

Heart Team in action: Managing complex TAVI procedures

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Founding President, HKSTENT
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HKCC ASC 2020



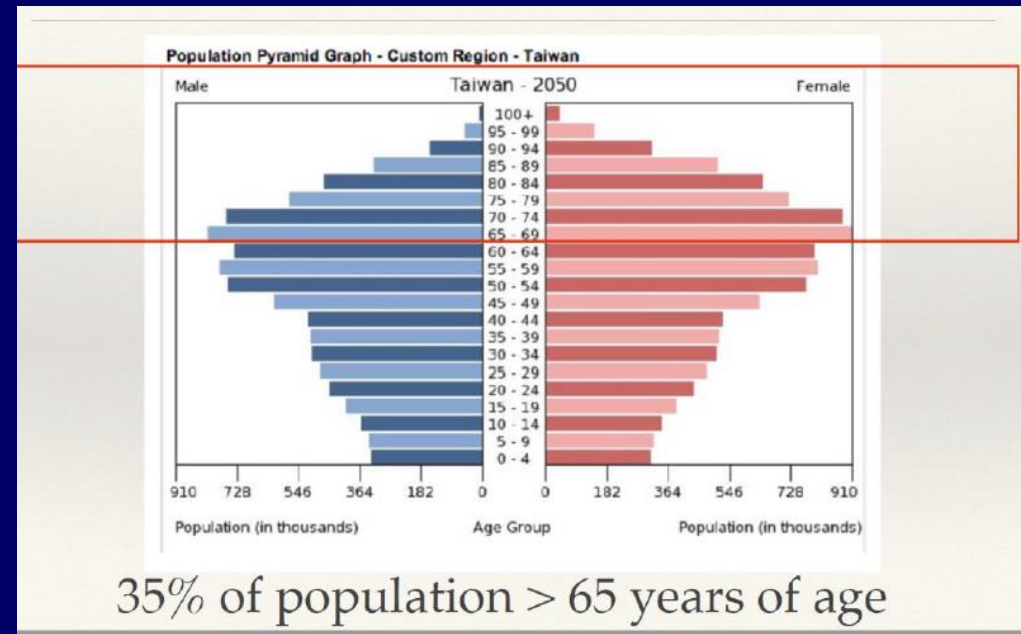
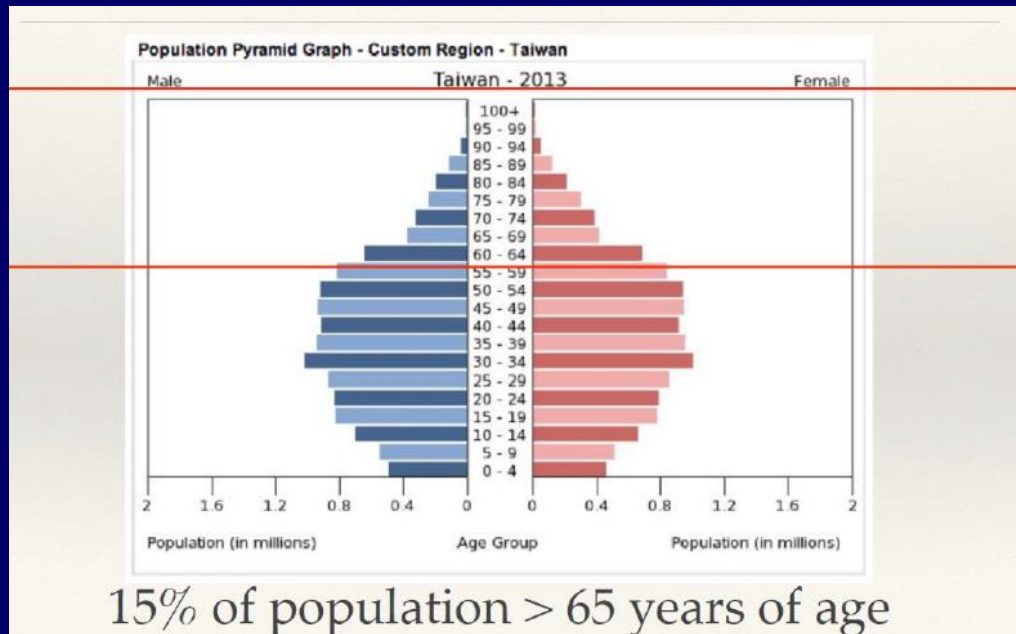
Declaration for Conflicts of Interest

Speaker's name: Michael Kang-Yin LEE, Hong Kong

Proctor of Medtronic and Edwards Lifescience

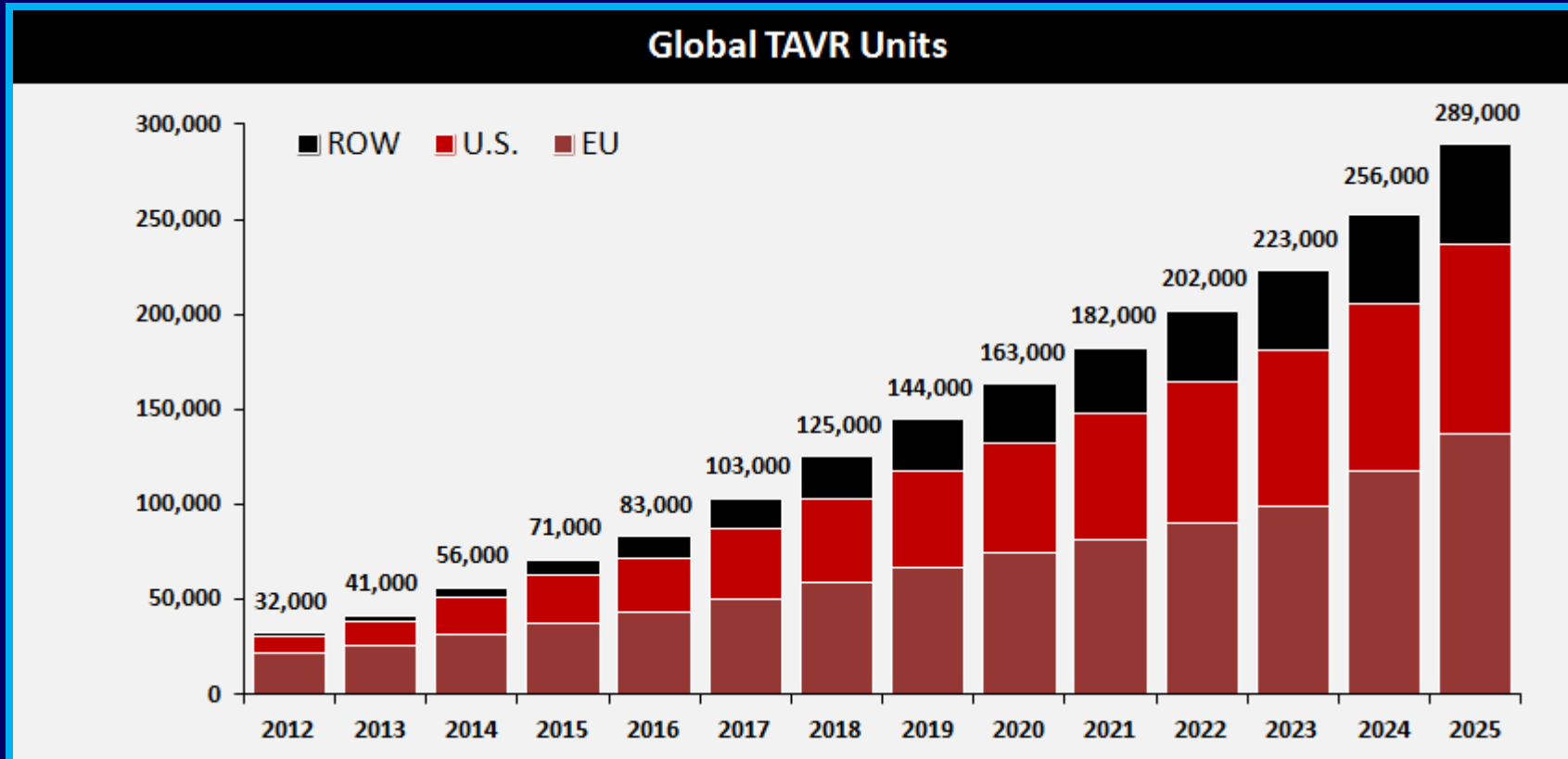


Change of Population Pyramid in Taiwan



Estimated Global TAVR Growth

>600,000
TAVI
procedures
have been
performed
worldwide
since 2002

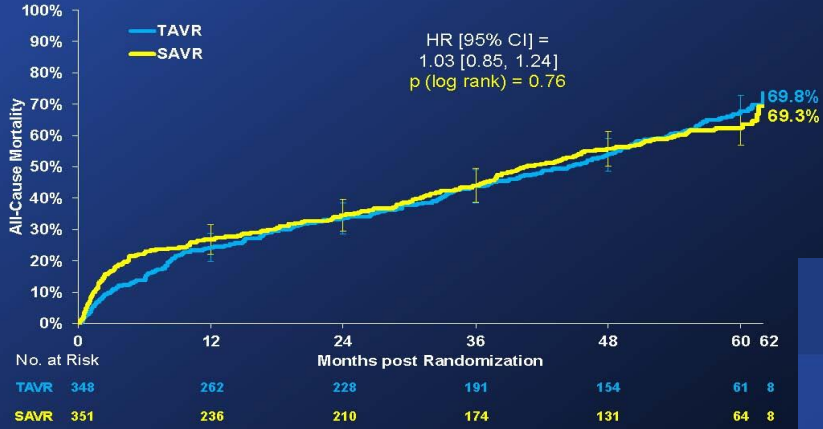


SOURCE: Credit Suisse TAVI Comment –January 8, 2015. ASP assumption for 2024 and 2025 based on analyst model. Revenue split assumption in 2025 is 45% U.S., 35% EU, 10% Japan, 10% ROW

In the next 10 years, TAVR growth will increase X4!

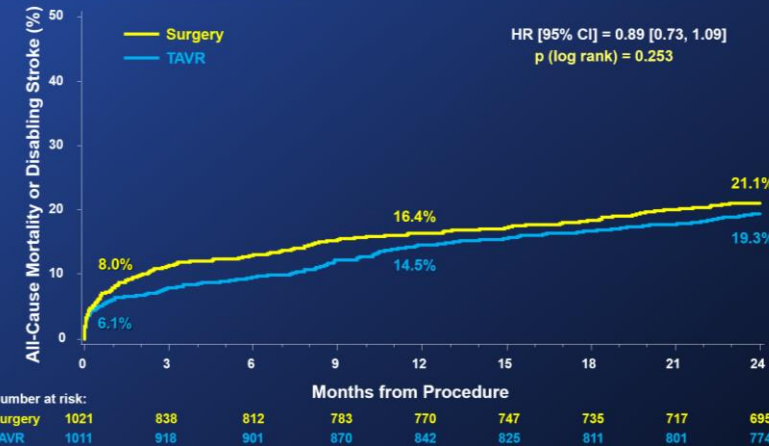


All-Cause Mortality (ITT) Pooled Approaches



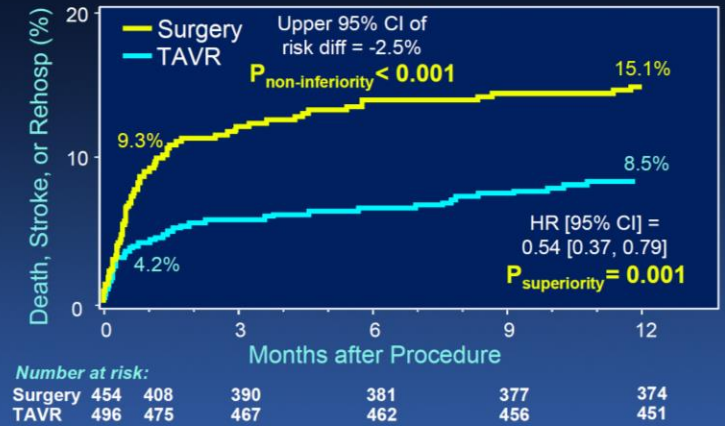
Edwards Sapien & S3

Primary Endpoint (ITT) All-Cause Mortality or Disabling Stroke



“High-risk”

Primary Endpoint



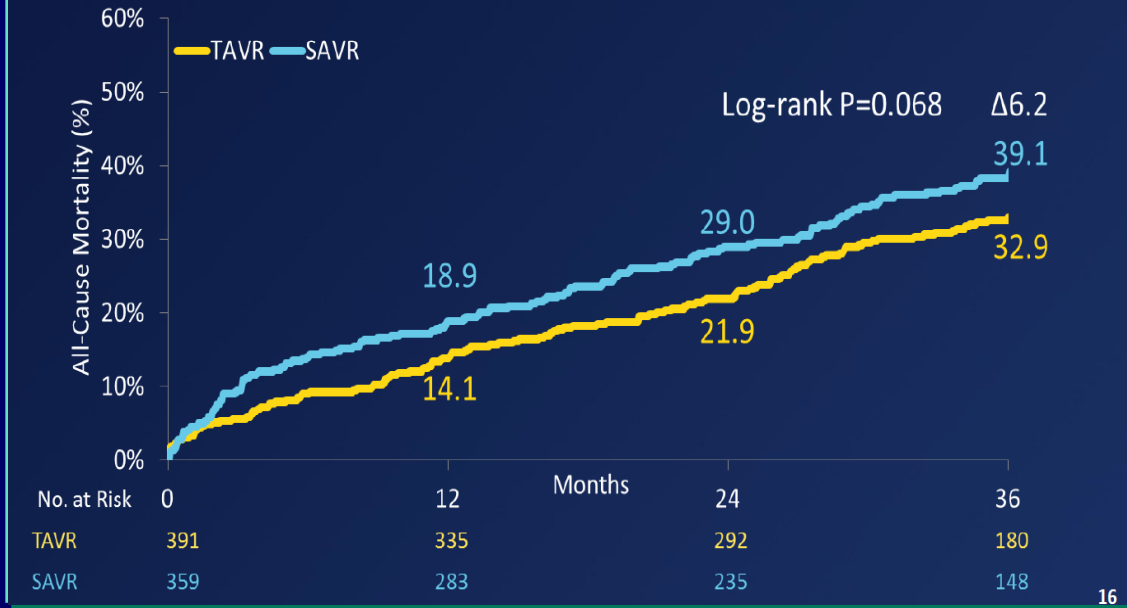
“Intermediate-risk”

“Low-risk”



All-Cause Mortality

CoreValve US Clinical Trials
ACC2016



CoreValve & Evolut

K-M All-Cause Mortality or Disabling Stroke at 1 Year

Evolut™
Low Risk
Trial

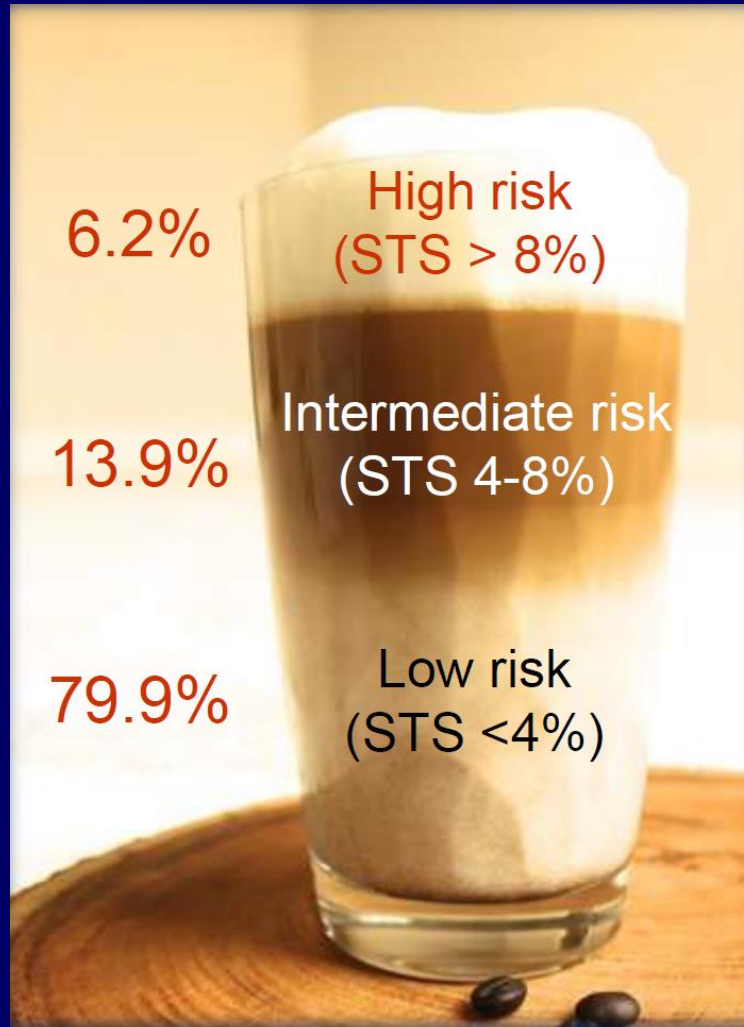


“High-risk”

“Low-risk”



STS database 2002-2010 (141,905 pts)



Acute Complications

- Early Mortality
- Annular rupture / LV Perforation
- Vascular complication
- Para-valvular leakage
- Pacemaker
- Stroke

Long-term Concerns of TAVI

- Access to future coronary intervention
- Permanent Pacemaker
- Valve Thrombosis
- Durability
- Bicuspid AV



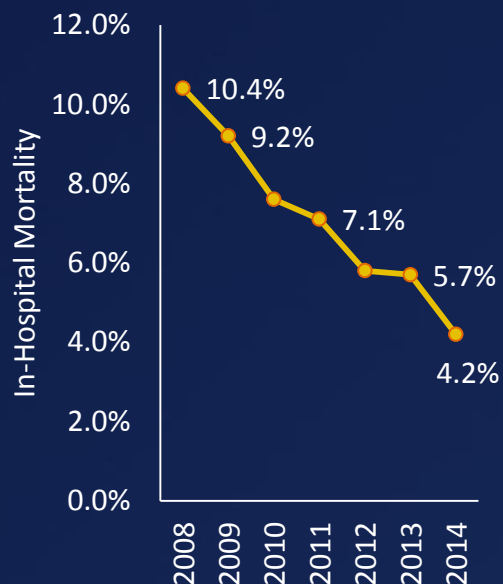
Early Mortality

Established TAVR Markets

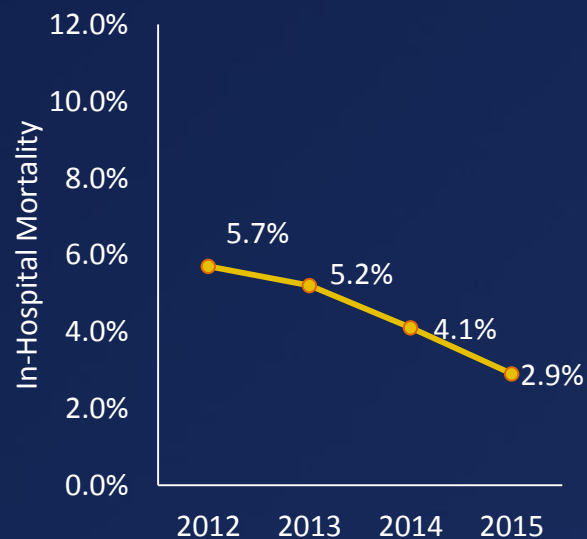
- Within these established markets, rates of early mortality have steadily decreased with time. 30-day mortality is under 5% in contemporary practice.
- Each geography has also shown declining rates of complications which are known to impact mortality, such as aortic regurgitation, vascular injury, and severe acute complications such as annular rupture.



