

How to Assess Aortic Valve for TAVI by MDCT and MRI

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Professor of Medicine

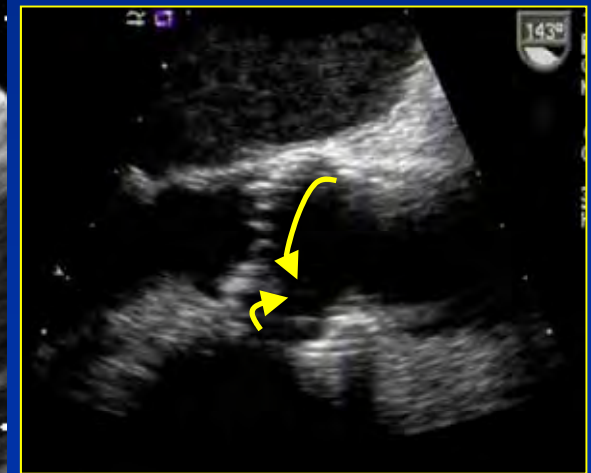
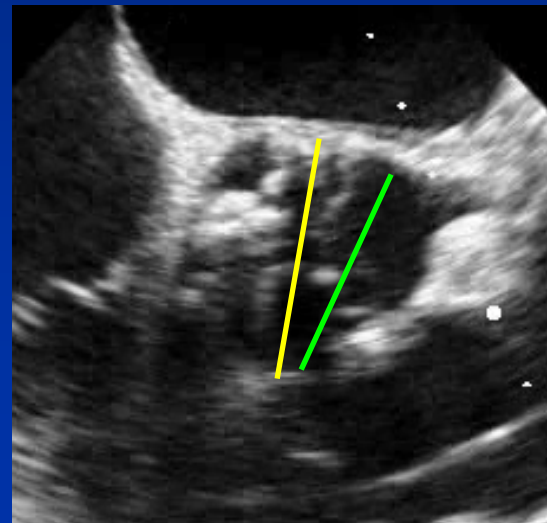
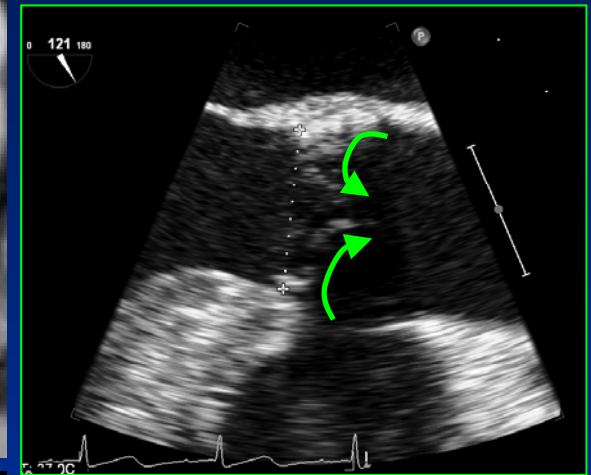
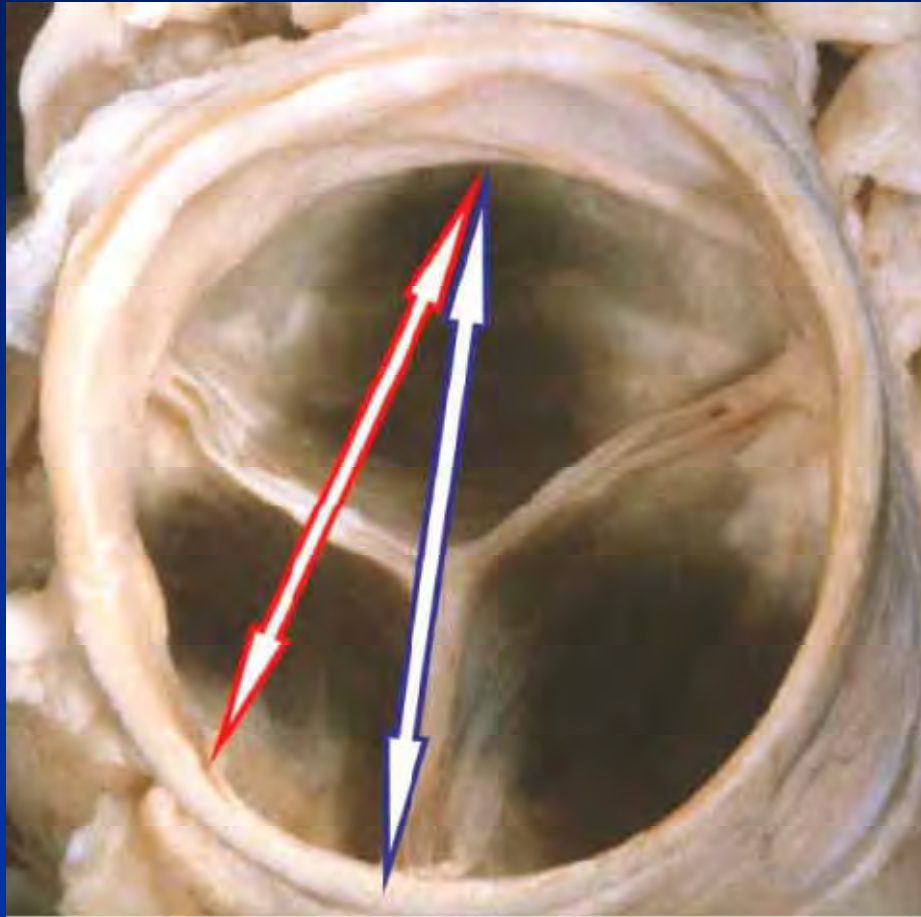
Director, Sones Cardiac Catheterization Laboratories

Cleveland Clinic

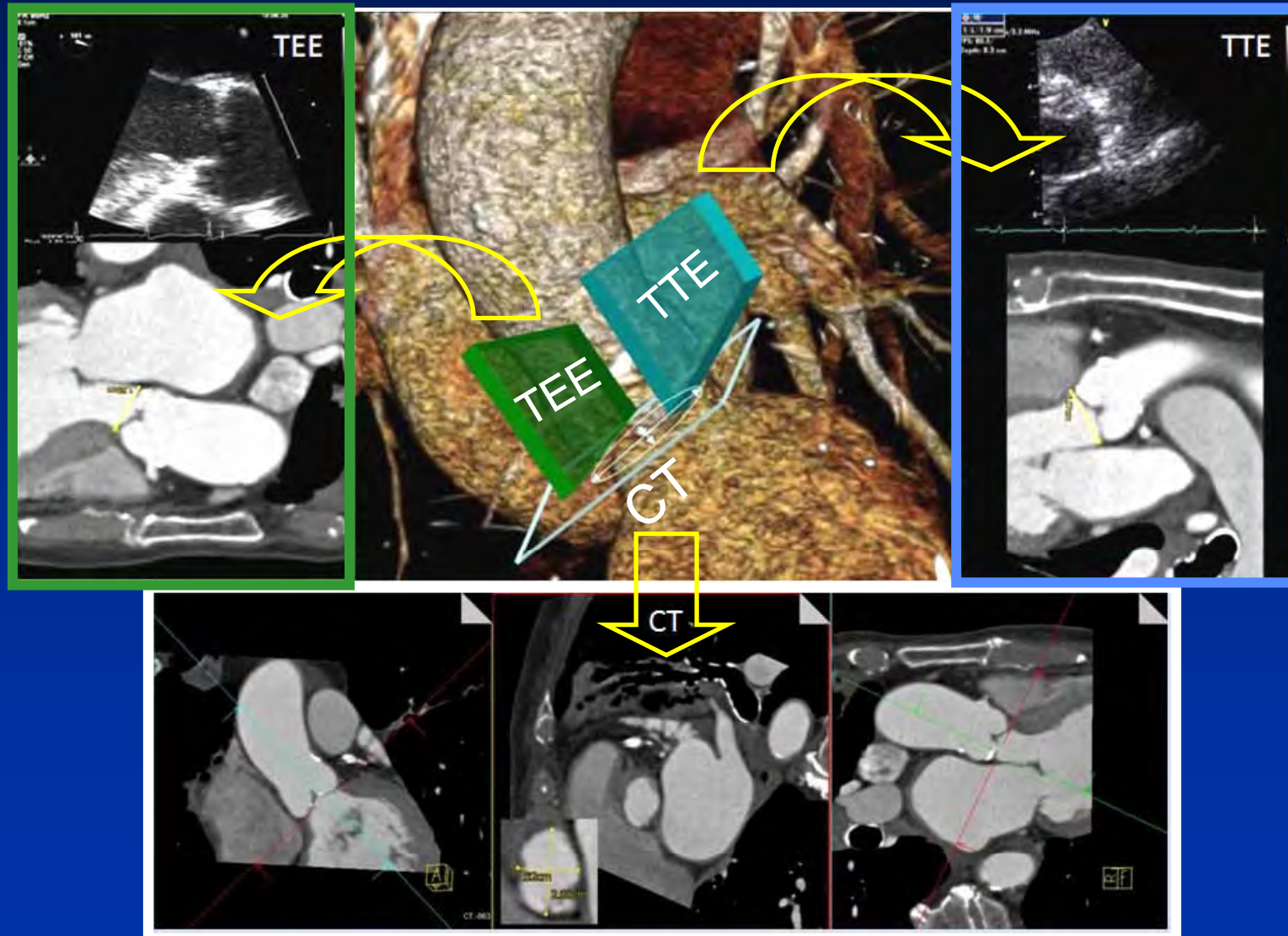
Goals of Screening Imaging Work-up

- Determine size of anulus
- Assess Aortic root
 - ST junction
 - LMT and RCA
 - Mitral anular calcification
 - Aortic and LV angle
- Determine access

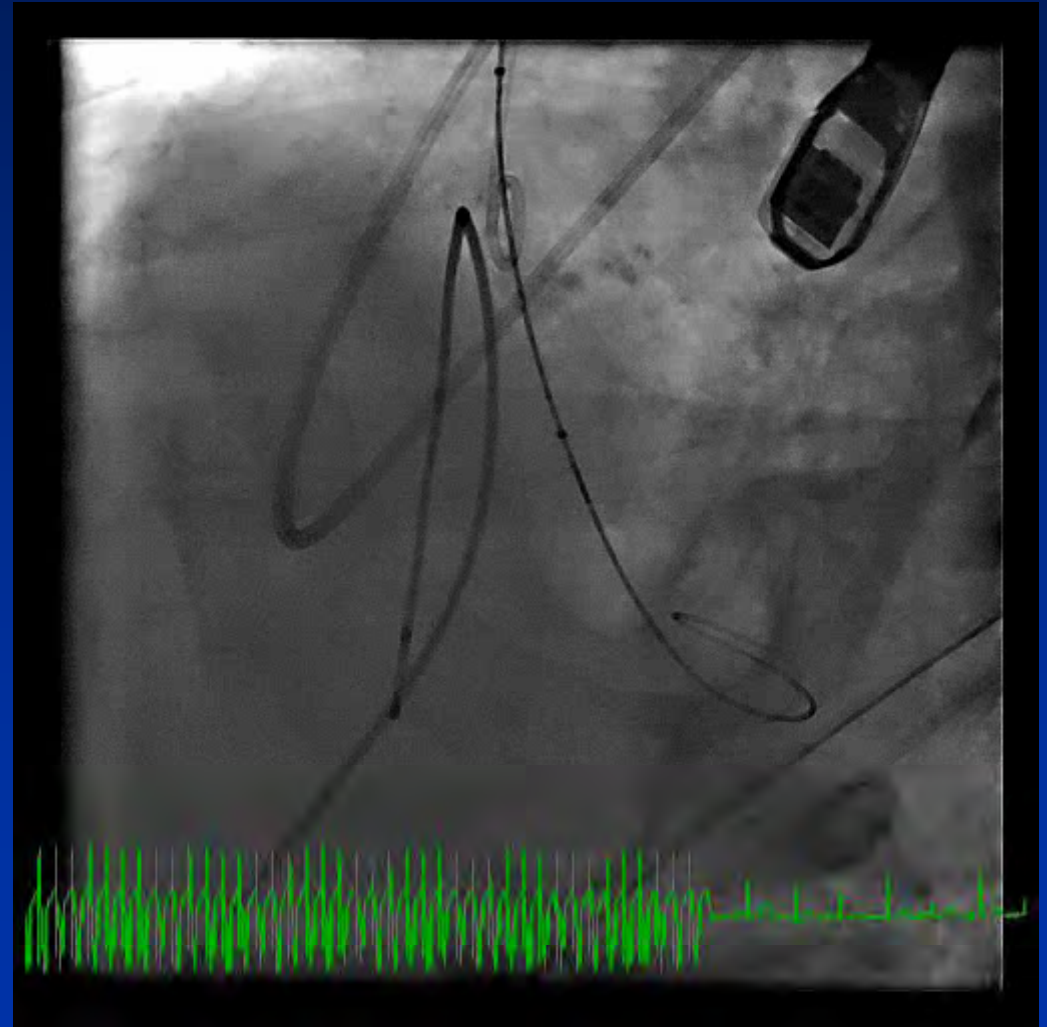
Correct Measurement by Echo



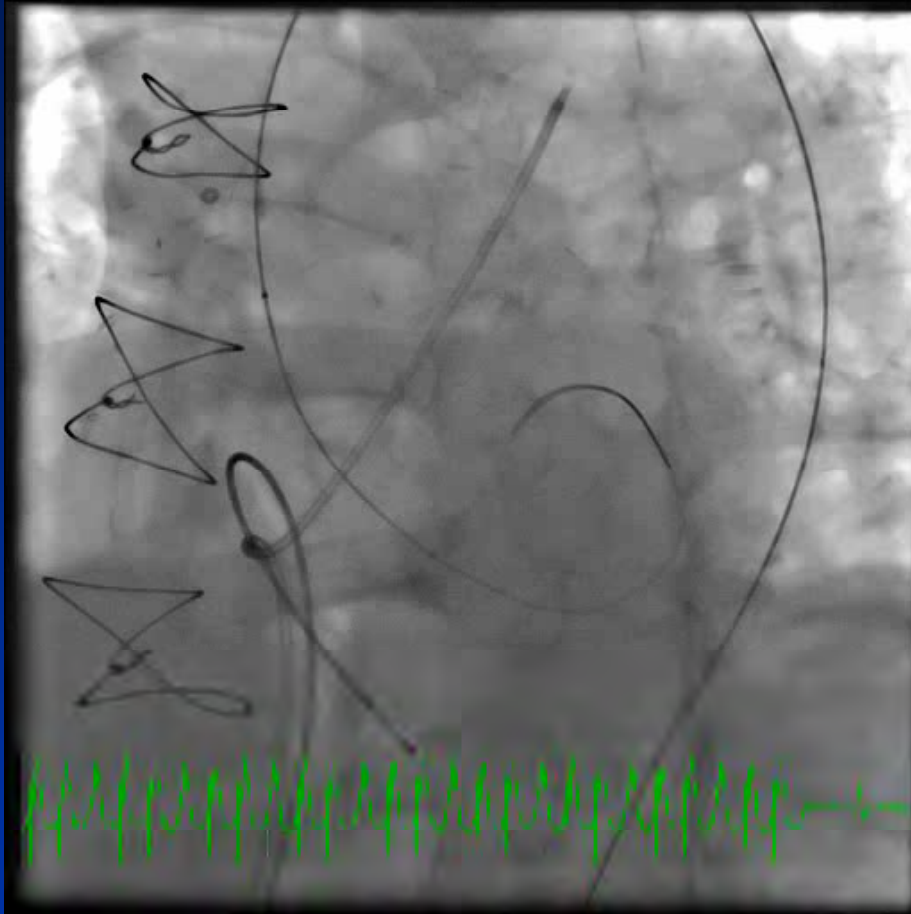
Anulus Measurement Different Imaging Modalities



