

TAVR at the Basics: Step-by-Step Streaming Procedure

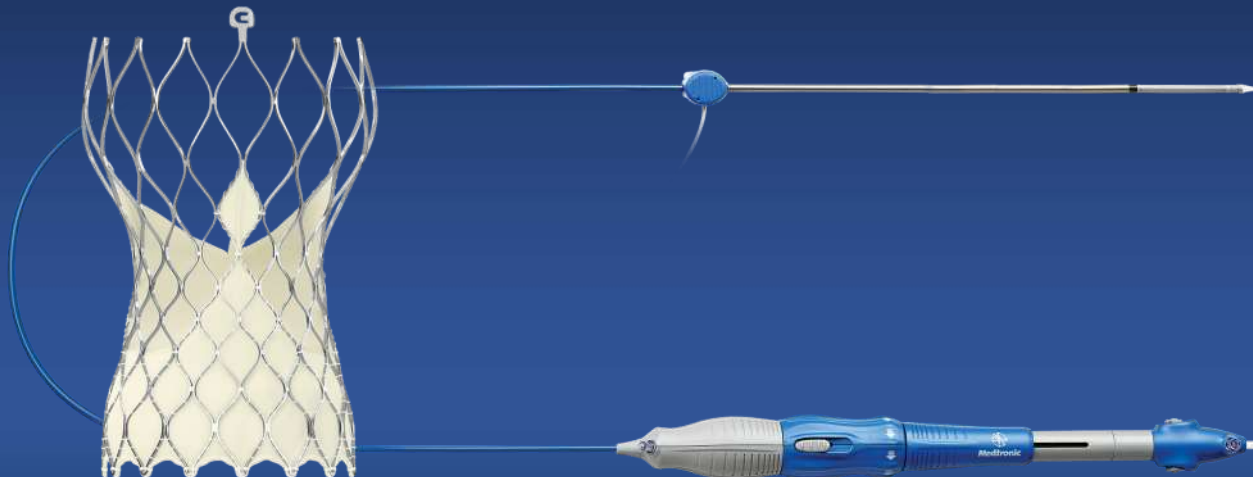
EVOLUT R

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Medicine, Seoul, Korea.

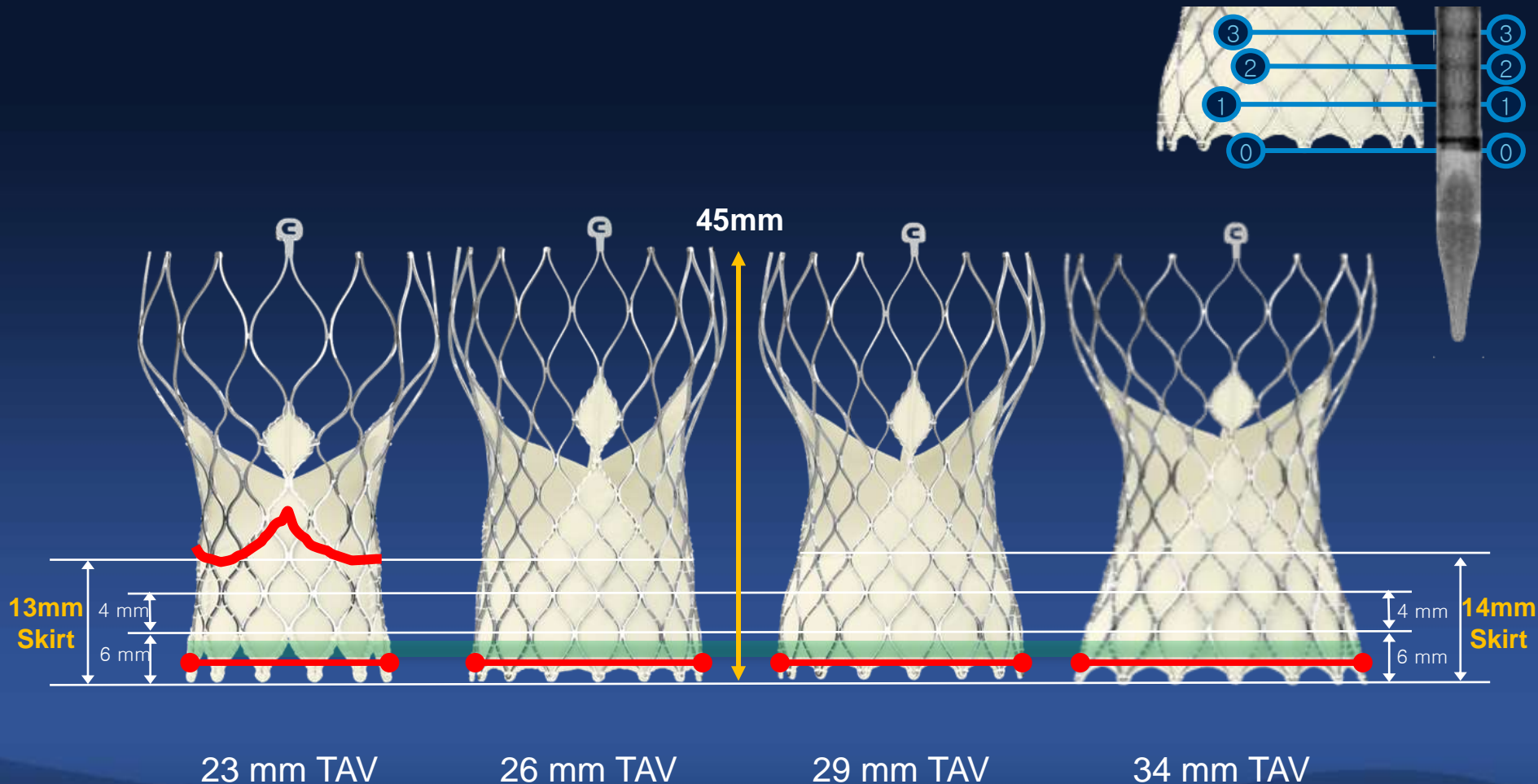
EVOLUT R

- **SUPRA ANNULAR VALVE DESIGN**
 - Maximizes leaflet coaptation
 - Promotes single digit gradients and large EOAs
- **PORCINE PERICARDIAL TISSUE**
 - Thin for low profile delivery
 - Strength and pliability for durability
- **SELF-EXPANDING FRAME**
 - Conforms and seals to the annulus
 - The foundation for recapturability
- 4 Transcatheter aortic valves (23, 26, 29, and 34 mm)
- 2 Delivery catheter systems (14 and 16 Fr equivalent)
- 3 Loading systems (23, 26/29, and 34 mm)






