

When Size Does Matter

A Tale of the Value of a Re-sheathable, Repositionable, Fully Re-capturable and Removable TAVR Device

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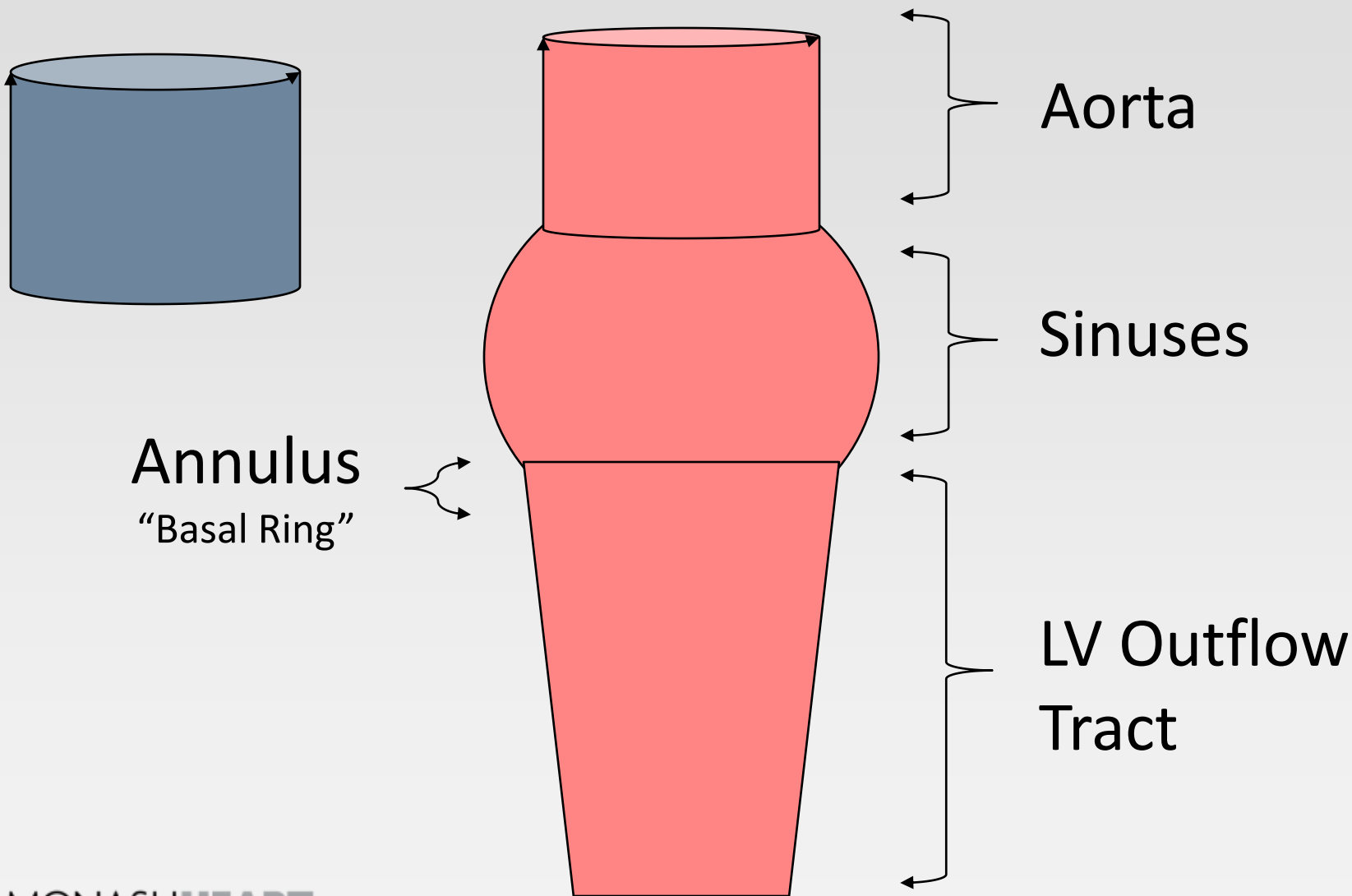
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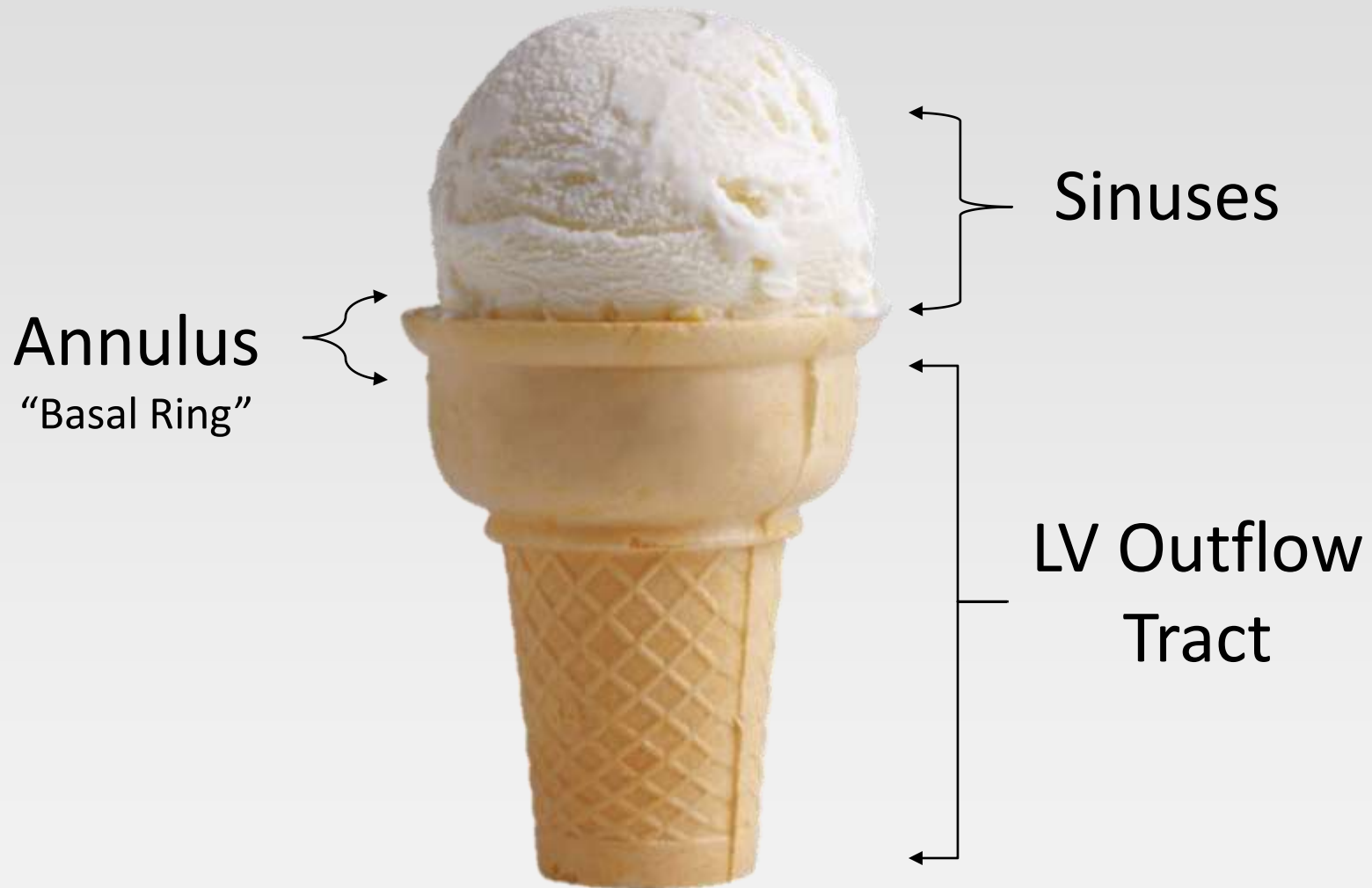
Consequence of Sizing Errors in TAVI Planning

- Paravalvular leak
- Valve embolization
- Conversion to high risk surgery
- Ectopic valve deployment
- Valve in Valve
 - Coronary occlusion
 - Pacemaker implantation
 - CVA