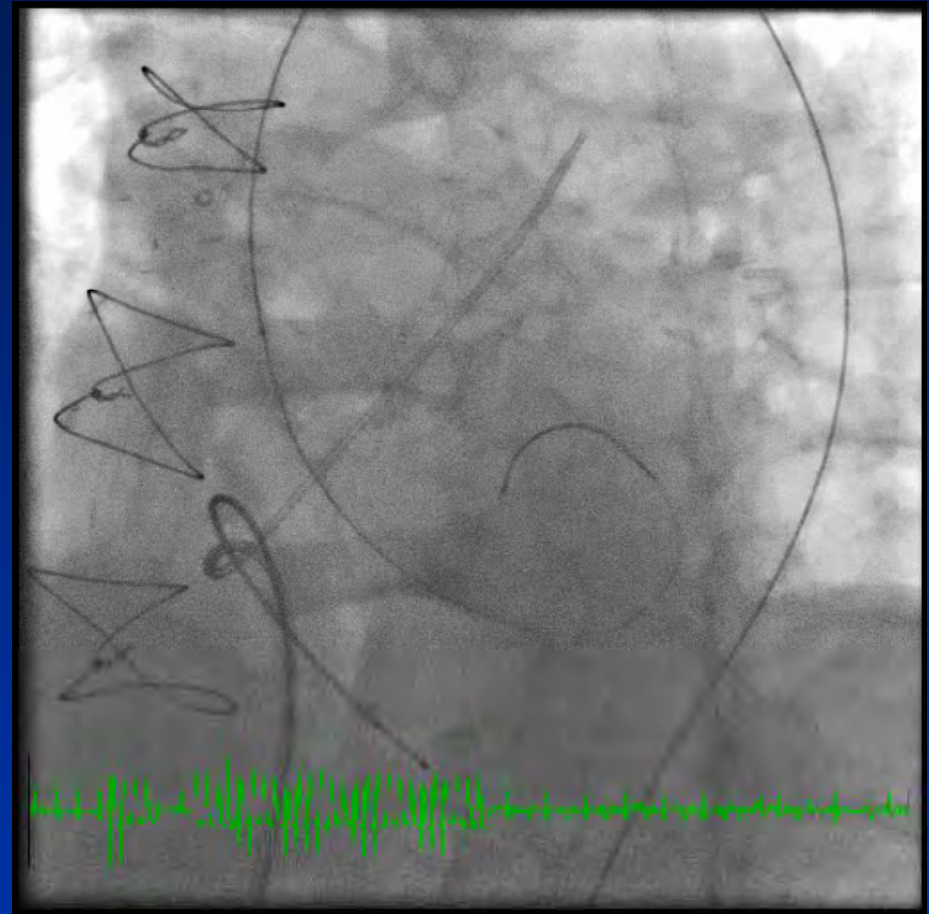
Sizing with Balloon



Another Clue for the Size



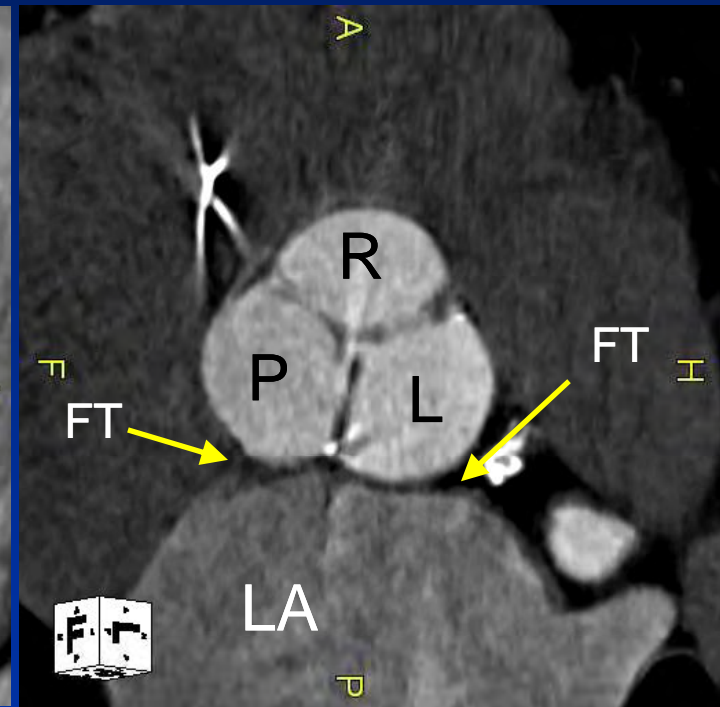
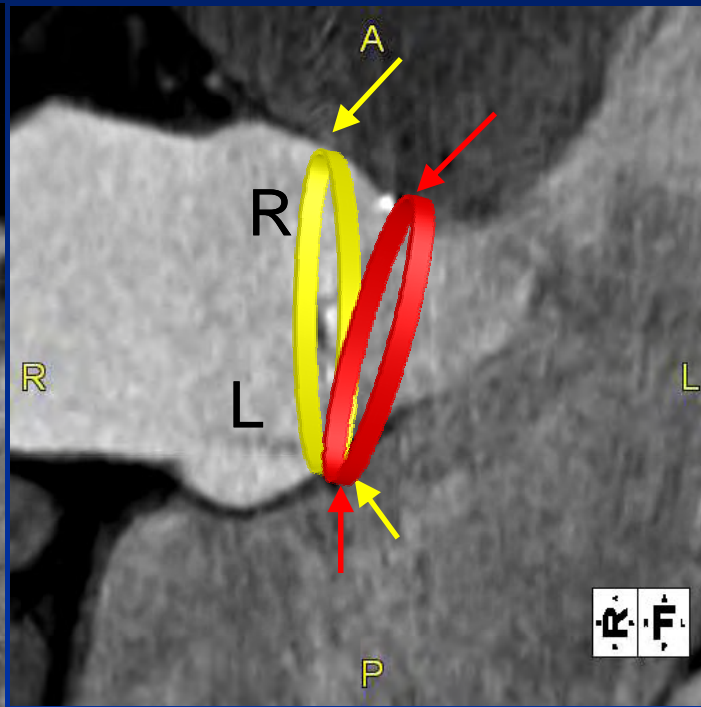
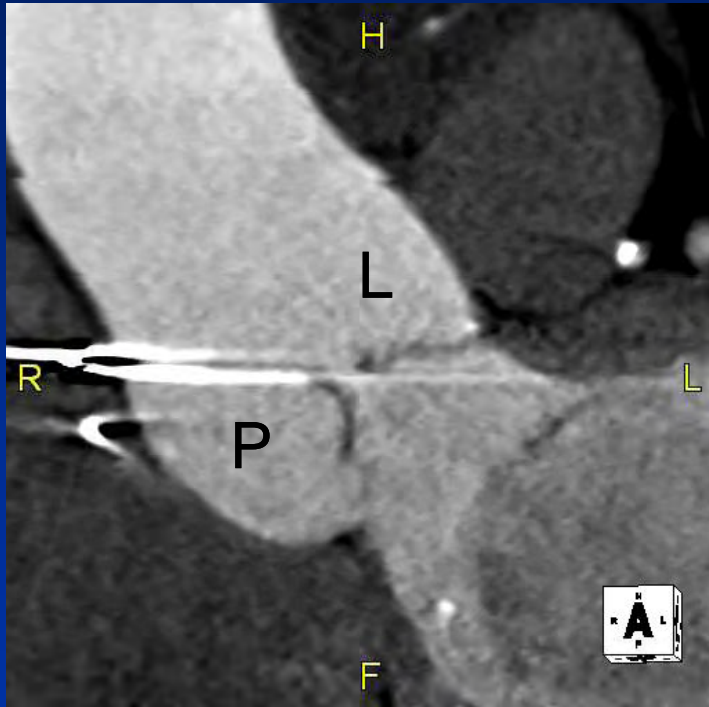
22 mm



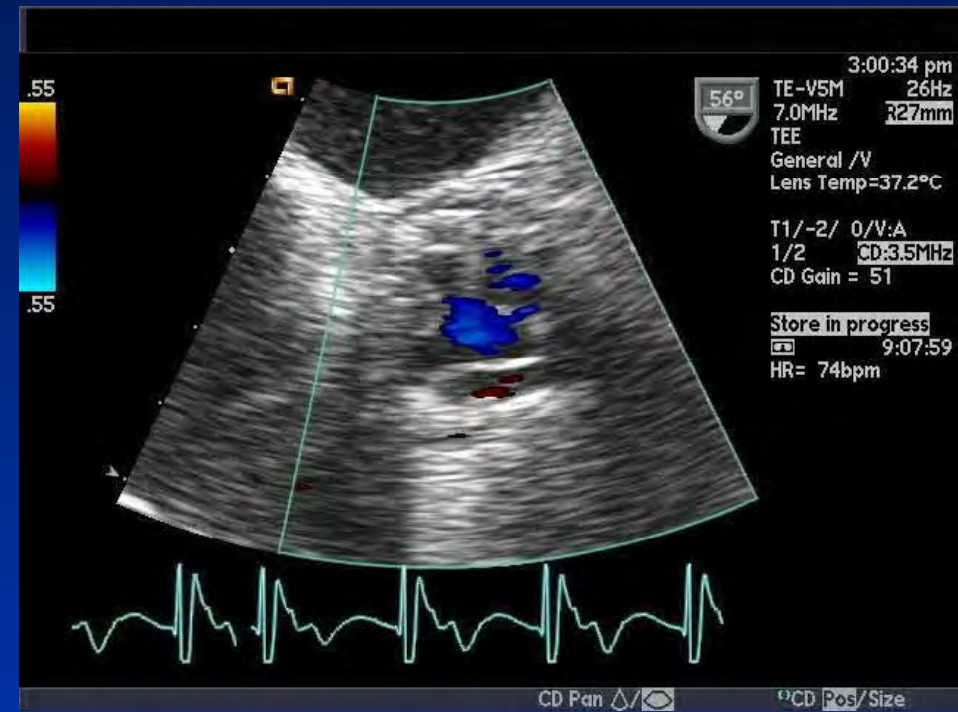
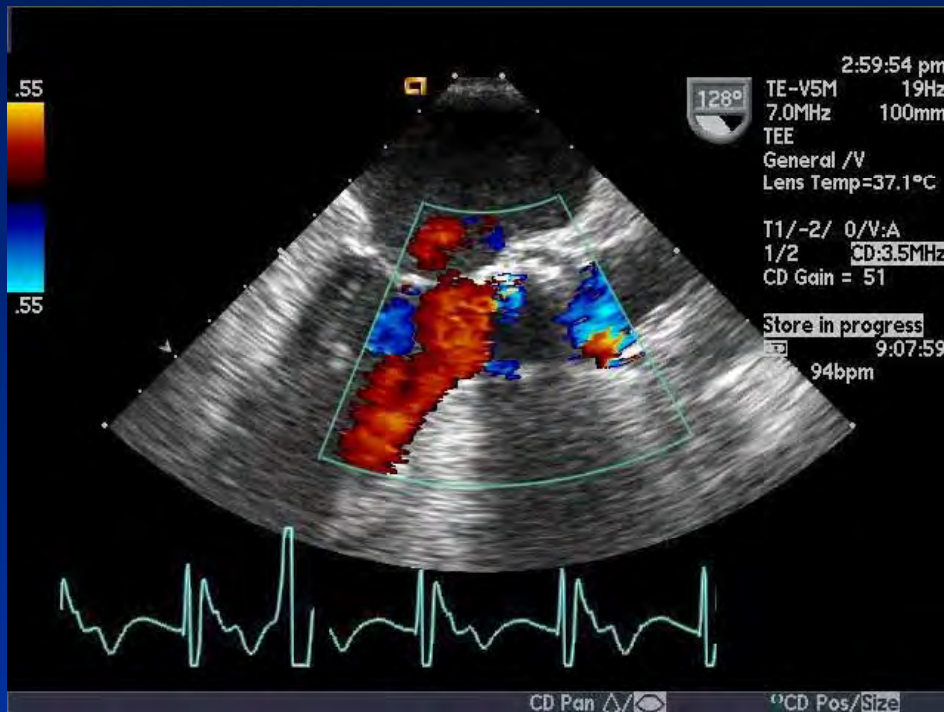
23 mm

