.9	9.3	10.2	11.6
15.5	18	20	22.5
SAPIEN 3 - THV			

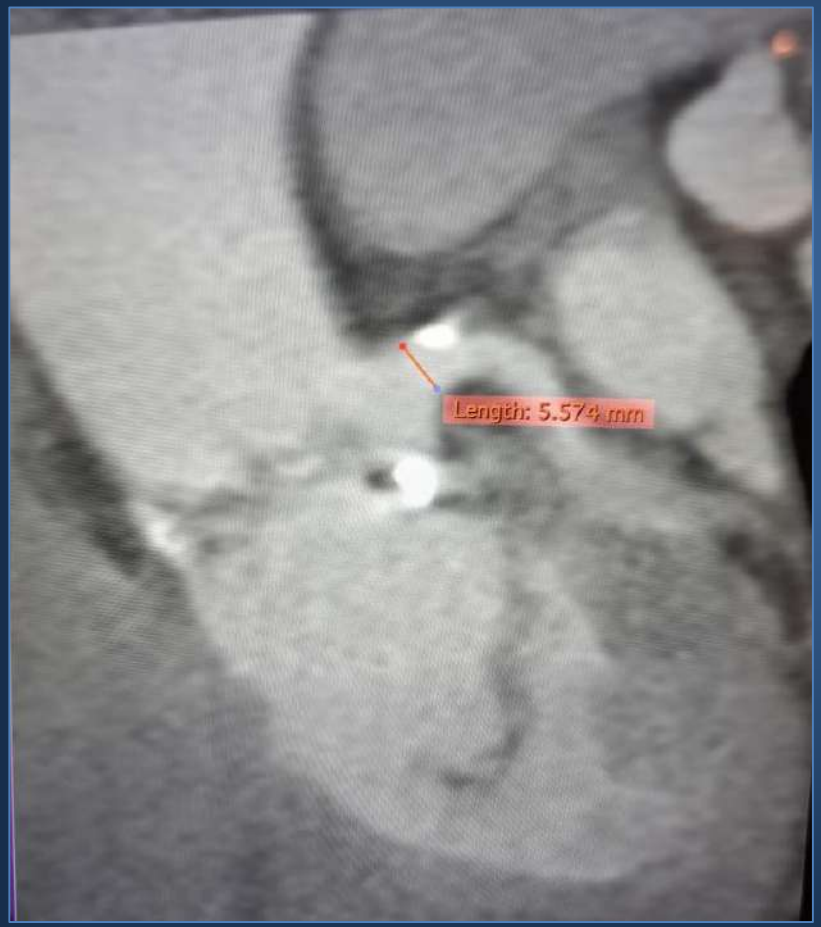
Virtual transcatheter valve and ostium distance

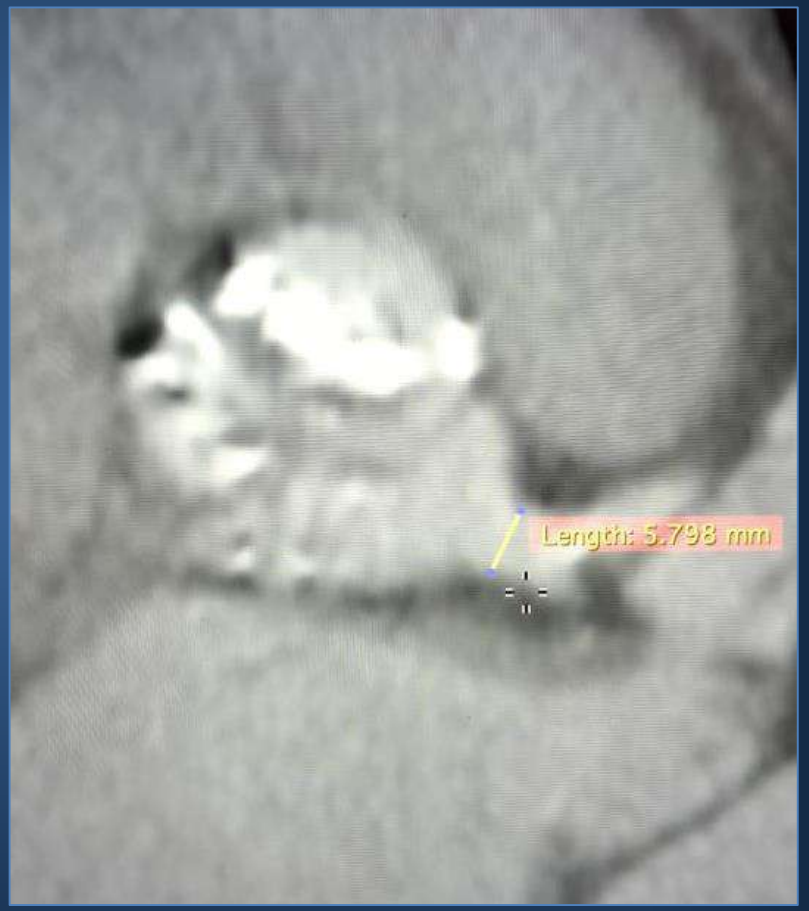




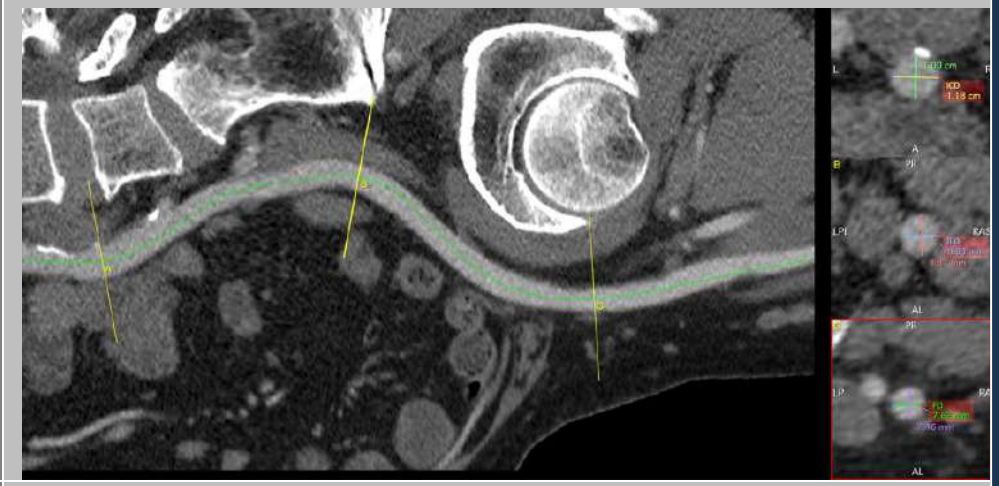
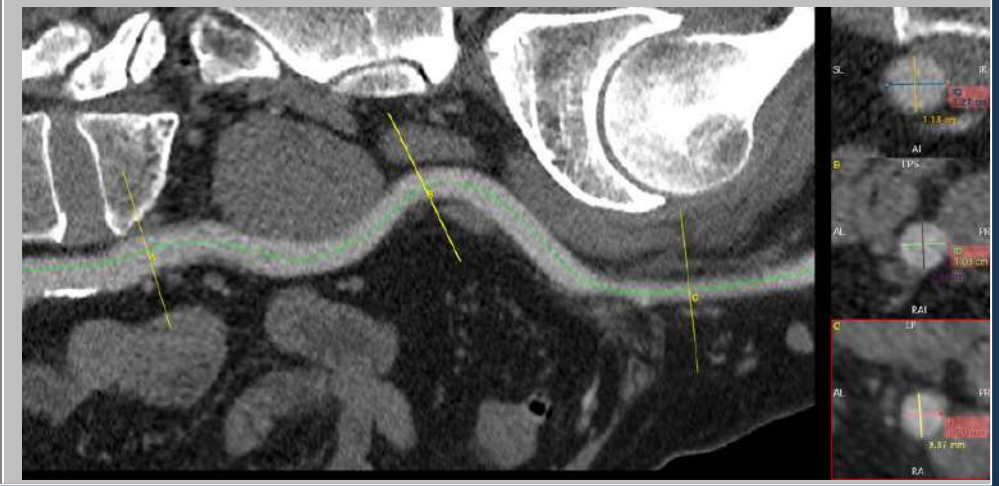
Computed tomography – Measurements