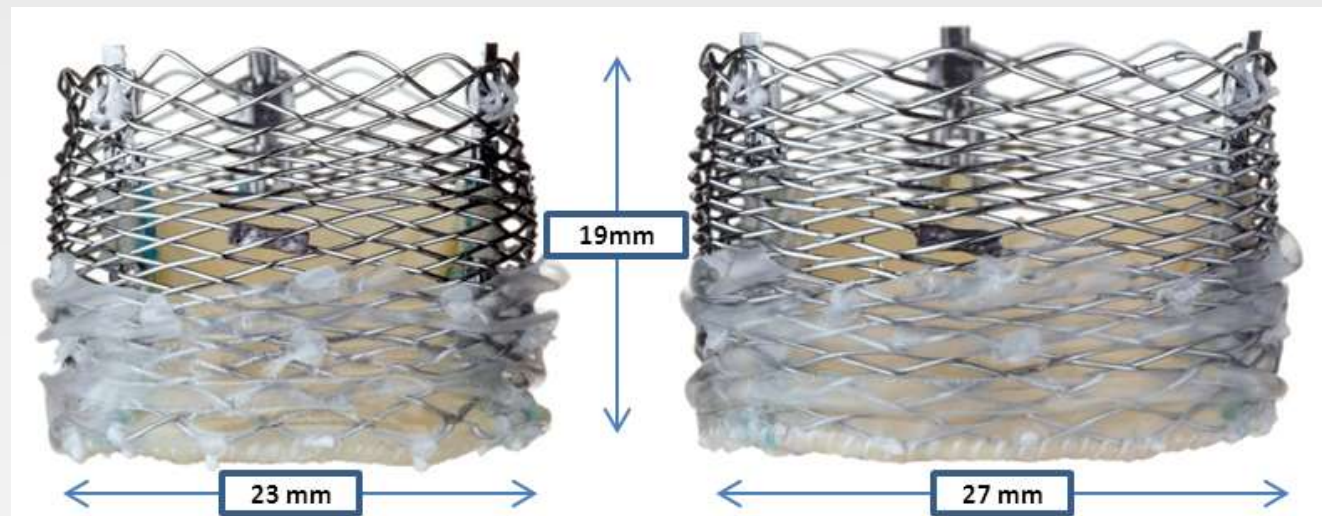
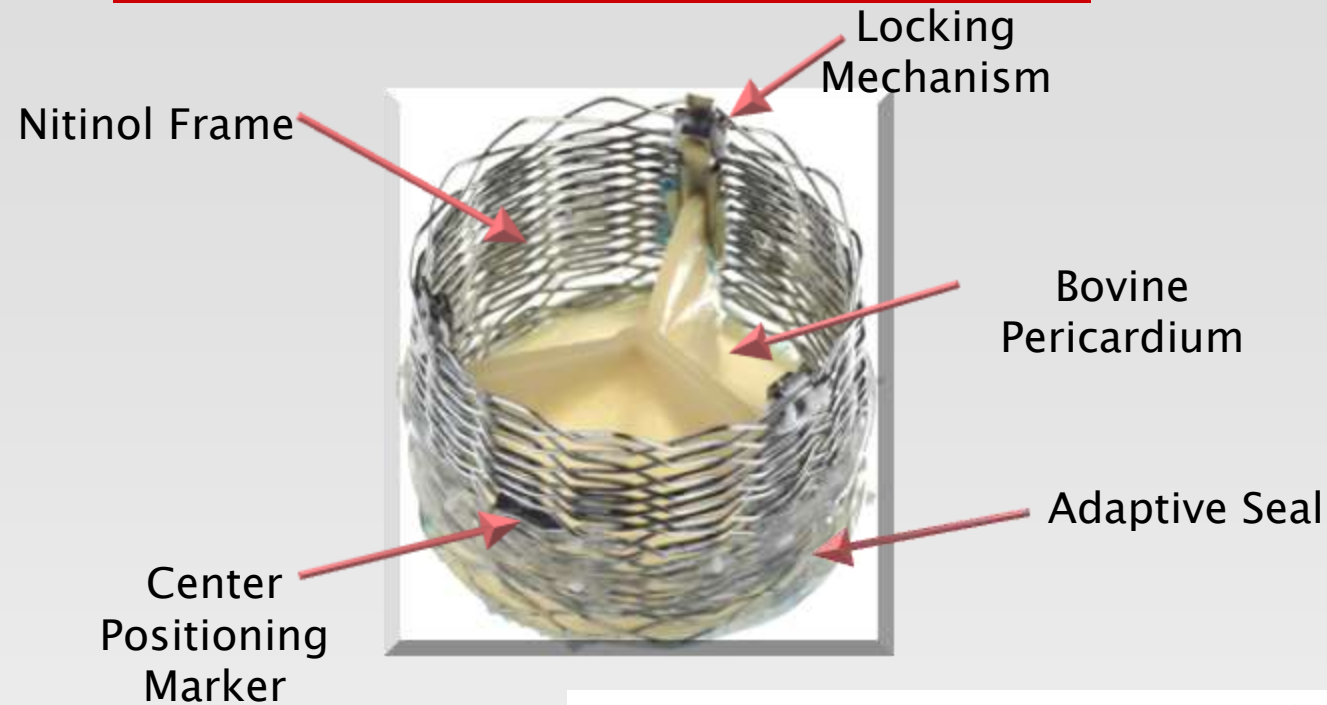
Tips and Tricks in Aortic Valve Sizing