Balloon movement with pacing cessation

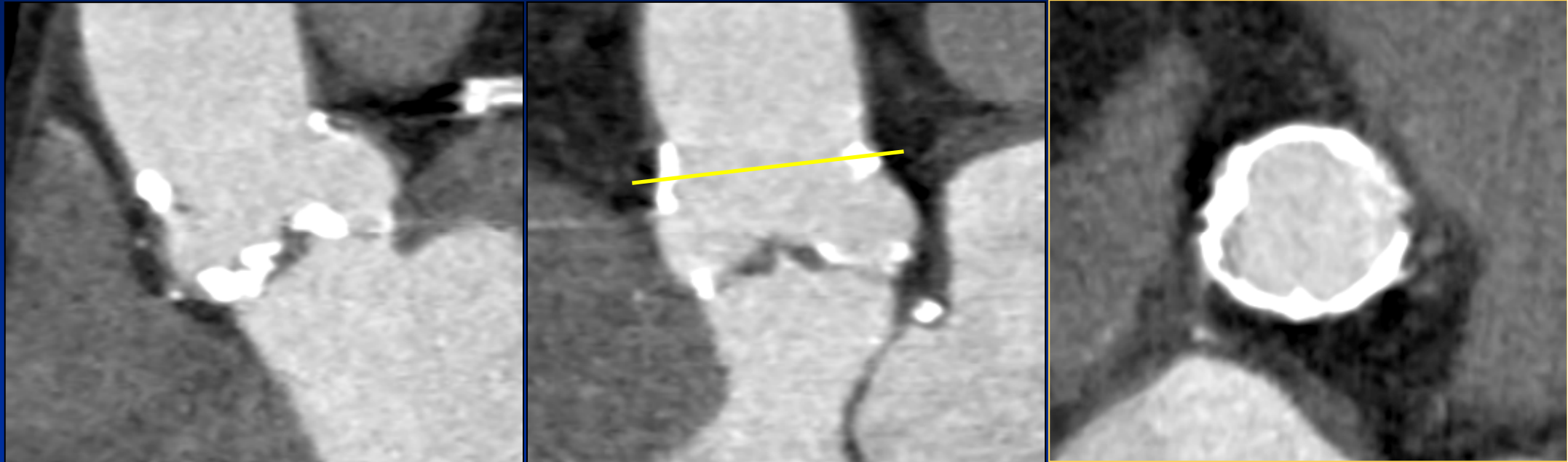
Anatomy of the Aortic Valve



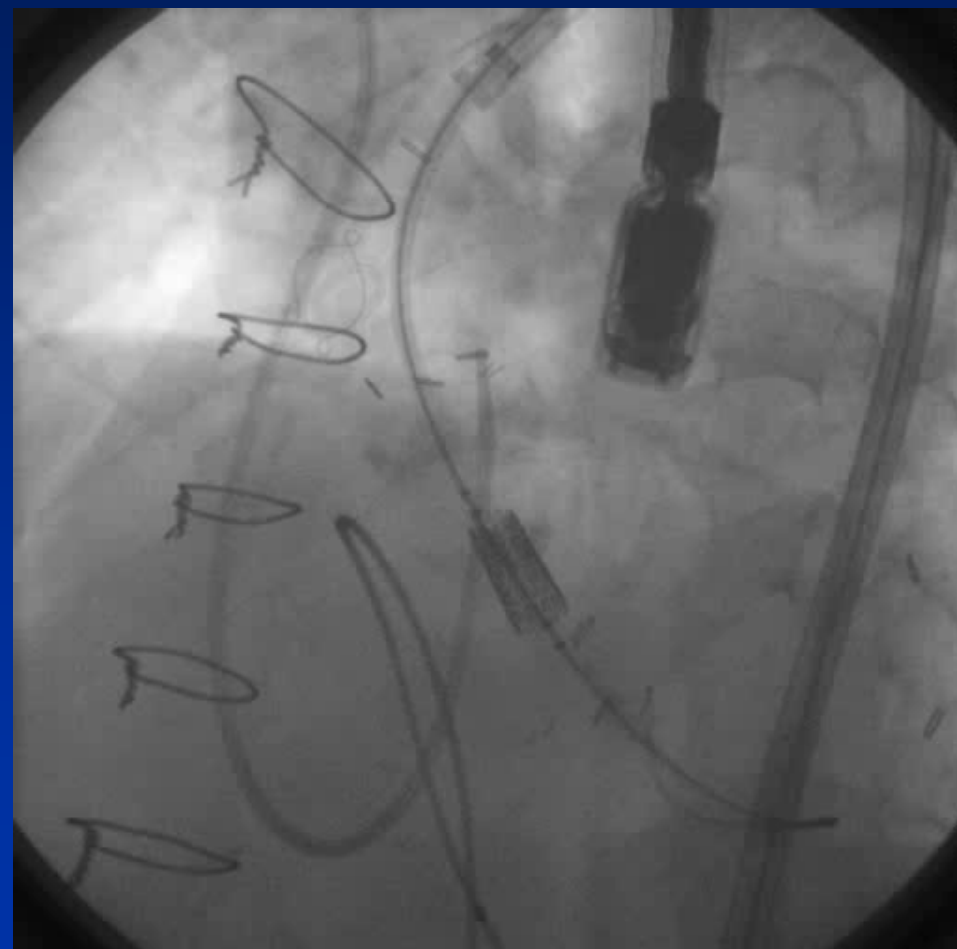
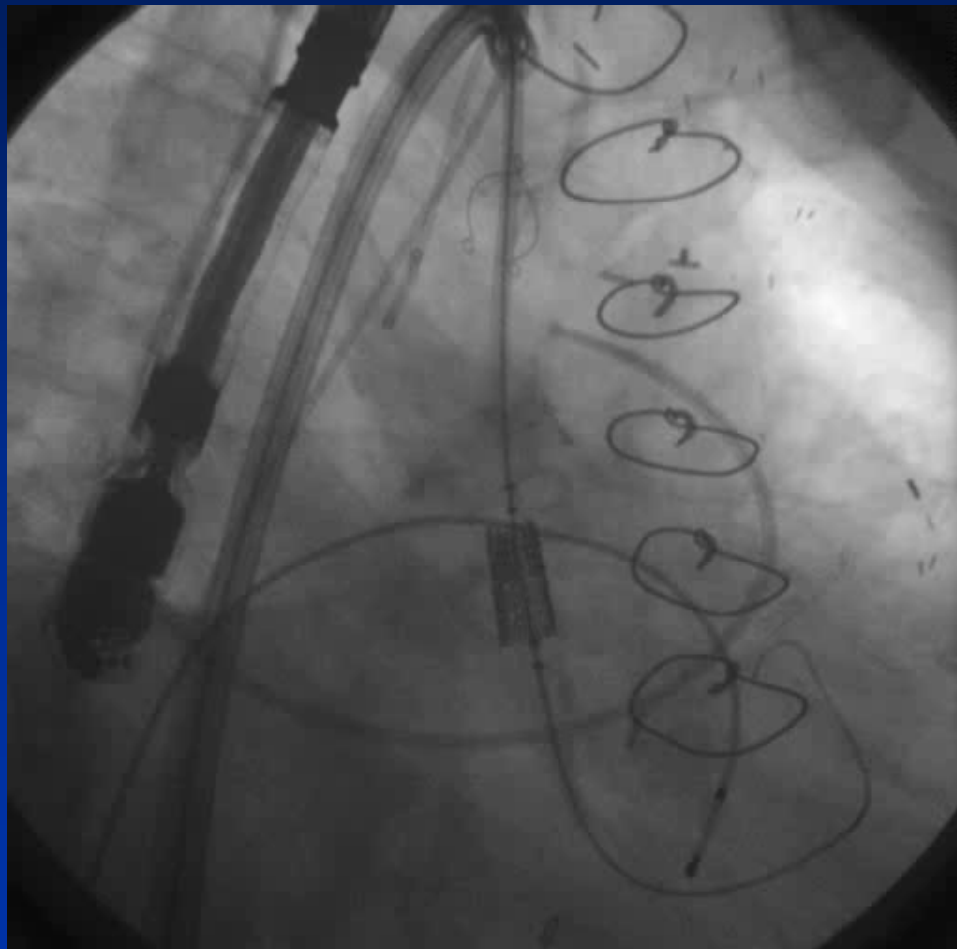
Inter-Trigonal Calcification: Relation to AR?