Left main coronary diameter and potential stent dimensions

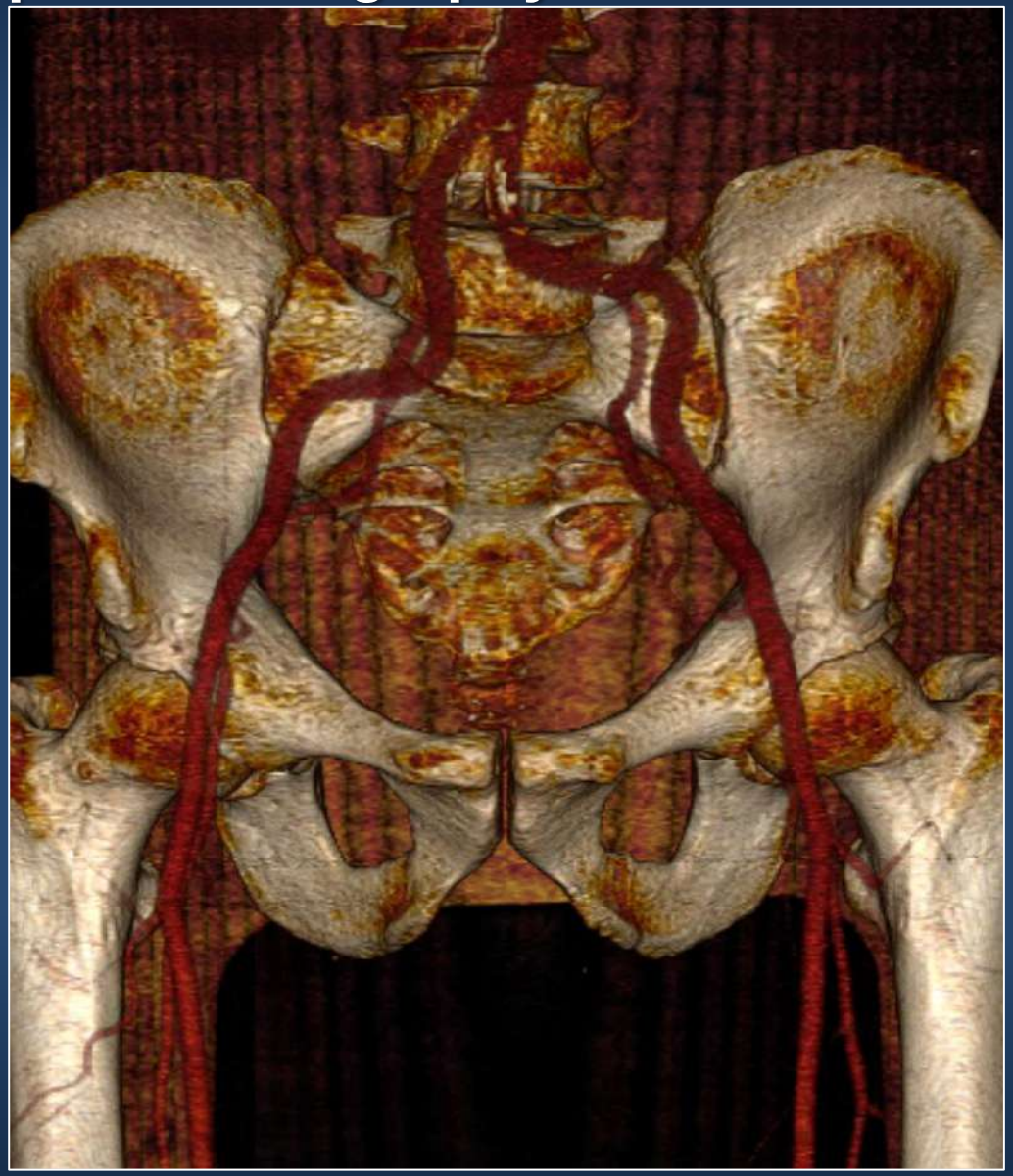




Computed tomography – Measurements

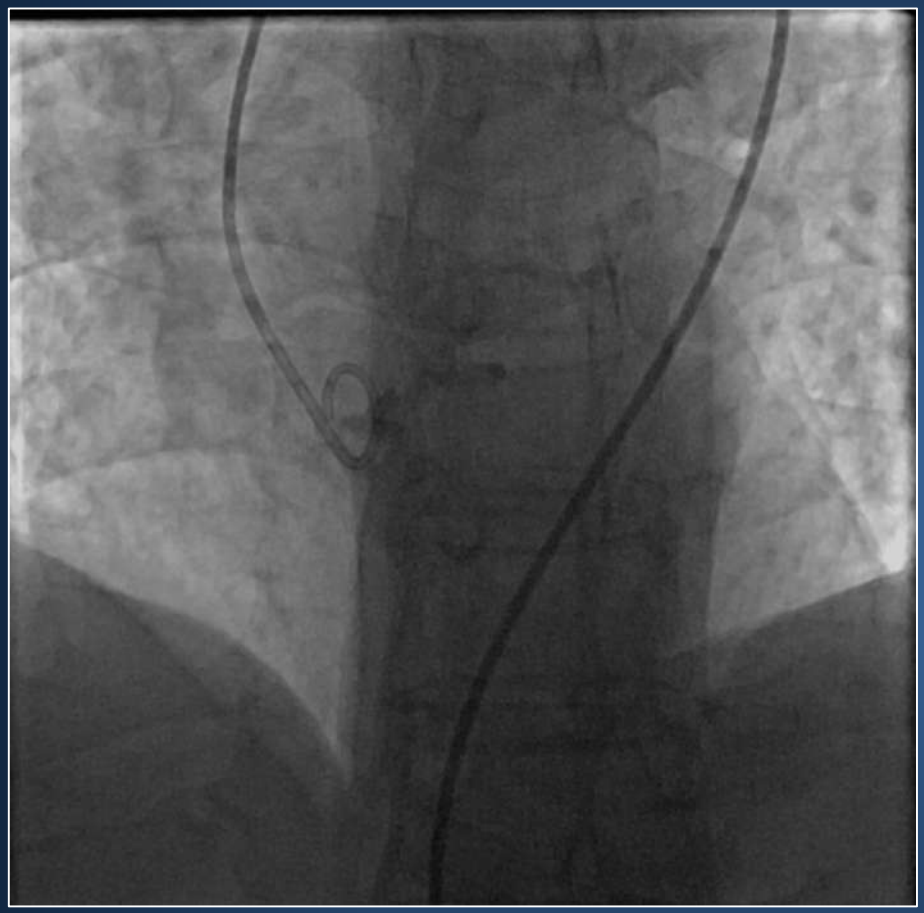
ACCESO DERECHO **Iliaca Común Derecha: 11mm** **Iliaca Externa Derecha: 9.3mm** **Femoral Derecha: 7.5mm**	
ACCESO IZQUIERDO: **Iliaca Común Izquierda: 12.2mm** **Iliaca Externa Izquierda: 9.7mm** **Femoral Izquierda: 8.8mm**	