Tips and Tricks in Aortic Valve Sizing



Boston Scientific Lotus Device

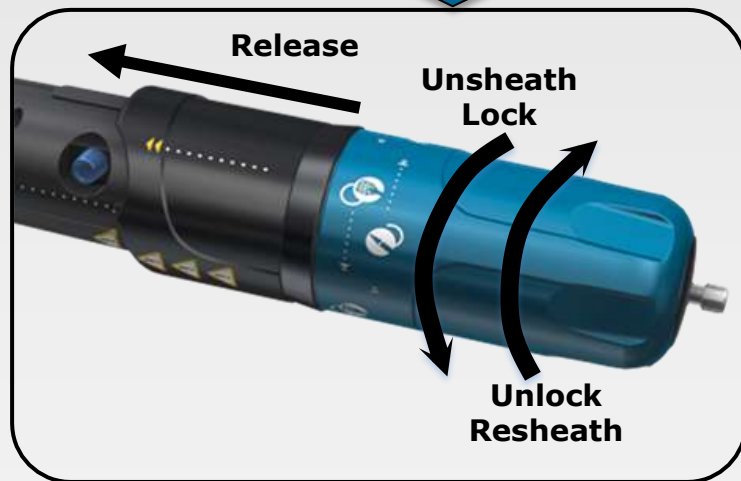


Lotus Valve System Design Features



Pre-Attached System

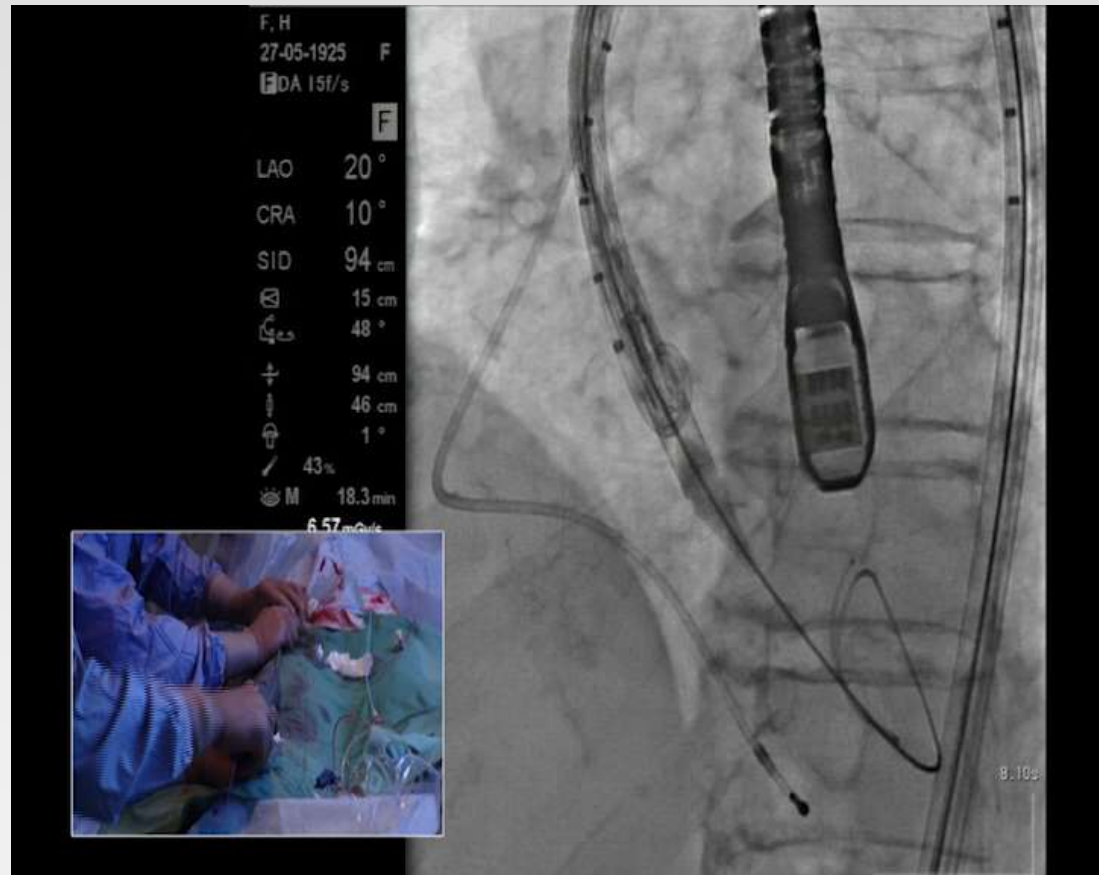
Easy to Prepare



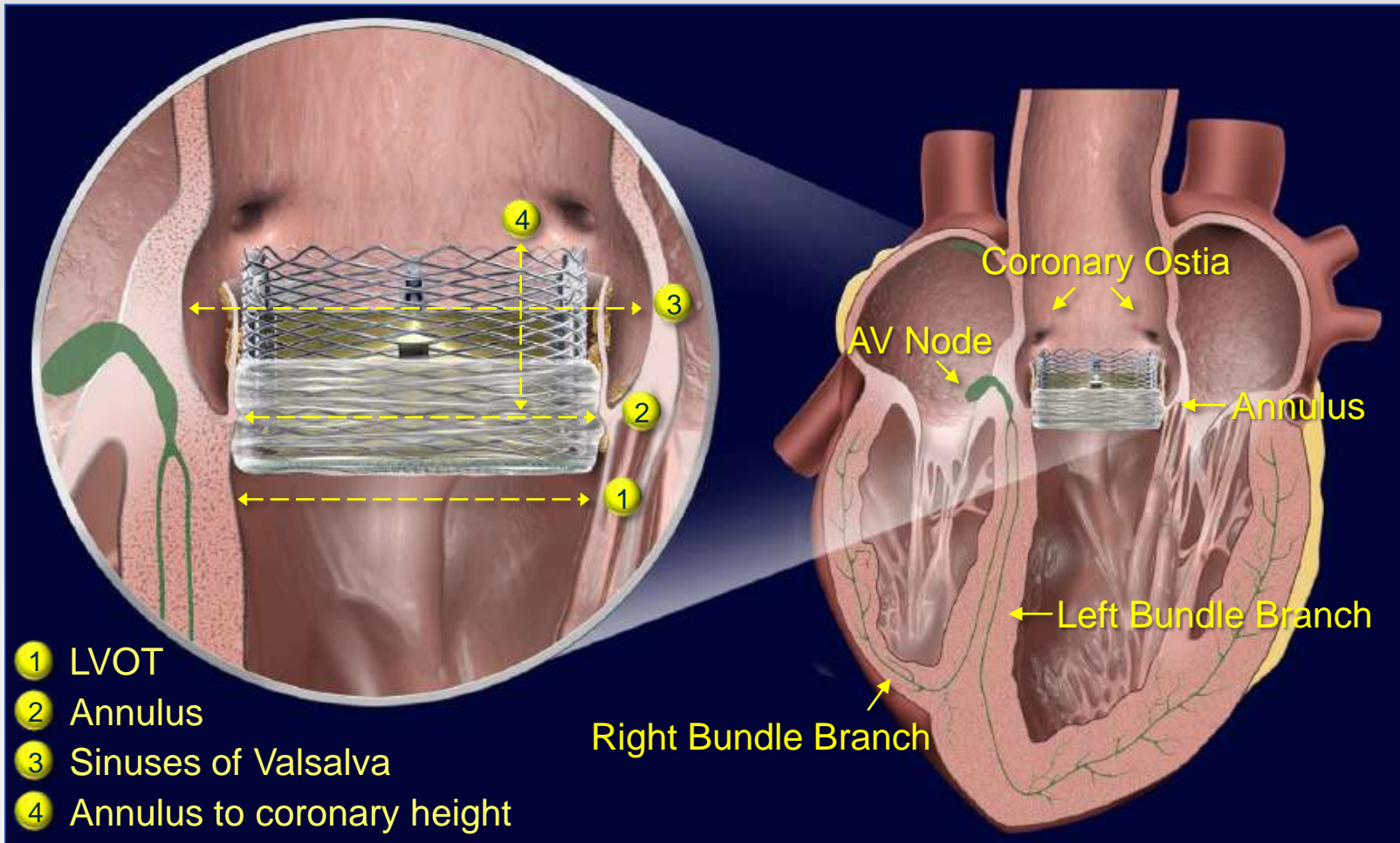
Lotus Valve System

Controlled Mechanical Expansion

- Valve deployed via controlled mechanical expansion.
 - ➔ Neither balloon expandable nor self-expanding.
- No rapid pacing during deployment
- Valve functions early
- No valve movement on release



LOTUS Valve In Situ

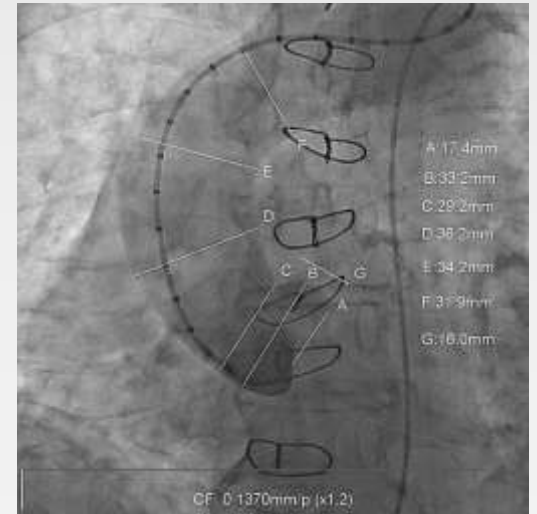
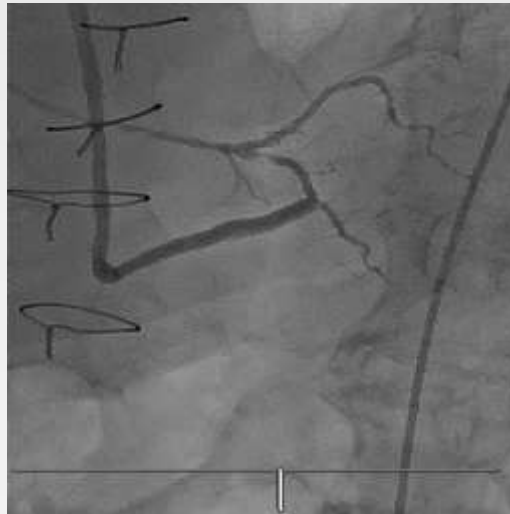
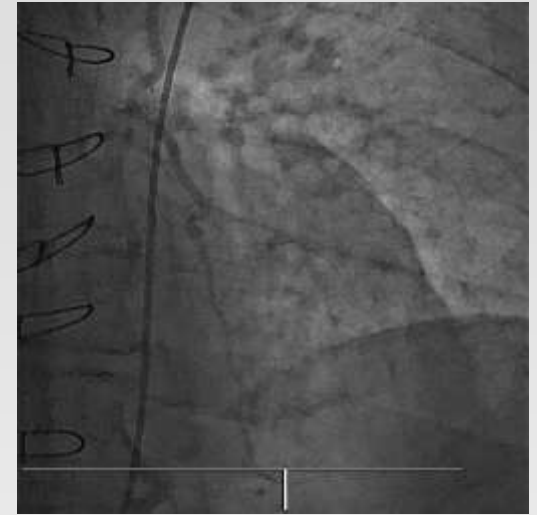
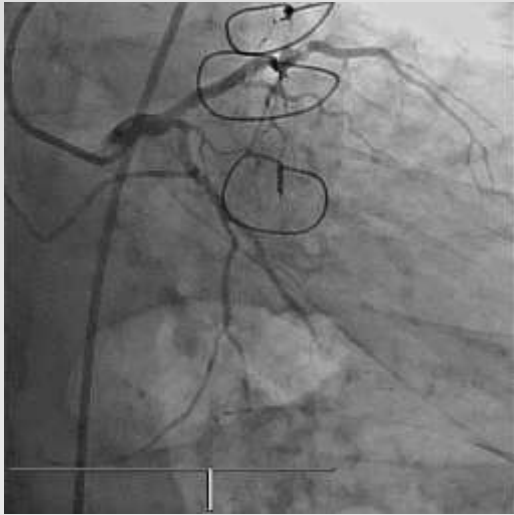