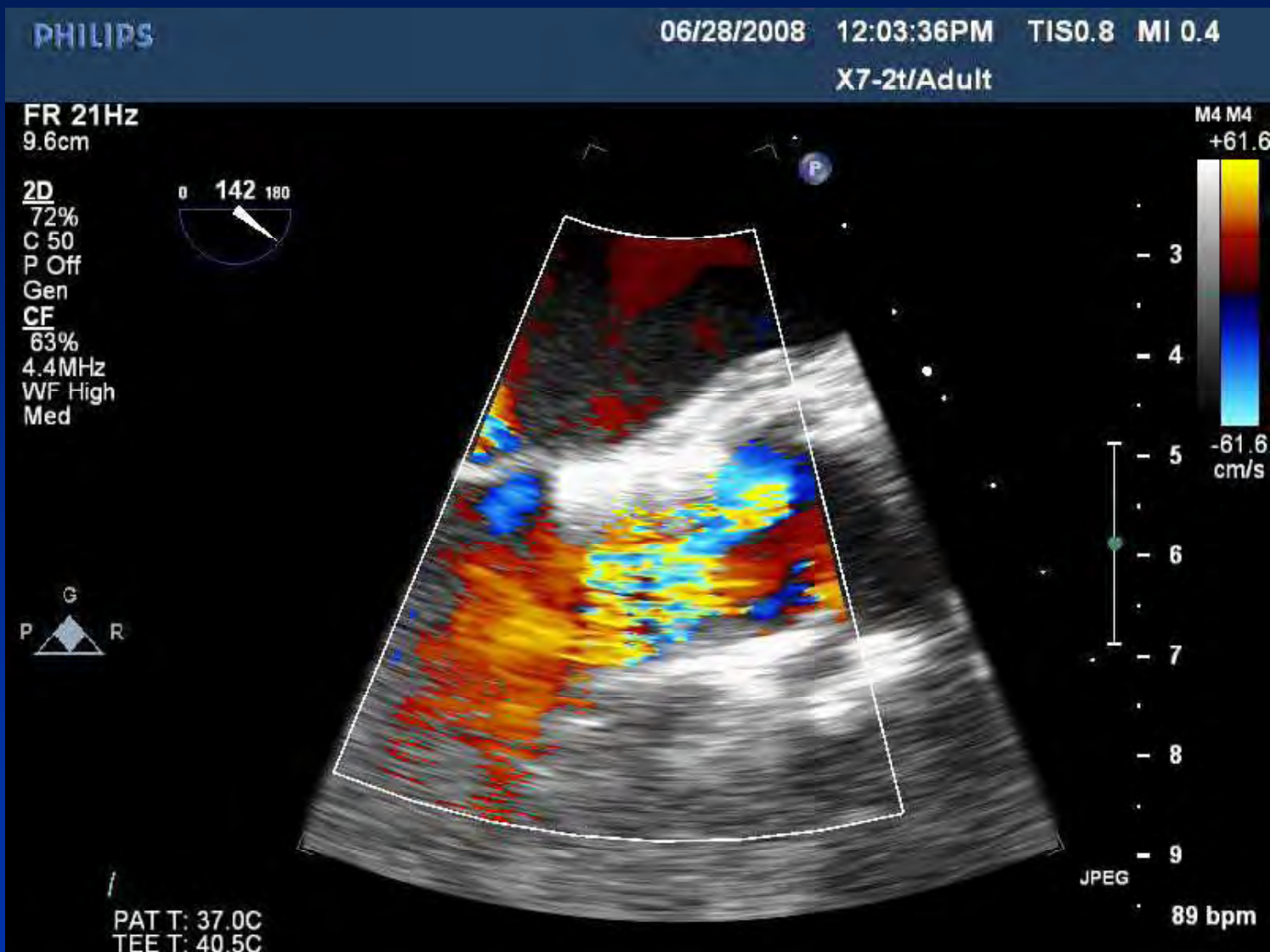
ST Junction Calcification



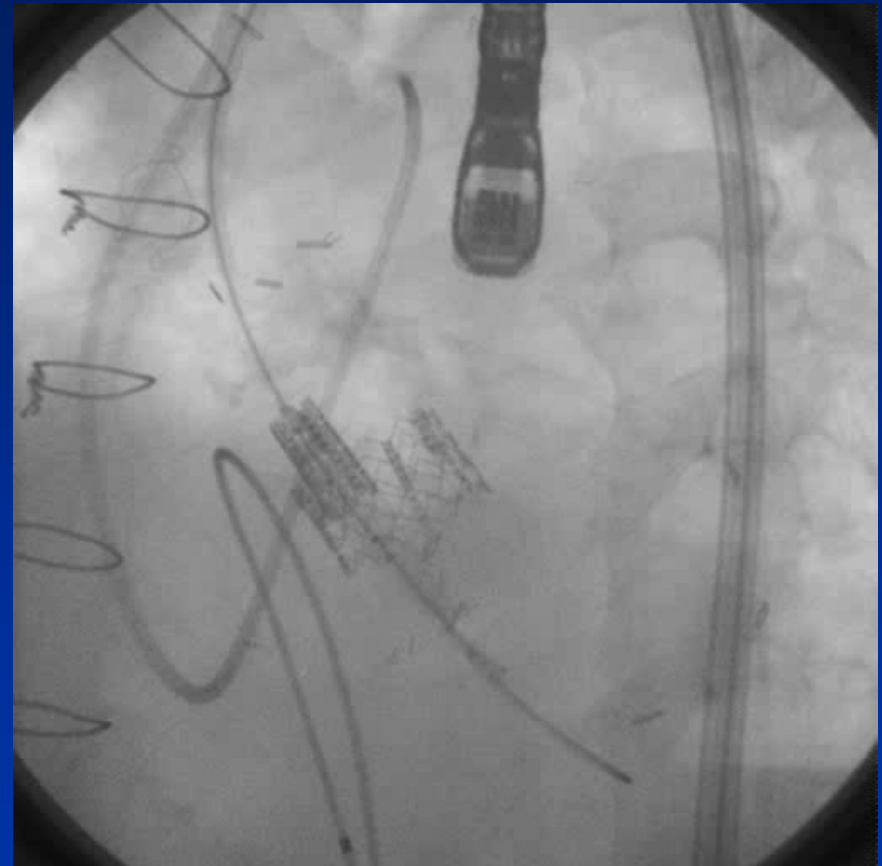
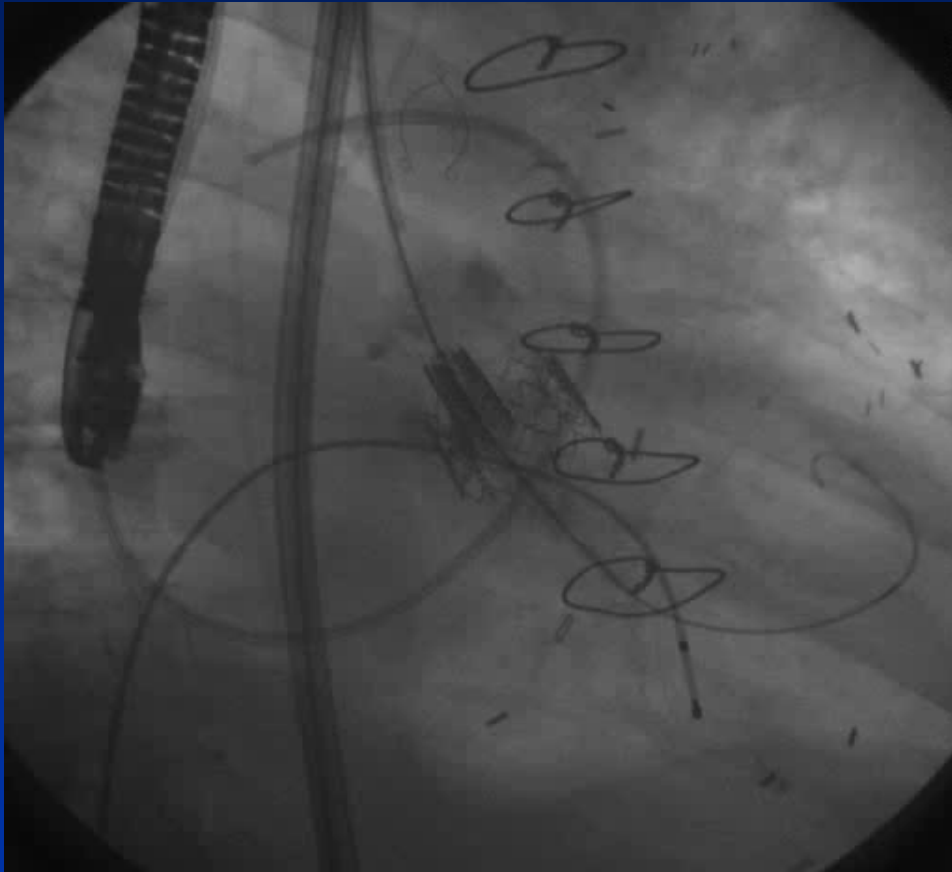
Valve Deployment



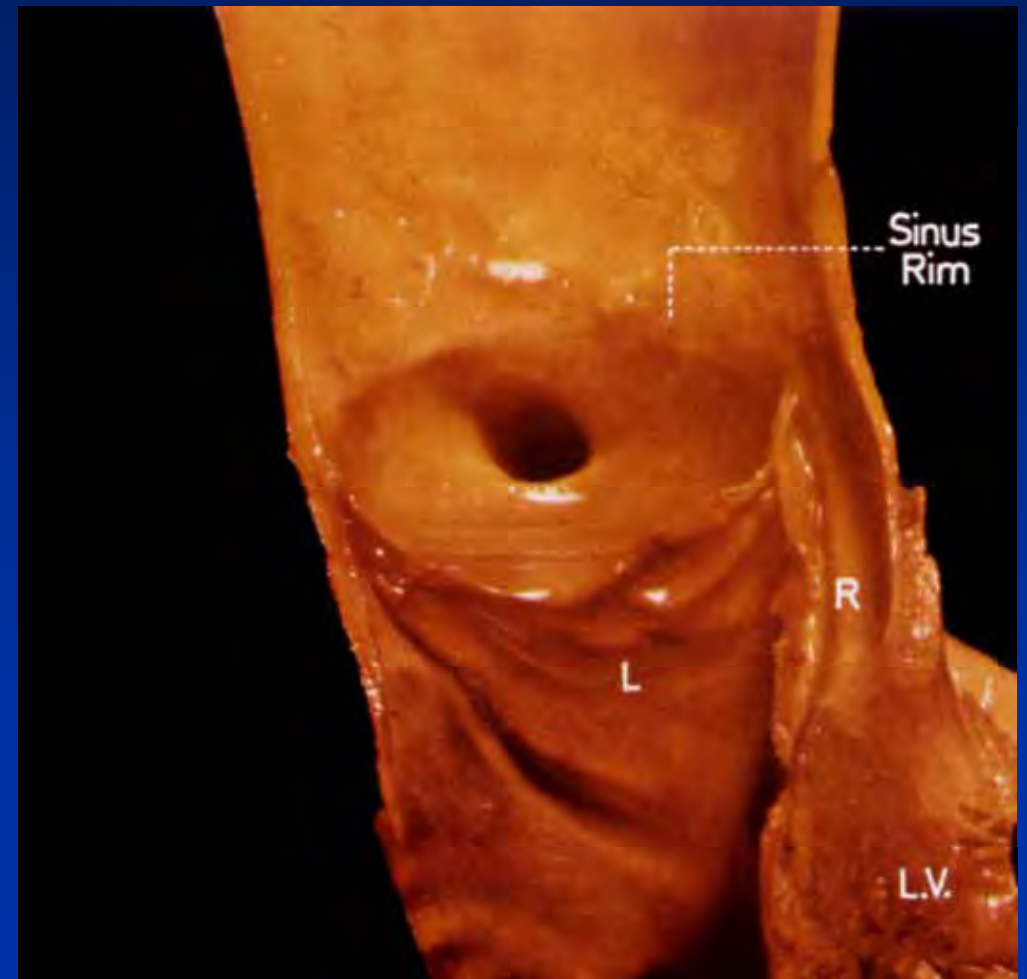
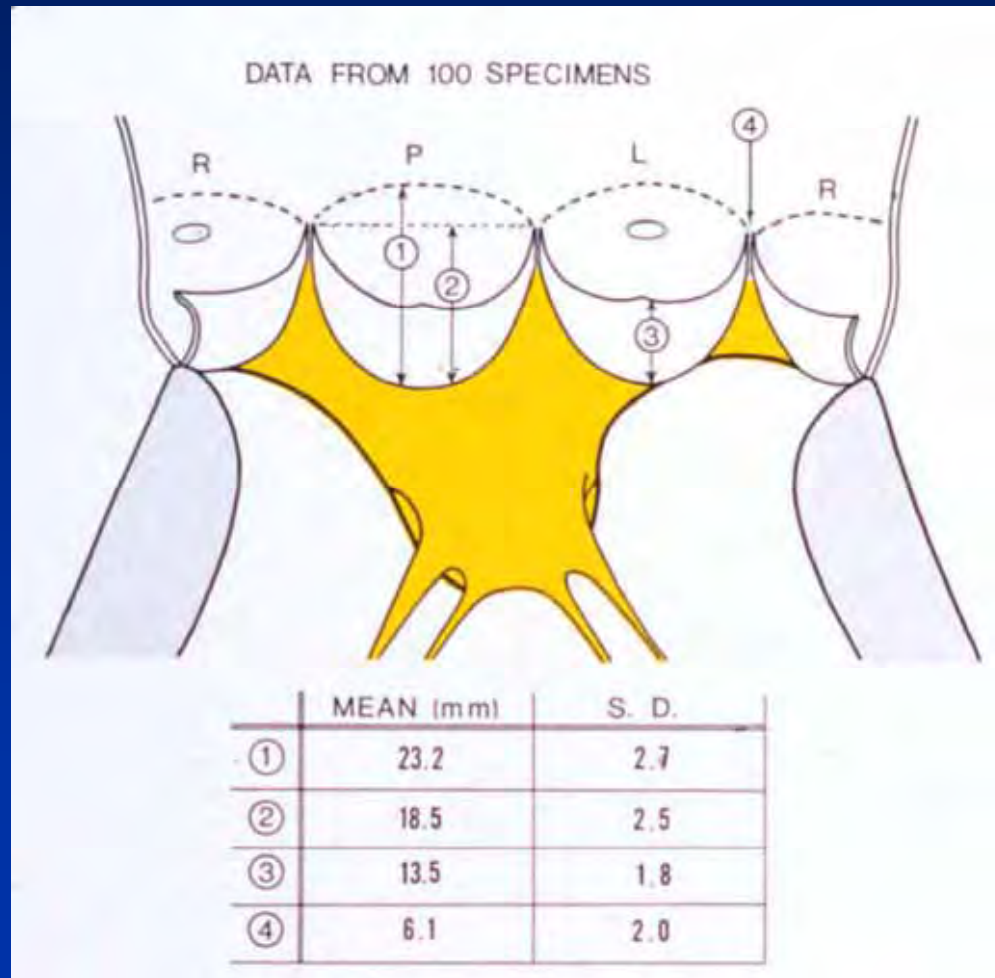
Severe AI