Dimension and Skirt Height

Target implant depth is **3 – 5 mm** for all valve sizes

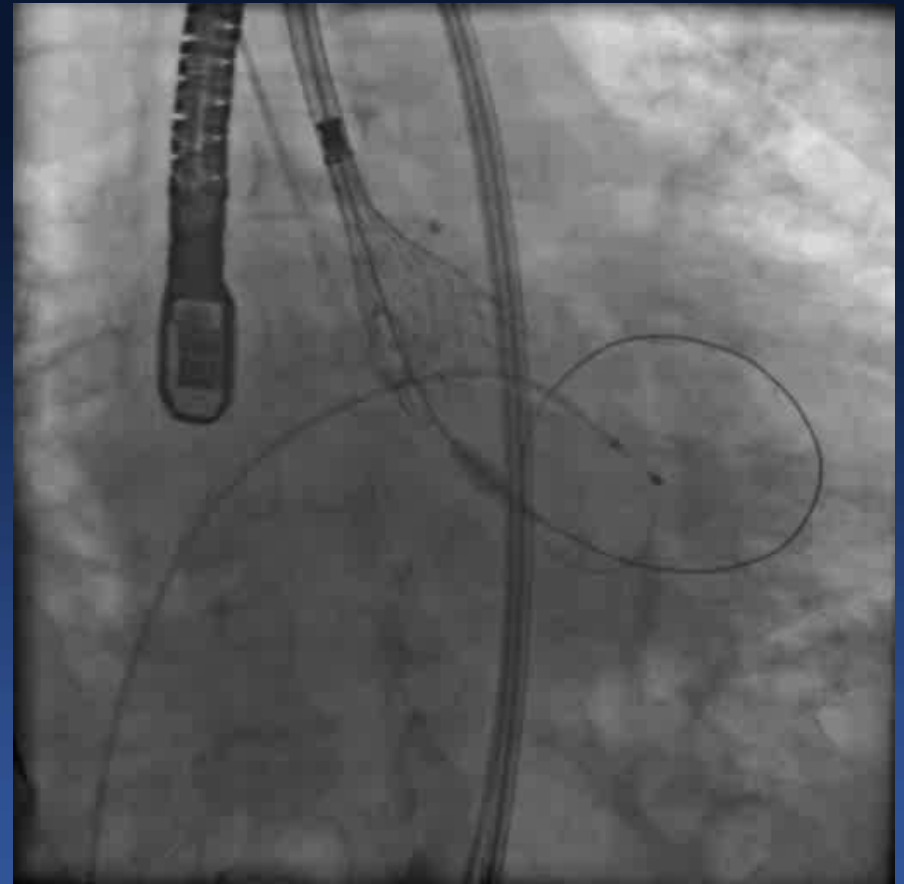
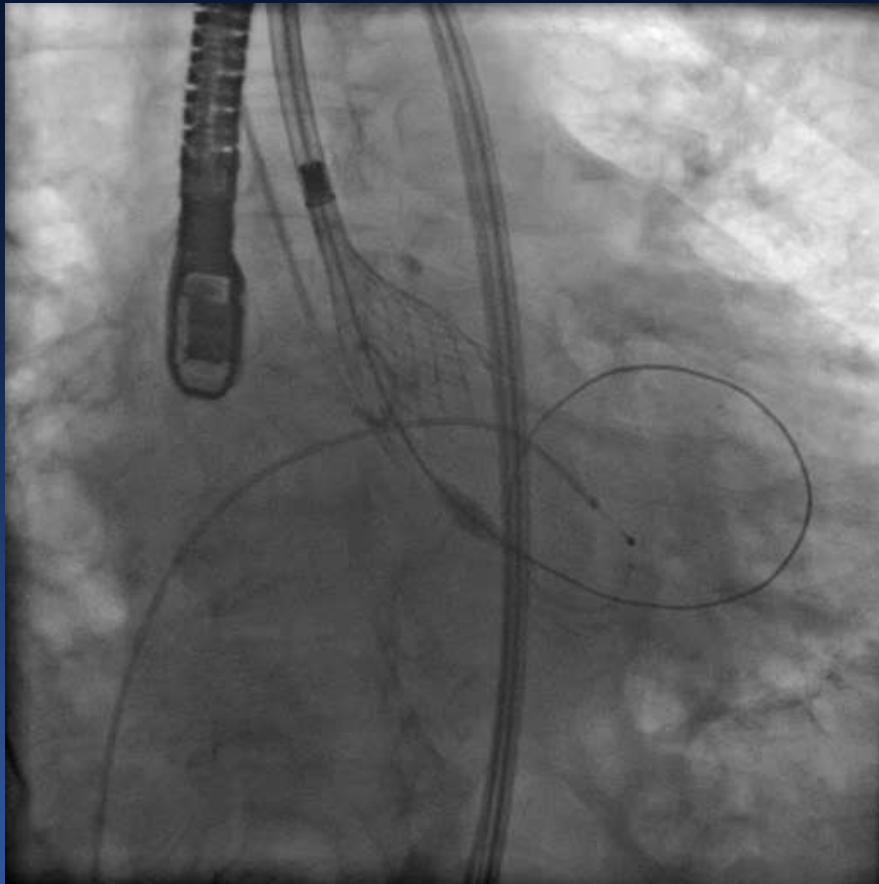


Device Selection

>10% Perimeter Oversize

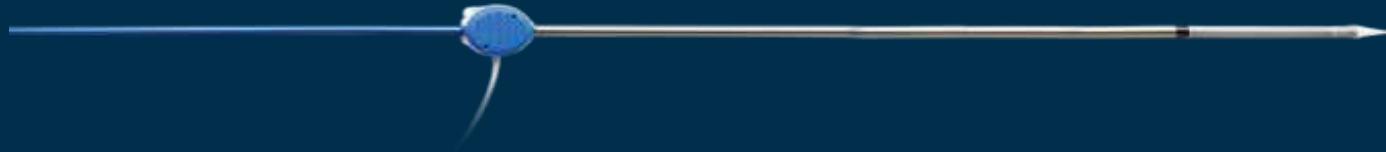
Valve Size Selection	CoreValve® Evolut® R Bioprosthesis		
			
Size	23 mm	26 mm	29 mm
Annulus Diameter	18-20 mm	20-23 mm	23-26 mm
Annulus Perimeter†	56.5-62.8 mm	62.8-72.3 mm	72.3-81.7 mm
Sinus of Valsalva Diameter (Mean)	≥ 25 mm	≥ 27 mm	≥ 29 mm
Sinus of Valsalva Height (Mean)	≥ 15 mm	≥ 15 mm	≥ 15 mm

Recapture



Femoral Access

InLine Sheath



14/16Fr Equivalent InLine Sheath

18/20 Fr Cook Sheath



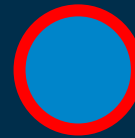
18Fr (OD)

≥ 5.0 mm



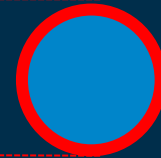
20Fr (OD)

≥ 5.5 mm



22Fr (OD)

≥ 6.0 mm



23Fr (OD)