Computed tomography – Measurements

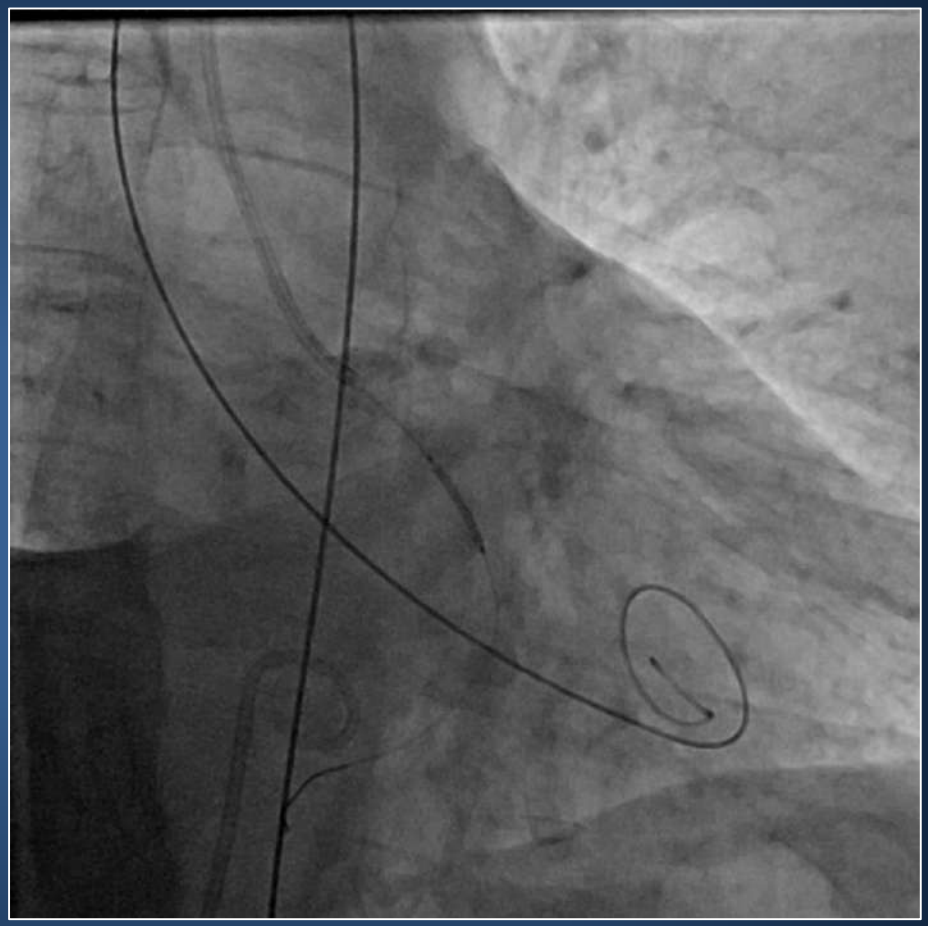


Transfemoral access evaluation

TAVI – Initial steps

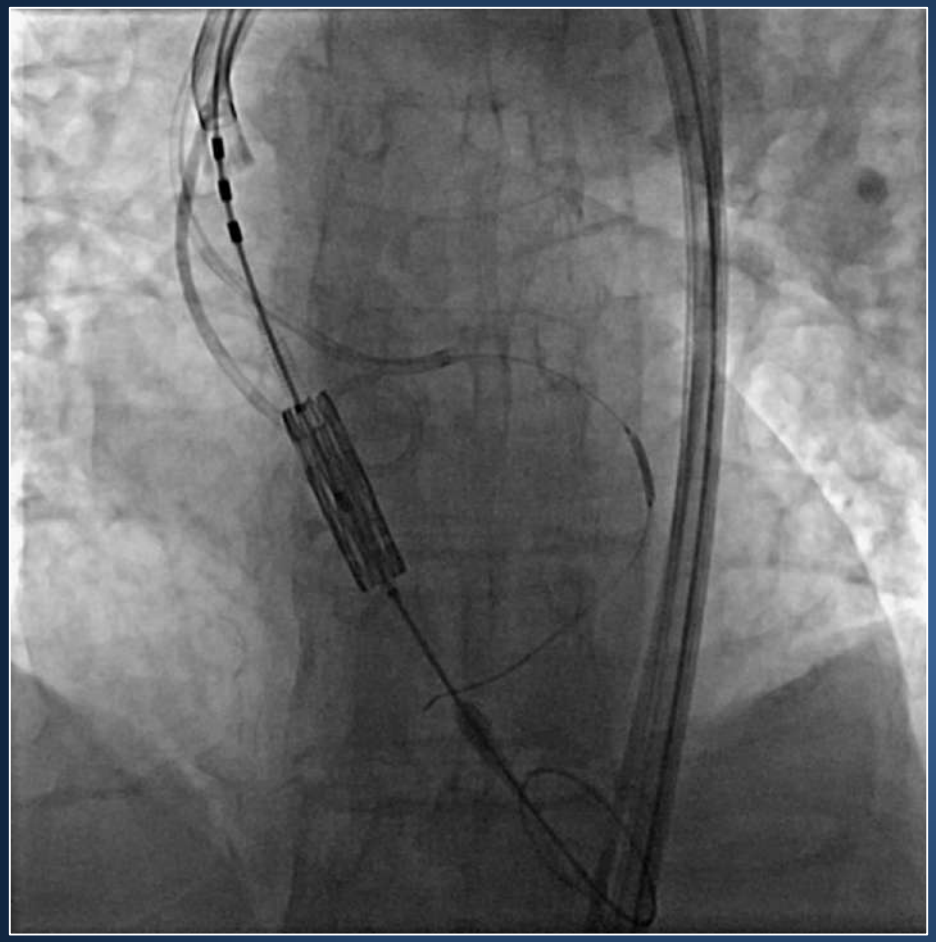


Aortography: Moderate calcification, three leaflets and low LM ostium