Case History

- **83-year-old male with severe aortic stenosis**
 - Height/Weight (metric units): 163 cm, 72 kg, BMI 27.1
 - NYHA class III
 - Aortic valve area 0.35 cm²/m², Mean gradient 50 mmHg
 - Previous CABG
 - Open Prostatectomy, HT, Hyperlipidaemia
- **Deemed high surgical risk by the Heart Team**
 - STS Mortality 6.8%, EuroSCORE II 7.14%
 - Frail (5 meter gait speed 8.2 sec, Hand grip 12.8 kg)

Routine Investigations

Angiographic Screening & Measurements



Routine Investigations

Angiographic Screening & Measurements



- R Femoral percutaneous access.

Routine Investigations

Echocardiogram Screening Measurements

Echocardiographic data:	
Aortic Valve Area	0.6 cm ² 0.35 cm ² /m ²
Mean and Peak Pressure Gradient	50 mmHg 102 mmHg
Peak Velocity	5.0 m/s
LVEF	60%
AR/MR/TR	Mild AR Mild MR Mild TR

Routine Investigations

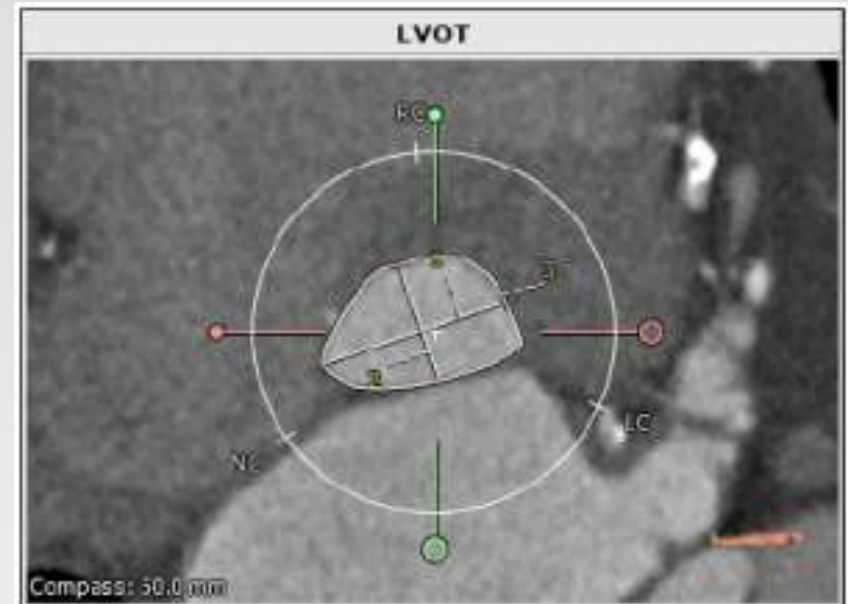
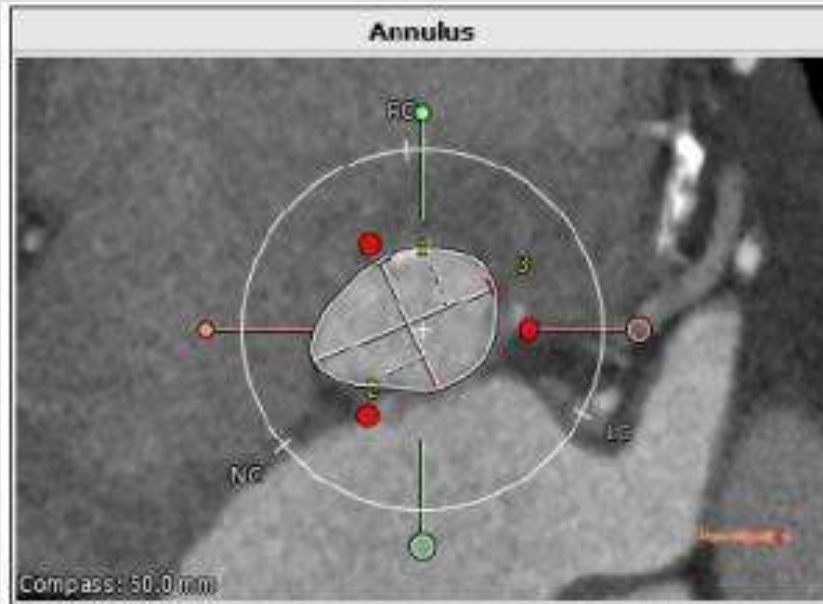
Echocardiogram Screening Measurements

Anatomic Considerations	
Aortic valve annulus diameter	21 mm
LVOT diameter	19 mm
Trans-sinus (aortic root) dimension	31 mm
Sinotubular Junction diameter	25 mm
SOV height and width	16 mm
Annulus to apex length	67 mm
Annulus to mitral valve hinge point length	12 mm
Intraventricular Septal Wall Thickness	15 mm
Posterior wall thickness	10 mm
Presence and morphology of Intraventricular Septal bulge	Mild

Routine Investigations

CTA Screening & Measurements

3Mensio Annulus and LVOT Measurements



Basal Ring Diameter

Maximum	26.7 mm
Minimum	19.1 mm
Perimeter	22.9 mm (72.0 mm)
Area	22.1 mm (383.5 mm²)