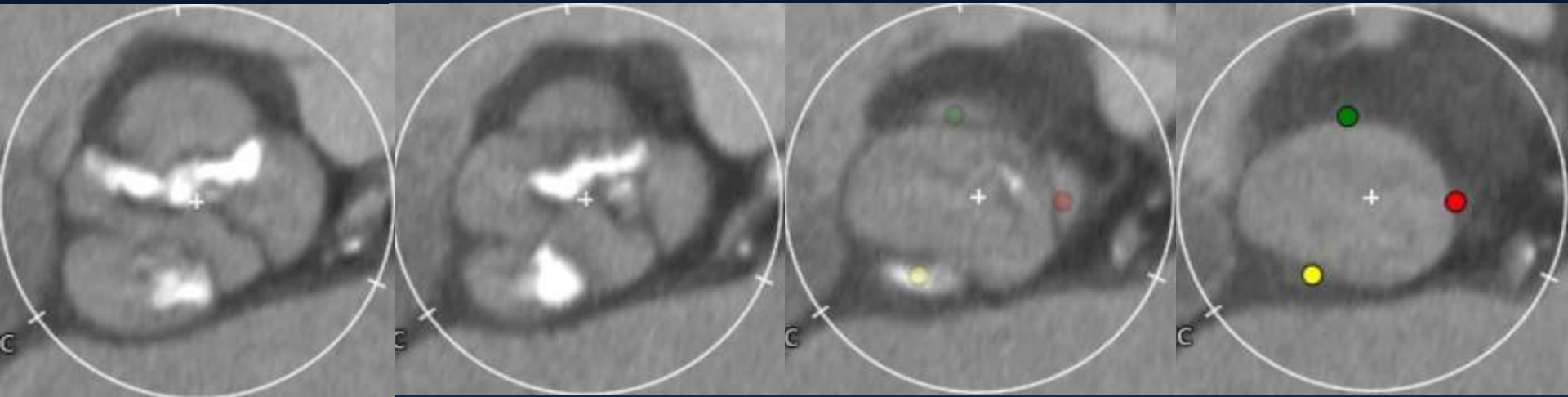
≥ 6.5 mm

Treatable Access Vessel
Diameter

Case 1: **Bicuspid AV and Small Access**

- 67/M, 162.7 cm, 52.3 kg, BMI 19.76, BSA 1.54
- Chief complaints
 - Chest pain (CCS III)
- Medical history
 - DM on insulin, HTN
 - ESRD on HD via AVF (2016.9.12-)
 - ASO s/p PTA (2010.12)
 - 1VD s/p PCI at RCA (2008.1) : Patent (2017.2)
 - s/p Lt.MCA infarction (2015.2), s/p traumatic EDH (2016.11)
 - Hypothyroidism / s/p total gastrectomy (15YA)
- ECG : NSR
- STS score = 9.977 %, Euroscore I = 45.94 %, Euroscore II = 4.60 %

CT findings – Aortic annulus view



Bicuspid AS with L-R fusion

Annulus plane

Aortic Annulus parameters	
Annulus short diameter	20.2 mm
Annulus long diameter	28.0 mm
Annulus mean diameter	24.1 mm
Annulus area	452 mm²
Annulus area-driven diameter	24.0 mm
Annulus perimeter	77.6 mm
Annulus perimeter-driven diameter	24.7 mm

CT findings – Aortic Valve Complex



Sinus of Valsalva



STJ

Sinus of Valsalva		STJ	
Area	838 mm²	Area	565 mm²
Sinus / Annulus Area Ratio	1.85	STJ/ Annulus Area Ratio	1.25
NCC diameter	34.9 mm	Mean diameter	26.9 mm
LCC diameter	31.7 mm		
RCC diameter	29.7 mm		

Mean Sinus / Annulus Area Ratio **1.83 ± 0.27**

Mean STJ / Annulus Area Ratio **1.49 ± 0.29**

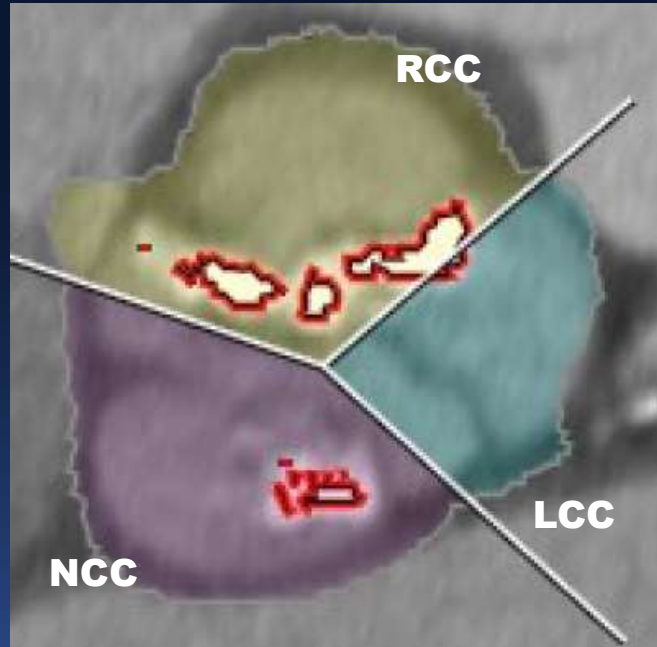
CT findings – Aortic Valve Complex



LVOT

LVOT	
Area	446 mm ²
LVOT / Annulus Area Ratio	0.99
Short diameter	20.0 mm
Long diameter	28.3 mm

CT findings – Aortic Valve Complex



Calcium volume	
NCC	62 mm ³
RCC	267 mm ³
LCC	15 mm ³
Total	343 mm ³

CT findings – Coronary Height



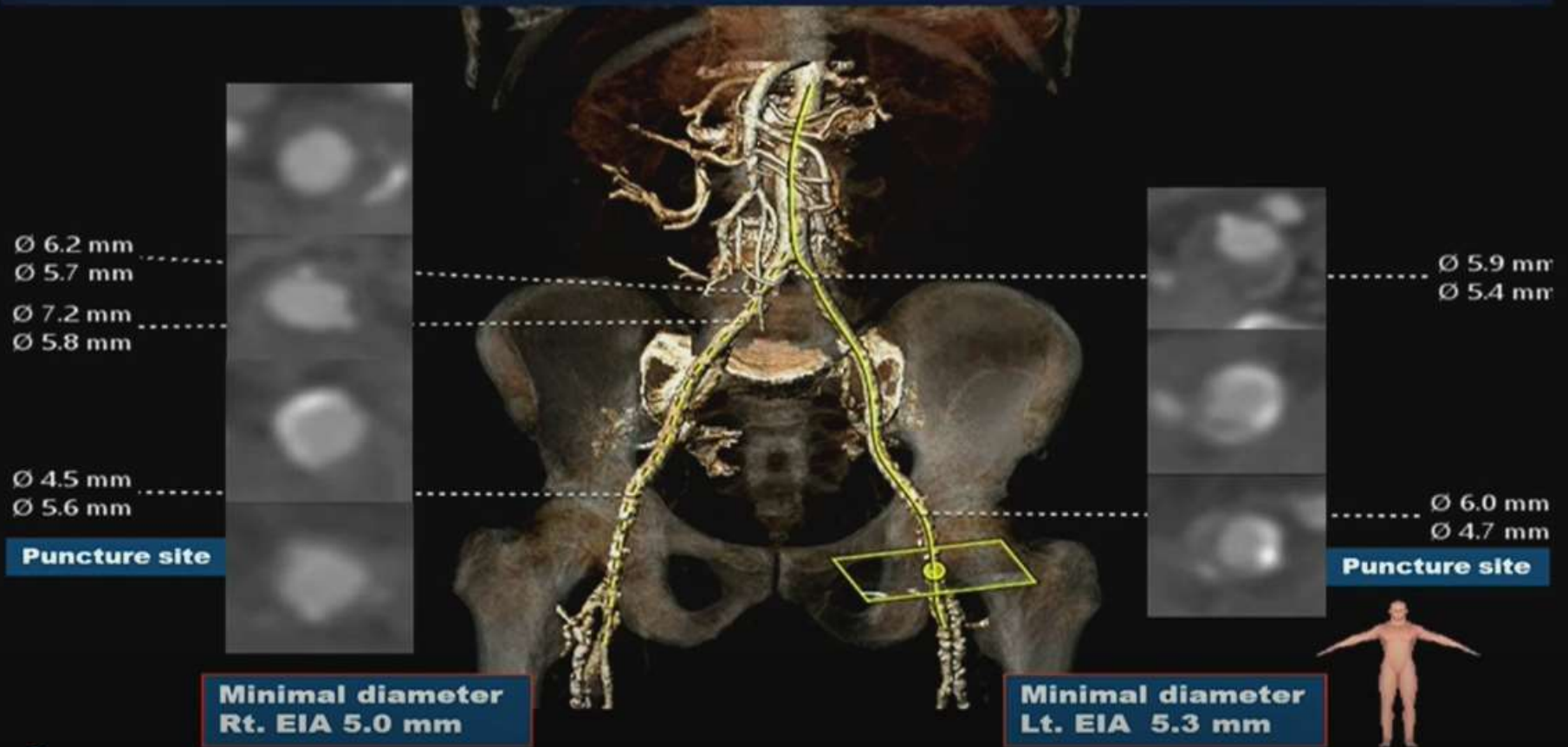
Coronary Height	
LCA	11.4 mm
RCA	18.1 mm