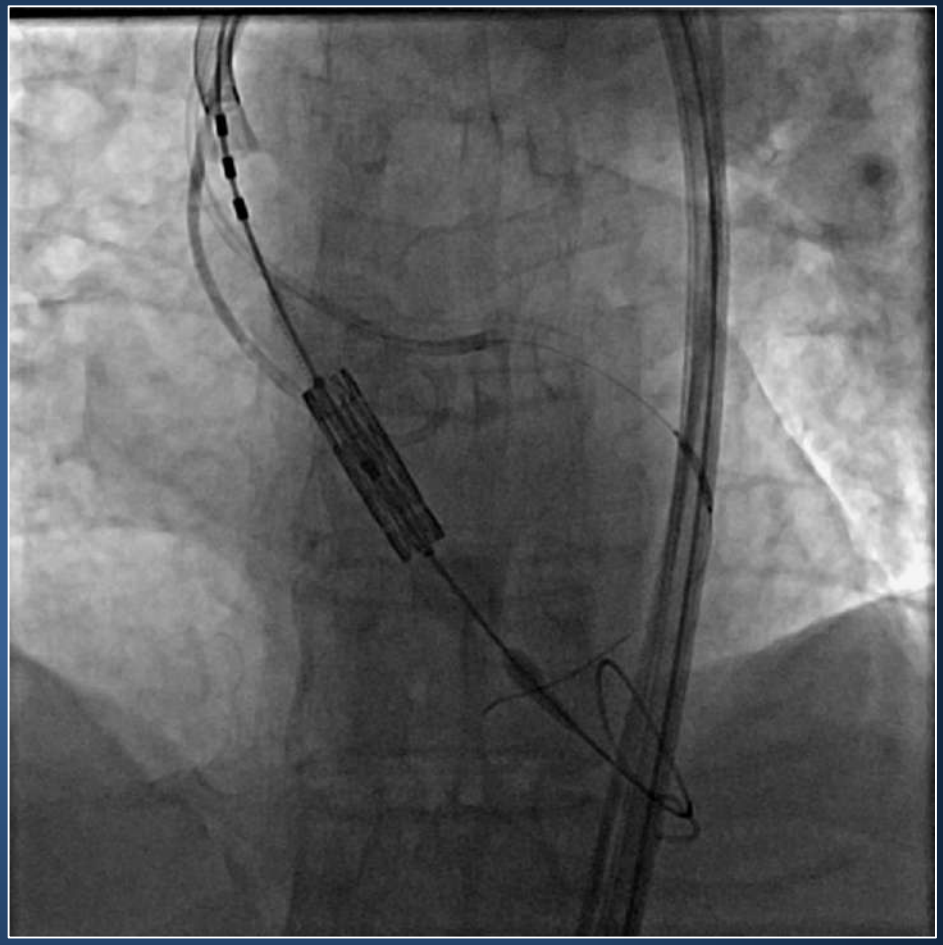


Left circumflex Onyx 5.0x12 mm Pre-emptive stent

TAVI – Delivery steps

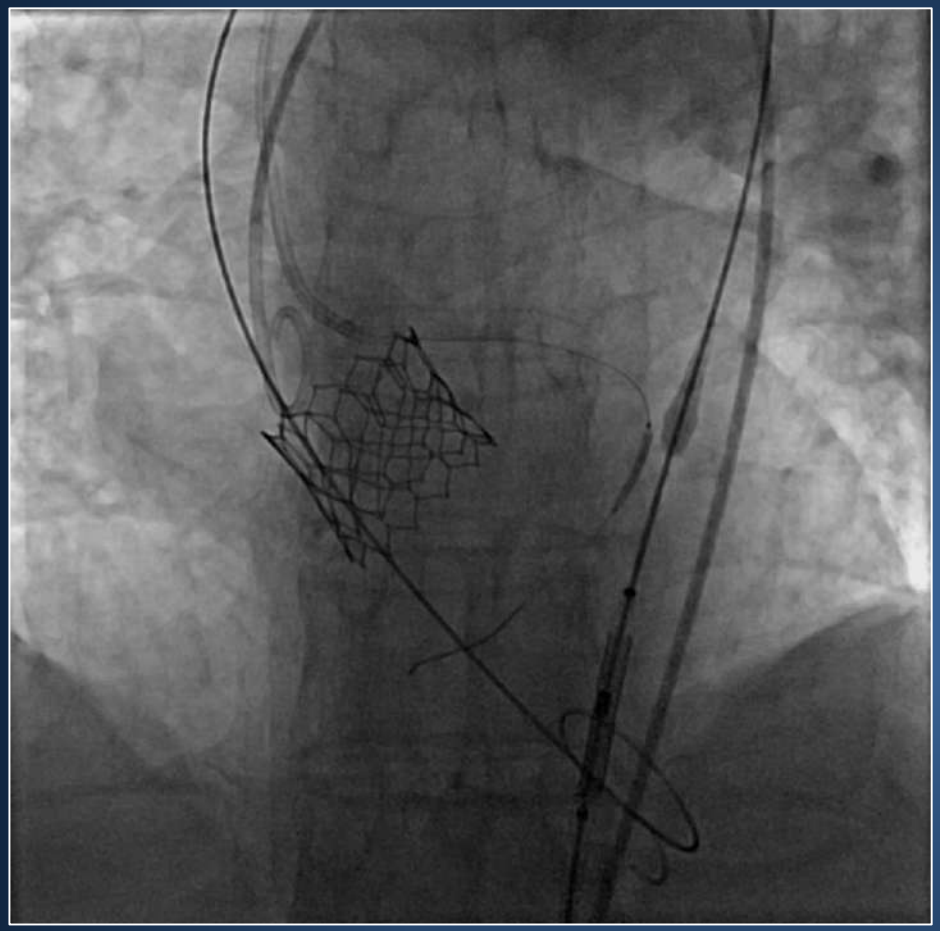


Valve positioning while guiding catheter is at LM