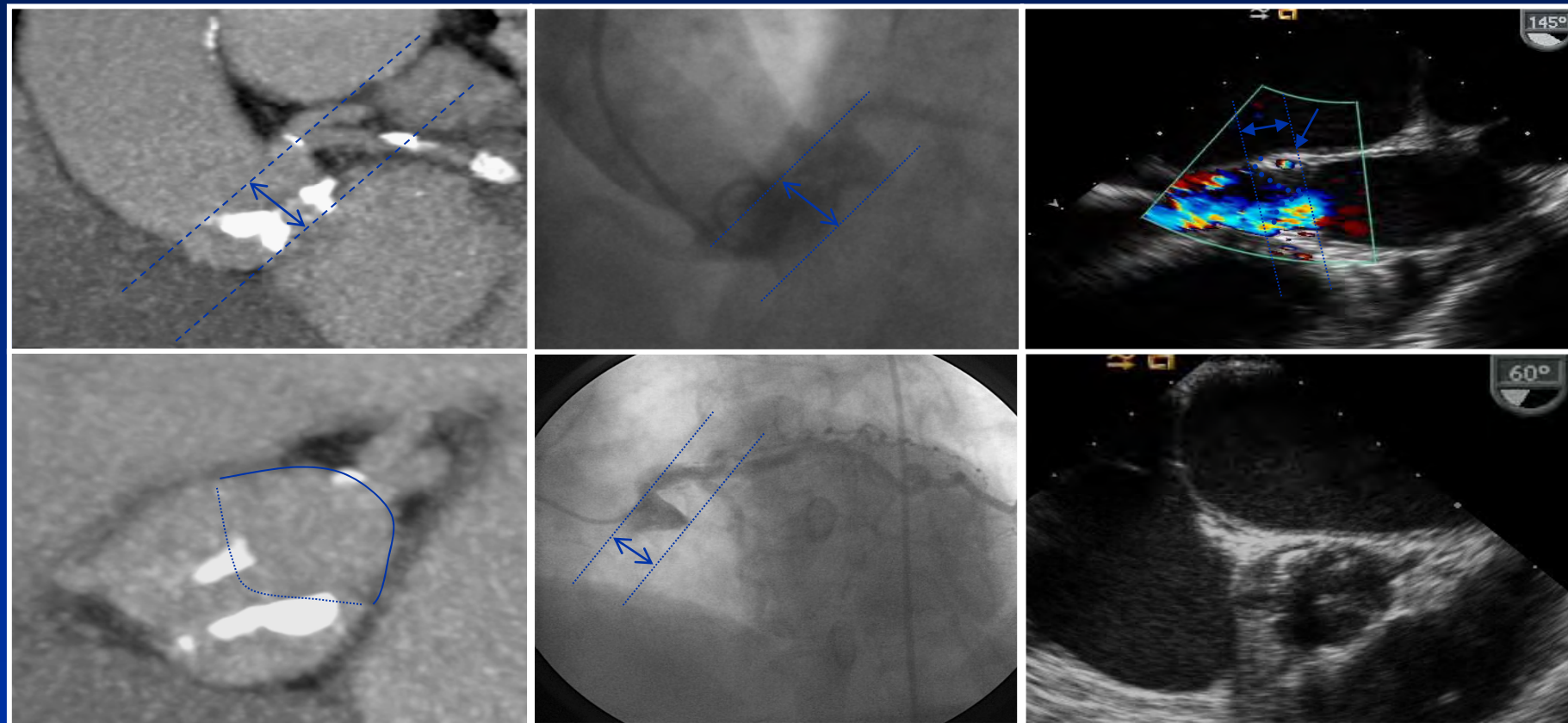
Valve in Valve



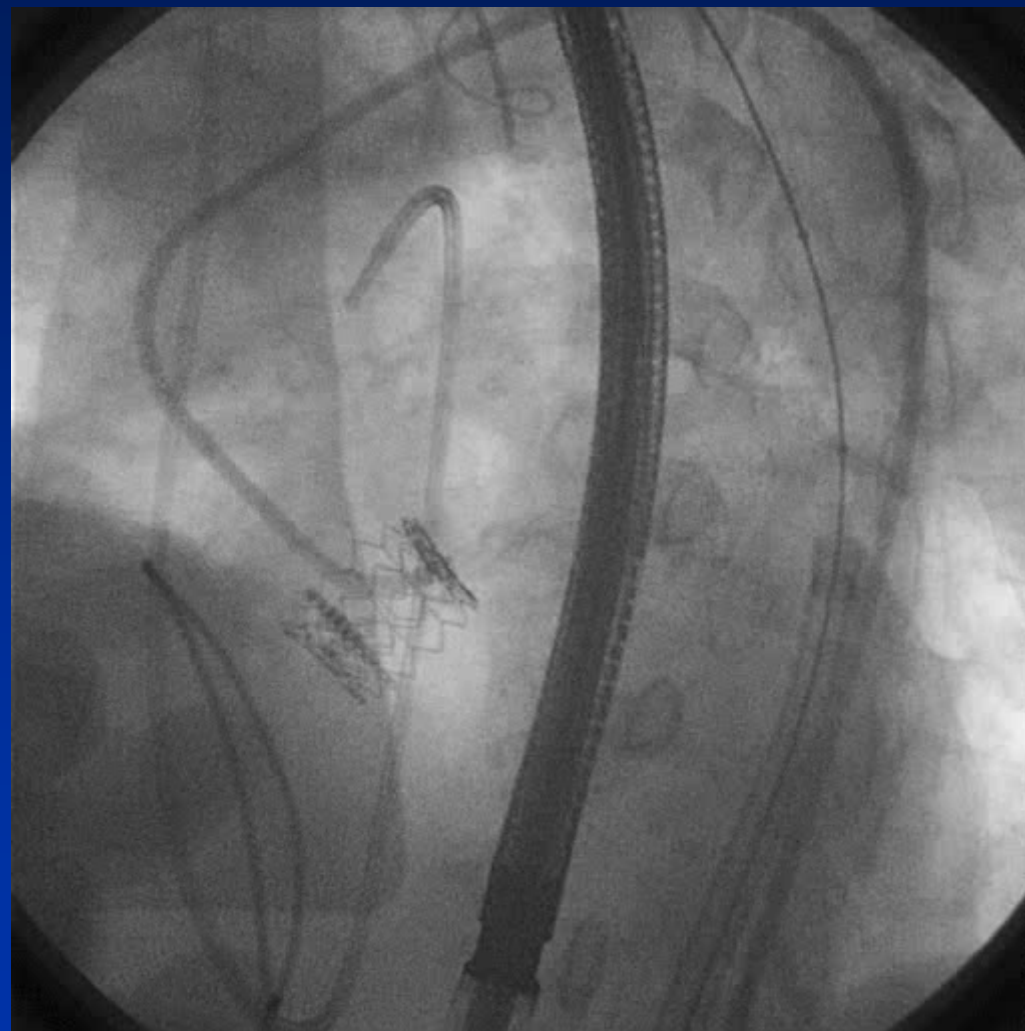
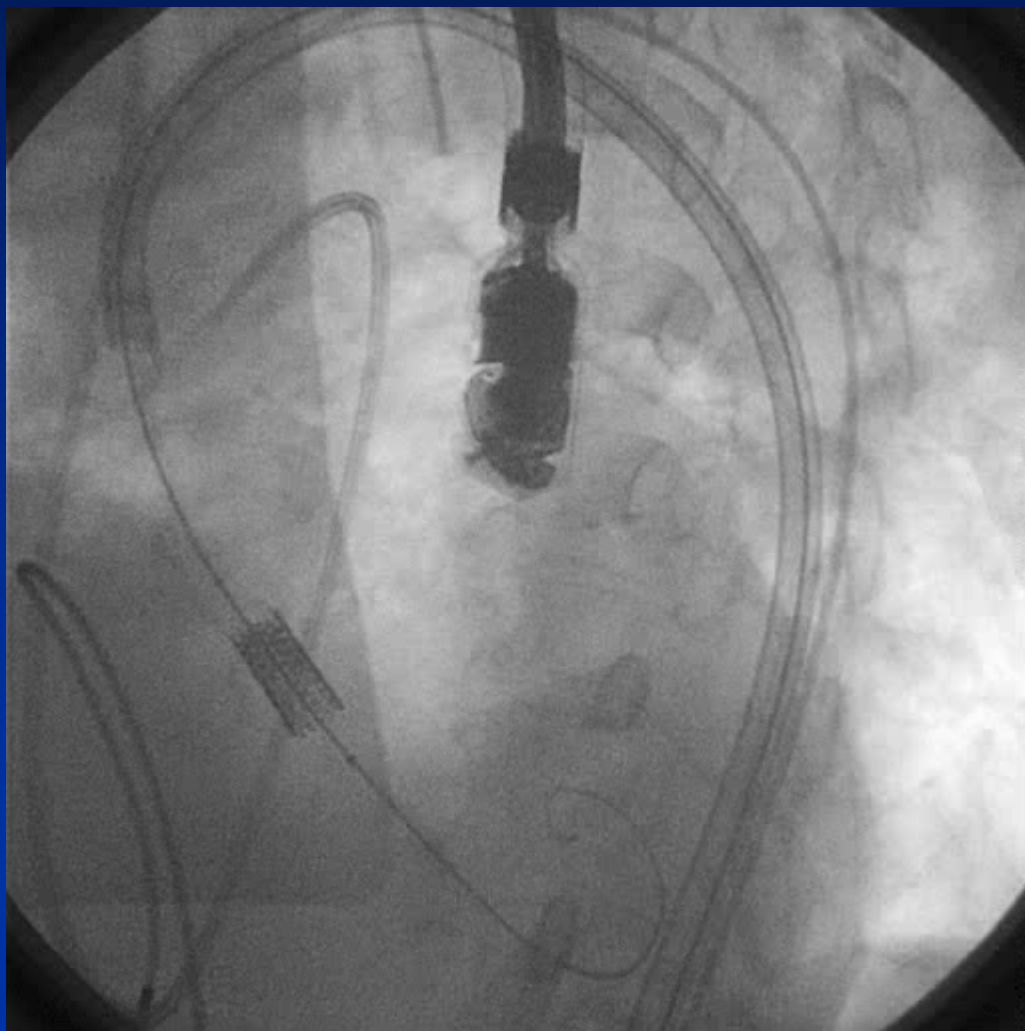
Cusp Anatomy and Coronary Ostia



Cusp Anatomy and Coronary Ostia

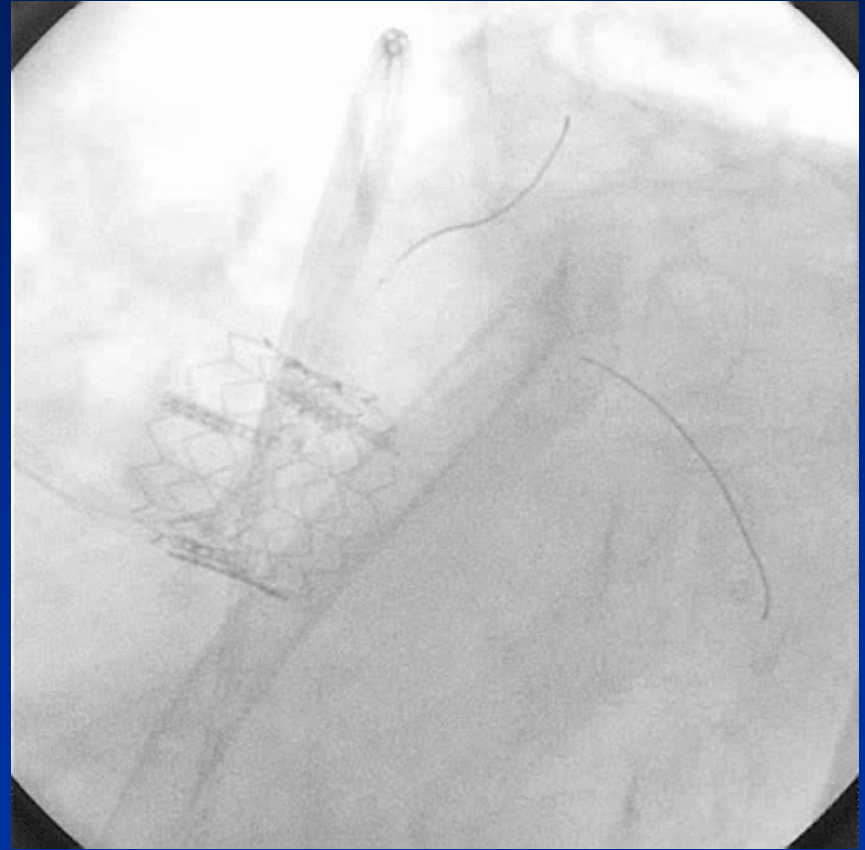
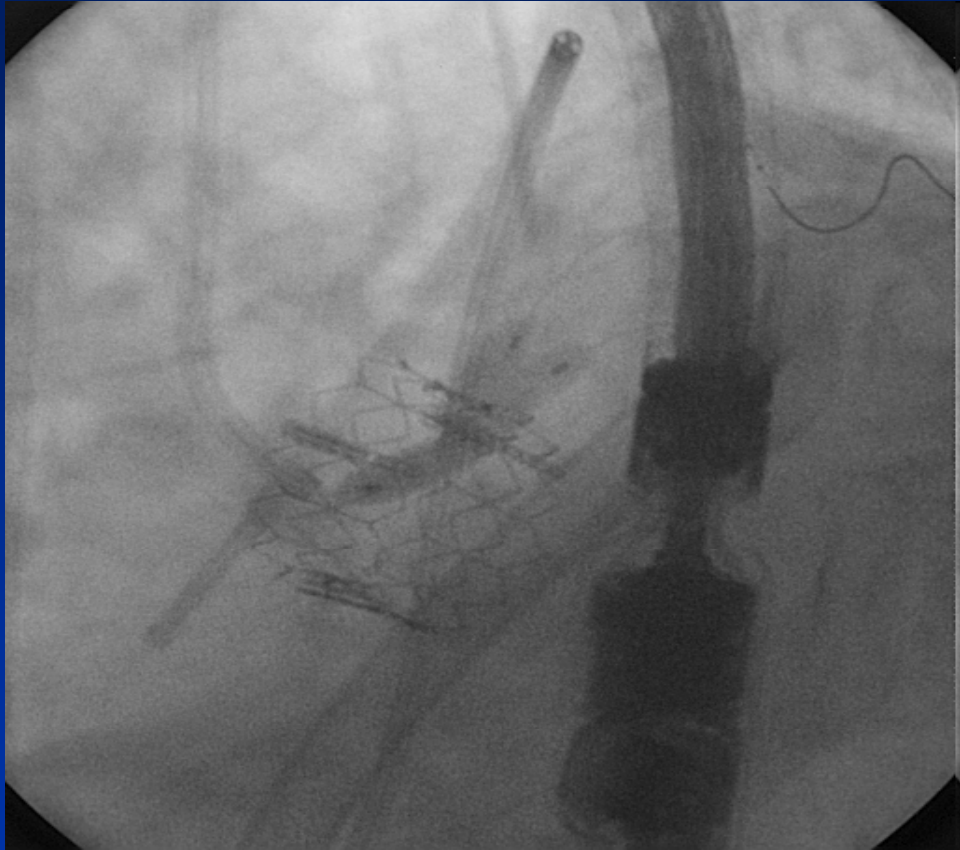