Germany



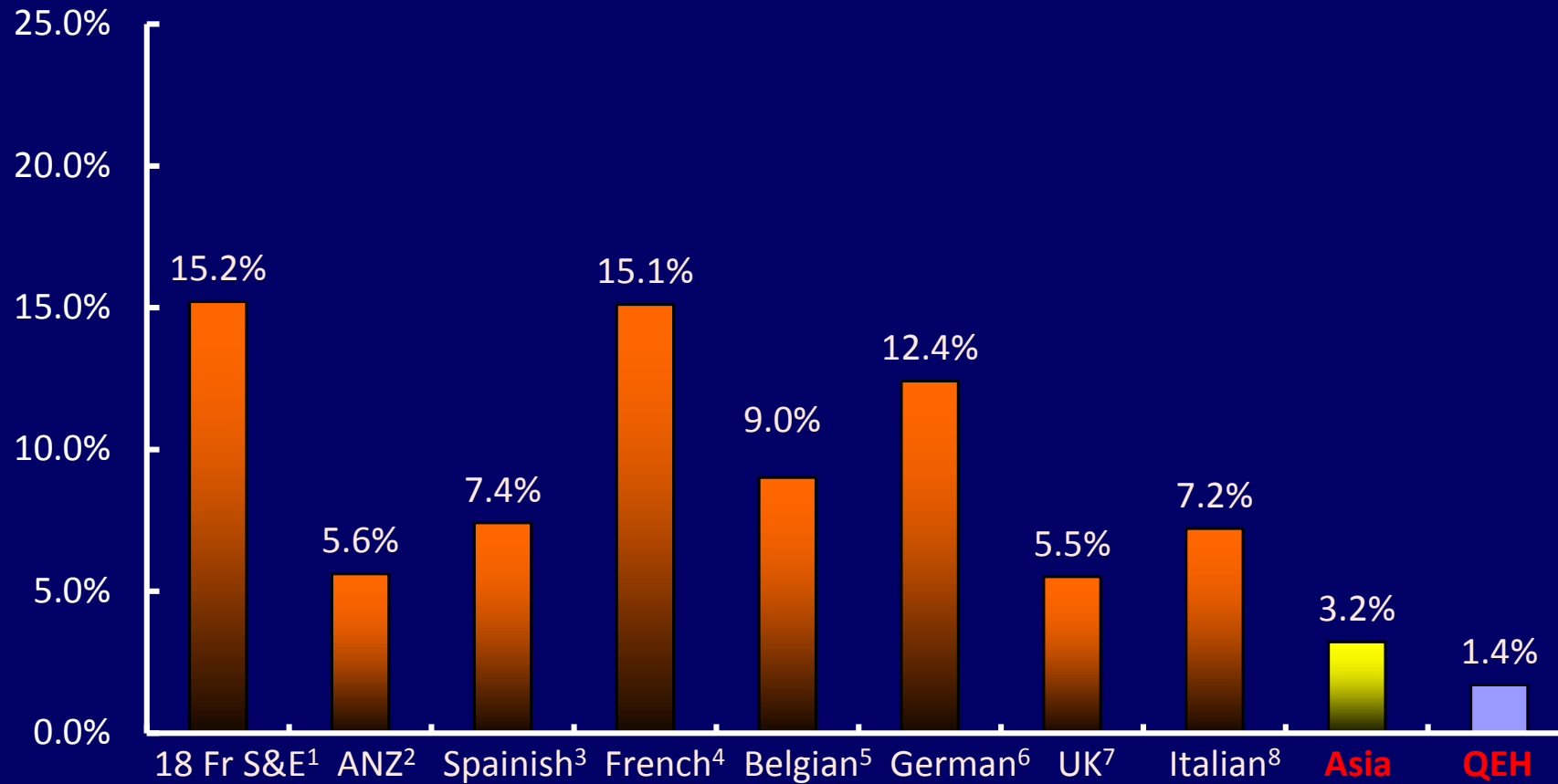
STS / ACC TVT Registry



UK TAVI Registry



30-Day All-Cause Mortality

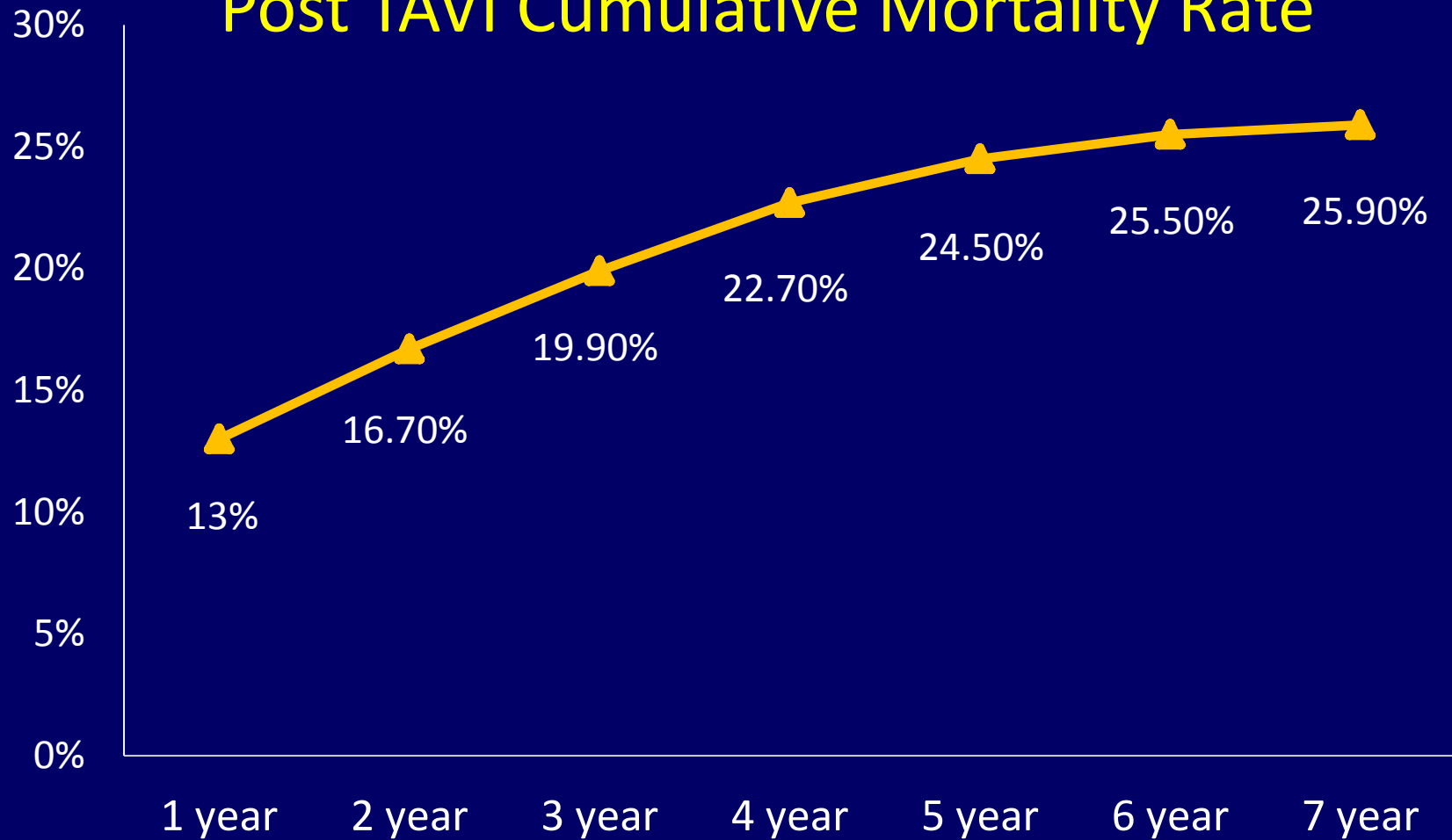


1. Medtronic Data on File. COR 2006-02: 18 Fr Safety & Efficacy Study Re-Analysis, August 14, 2009.
2. Meredith. VARC-adjudicated Outcomes in Inoperable and High Risk AS Patients. TCT 2010, Washington, DC.
3. Avanzas P, Munoz-Garcia AJ, Segura J, et al. Percutaneous implantation of the CoreValve[®] self-expanding aortic valve prosthesis in patients with severe aortic stenosis: early experience in Spain. *Rev Esp Cardiol.* 2010;63:141-148.
4. Eltchaninoff. French Registry, TAVI Facts, Figures and National Registries. EuroPCR 2010, Paris, France.
5. Bosmans. Belgian Registry, TAVI Facts, Figures and National Registries. EuroPCR 2010, Paris, France.
6. Zahn. German Registry, TAVI Facts, Figures and National Registries. EuroPCR 2010, Paris, France.
7. Ludman. UK Registry, TAVI Facts, Figures and National Registries. EuroPCR 2010, Paris, France.
8. Petronio. Italian Registry, TAVI Facts, Figures and National Registries. EuroPCR 2010, Paris, France.



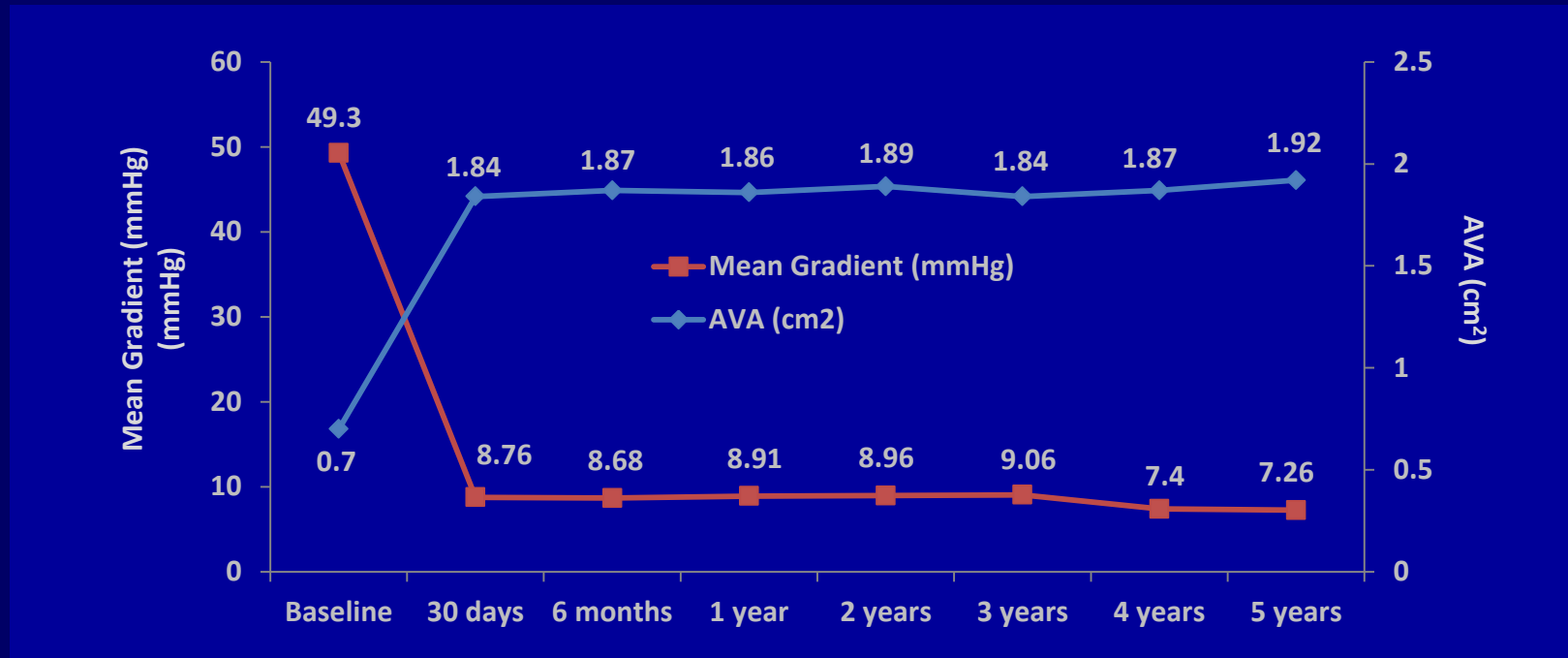
QEH Registry

Post TAVI Cumulative Mortality Rate

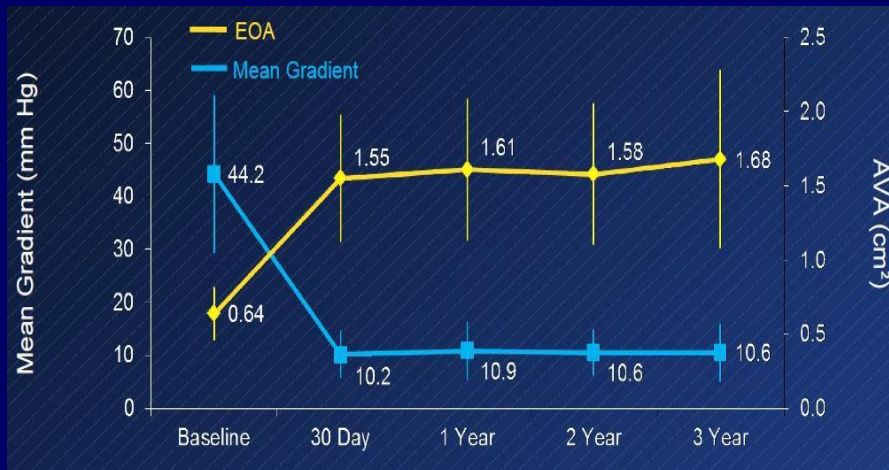


Mean Gradient & Valve Area

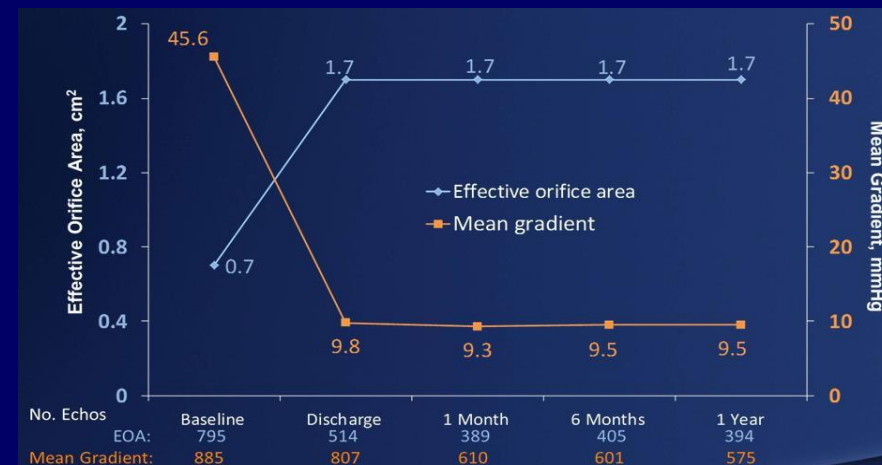
QEH
Registry



The PARTNER Trial



CoreValve ADVANCE Study



↓Complications with ↑Complexity of Patients

- Device advancement
- Heart Team
- Techniques
 - Pre-procedural CT planning
 - LV pacing
 - High implant
 - Skills: Structural, Imaging, Coronary, Peripheral
 - 3D Printing
- Training