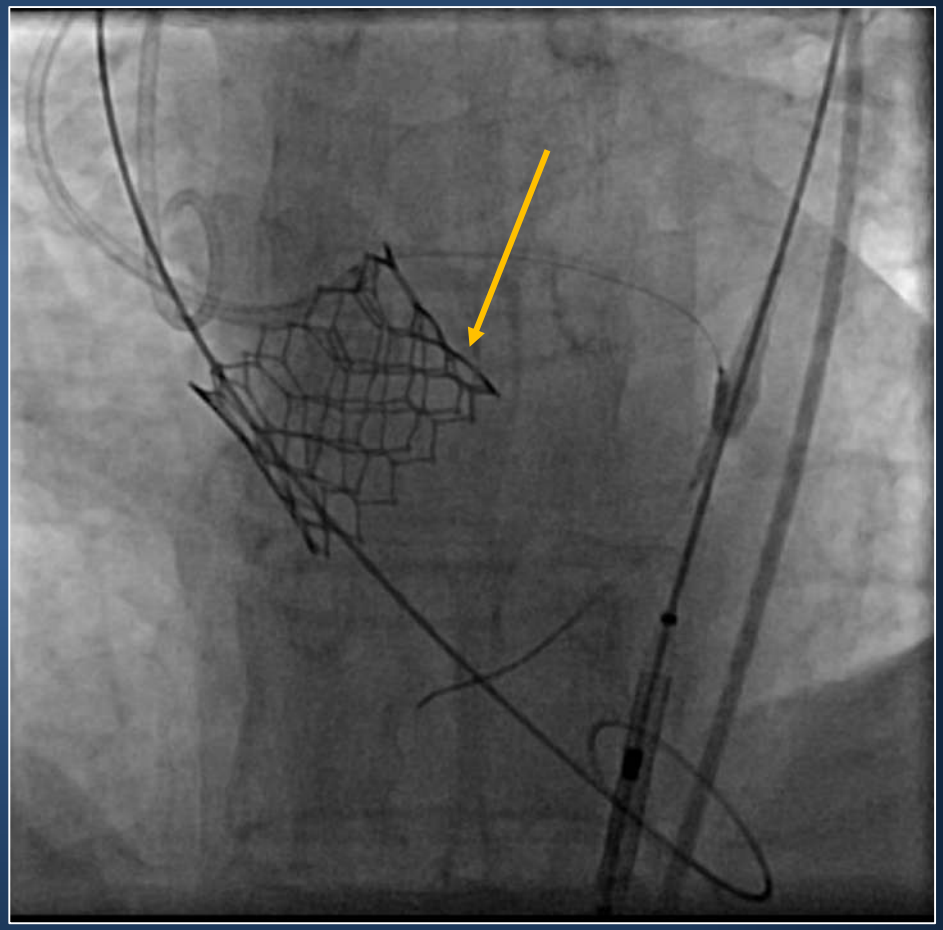
Balloon expandable valve delivering

TAVI – LM suspicious of flow limiting



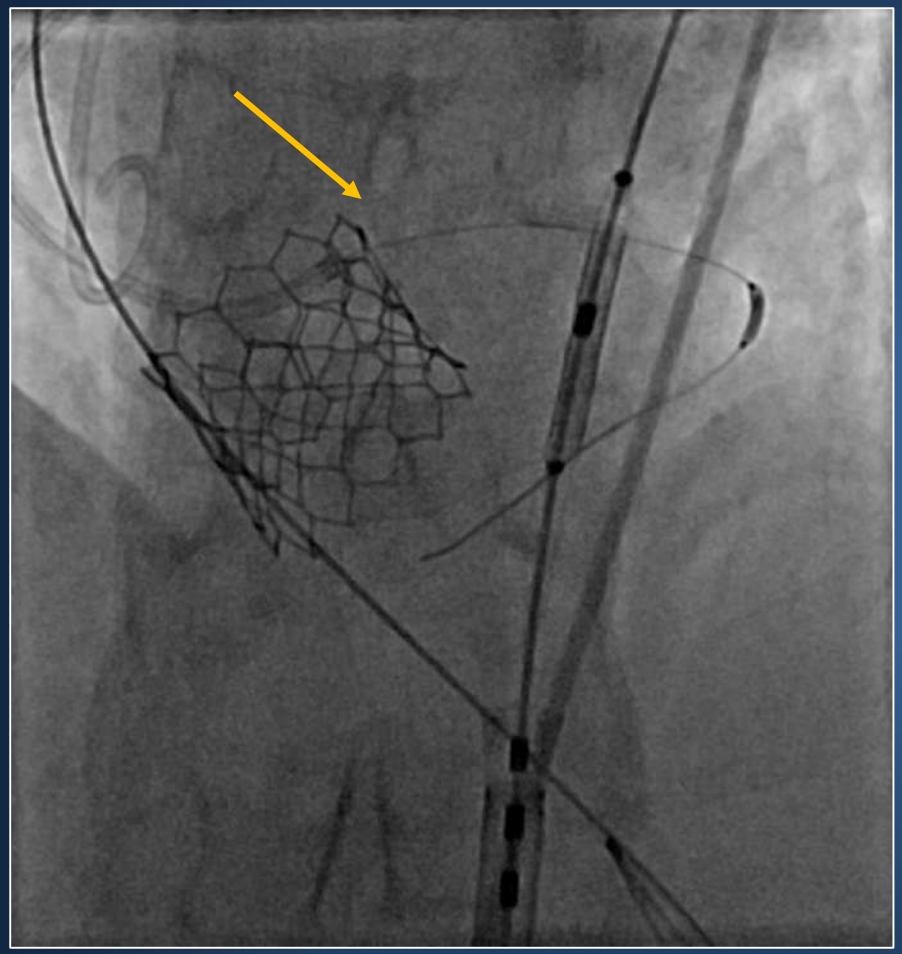
Aortography shows well valve position