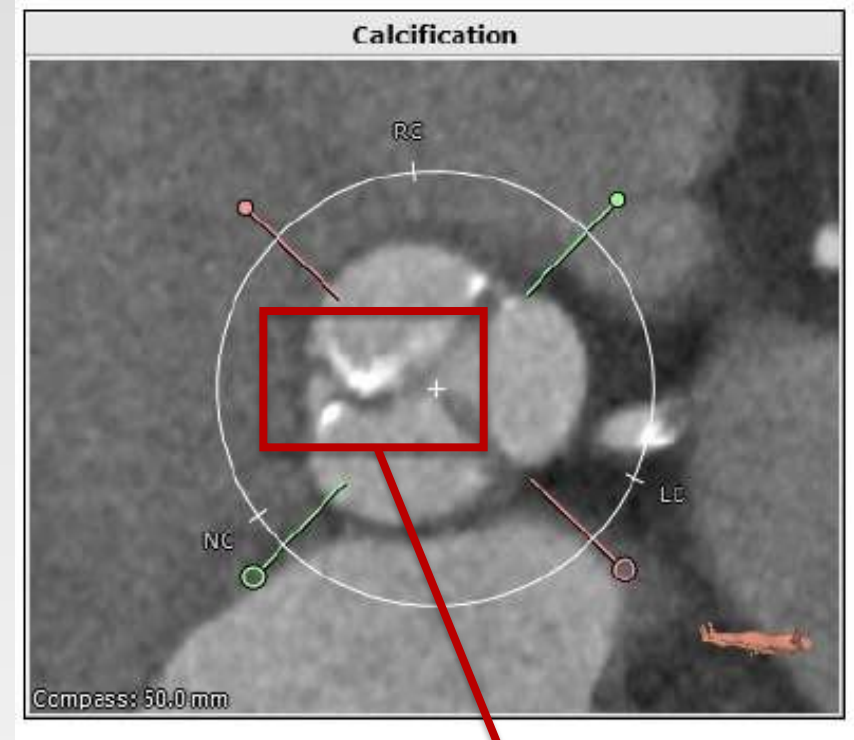
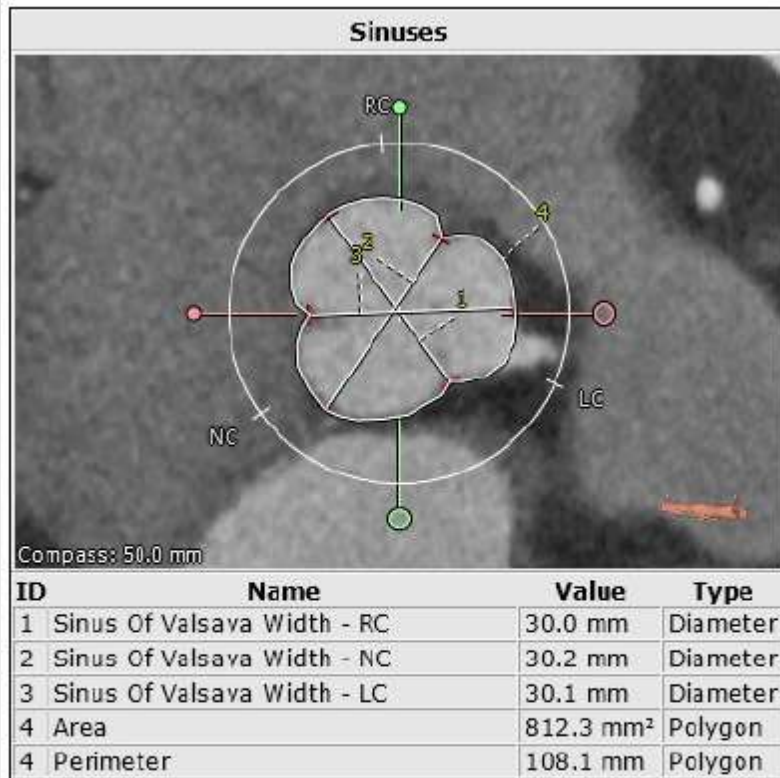
Left Ventricular Outflow Tract Diameter

Maximum	26.2 mm
Minimum	16.8 mm
Perimeter	22.8 mm (71.7 mm)
Area	21.4 mm (358.5 mm²)