Percutaneous Aortic Valve Replacement

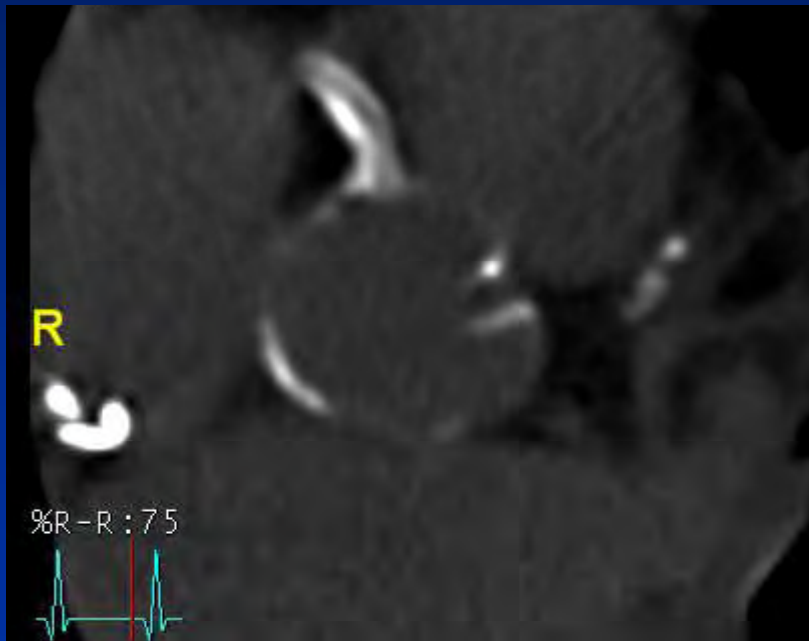


Kapadia SR et al, Catheter Cardiovasc Interv. 2009 Jun 1;73(7):966-72

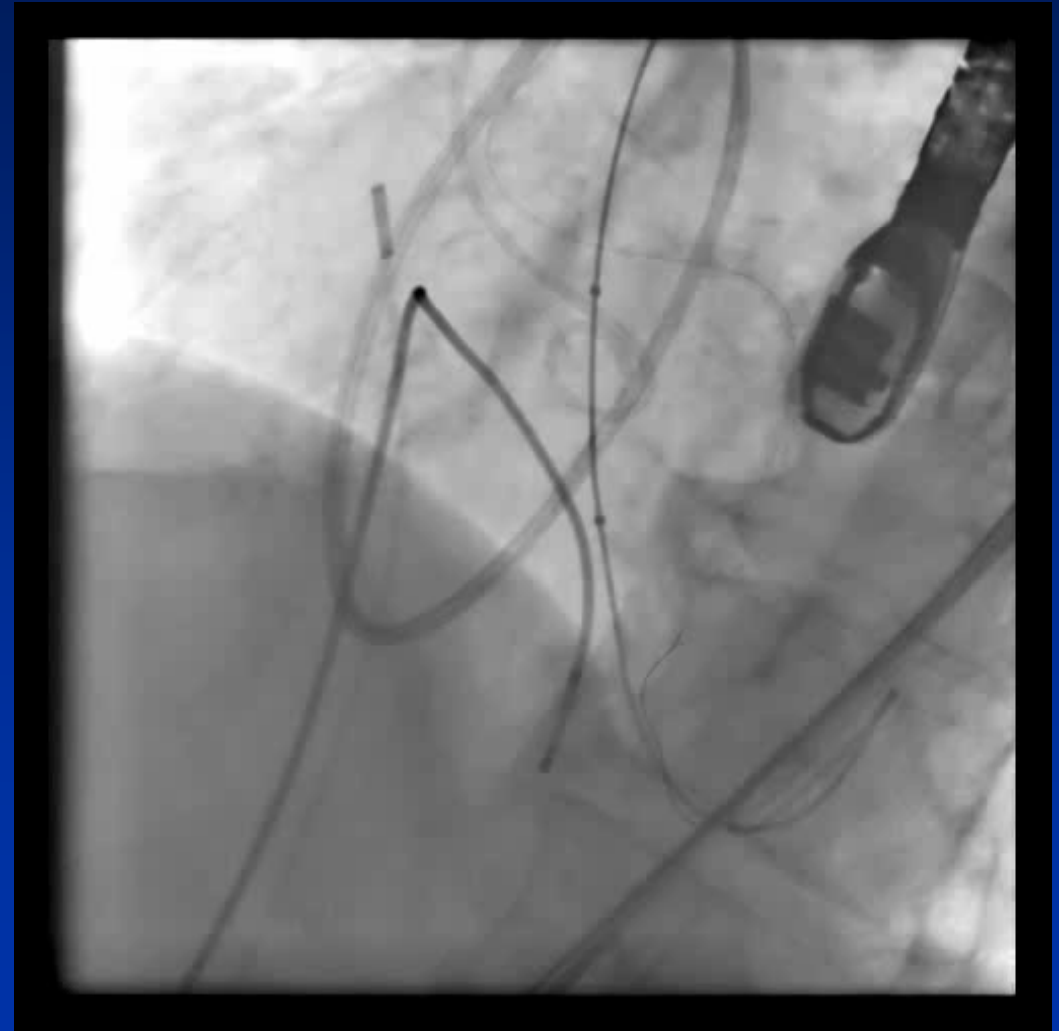
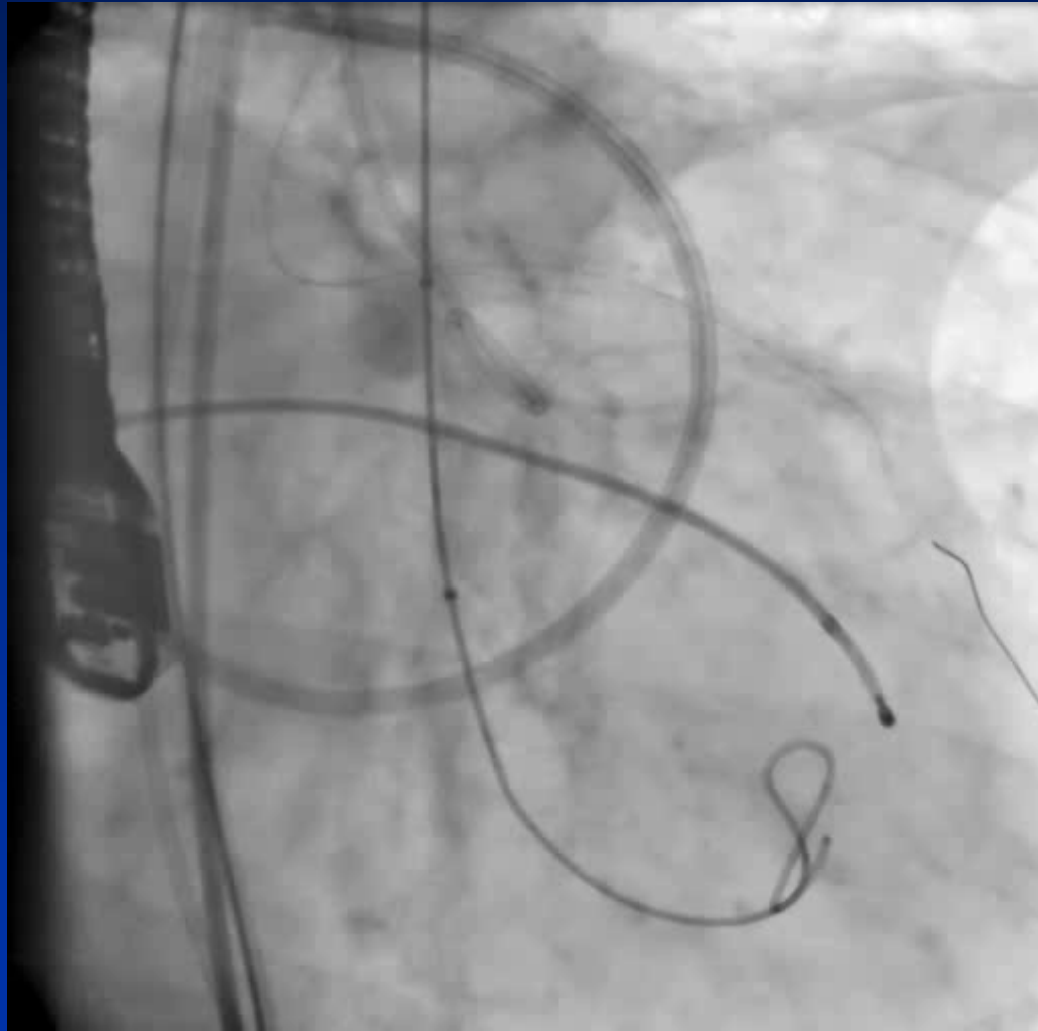
Final Result: Stents in the Left Main