Sizing for Evolut R

Size	Area_oversize (%)	Perimeter_oversize (%)
23	91.9	93.1
24	100.0	97.1
25	108.5	101.2
26	117.4	105.2
27	126.6	109.3
28	136.2	113.3
29	146.1	117.3

Live Case Briefing

CT findings – Ileofofemoral Angio




Procedural Plan

- 1) General Anesthesia
- 2) Rt. Side 14F Sheath for BAV
- 3) Balloon Sizing With 18mm Balloon
- 4) Valve Delivery Using InLine Sheath

Place Reference Pigtail Catheter In NCC

Live Case Briefing

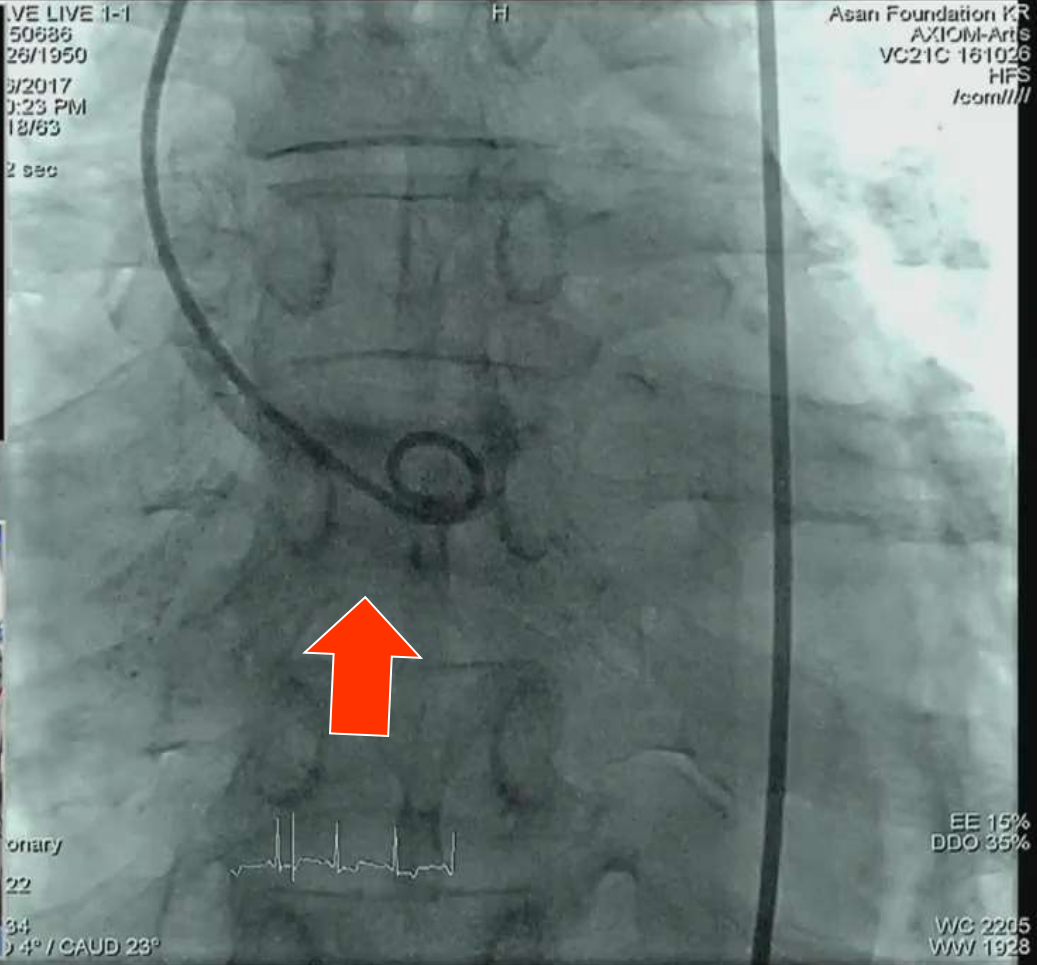


Bicuspid AS with L-R fusion **Annulus plane**

Aortic Annulus parameters	
Annulus short diameter	20.2 mm
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Annulus perimeter	77.6 mm
Annulus perimeter-driven diameter	24.7 mm

VE LIVE 1-1
50686
26/1950
3/2017
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18/63
2 sec