Routine Investigations

CTA Screening & Measurements

Further Anatomic Considerations



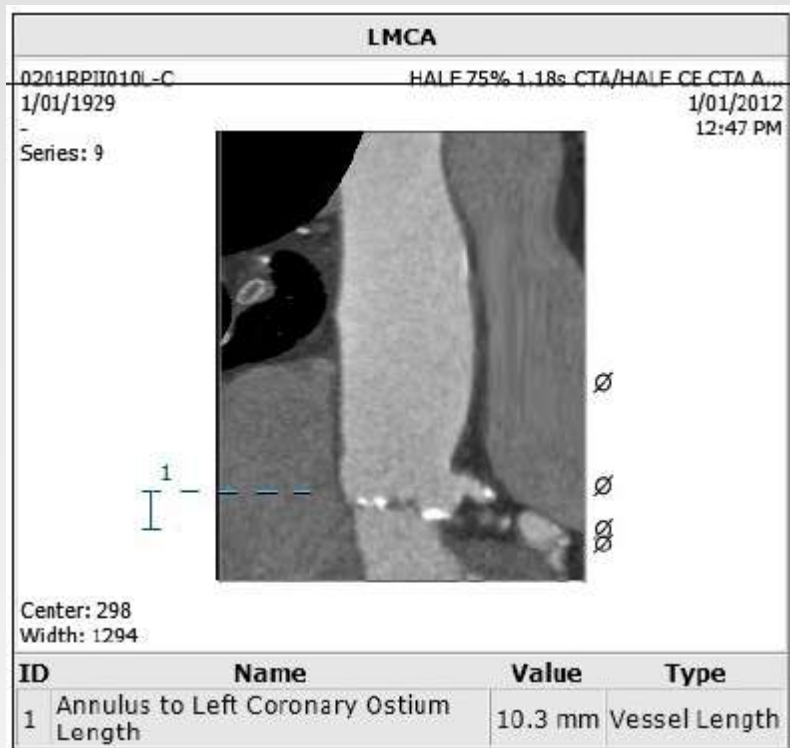
Minimal calcification

Routine Investigations

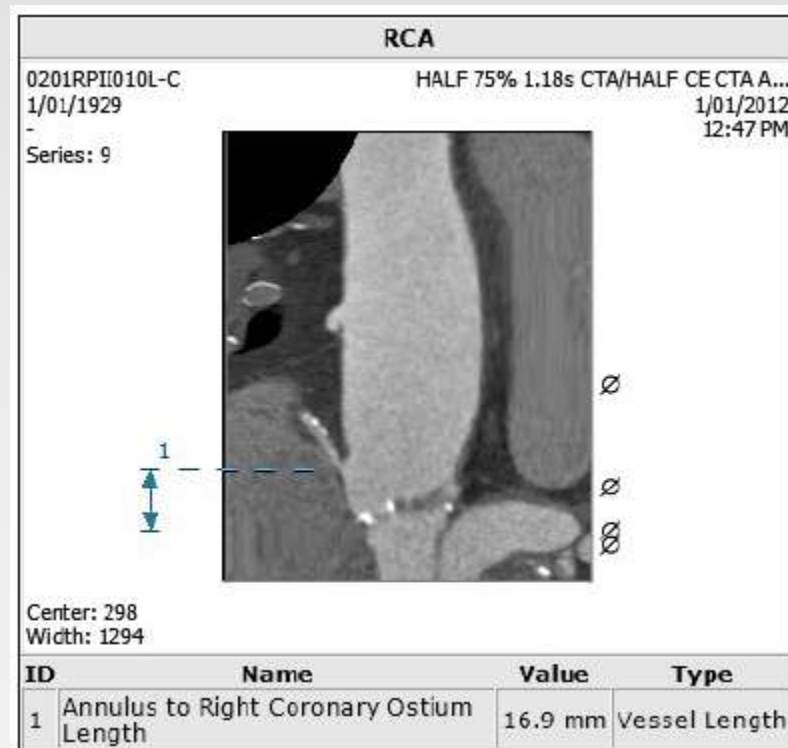
CTA Screening & Measurements

Annulus to Coronary Heights

Height from Annulus to
Lowest edge of Left Coronary
Ostium = 10.3 mm



Height from Annulus to
Lowest edge of Right
Coronary Ostium = 16.9 mm

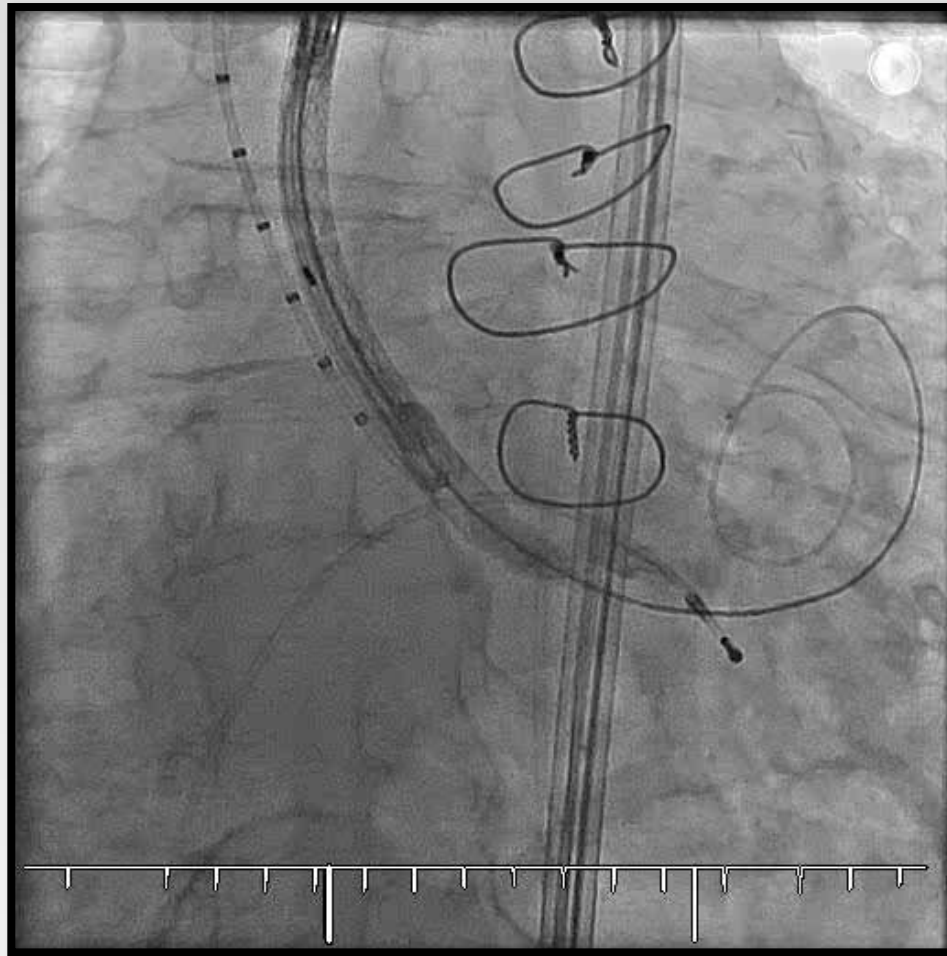


Routine Investigations

CTA Screening & Measurements



23 mm Lotus Deployment



Intuitive Handle Design

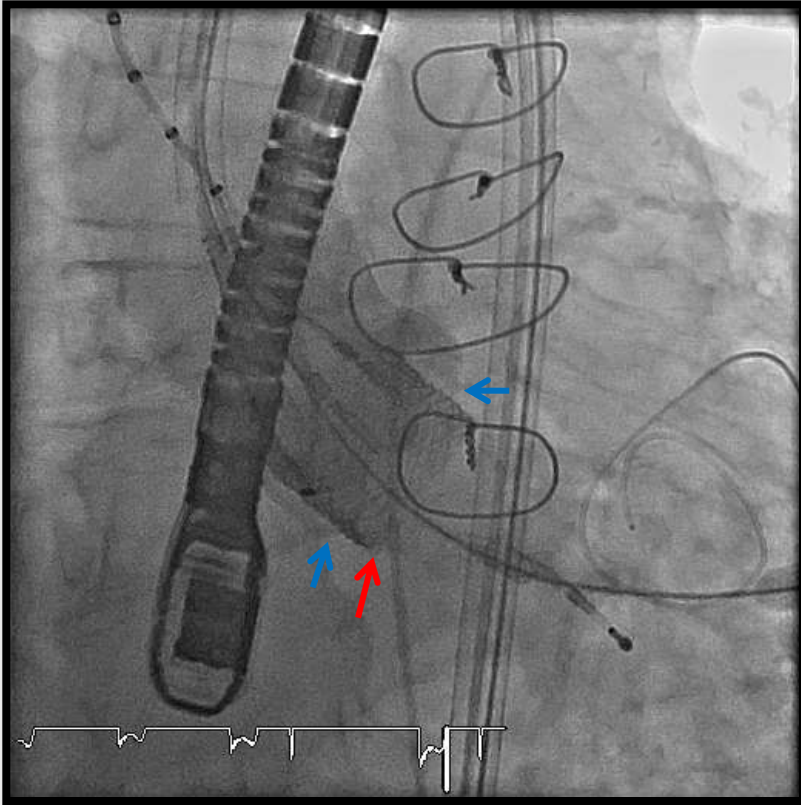