EnVeo™ R Delivery System

14Fr Equivalent System with EnVeo InLine™ Sheath



EnVeo™ R Delivery System

Positioning Accuracy

1 1st Time Deployment Accuracy with 1:1 response



2 Resheathable to reposition and retrieve/recapture



3 Flexible catheter with Nitinol-reinforced capsule (flare) enables resheathing



PARTNER SAPIEN Platforms

Device Evolution

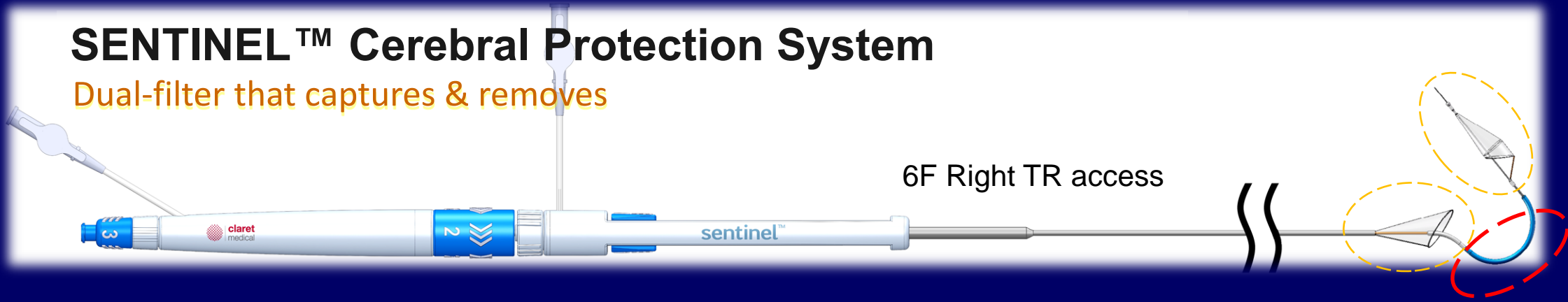
	SAPIEN	SAPIEN XT	SAPIEN 3
Valve Technology			
Sheath Compatibility			
Available Valve Sizes	 23 mm  26 mm	 23mm  26mm  29mm*	 20 mm  23 mm  26 mm  29 mm

***First Implant Oct 30, 2012**



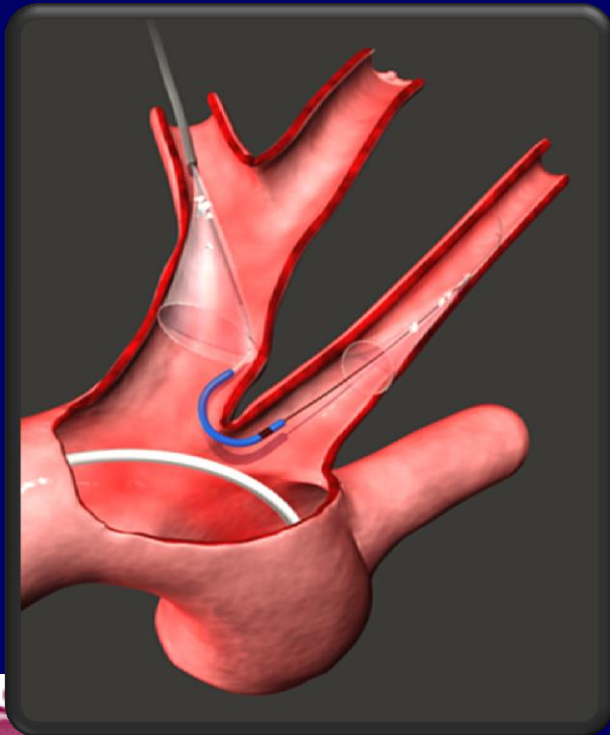
SENTINEL™ Cerebral Protection System

Dual-filter that captures & removes



6F Right TR access

Deflectable compound-curve catheter facilitates cannulation of LCC



Little interaction with other devices in the aortic arch

One size fits ~90% of anatomies



Filter pore size = 140 μ m



Sentinel Cerebral Protection System

First use of the device in Asia Pacific (27.9.2016)



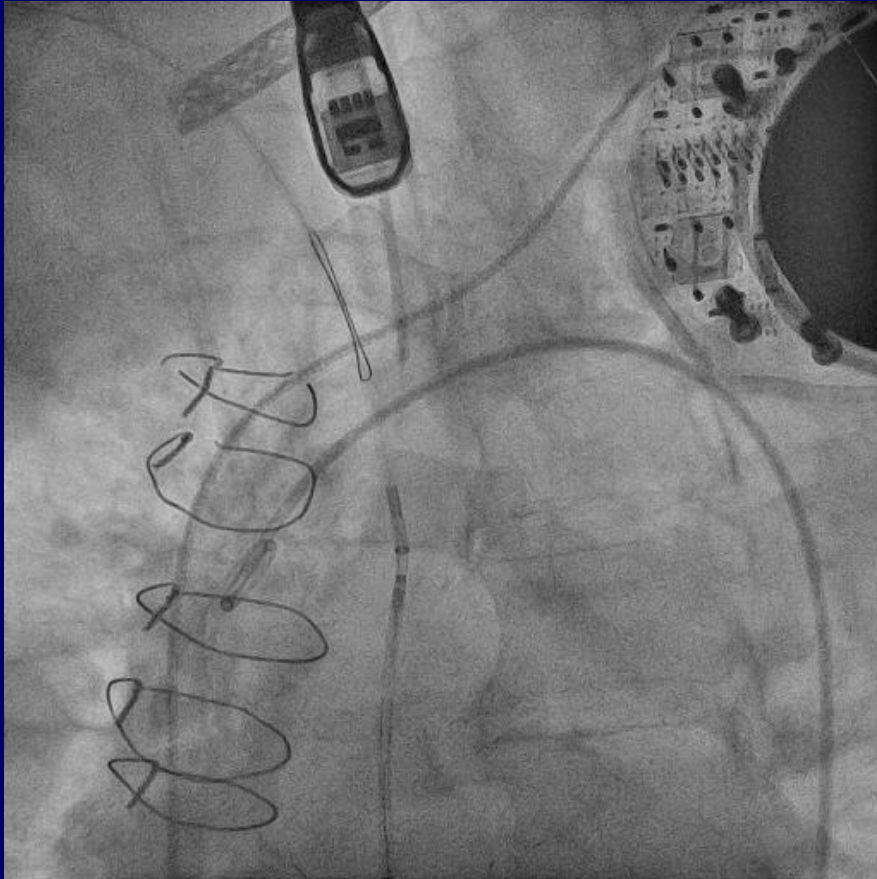
3D model of the patient's aorta and big vessels



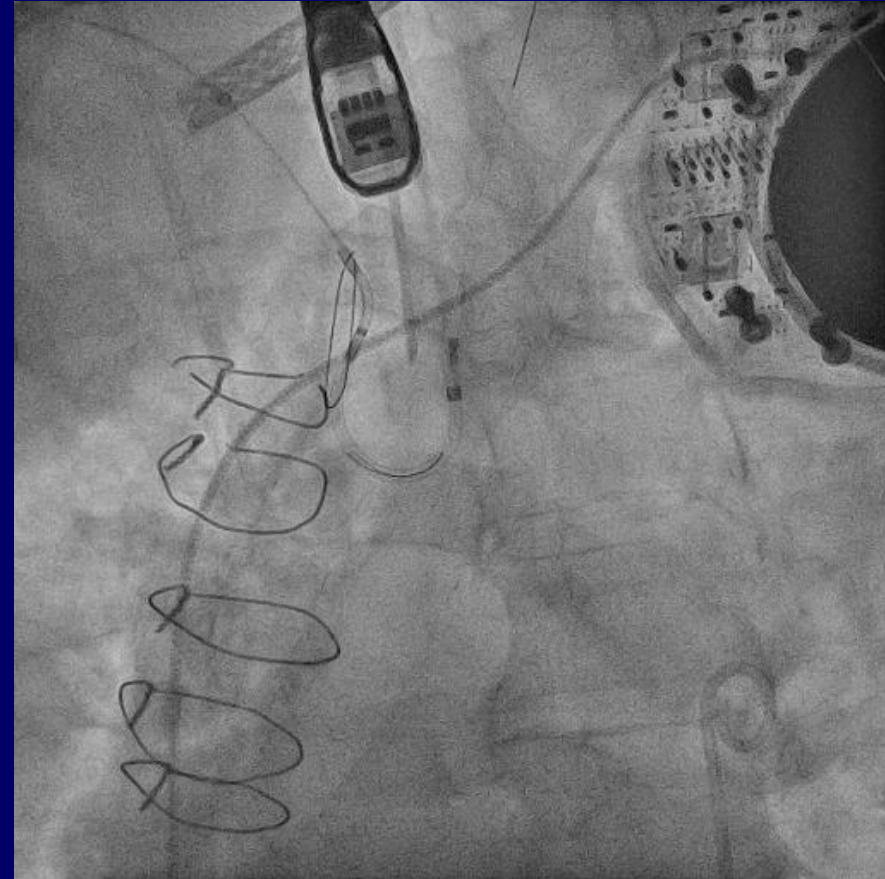
Sentinel CPS

Sentinel Device over BMW GW

1st filter in brachio-cephalic artery

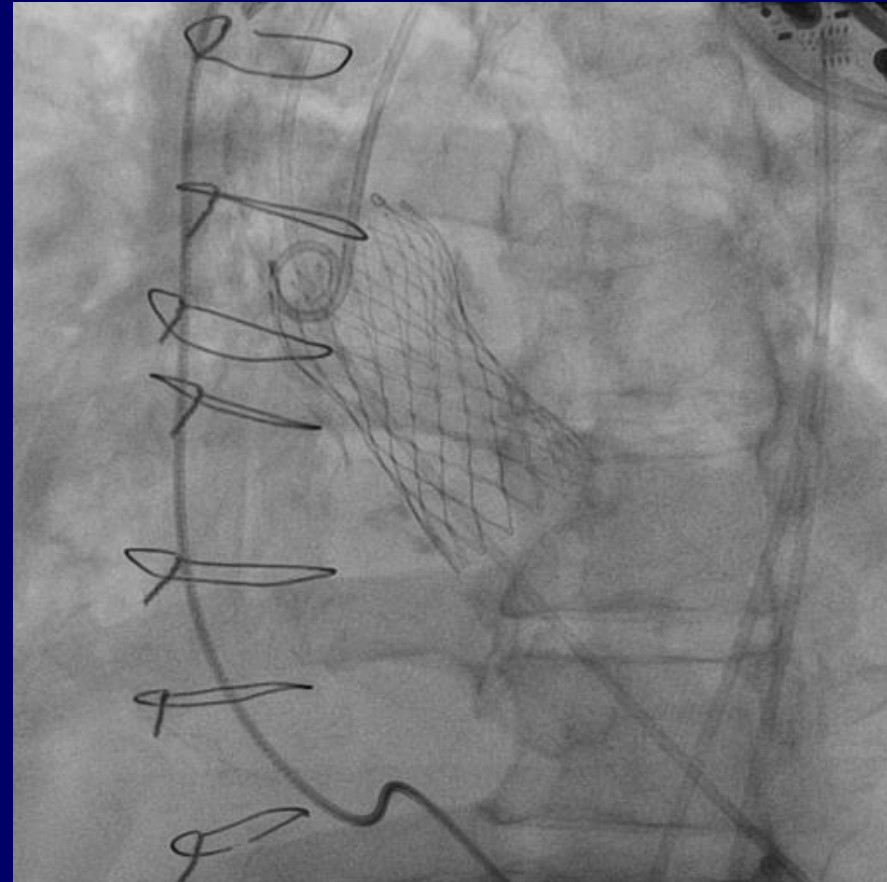
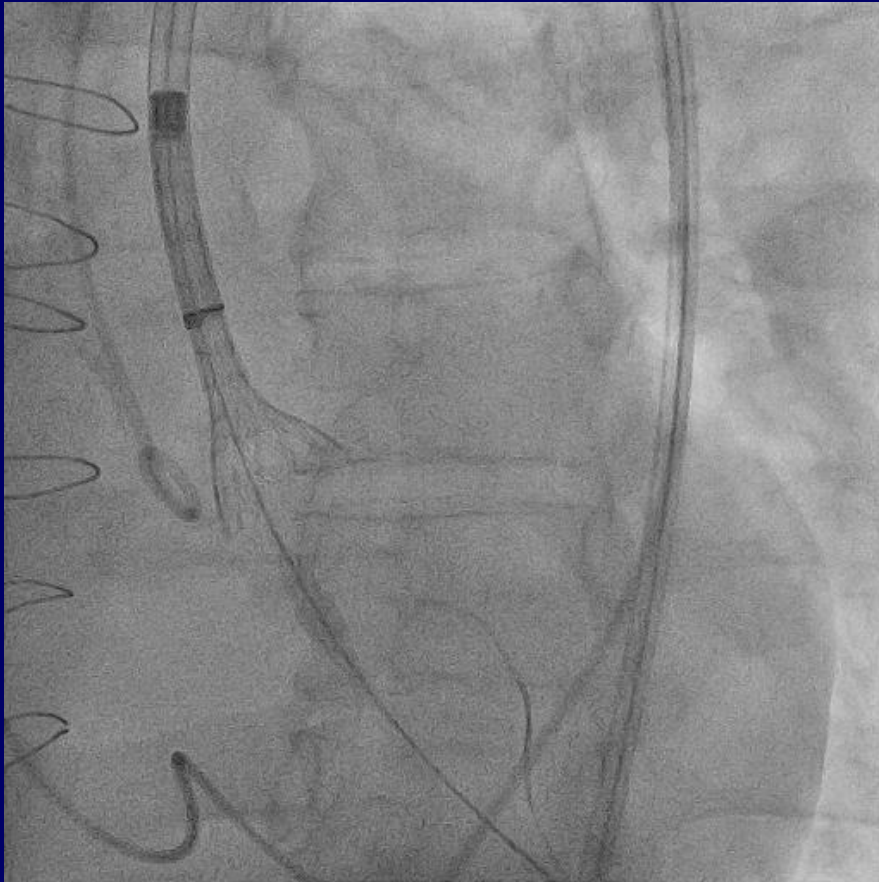