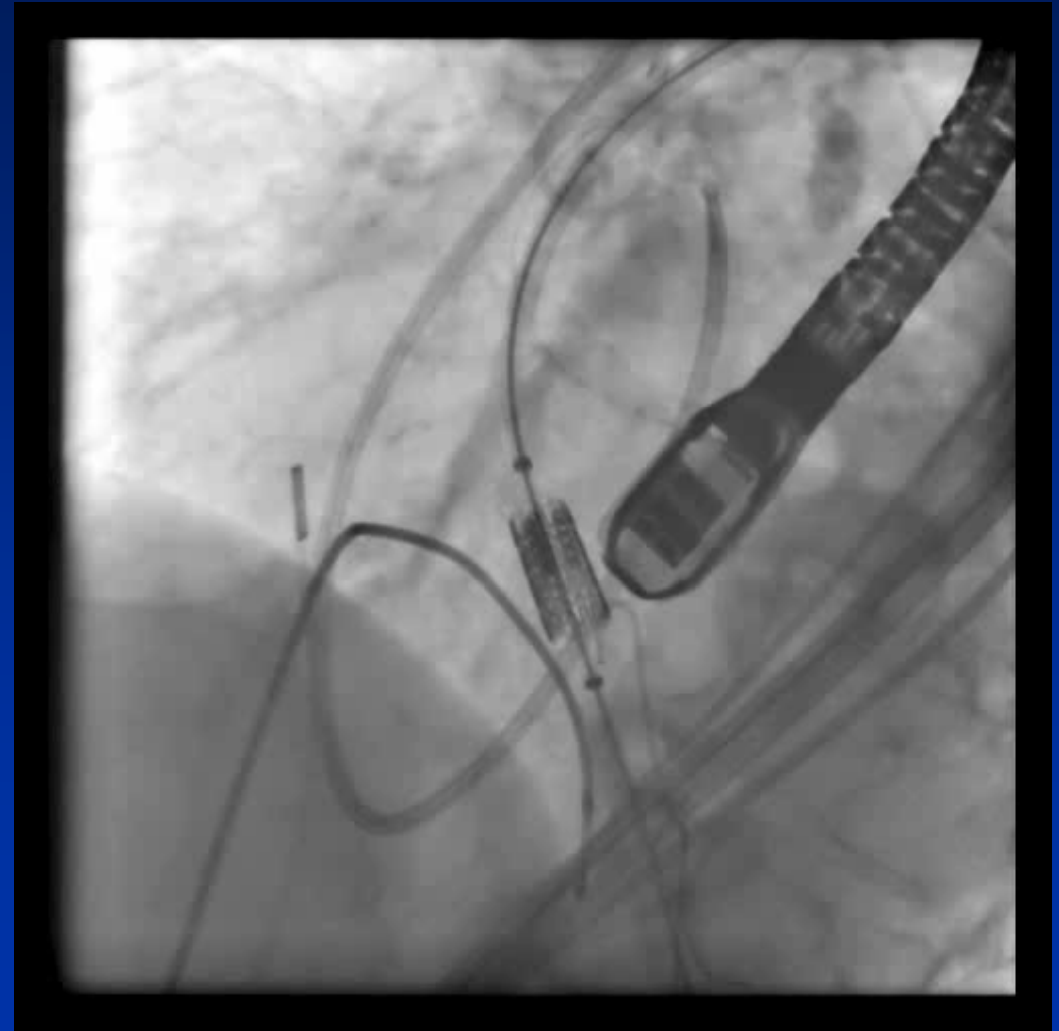
Stent in Coronary Ostia



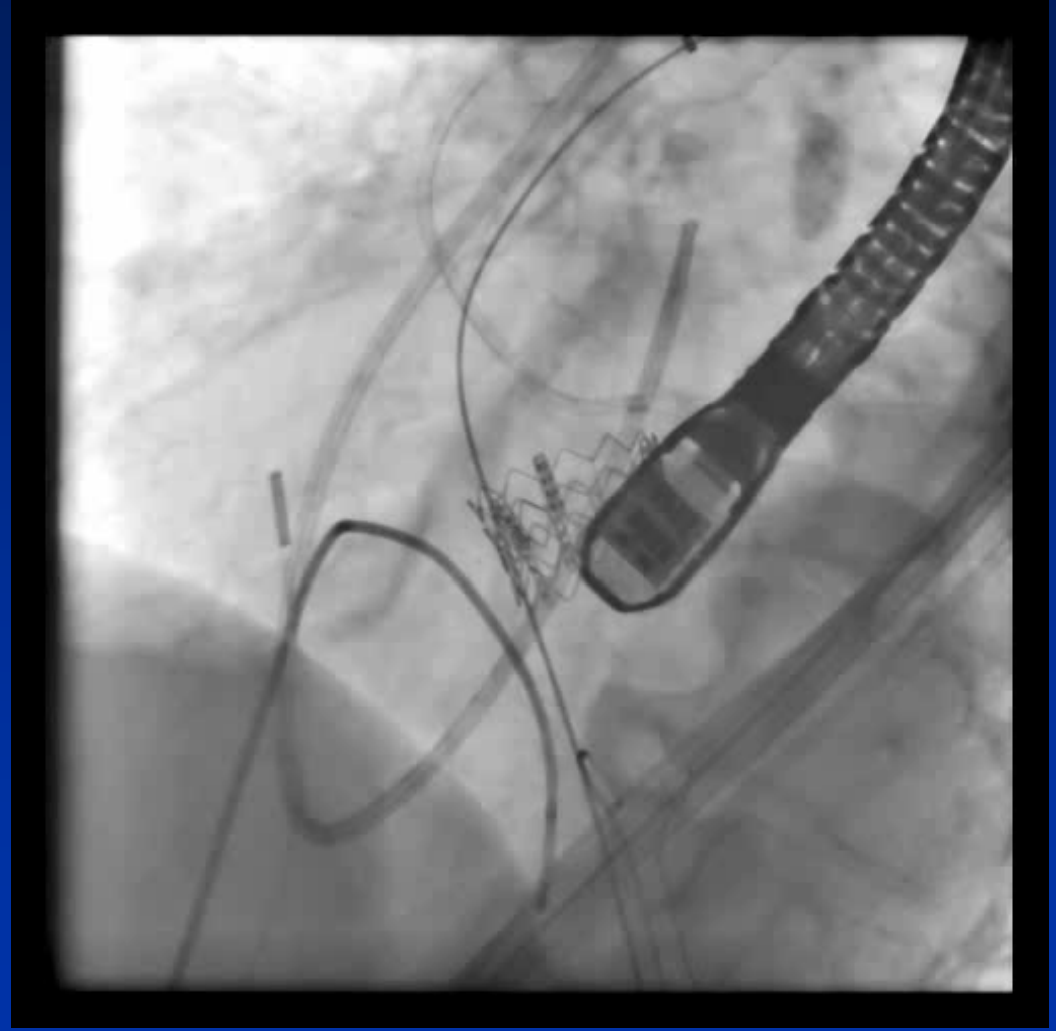
LMT stent: Injection with BAV



Valve Deployment with Wire

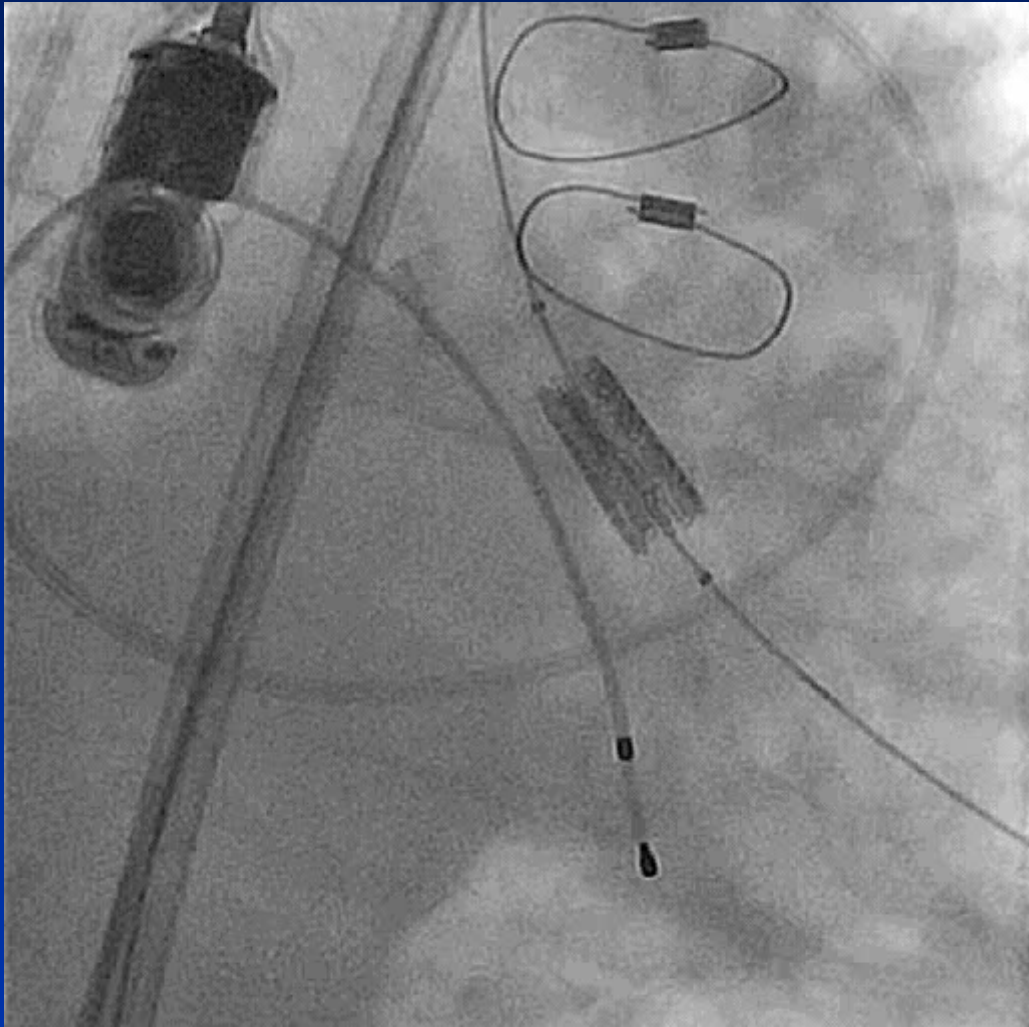


Coronary un-compromised



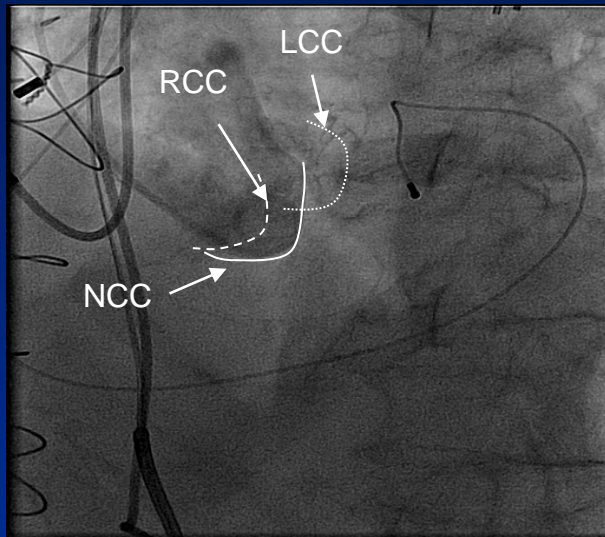
How To Prevent Malpositioning?

Stent Length is 14-16 mm, there is one chance!

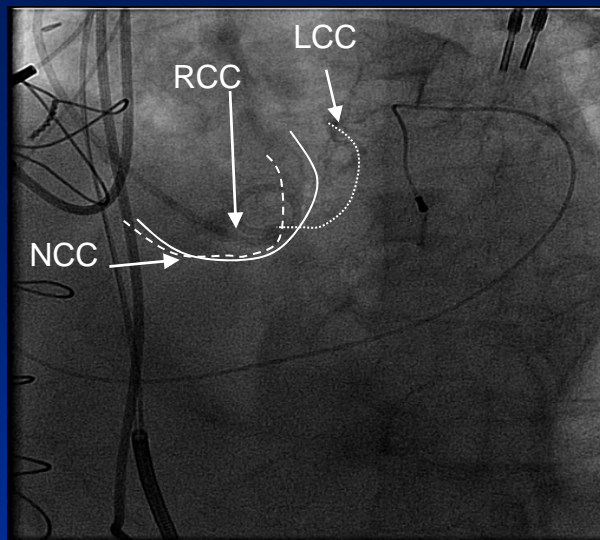


Selection of Fluoroscopic Projections

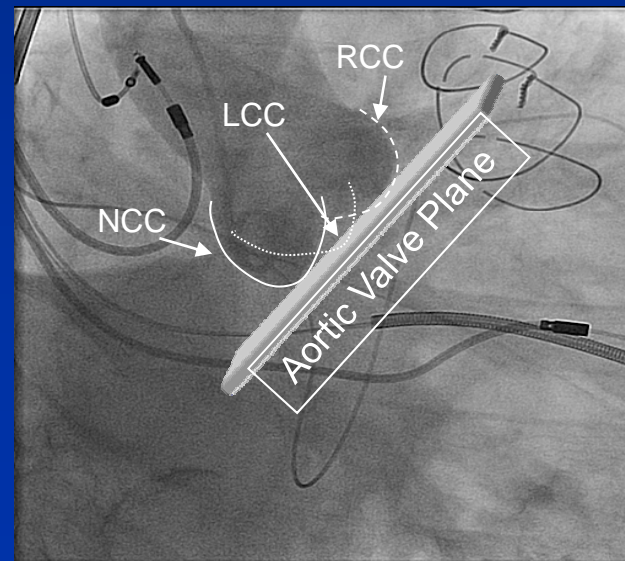
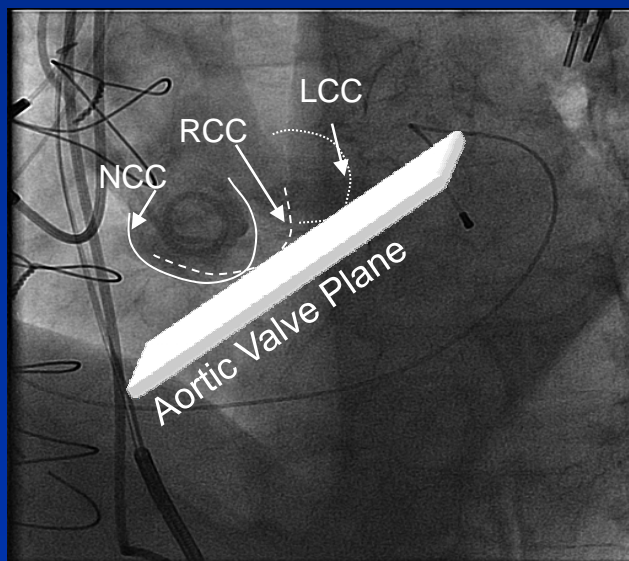
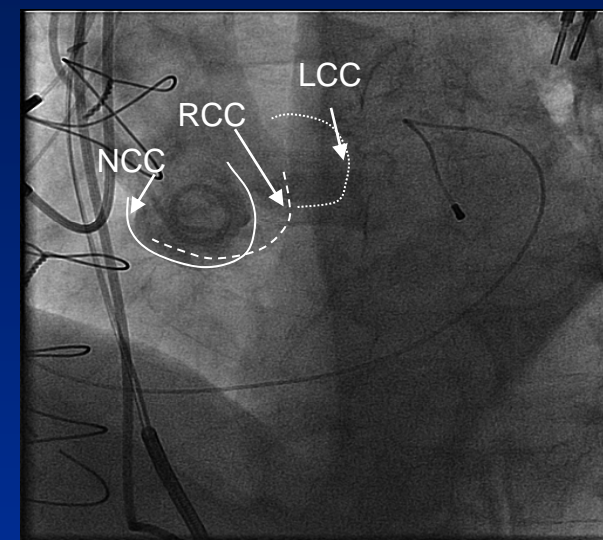
LAO 40 Cr 20



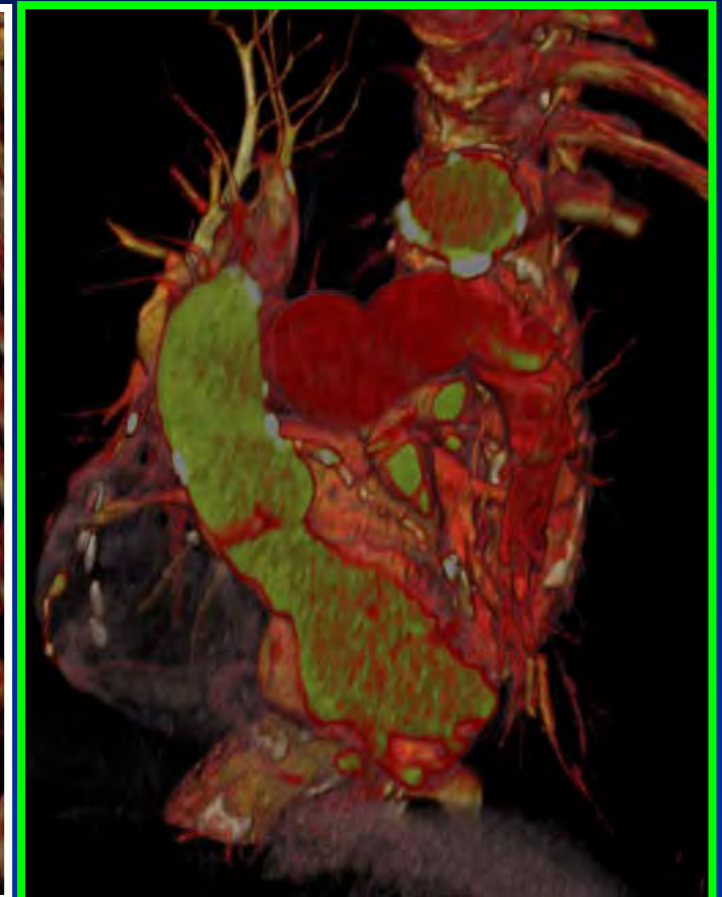
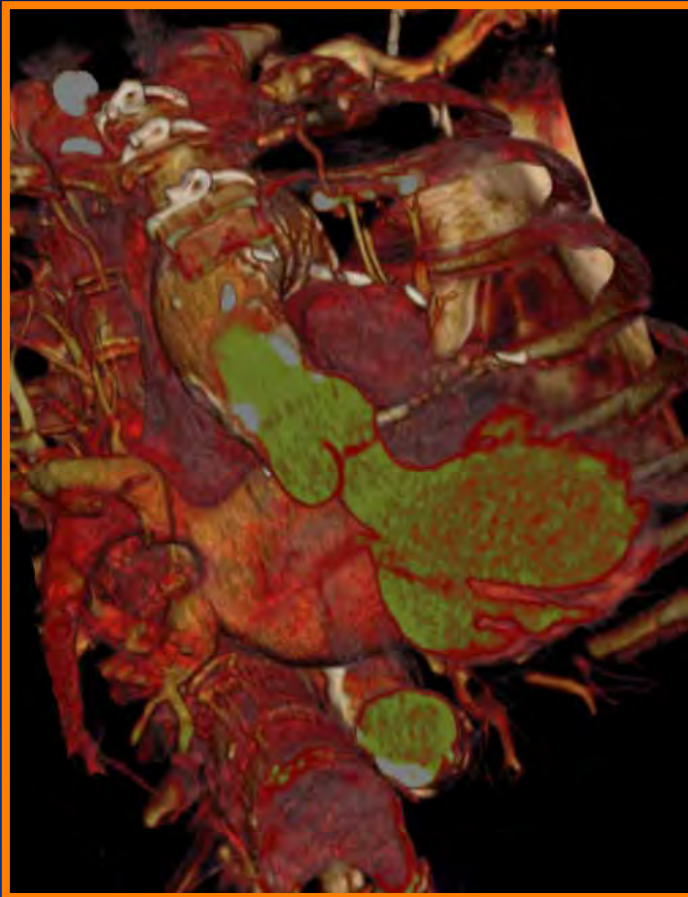
LAO 40 Cr 30