Asan Foundation KR
AXIOM-ARTIS
VC21C-161026
HFS
Ison/III



EE 15%
DDO 35%

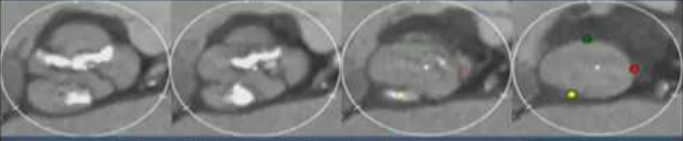
WC 2205
WW 1928

onary
22
34
D 4° / CAUD 23°



Crossing the Aortic Valve


Live Case Briefing



Bicuspid AS with L-R fusion **Annulus plane**

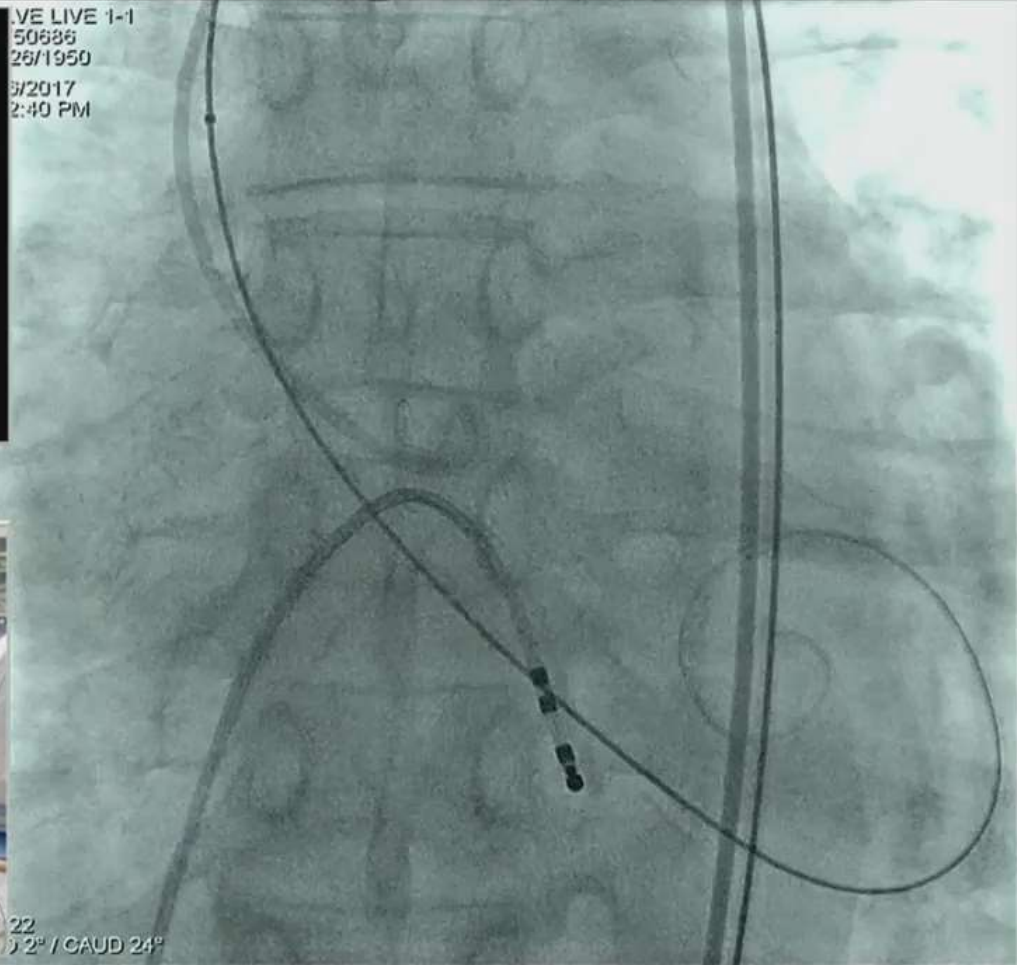
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8/2017
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22
3° / CAUD 23°

Balloon Aortic Valvuloplasty



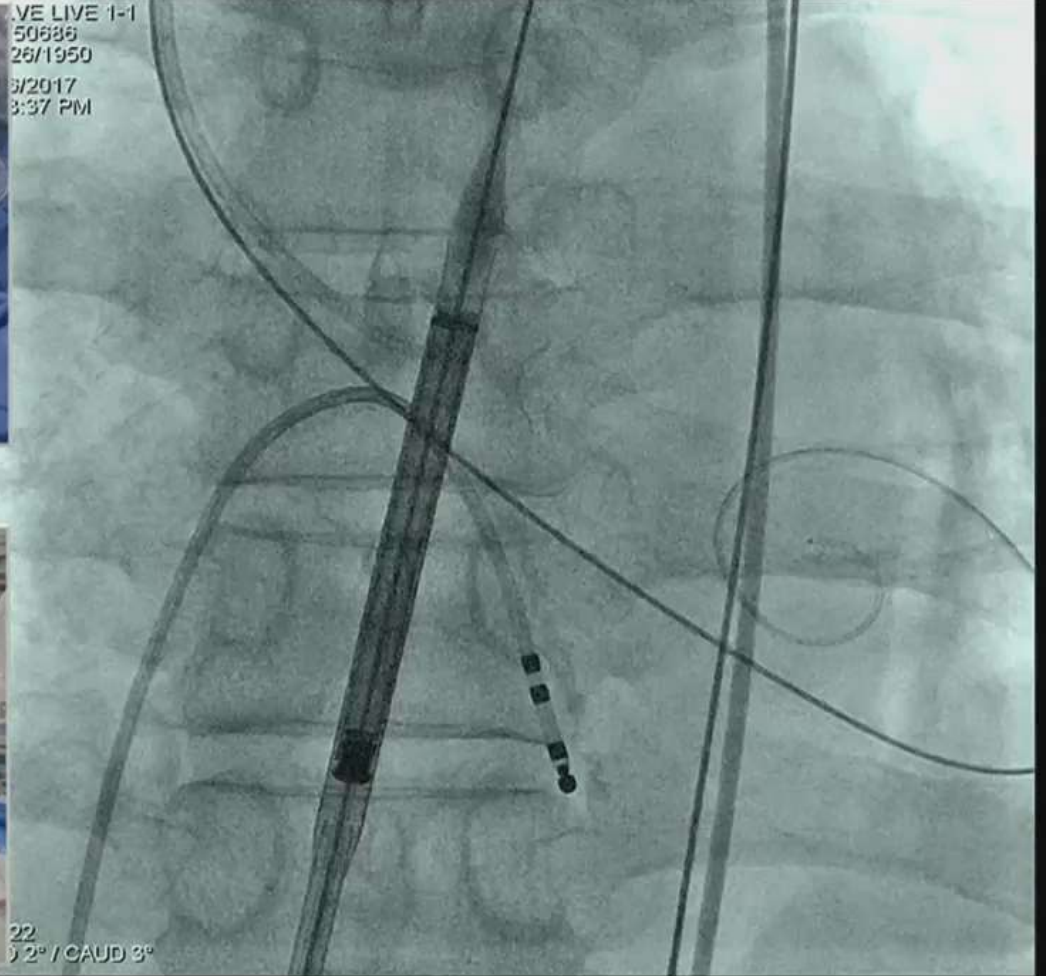
Fluoro Load Inspection



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28/1950
3/2017
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22
5 2° / CAUD 3°



Fluoro Load Inspection: Paddles Properly Seated



Use the following recommendations to ensure an accurate load assessment:

Imaging Projection:

- AP projection
- High magnification
- Low resolution to locate paddles
- High resolution (30 FPS) for load check