2nd filter in the left carotid artery



TAVI Procedure

Evolut PRO
29mm

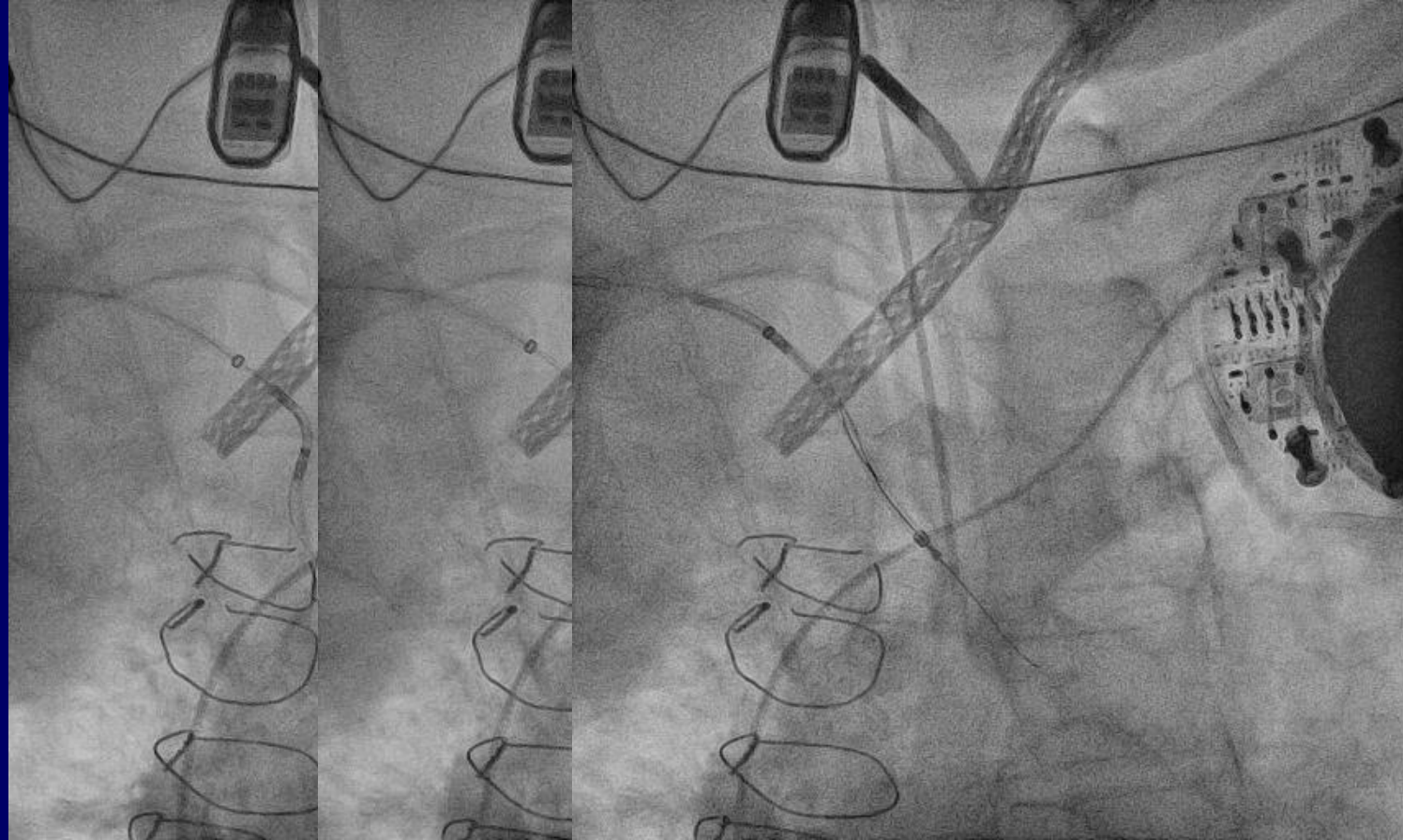


Mild PVL



Retrieval of Sentinel CPS

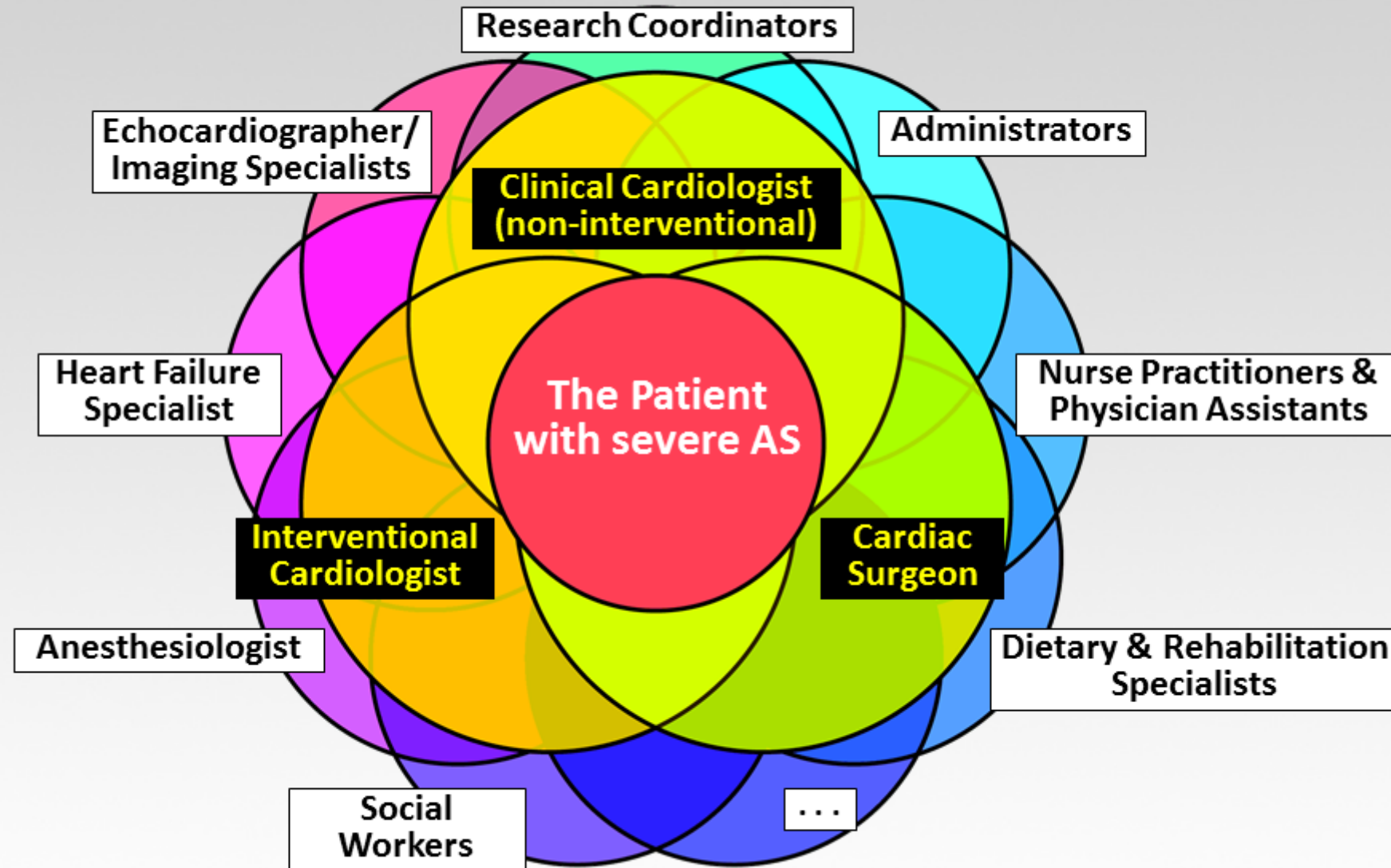
Retrieval of
Sentinel CPS



What we captured!



The Multidisciplinary Heart Team



TAVI Program in QEH

Multi-disciplinary Heart Team formed in 2009:

- Interventional Cardiologists
- Echo Cardiologists
- Cardiac Surgeons
- Cardiac Anaesthesiologists
- Radiologists
- Cardiac Nurses
- ✓ TAVI Coordinator

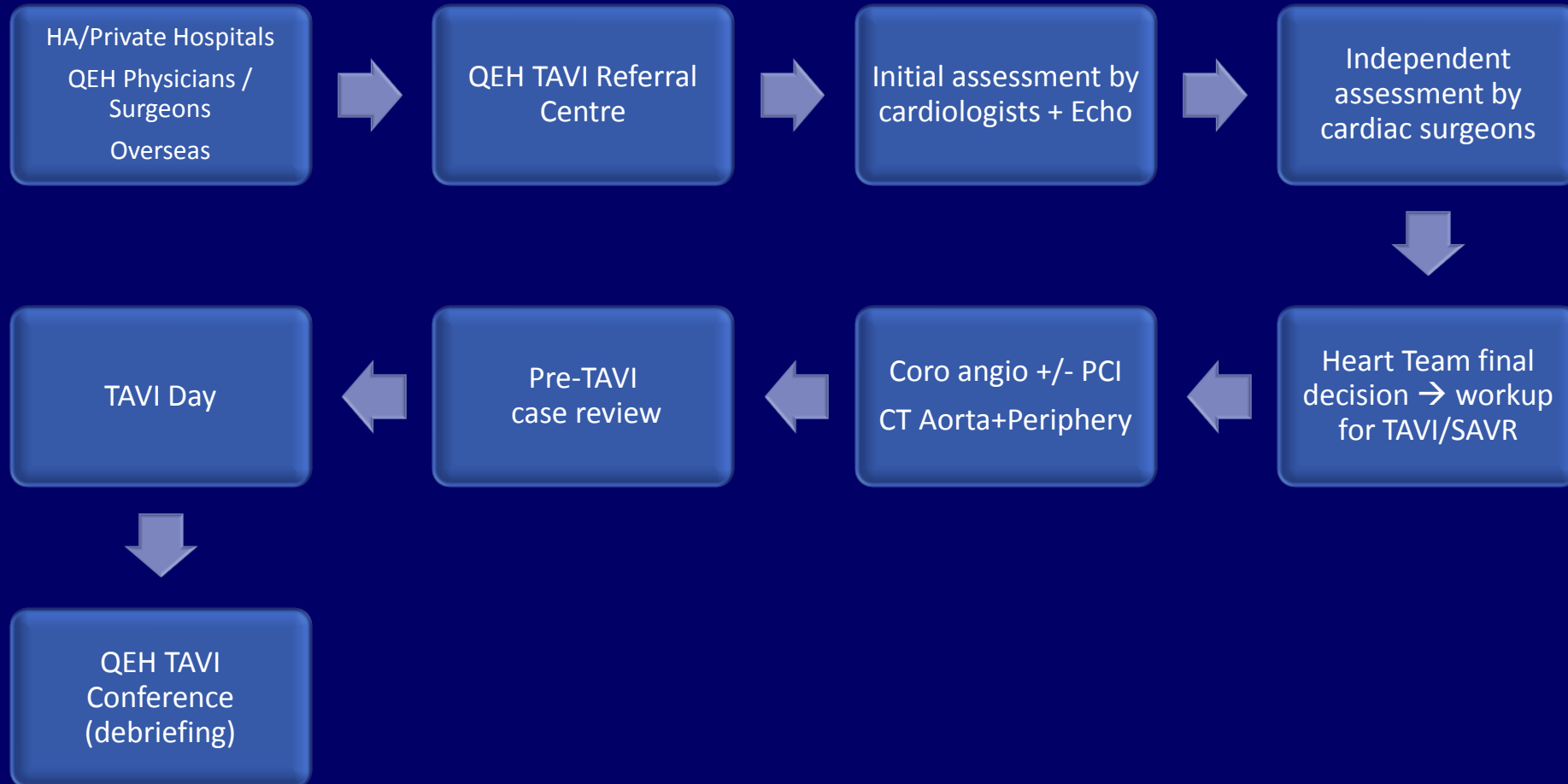


TAVI Heart Team

<i>Discipline</i>	<i>Responsibilities</i>
Cardiologists	Patient selection, assessment, intervention, post-op care and follow-up
Cardiac Surgeons	Patient selection, assessment, surgical support of emergency conditions
Cardiac Anesthesiologists	Pre-operative assessment, support for GA/MAC procedure
Radiologists	Imaging assessment
Cardiac Nurses	Co-ordination, liaison among multi-disciplinary teams, patients' education & counselling, pre-, peri- & post-operative patient care, data registry and audit report preparation
Physiotherapists	Pre & post -operative physical assessment and post-operative rehabilitation



Queen Elizabeth Hospital Patient Flow

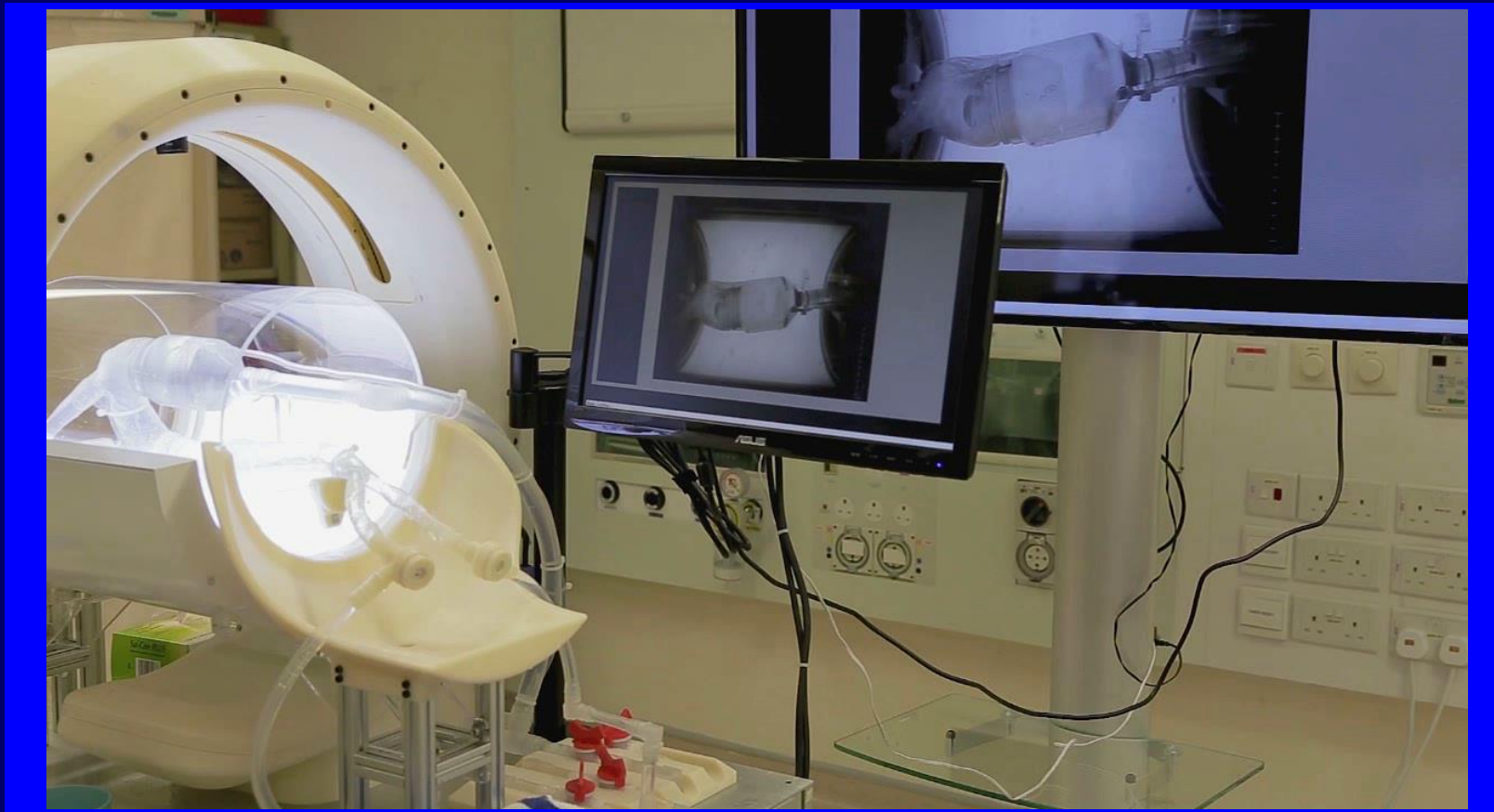


Simulation Training

Symbionix machine with TAVI module + 3D Printing to provide simulation training to cardiologists & cardiac nurses in HK & Asia

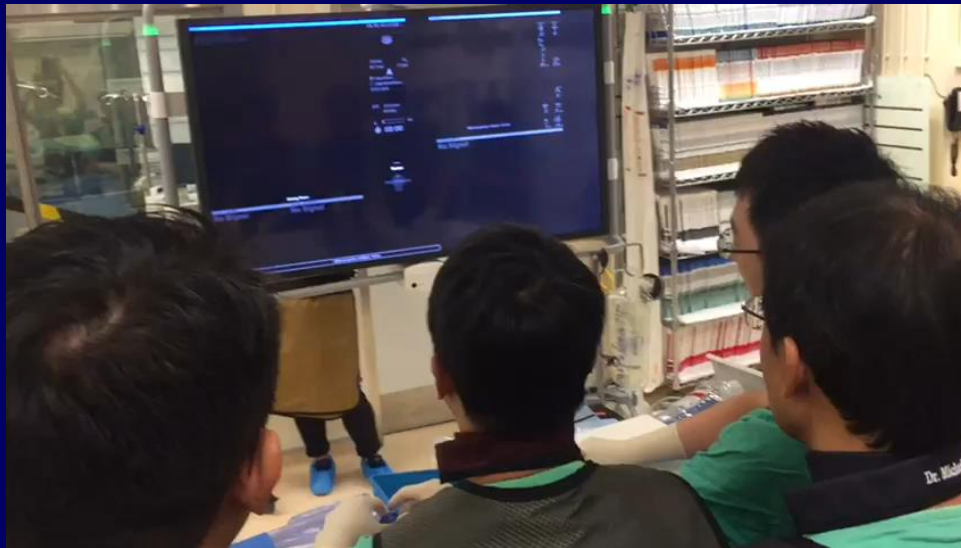
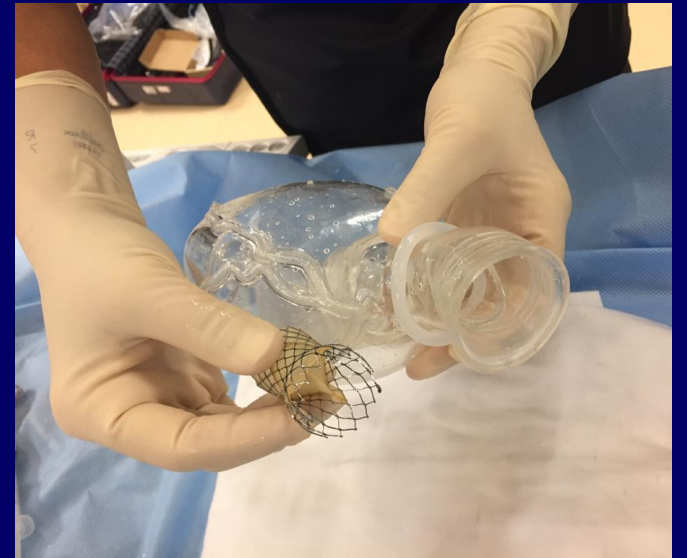
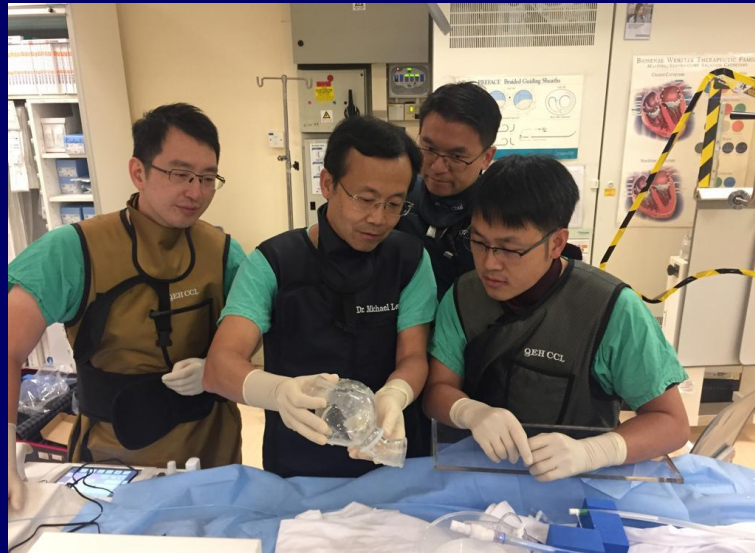