2 Controls

Release

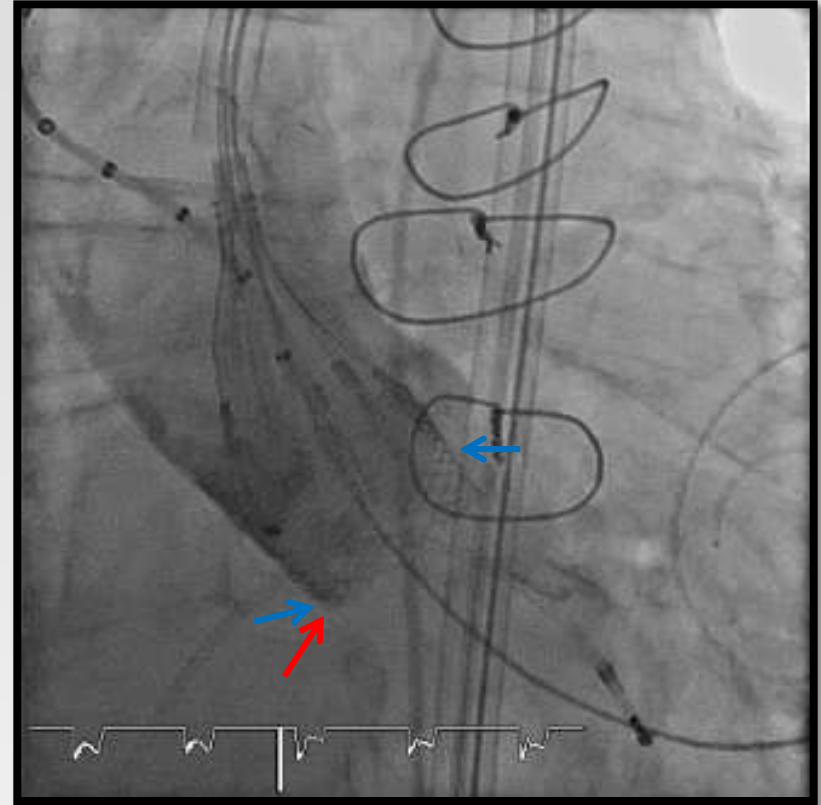
Deploy,
Lock

Unlock,
Retrieve

23 mm Lotus Deployment

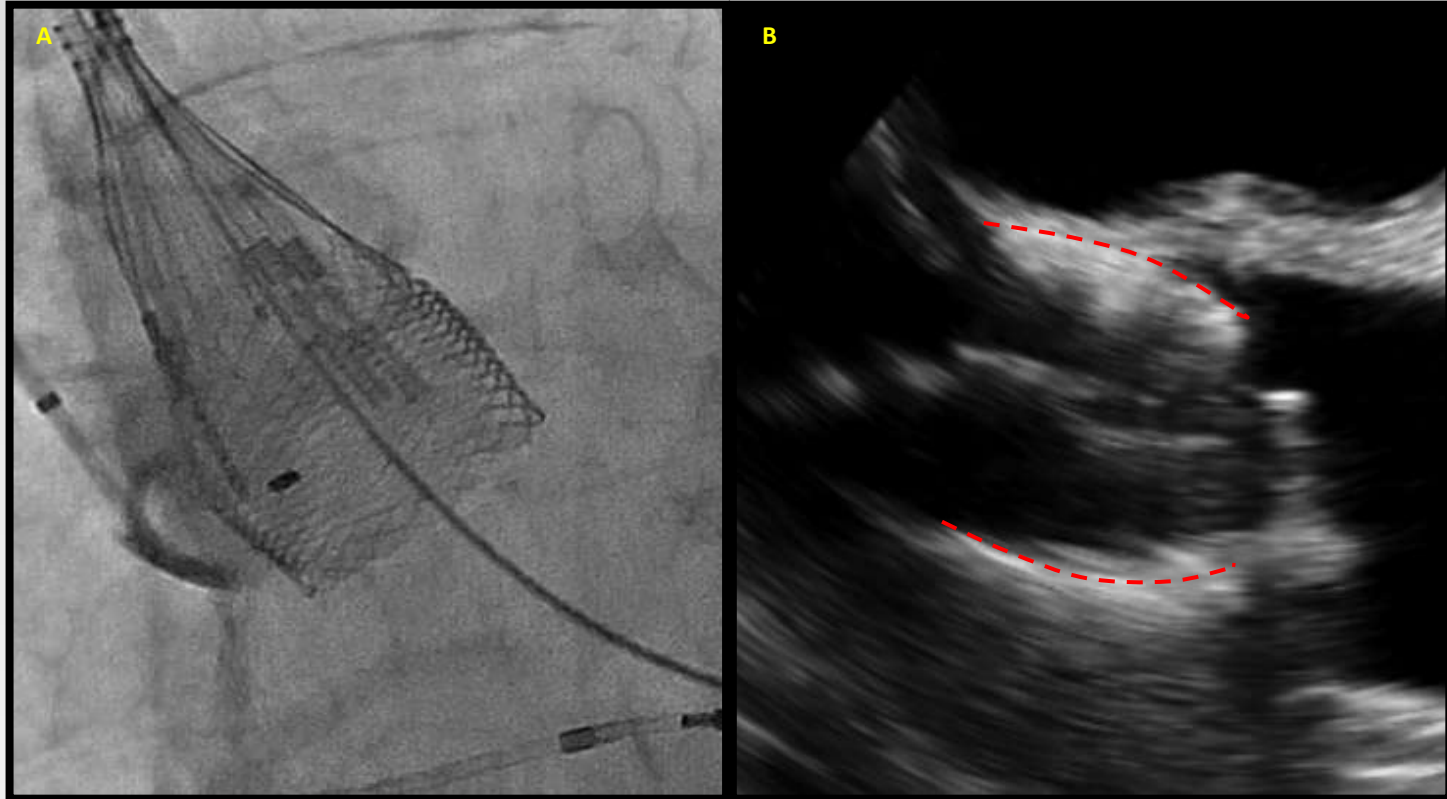


**Despite only trivial AR the
23 mm valve did not form
a waist**



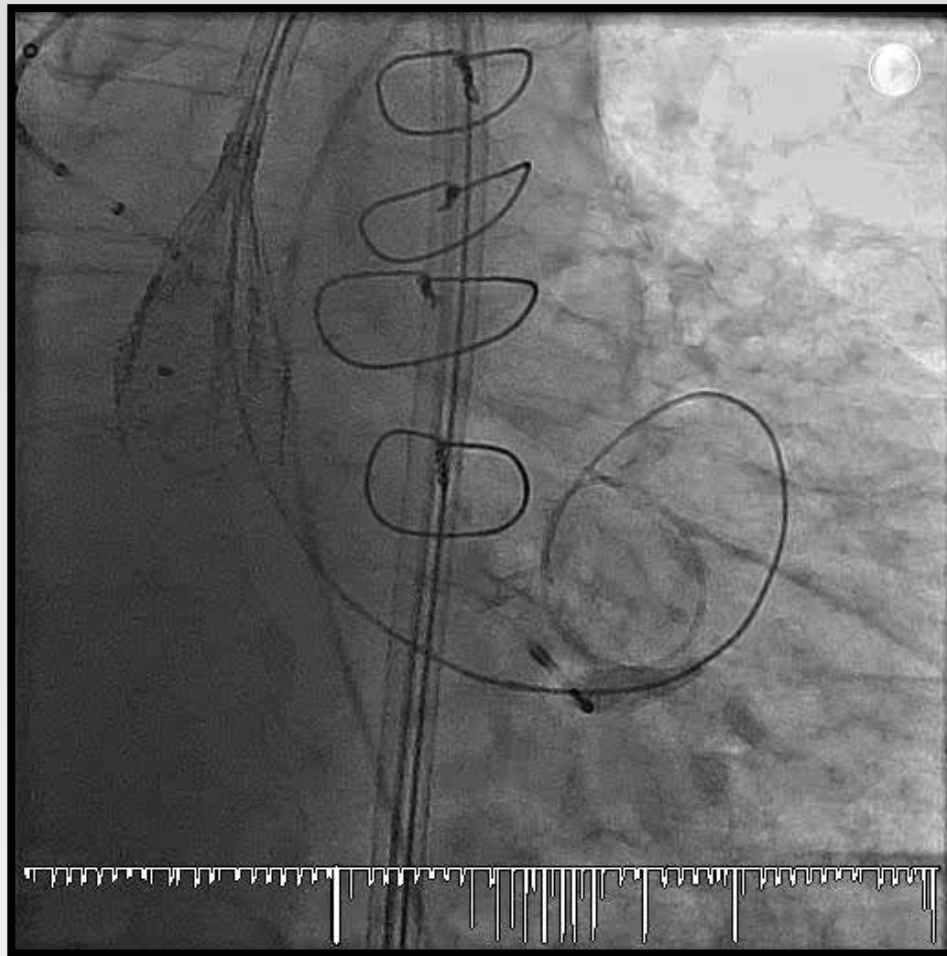
**With minimal tension on the
delivery catheter the valve
dislodged on the non-
coronary side**

TOE Appearance



- **Barrel shaped without any waisting**

Retrieval of the 23 mm Device



Intuitive Handle Design

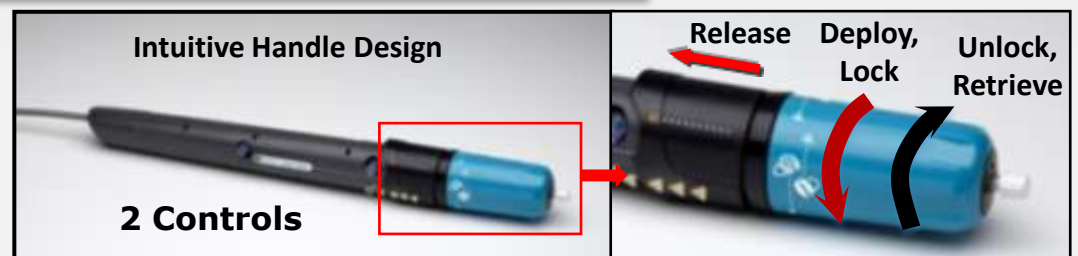
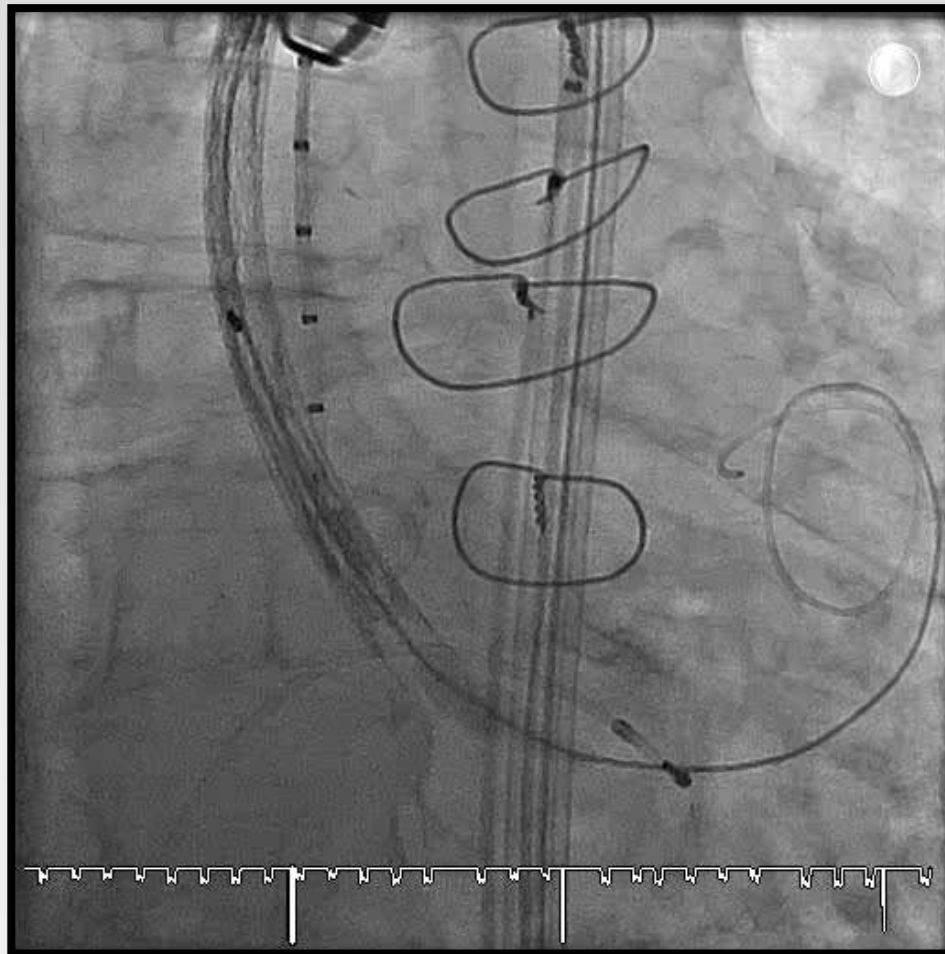
2 Controls