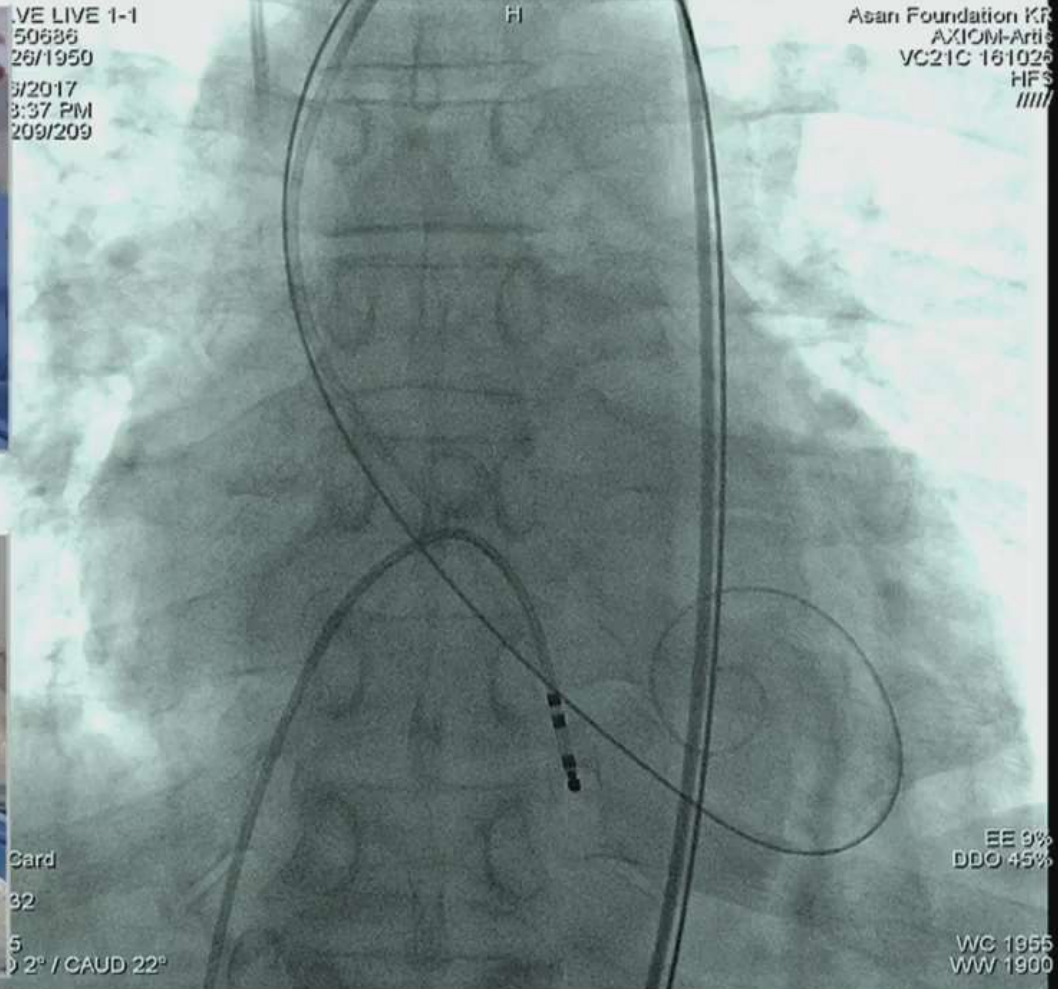
Delivery System:

- Flush ports at 3:00/9:00
- Capsule flat on table or patient
- Rotate delivery system a few degrees in either direction until both paddles are visible simultaneously

Introduce the Delivery System and Position System Within Native Annulus



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209/209



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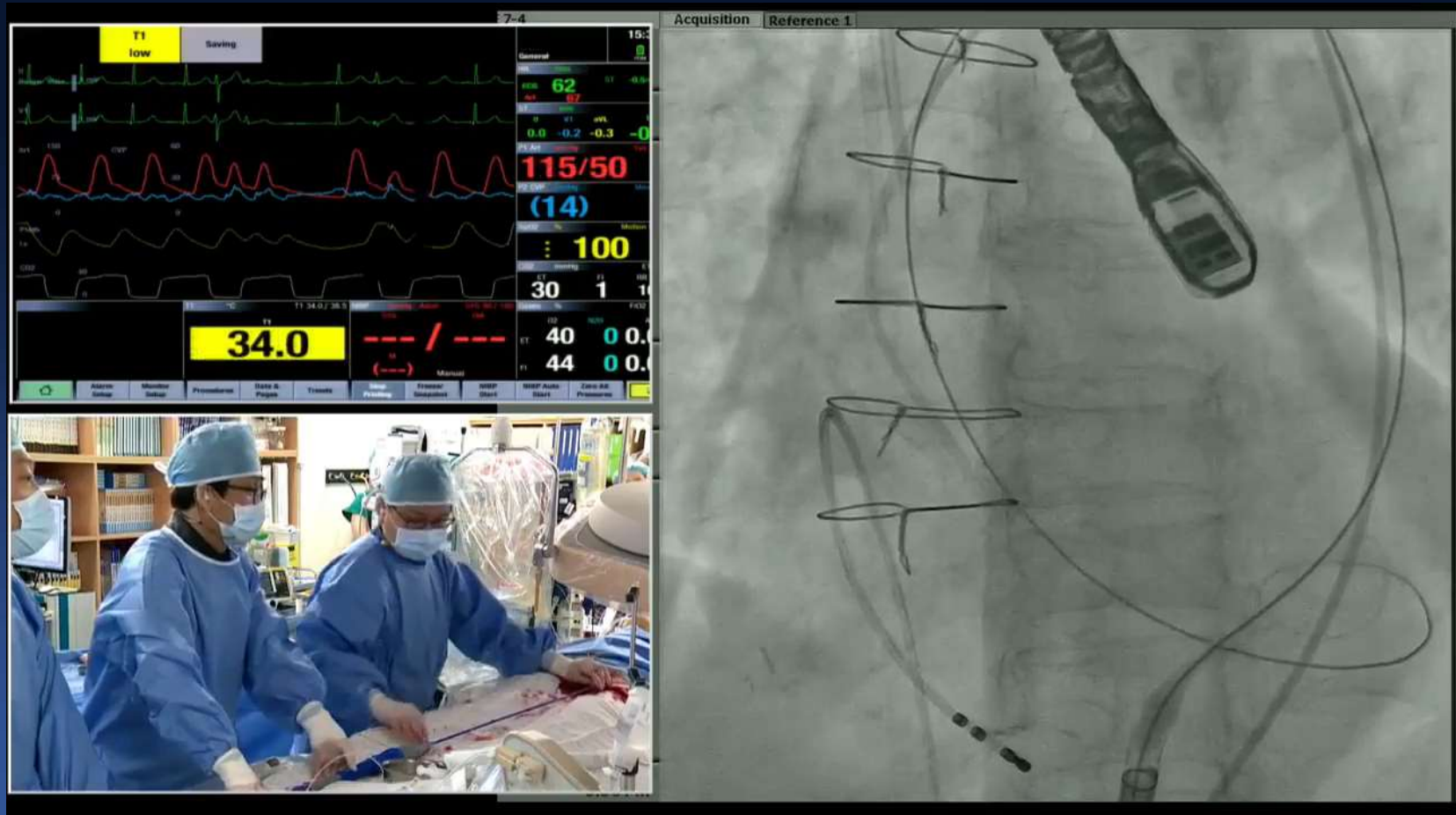
Card
32
5
D 2° / CAUD 22°