Simulation Model for TAVI Training



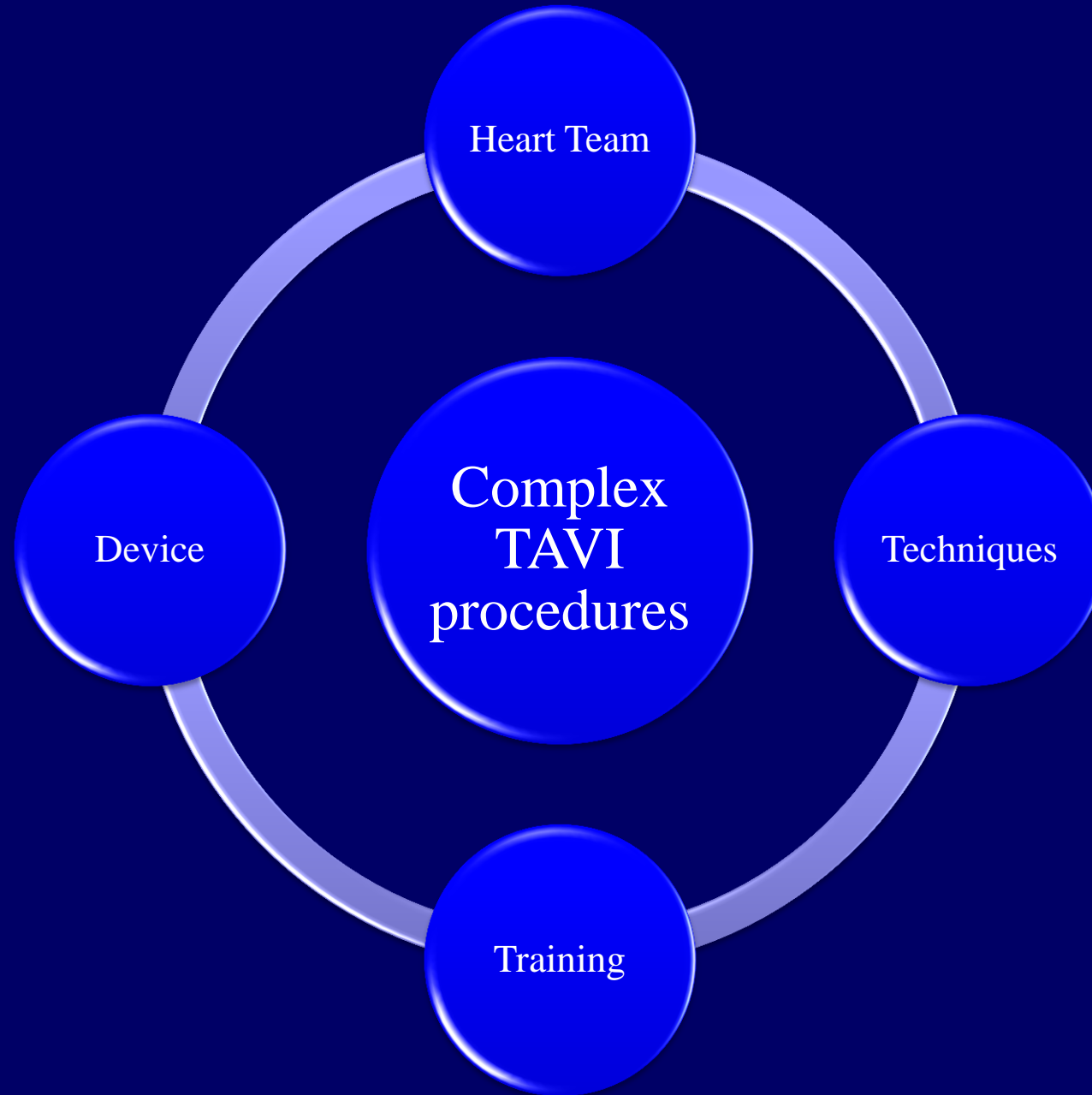
Heartroid Model for TAVI Training in the Cath Lab





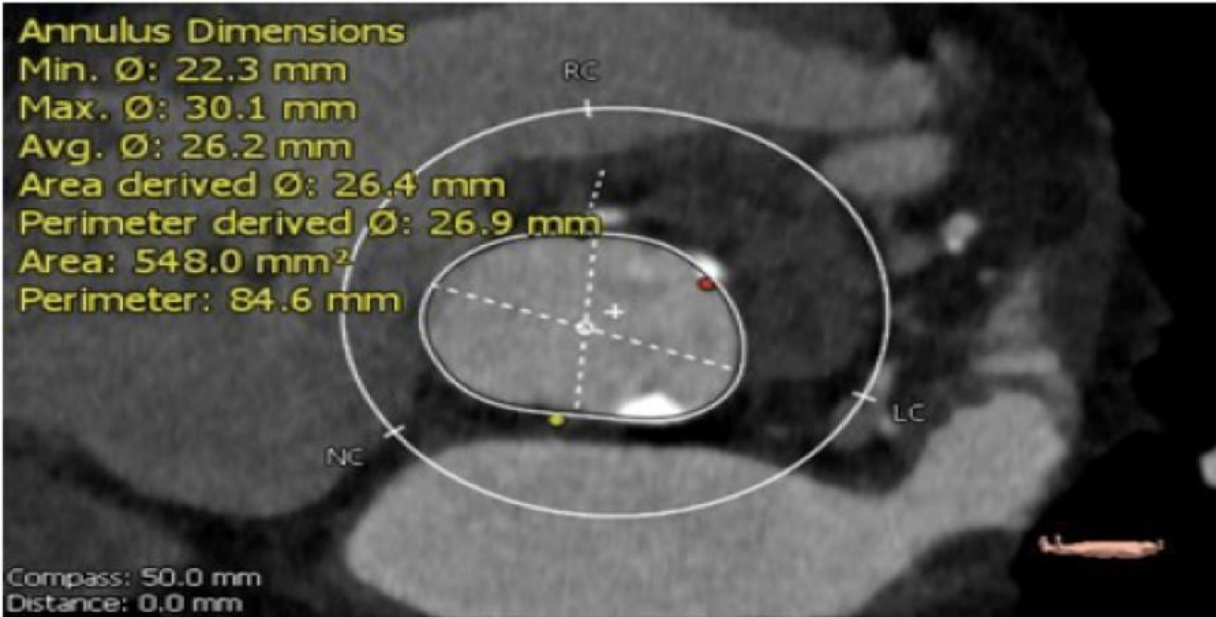
TAVI training in the Cath Lab





Bicuspid Aortic Valve

Annulus



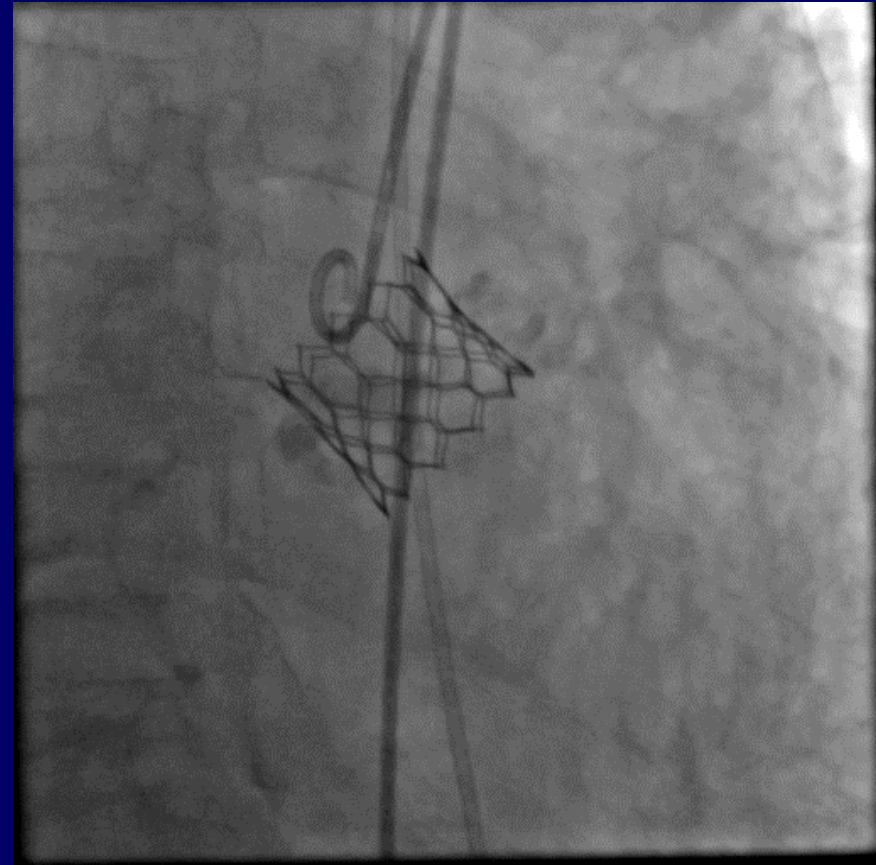
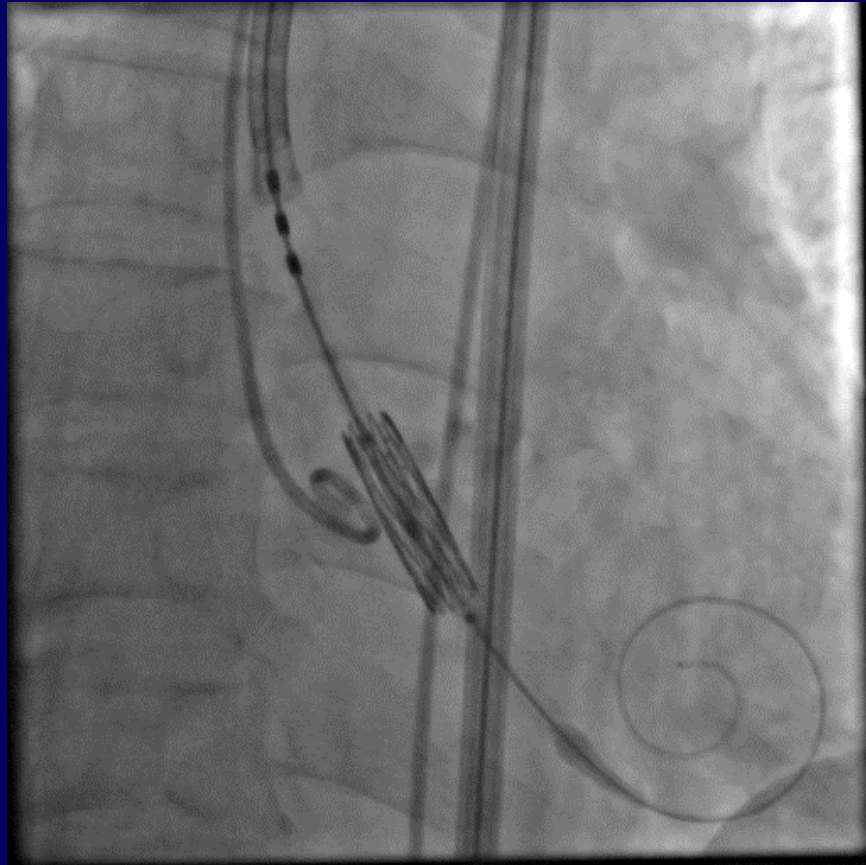
Perpendicular Plane



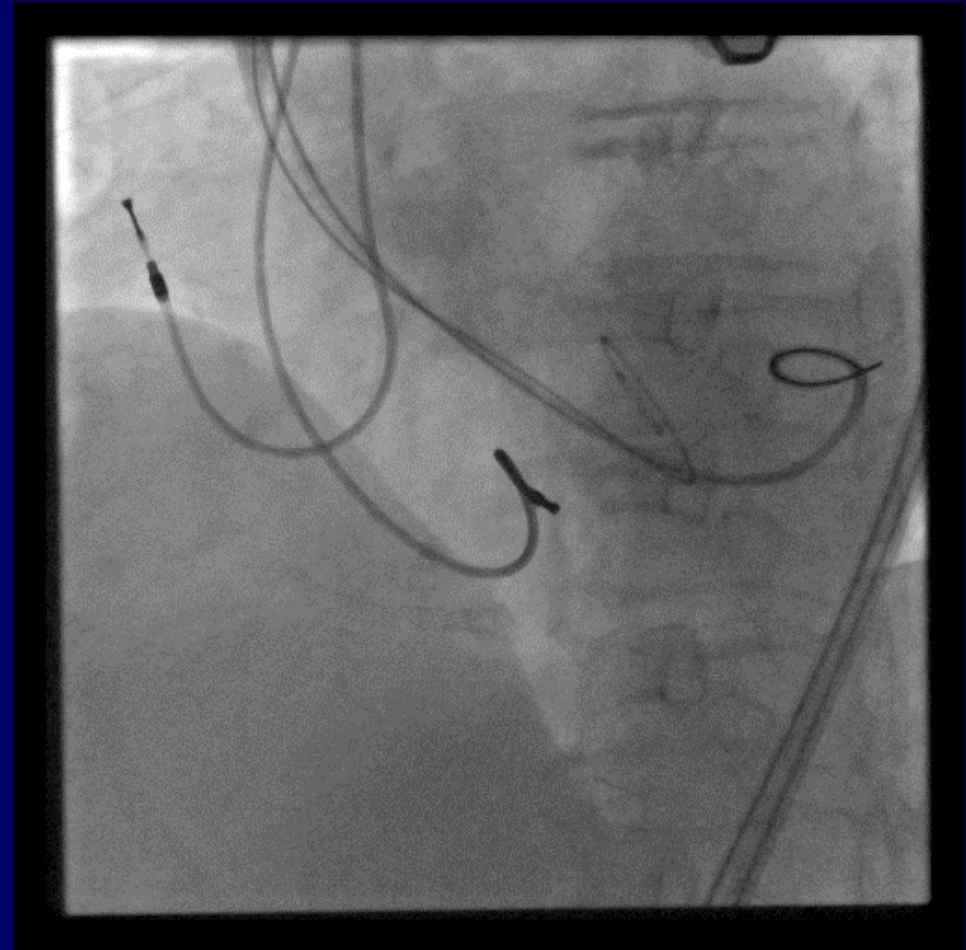
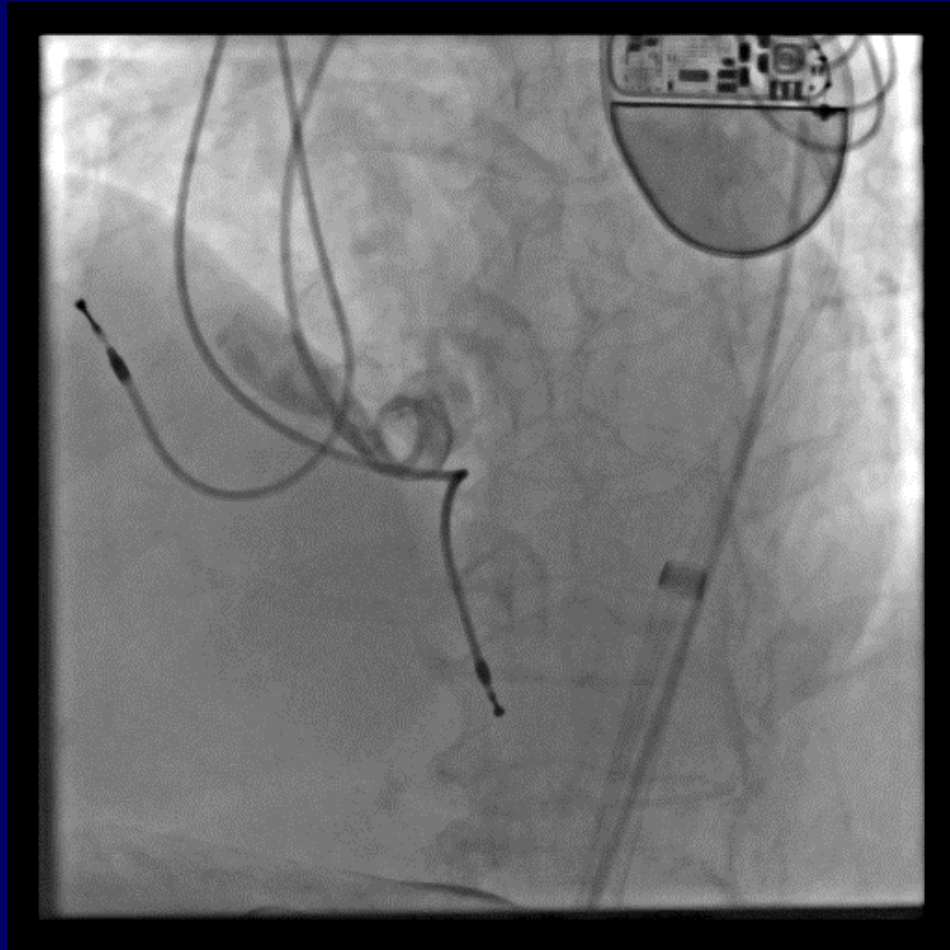
Area: **548mm²**
Perimeter: 84.6mm