Release

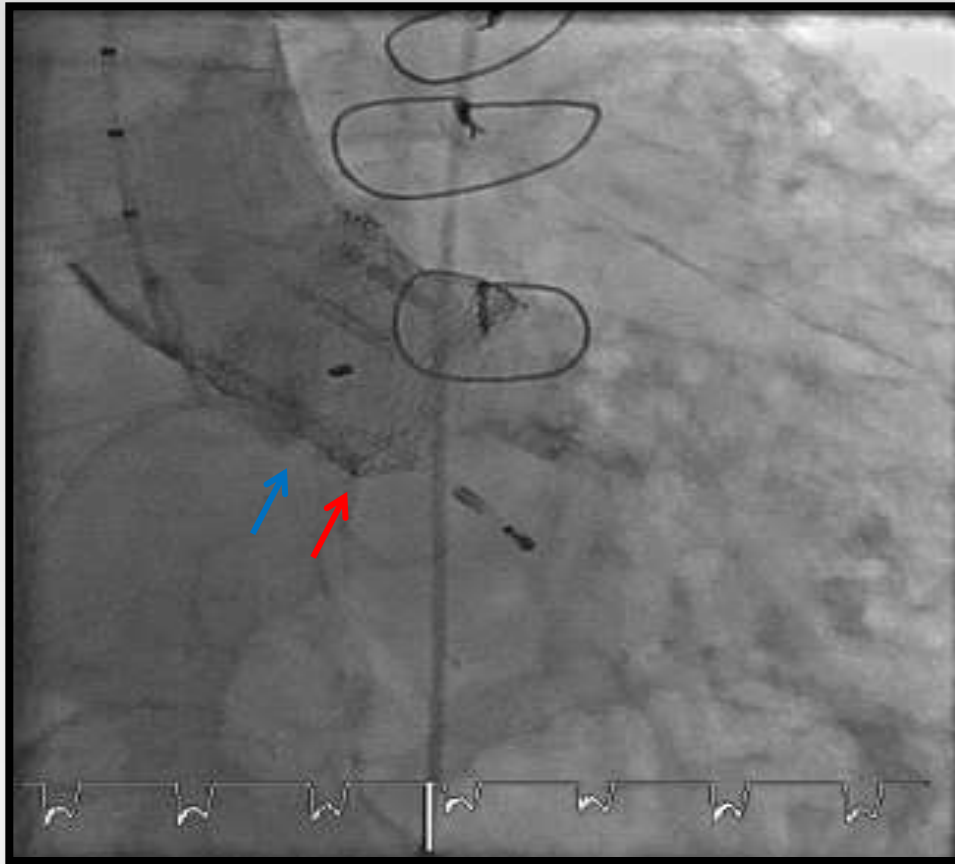
Deploy,
Lock

Unlock,
Retrieve

27 mm Lotus Deployment

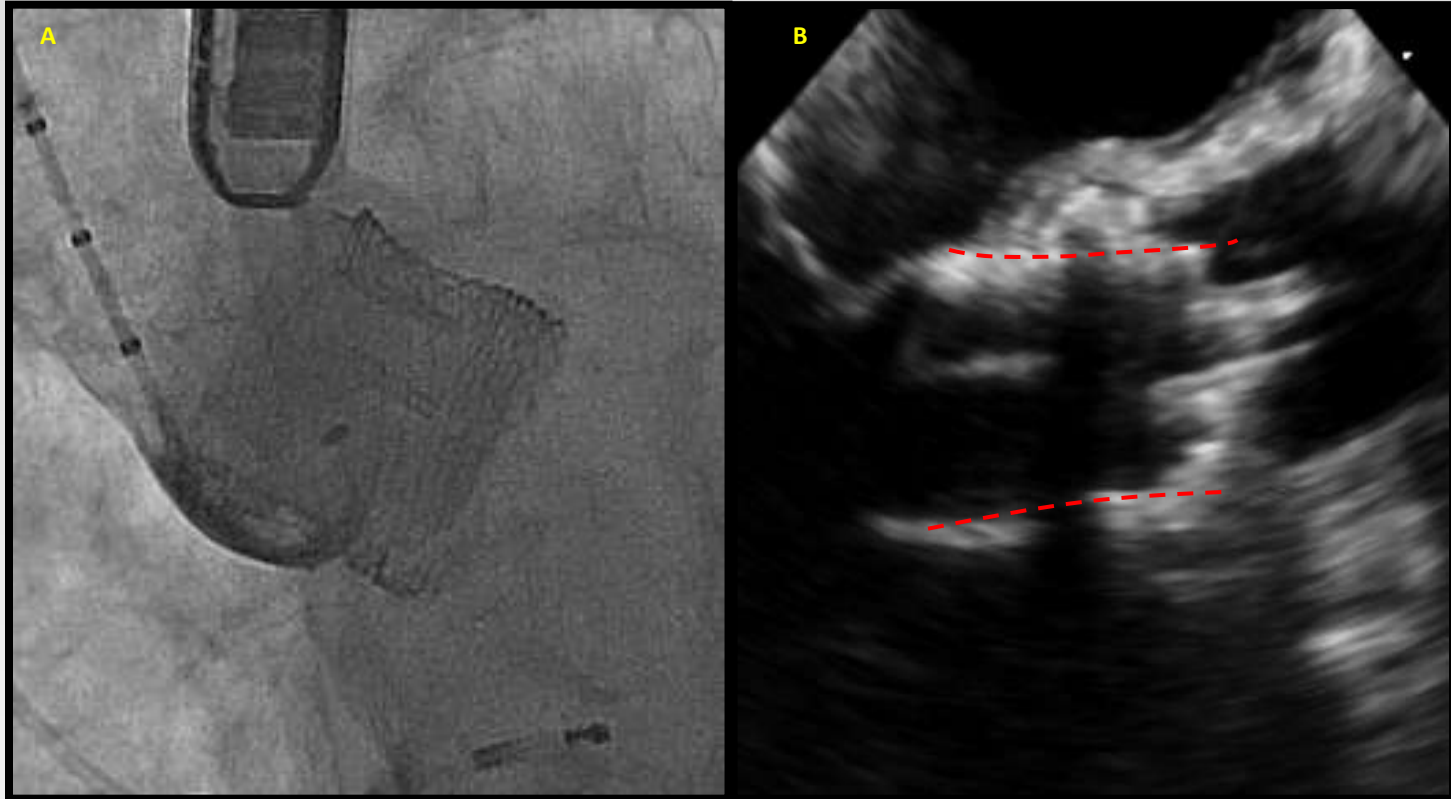


27mm Lotus Final Position



- Successful placement of a 27 mm SADRA Lotus device
- Slight “waist” with no AR

TOE Appearance



- **Mild waist at mid frame**

Take Home Message

- Annular measurements alone may not predict or guarantee valve stability especially if there is minimal annular or leaflet calcification
- Greater appreciation of the overall Aorto-valvular complex three dimensionally including distribution, burden and patterns of calcification necessary
- Valve specific sizing algorithms
- The Lotus TAVI prosthesis facilitates easy repositioning, full retrieval and change of device size if required