Leaflet protruding the LM ostia

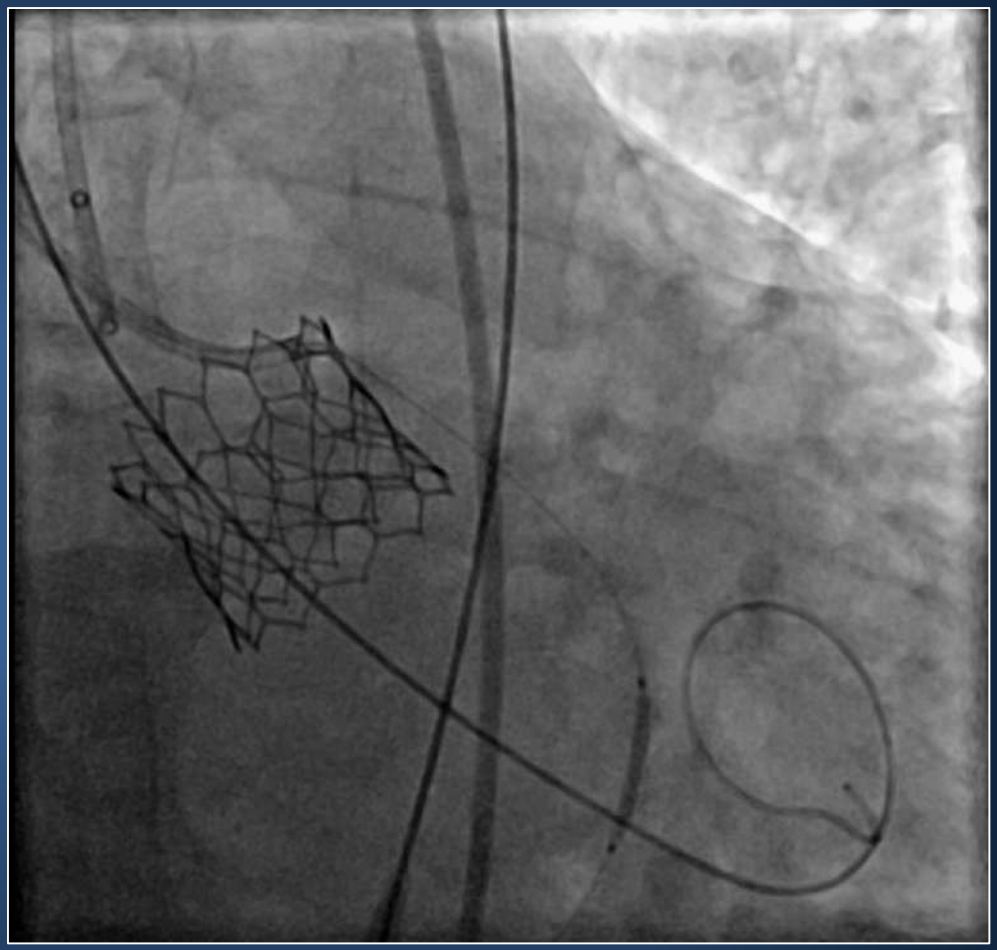


TAVI – LM suspicious of flow limiting

Tight stenosis

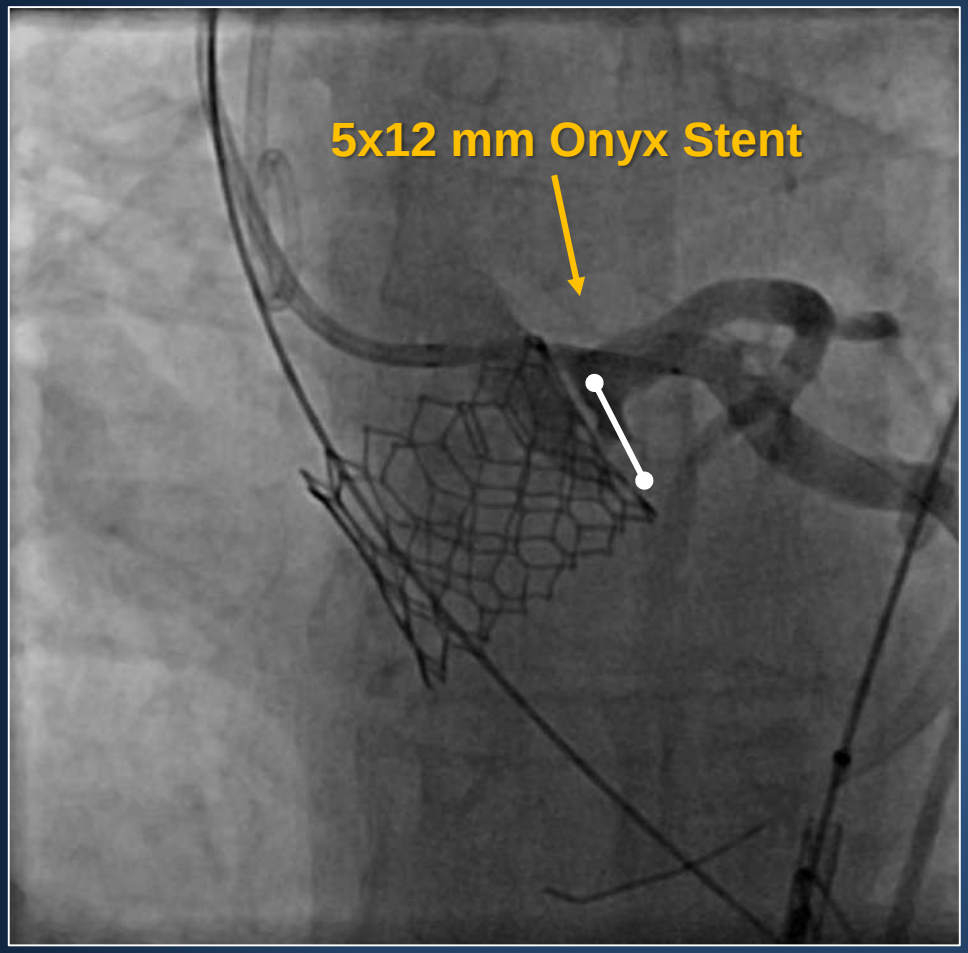


Analysing LM involvement in different views