Fusion of L-R cusps

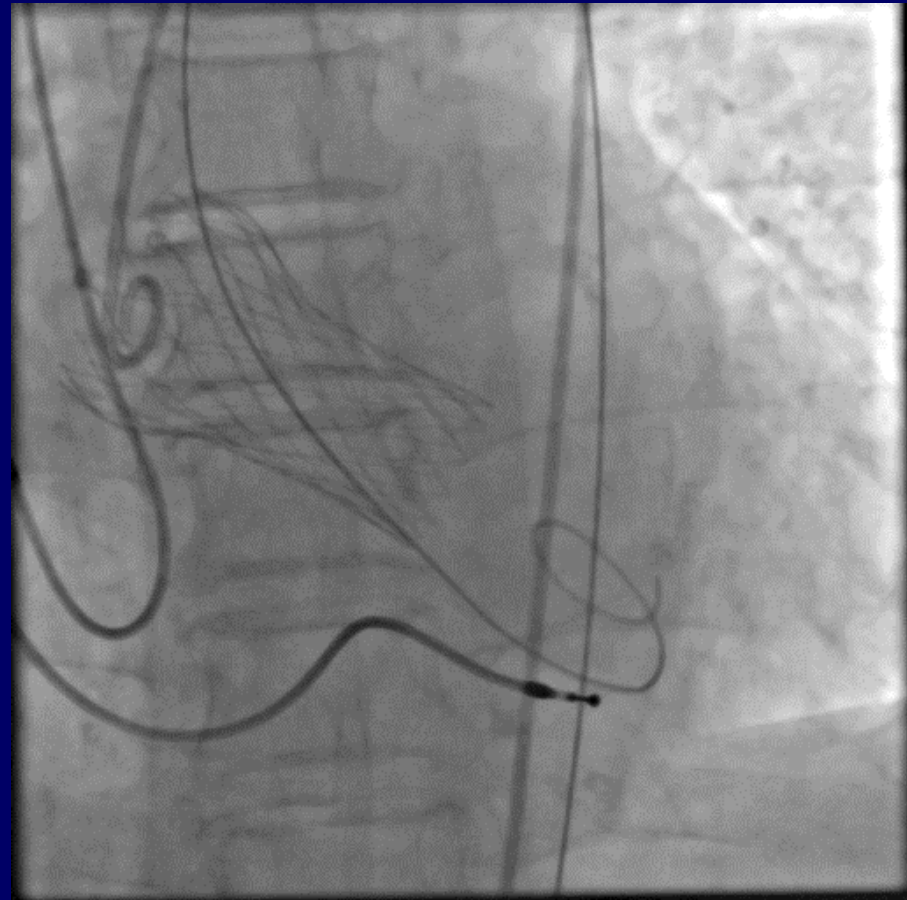
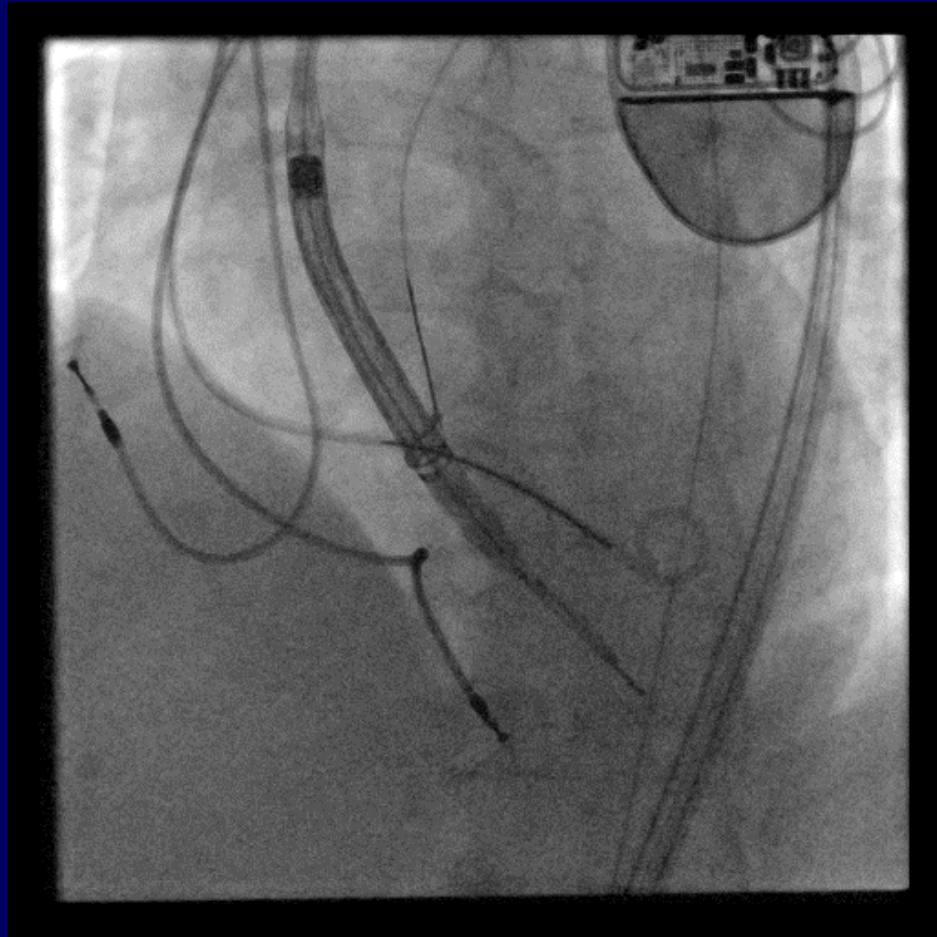
Bicuspid AV (S3 26mm)



Calcified Bicuspid AV + Horizontal Aorta

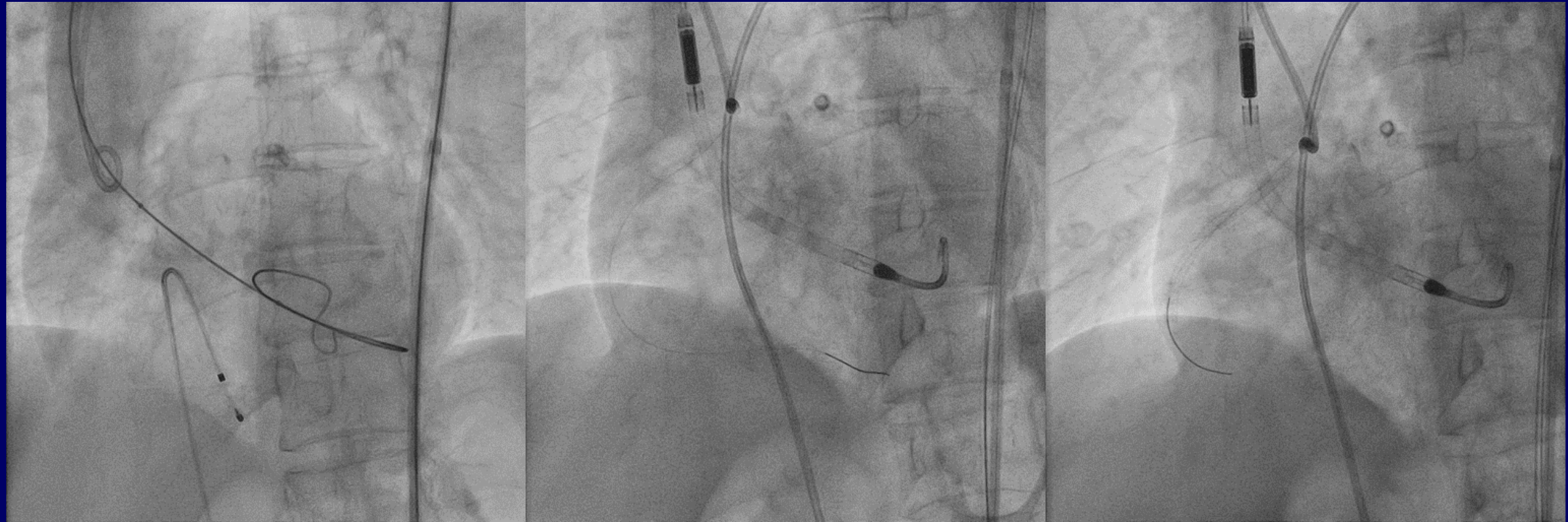


Snare + Evolut PRO



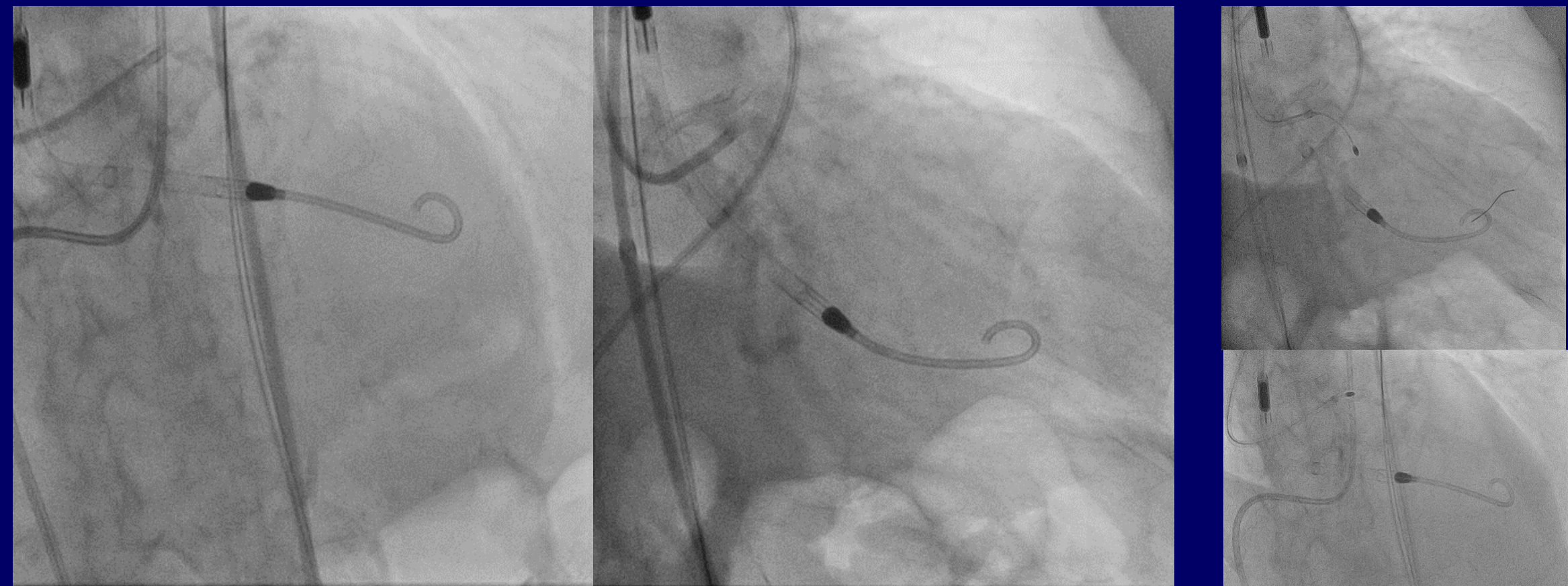
Severe AS + TVD with EF 30%

BAV + Impella-supported PCI



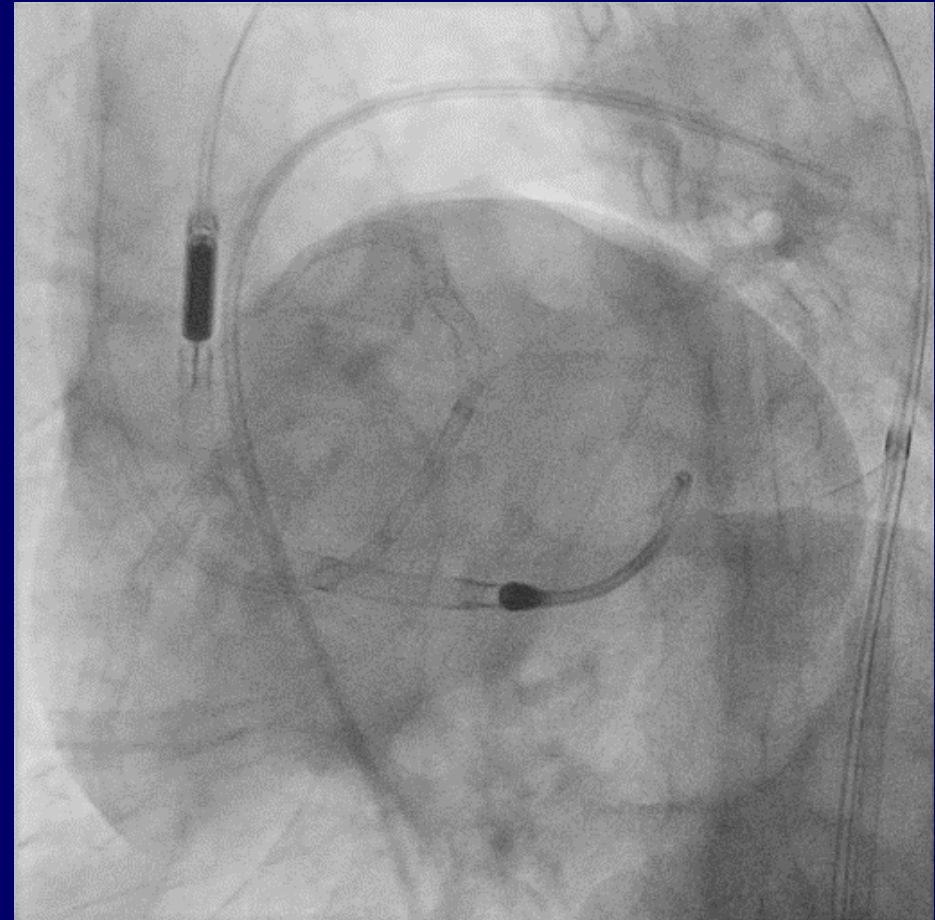
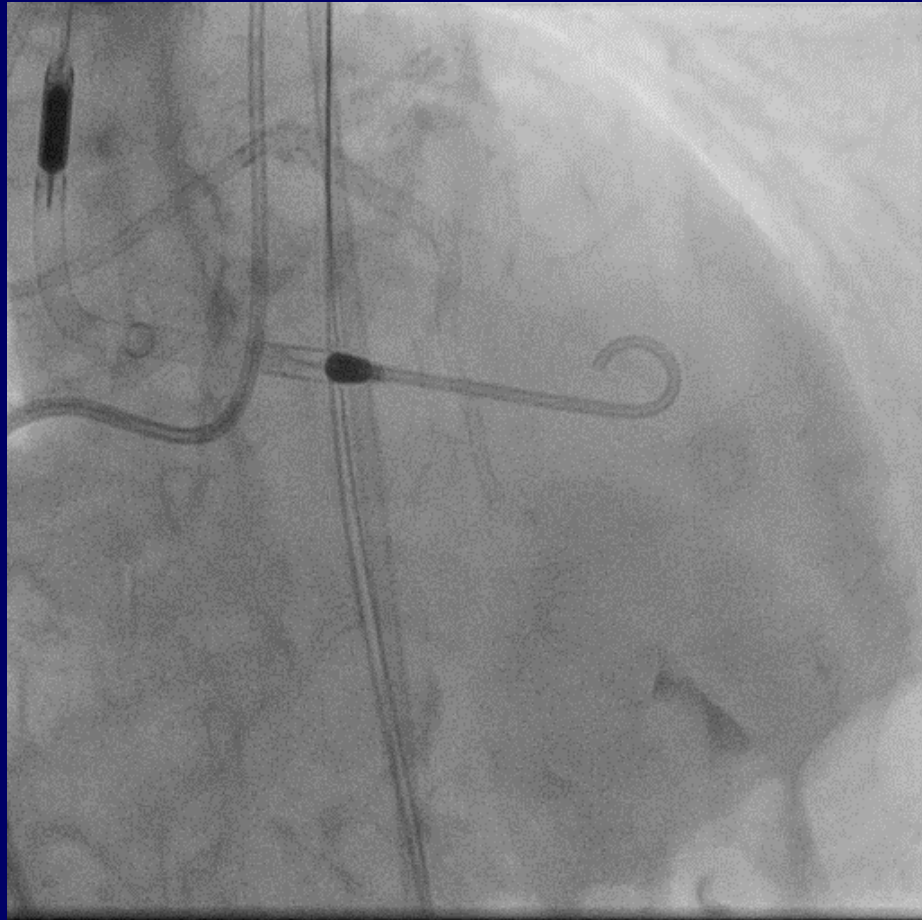
Severe AS + TVD with EF 30%

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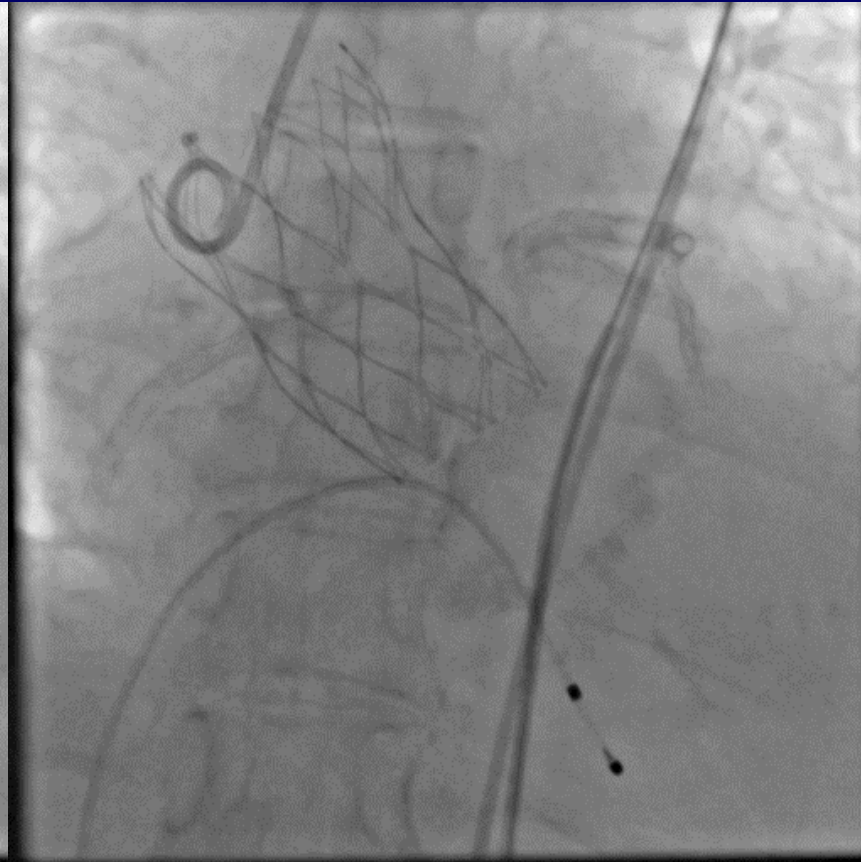
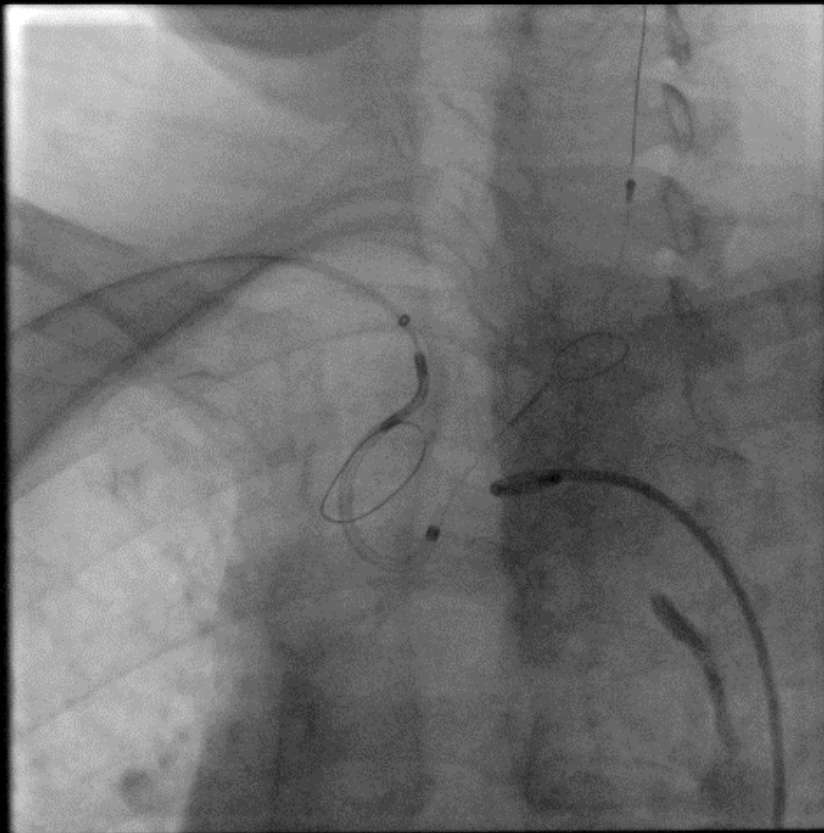