EE 9%
DDO 45%

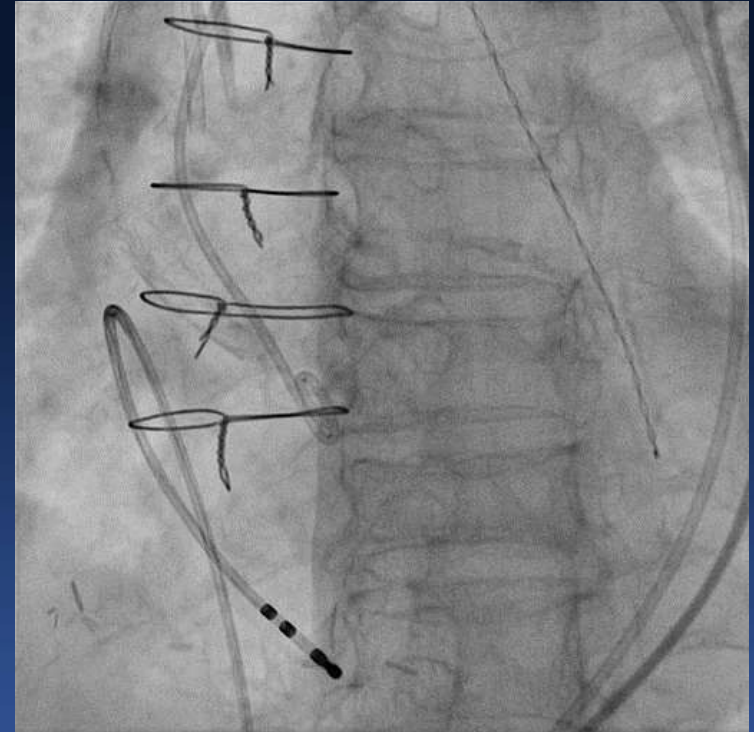
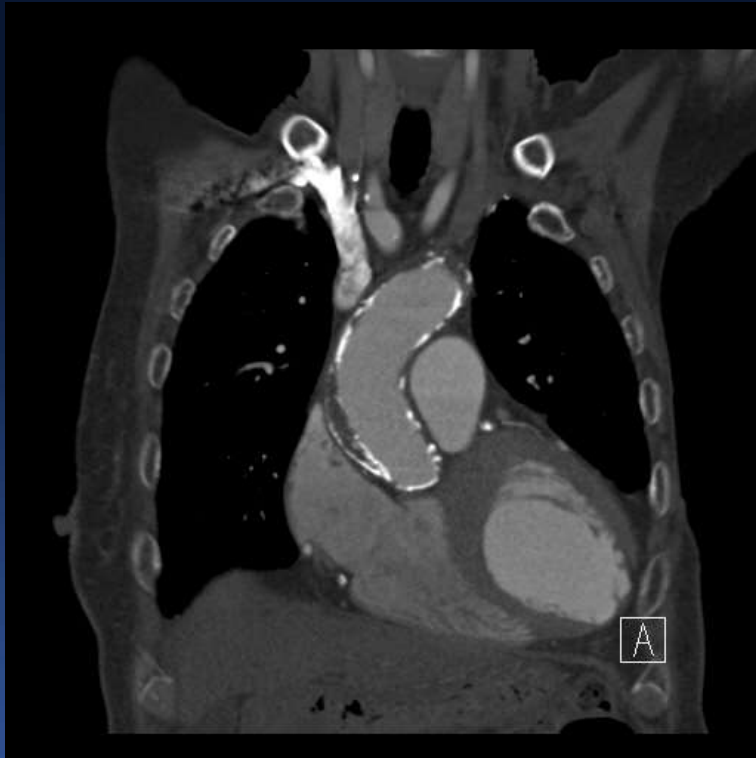
WC 1955
WW 1900



Hard to Deliver the System



Bone-Like Aorta



Stiffer Guidewire: Lunderquist

The image is a composite of four panels. The top-left panel shows a medical monitor with multiple waveforms and vital signs. A yellow box highlights 'CVP means high'. The top-right panel is a fluoroscopic image showing a catheter with a guidewire, with text indicating 'Acquisition Reference 1', 'LAO 16°', and 'CAUD 14°'. The bottom-left panel shows two medical professionals in blue scrubs and masks in a catheterization lab. The bottom-right panel shows two men sitting at a table with microphones, likely a panel discussion.

CVP means high

75
102/52
(23)
100
31 0
41 0.0
44 0.0

Acquisition Reference 1
LAO 16°
CAUD 14°

TCTAP 2016

Stakeman
Muller

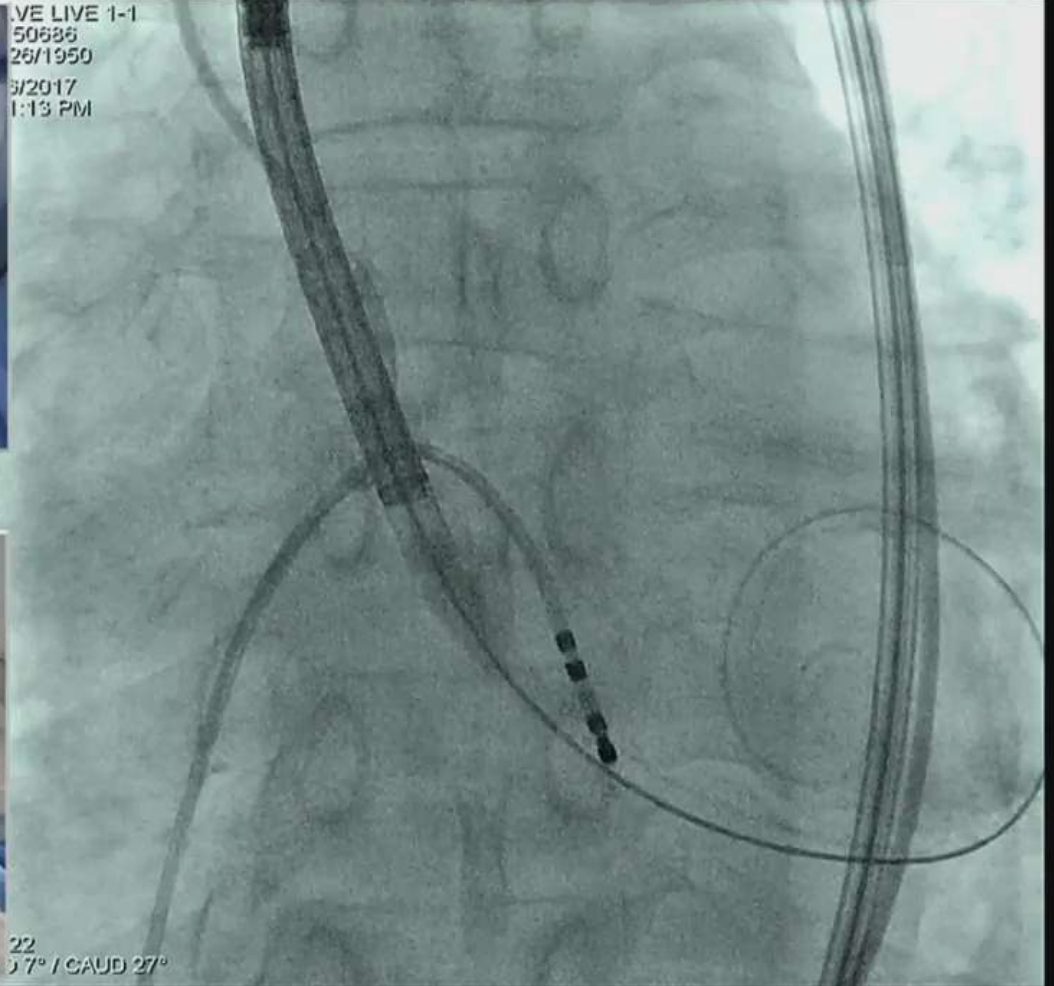
Deployment



LIVE LIVE 1-1
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22
57° / CAUD 27°