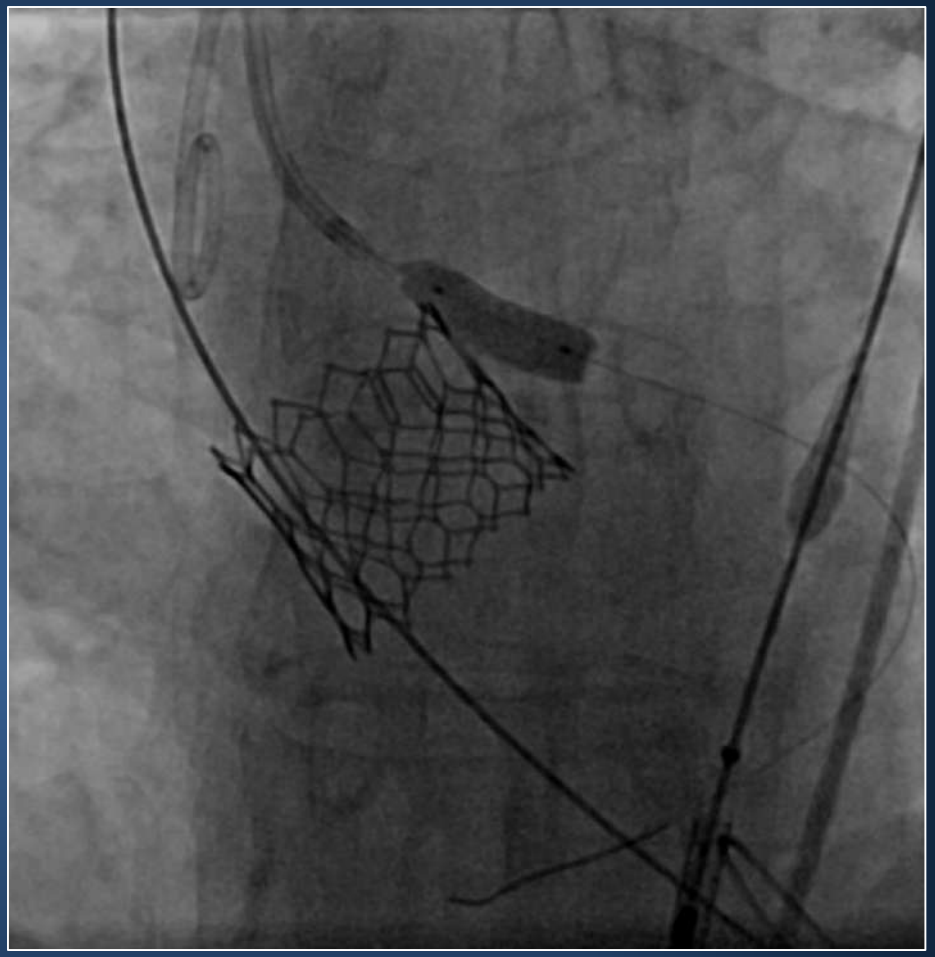


RAO view

Decision making process of LM stenting

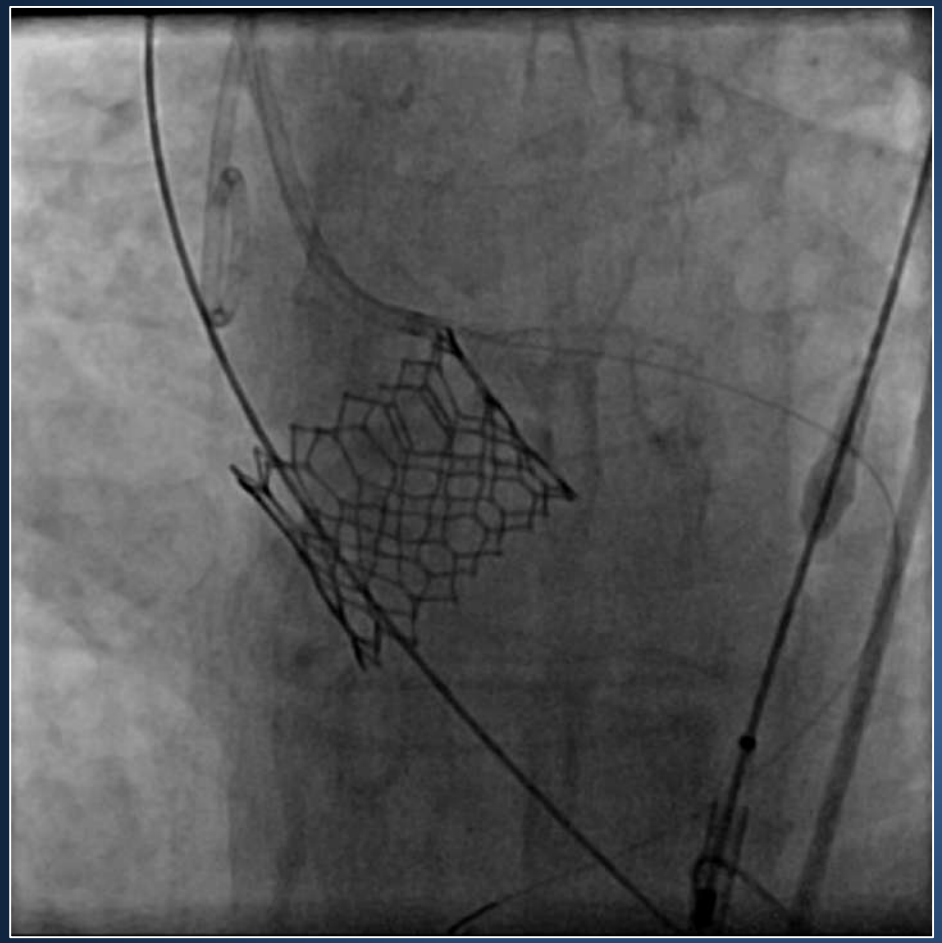


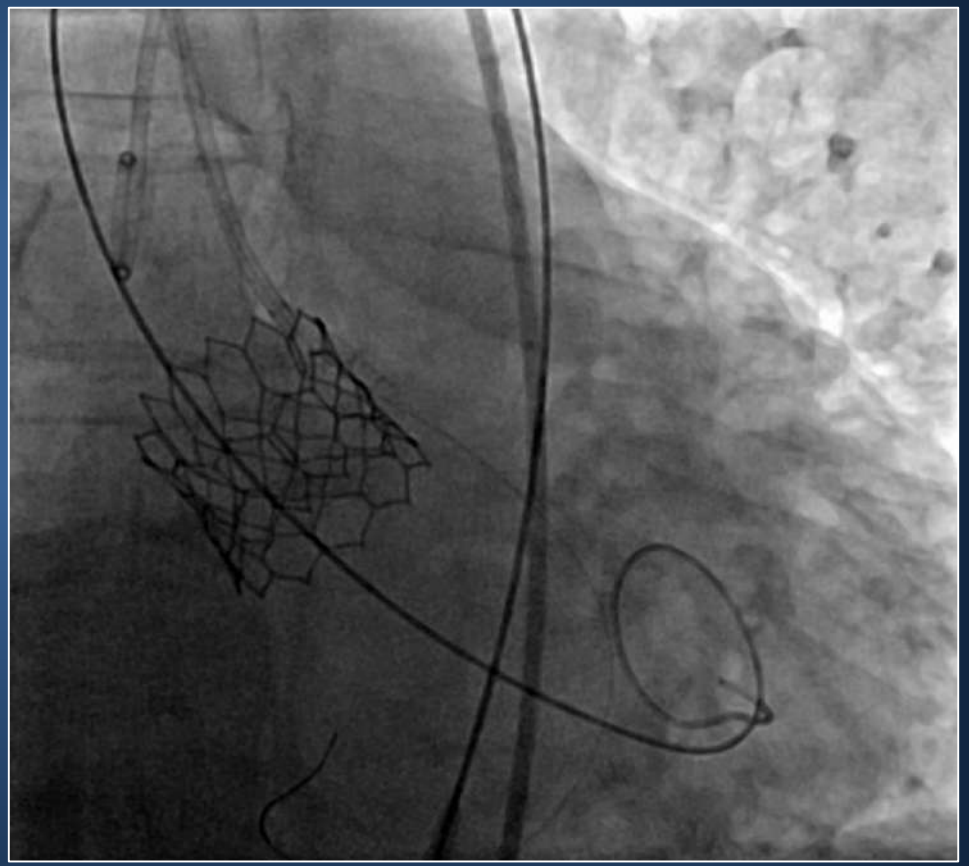
Displacement of the calcified native cusp over coronary ostia