Severe AS + TVD with EF 30%

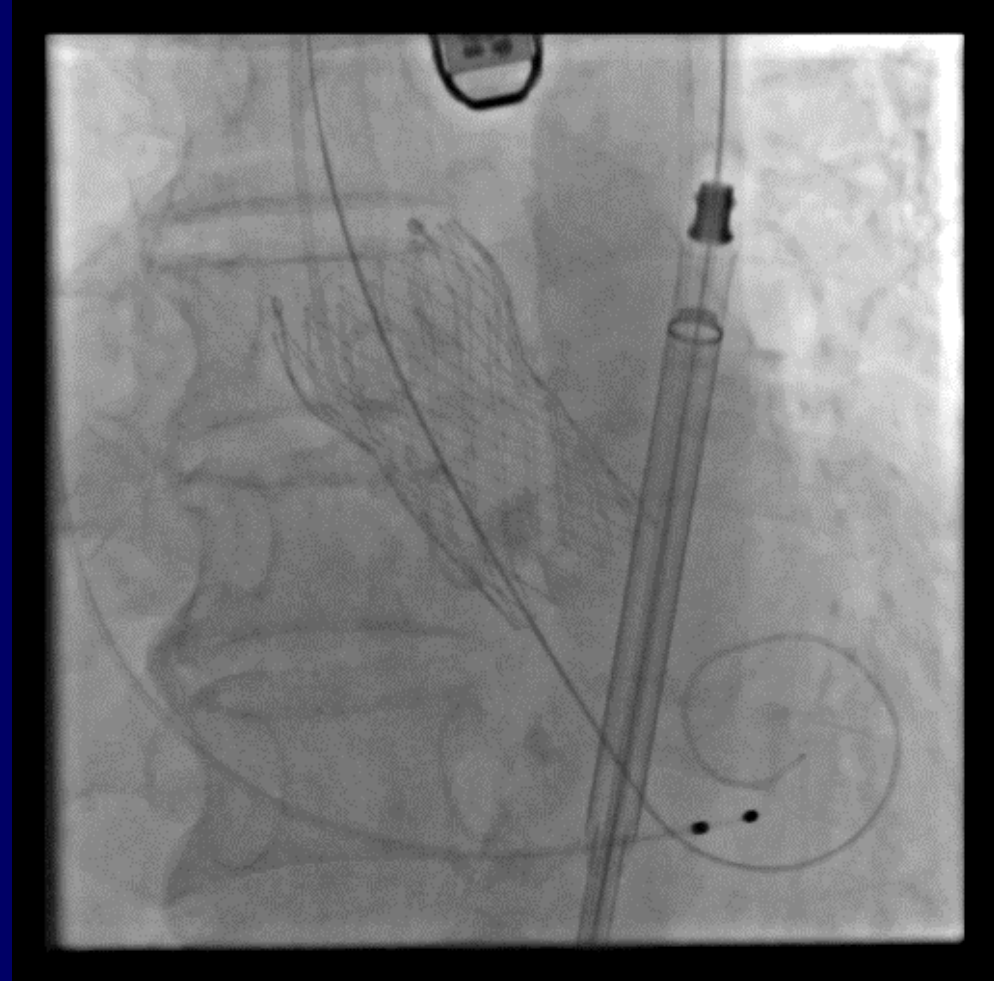
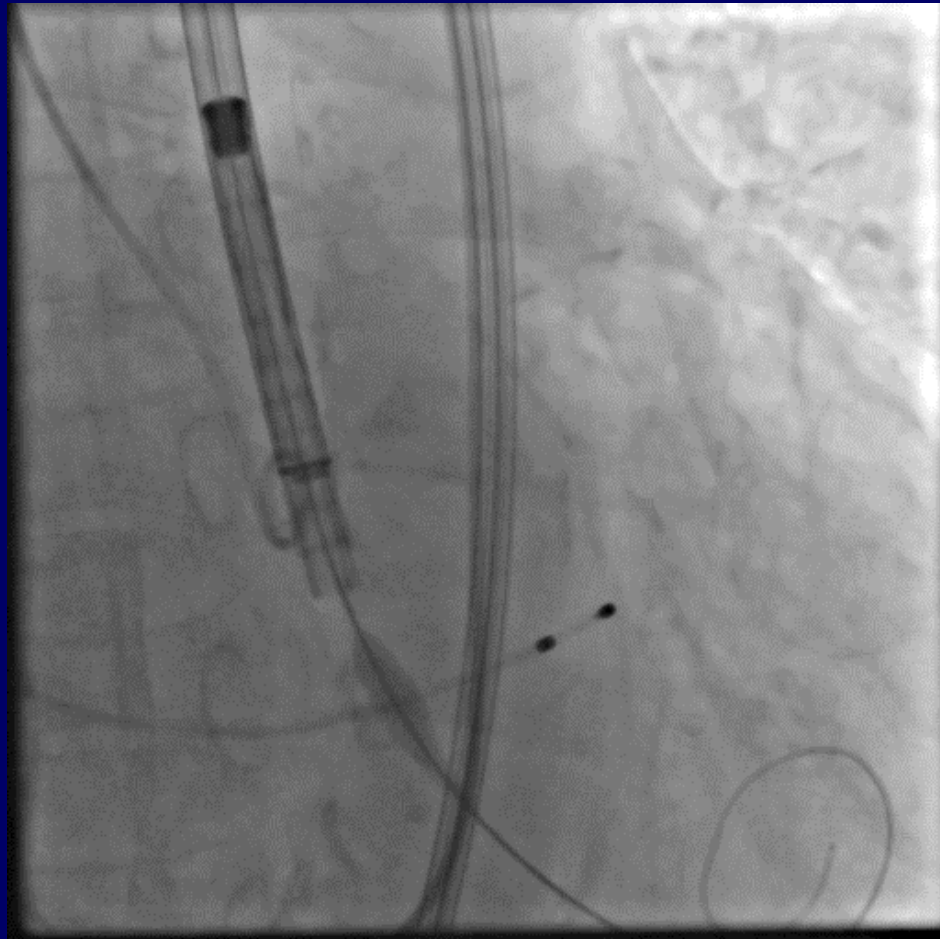
BAV + Impella-supported PCI



TAVI with Portico Valve



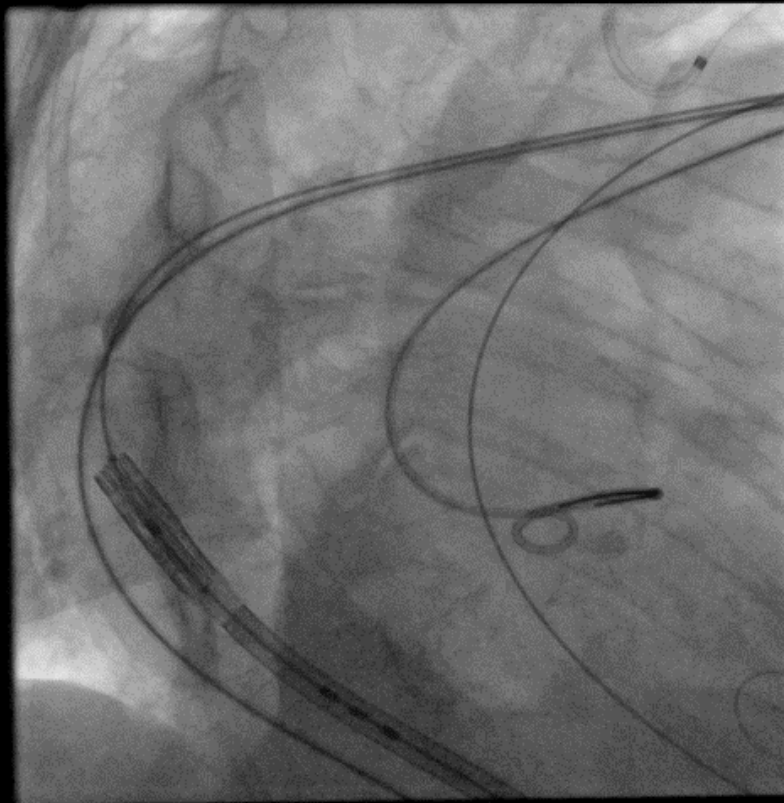
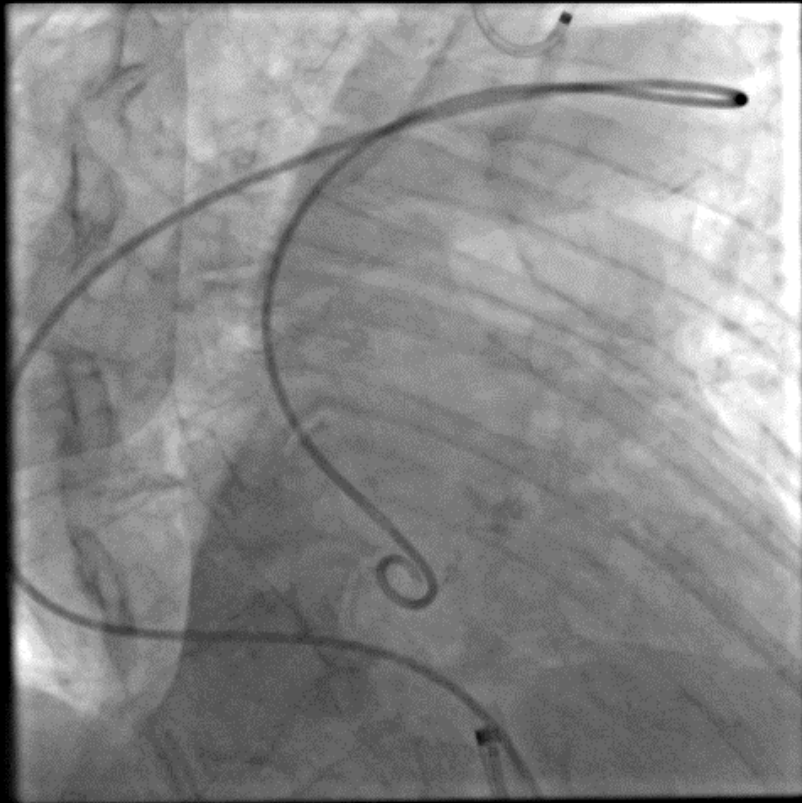
AS, AR with EF 20%



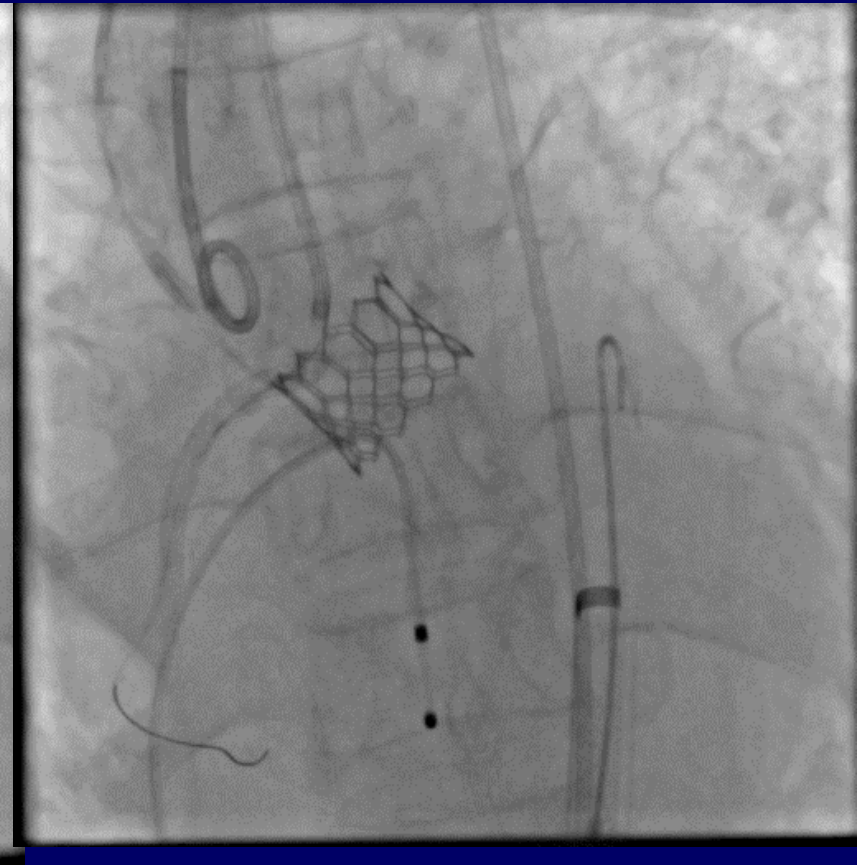
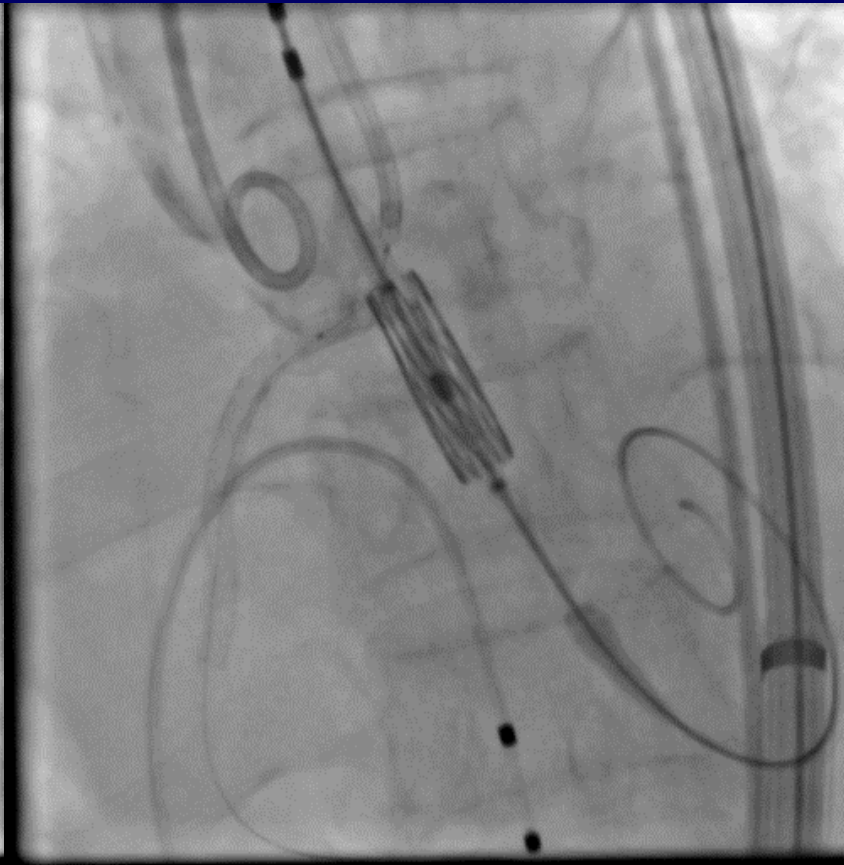
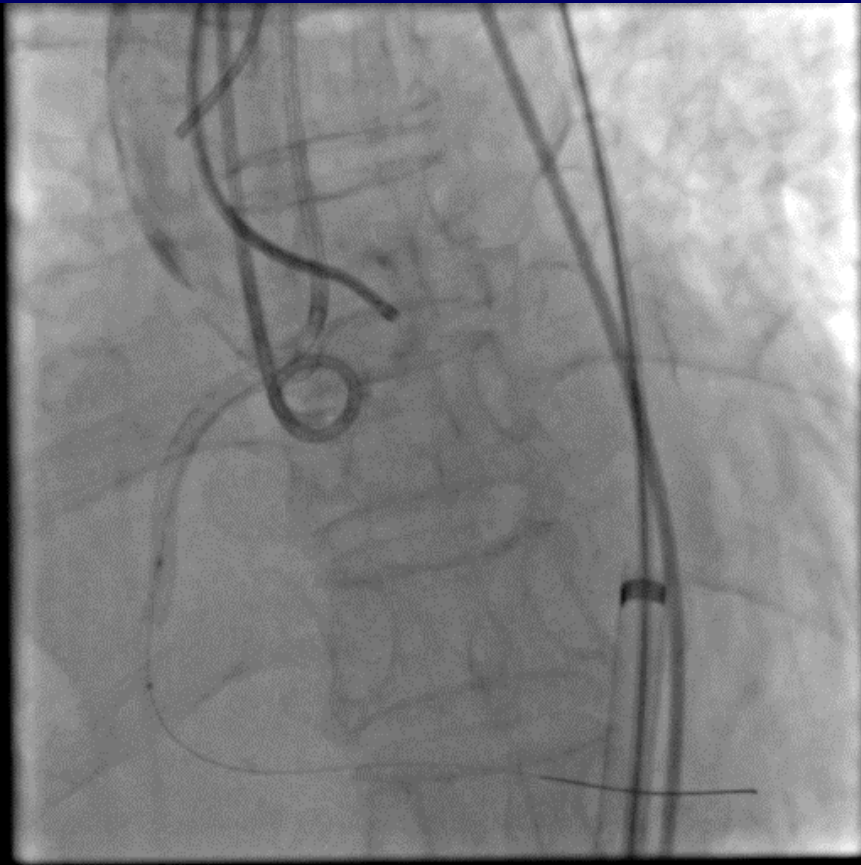
Evolut + Impella