Case 2: CAD and Low Coronary Height

- 91/M , 168.2 cm, 68.9 kg, BMI 24.3
- Chief complaints
 - DOE (NYHA class II?)
- Medical history
 - Hypertension
 - h/o stomach cancer

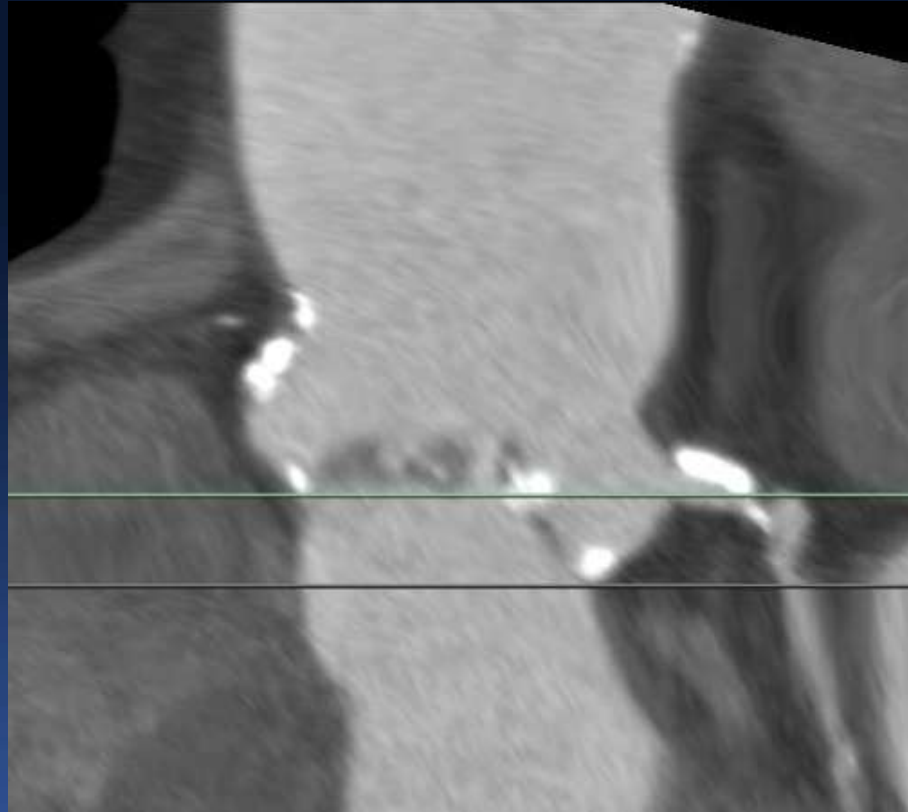
EuroSCORE = 10.14%, EuroSCORE II = 3.11%

STS score = 5.115%

Significant CAD



Low Coronary Height

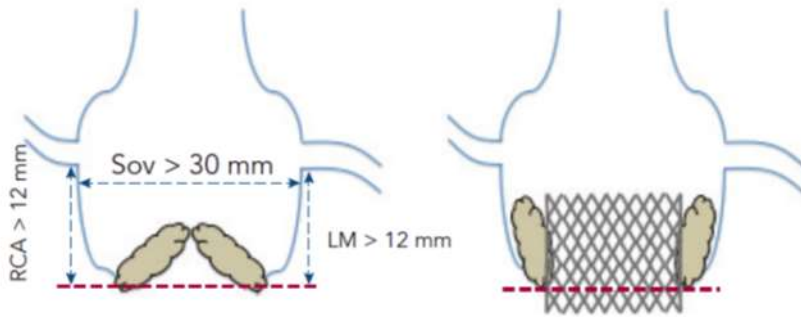


LCA Height 7.8mm

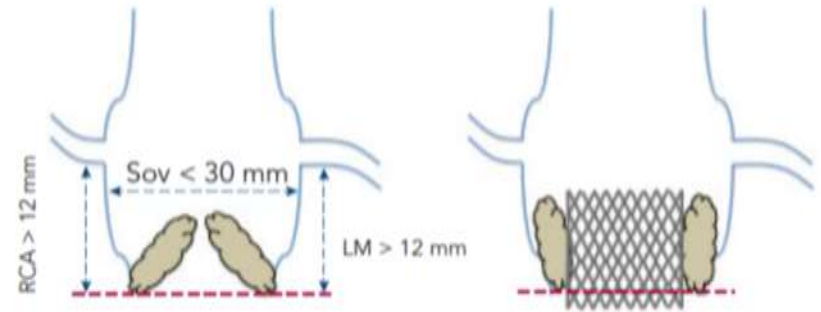
SOV 33 mm

Aortic Root Scenarios For Coronary Obstruction

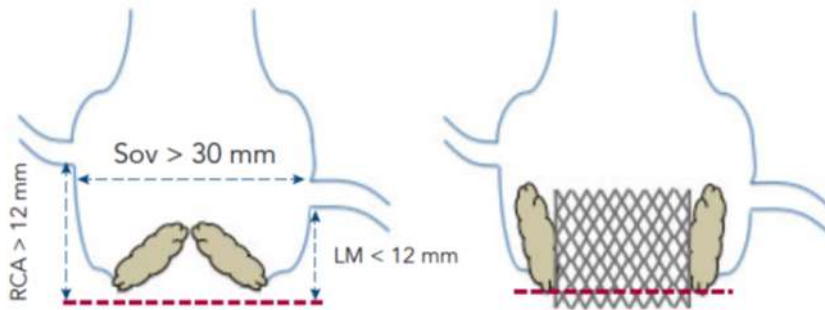
Wide and High



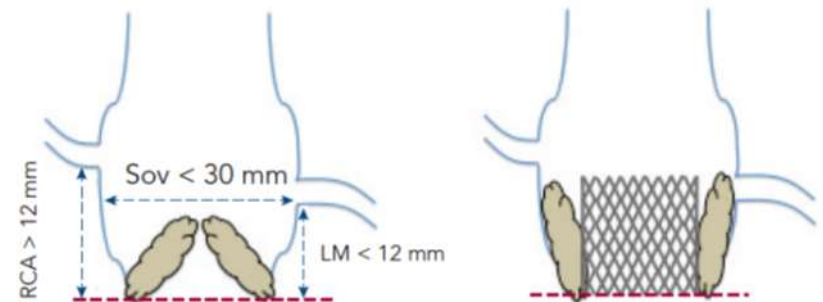
Shallow and High



Wide and Low



Shallow and Low



Low Coronary Height

- Tapered shape of the frame
- If needed, coronary access can be achieved through the struts of the frame
- **Can be completely recaptured in an emergency situation**



Case 2: Low Coronary Height

CASE 1-2 Acquisition Reference 1

Live Case Briefing

Non-invasive Studies

- Echocardiography : LVEF 62; Peak / Mean PG 120 / 74 mmHg; AVA 0.47 cm²; annulus 22.8 mm; no significant AR or MR
- Treadmill test : none
- Thallium SPECT : none
- Other(s) : none

Cardiac Catheterization Findings

The left coronary angiogram showed significant stenosis of the left main.
The right coronary angiogram showed significant stenosis of the proximal RCA.