Left main stenting depicts sandglass shape

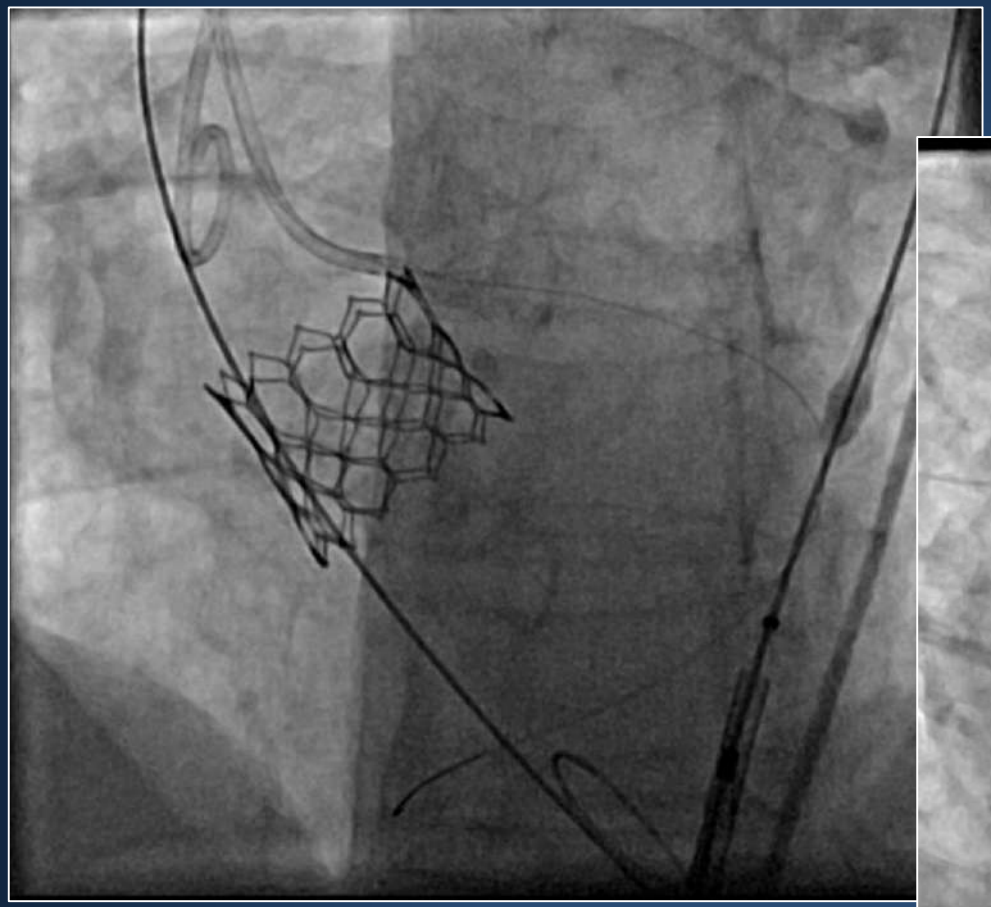
Post-stenting result

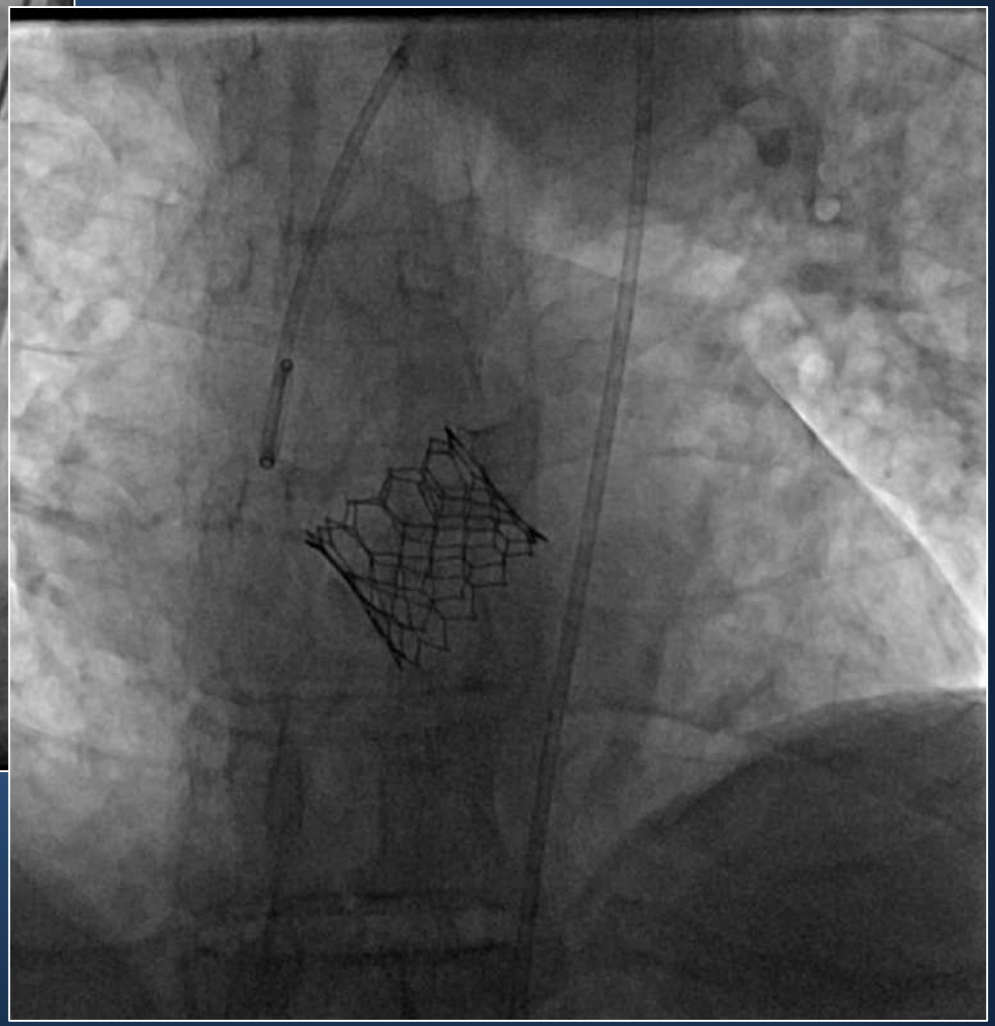




Confirming normal coronary flow in multiple views

Valve delivery: final result





Final Aortography

TAVI and Potential concerns about the occurrence of coronary obstruction

- Anatomic predictors:
  - Low coronary ostium
  - Sinus of Valsalva diameters less than 28 mm
  - Leaflet length
  - Virtual transcatheter valve to ostia less 4 mm
- Clinical and procedure related factors
  - Older age, female gender
  - Balloon-expandable valve
  - Valve-in-valve TAVI

Potential preventive measures

- CT scan analysis to stablish patient at high risk:
  - Ostia height
  - Leaflet lenght
  - VTC distance
  - Sinus of Valsalva diameters
- Preemptive guidewire and stent positioning
- Stent delivery when facing concerns about the coronary flow