Extremely Tortuous Aorta – S3 23mm



S3(23mm) & RCA(5mm) TAVI-Coronary Kissing Balloons



R't Peripheral Arteries Overview

Fl_Aorta IV 0.75 B40f
2020/1/1

RAO: 0°
Caudal: 0°

Ø 5.0 / 5.2 mm

Ø 4.7 / 5.9 mm

Ø 4.7 / 5.5 mm

Ø 12.7 / 14.6 mm

Ø 12.1 / 12.1 mm

Ø 3.9 / 4.5 mm

Ø 4.4 / 4.8 mm

Ø 5.0 / 5.5 mm

Ø 5.1 / 5.7 mm

Ø 6.7 / 7.8 mm

Ø 4.8 / 5.3 mm

Series: 9
Slices: 1-1405
Slice Spacing: 0.5 mm

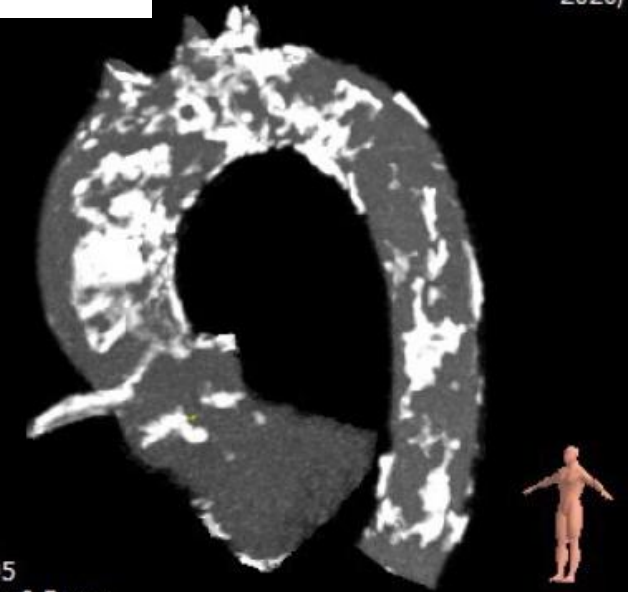


Aortic Arch (Calcifications)

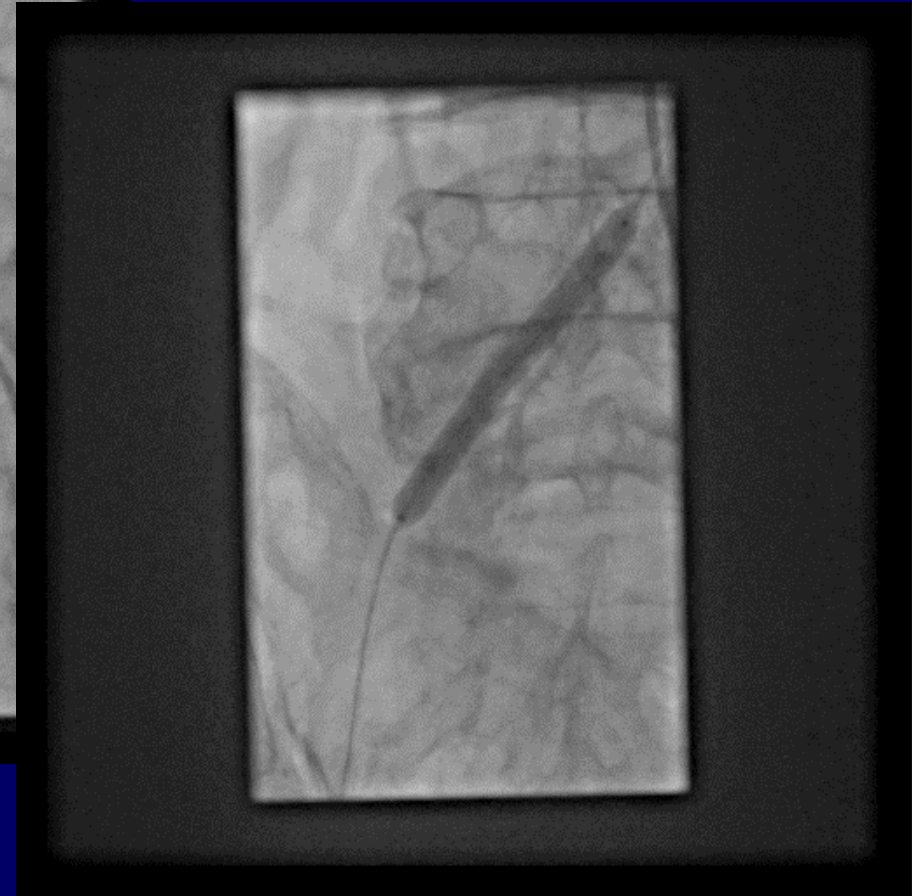
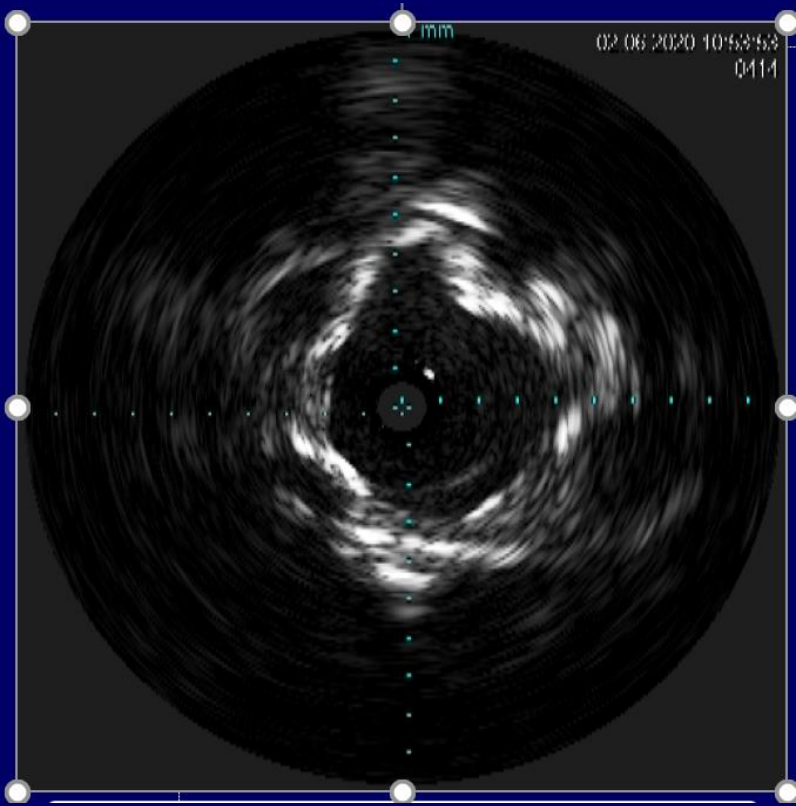
Fl_Aorta IV 0.75 B40f
2020/1/1

LAO: 45°
Caudal: 0°

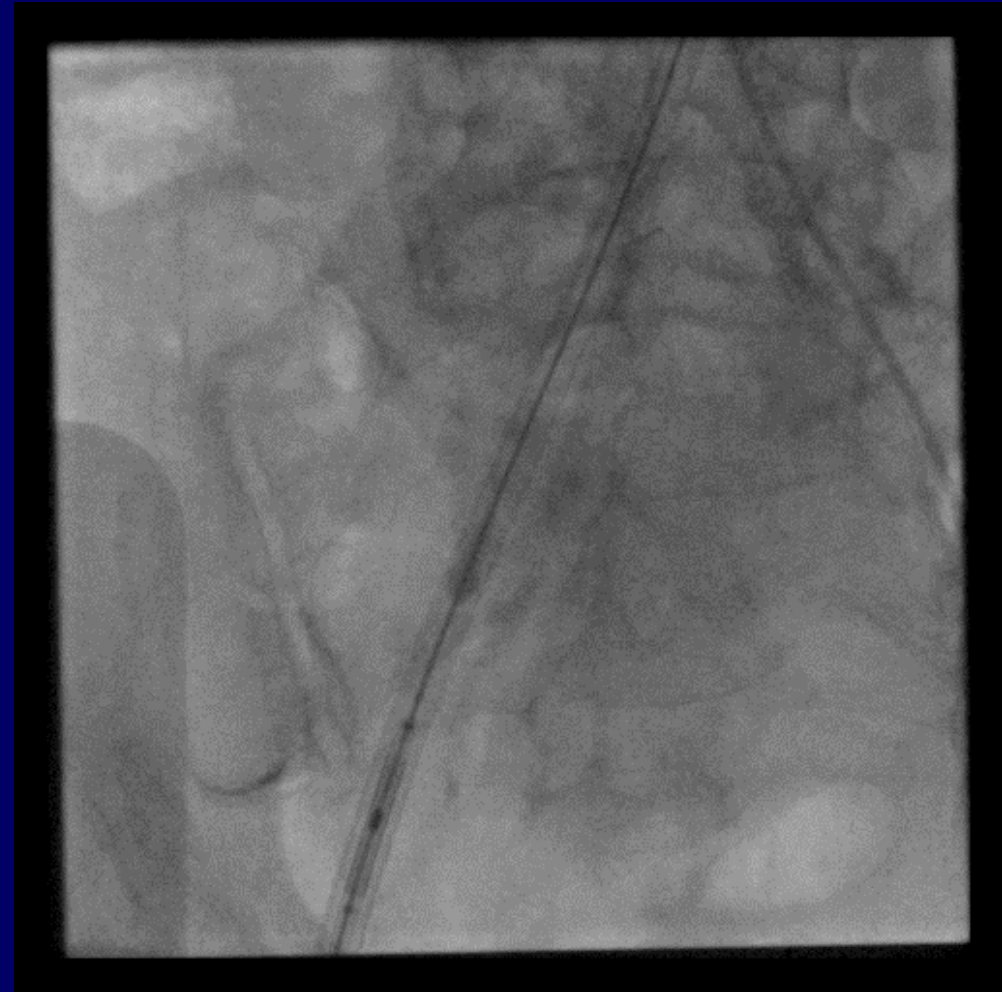
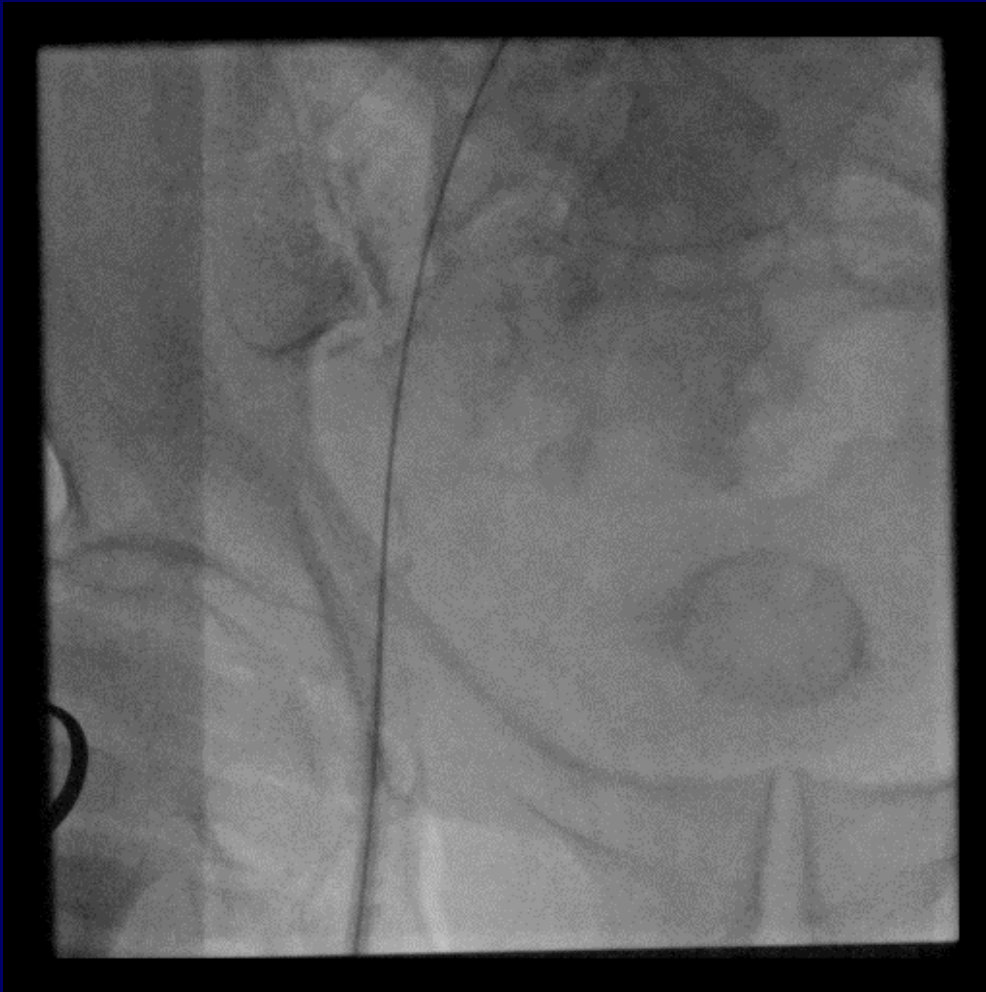
Series: 9
Slices: 1-1405
Slice Spacing: 0.5 mm



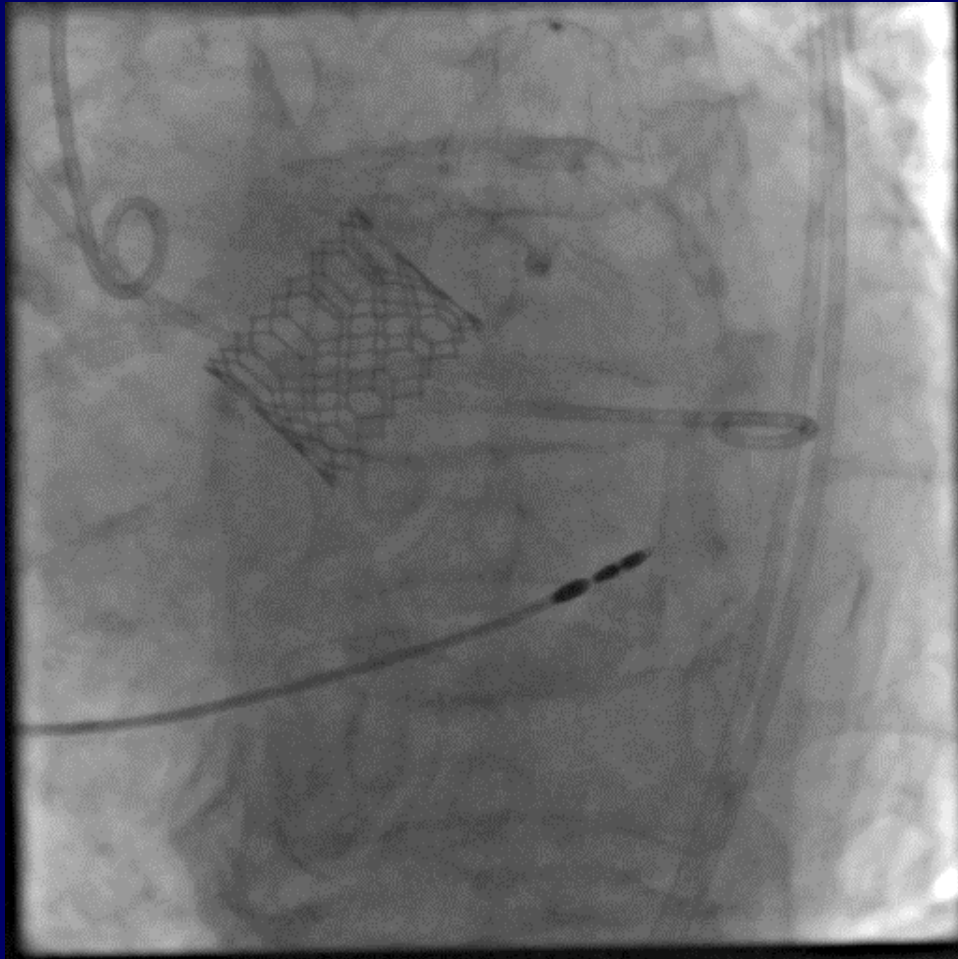
Shockwave M5 6x60mm



14F E-sheath & Sapien S3



26mm Sapien S3



TAVI in Hong Kong

Learn from the experts



Celebrate with the patients



Our patients & families...

TAVI 2-year celebration



TAVI 5-year celebration



TAVI 3-year celebration



TAVI 7-year celebration



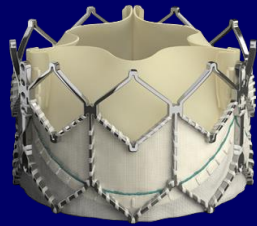
Minimalist TAVI

- Heart Team
- LA/Conscious Sedation
- No TEE, TTE if needed
- No central line
- No temporary pacing wire
- LV pacing through the stiff GW
- R femoral for 14F sheath, L femoral for 5F pigtail
- R radial for Sentinel cerebral embolic protection
- Large bore closure device - MANTA
- Early ambulation
- Discharge 48-72 hours



Complex Made Simple!

TAVI in 2020



- 1% in-patient mortality
- 2% stroke
- 3% vascular complications
- 1 hour procedure (max.)
- Conscious sedation/LA
- 48 hr hospital stay (max.)



HKSTENT - CHIP & CICF 2020

14 - 15 November 2020
Hong Kong

*Hong Kong Convention
& Exhibition Centre*

Mark Your Calendar!

For updates, please visit

▶▶▶ www.hkstent.org ◀◀◀



Organized by:



Hong Kong Society of Transcatheter
ENdo-cardiovascular Therapeutics
(HKSTENT)



THANK YOU!