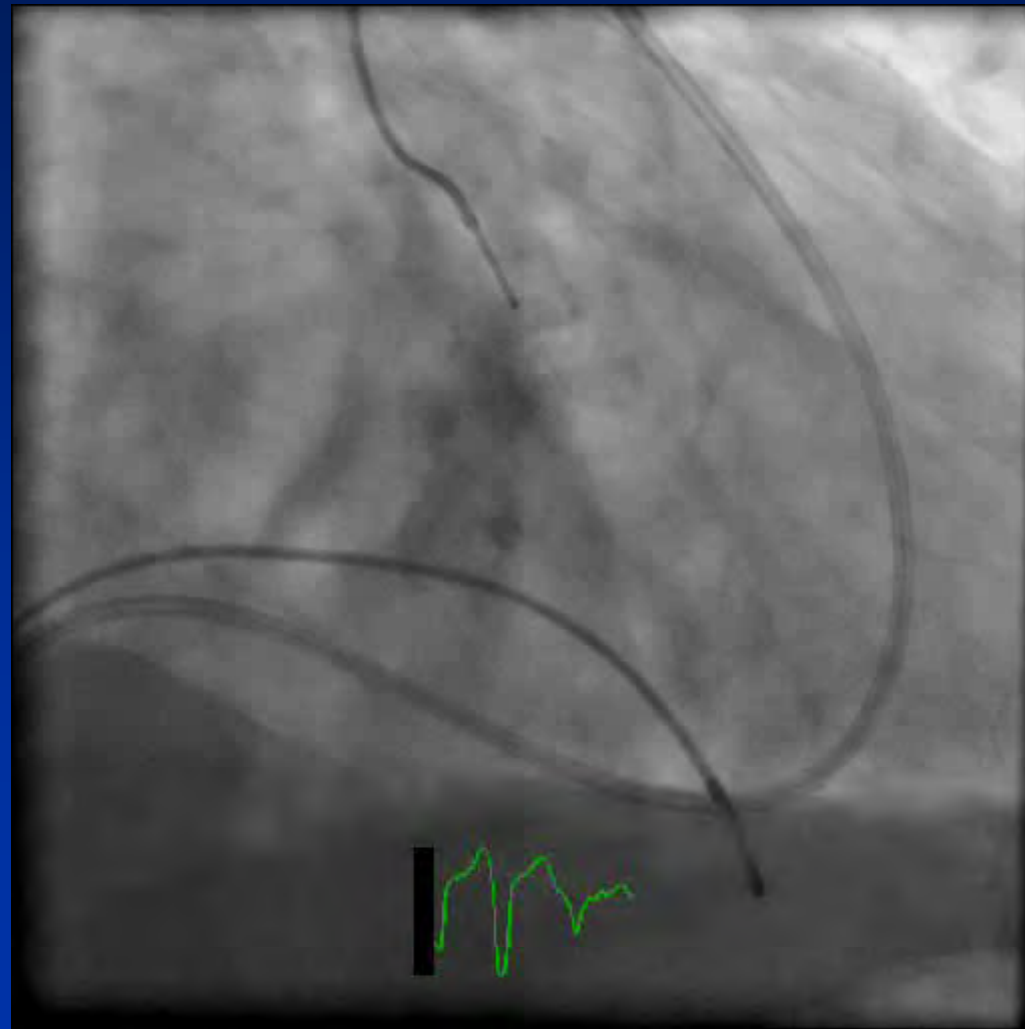
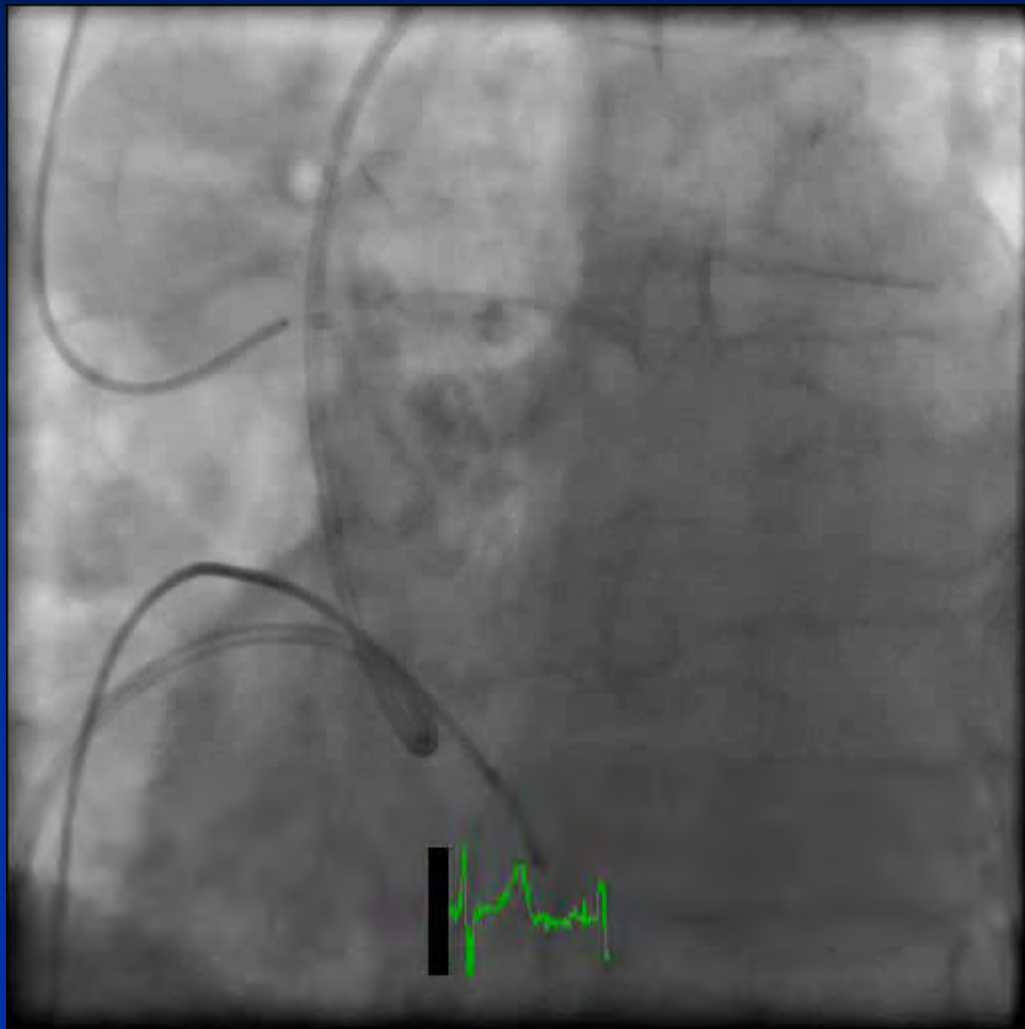
LAO 30 Cr 30



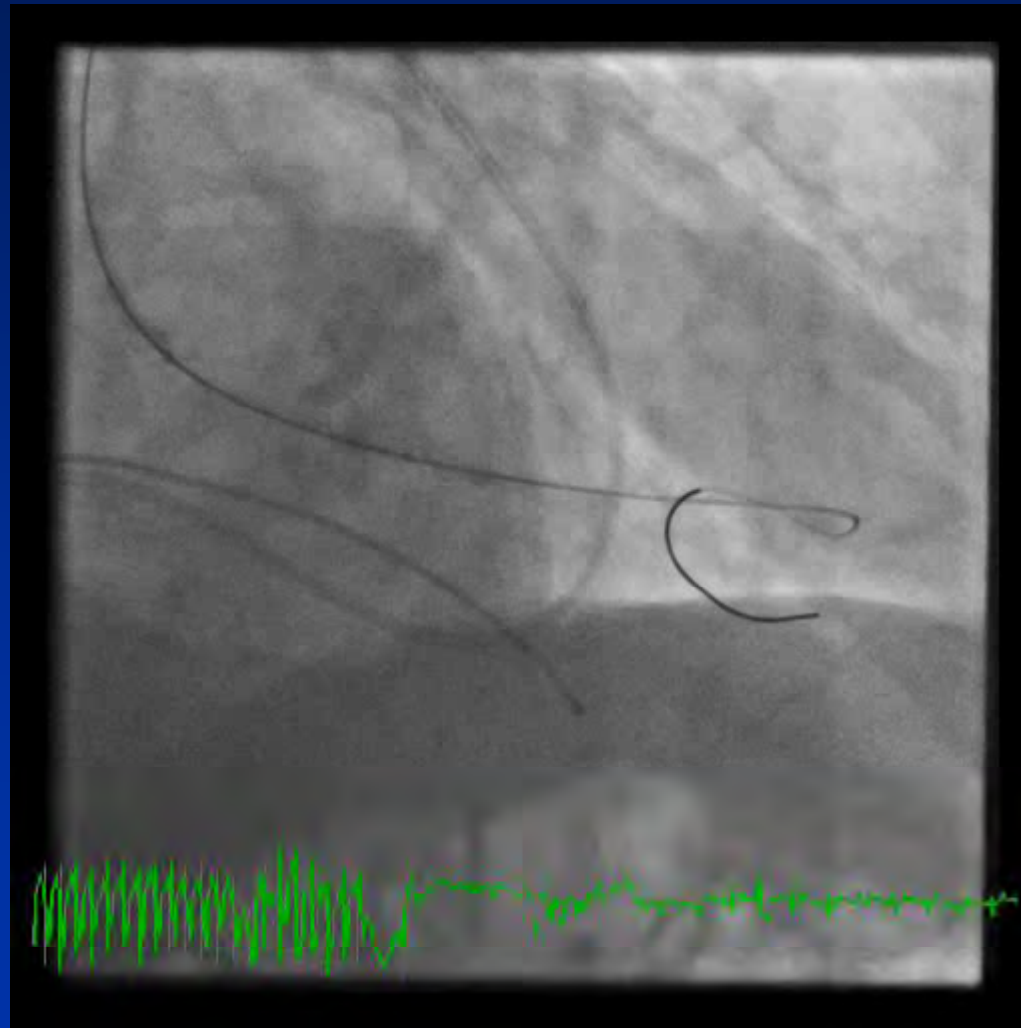
CT Scan : Definition of Aortic Plane



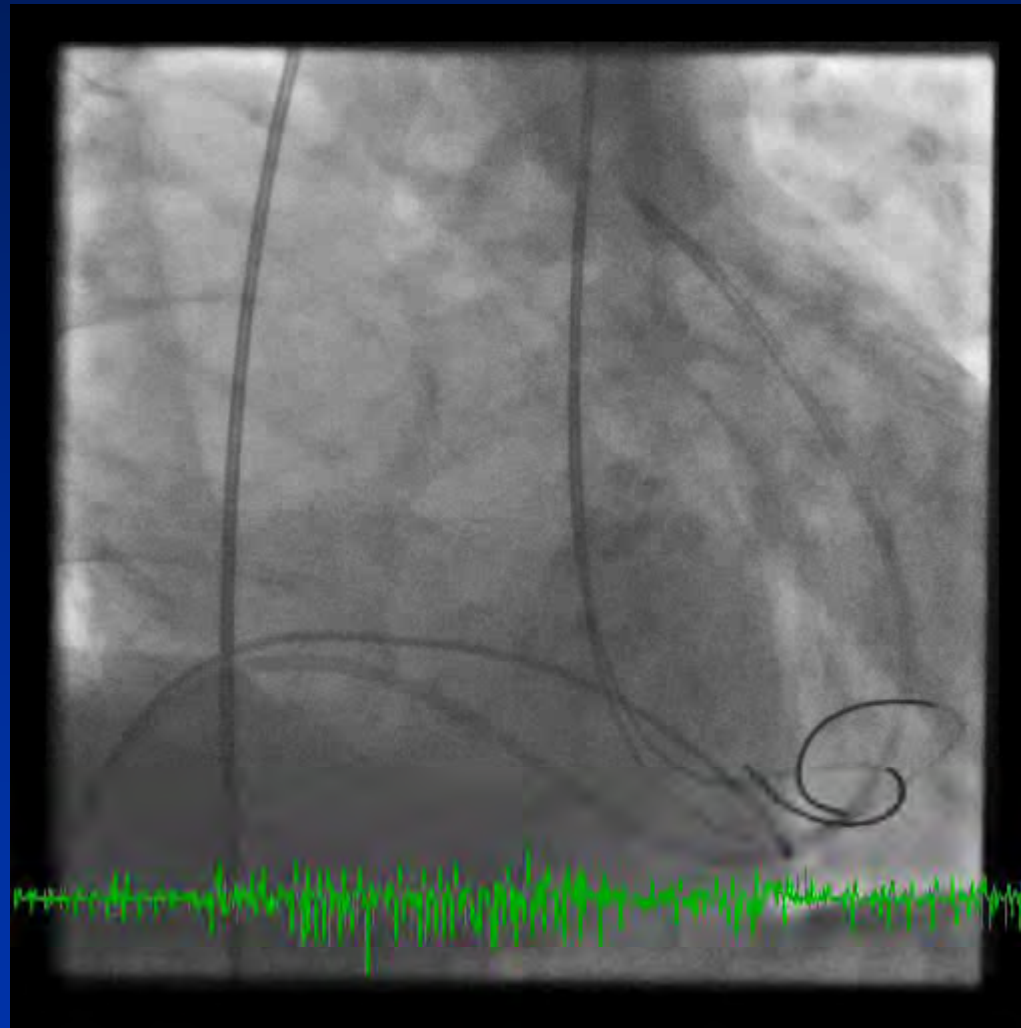
Horizontal Valve Opening



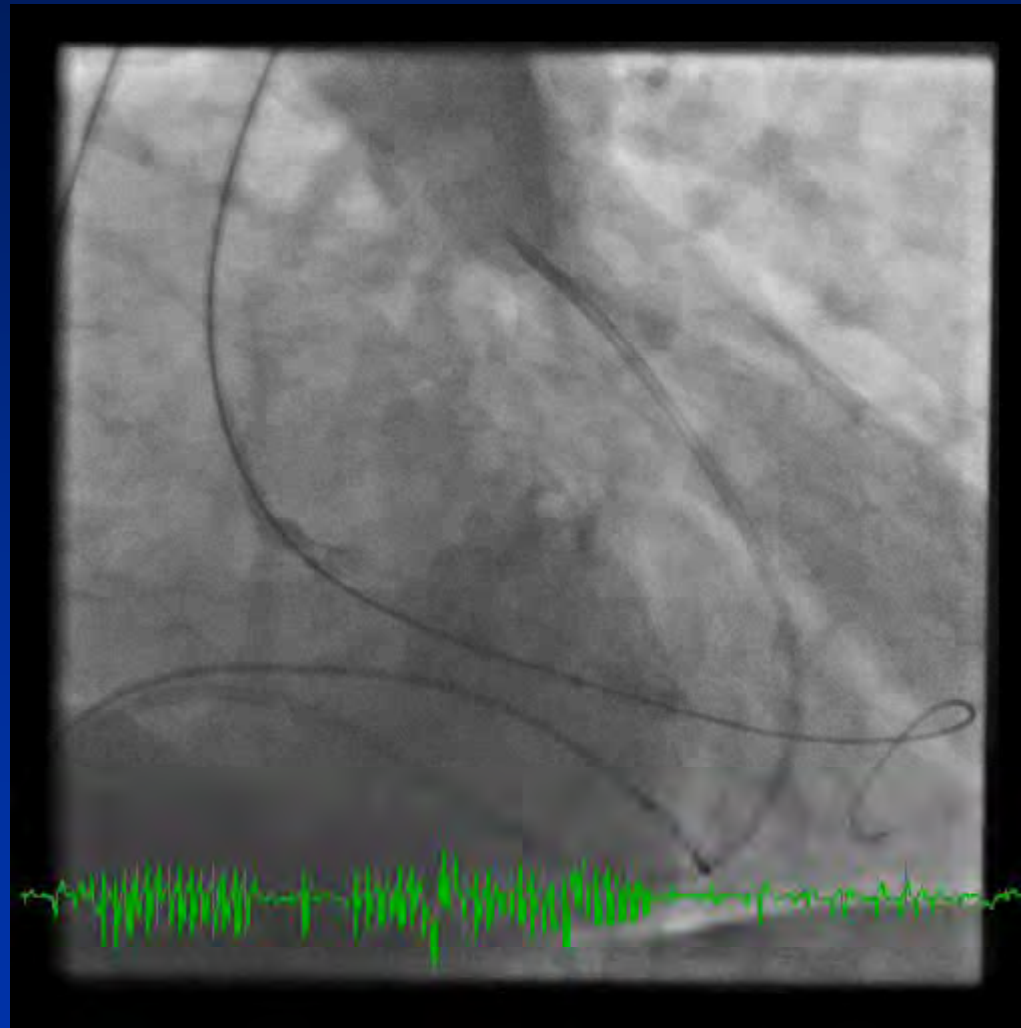
Horizontal Balloon Entry



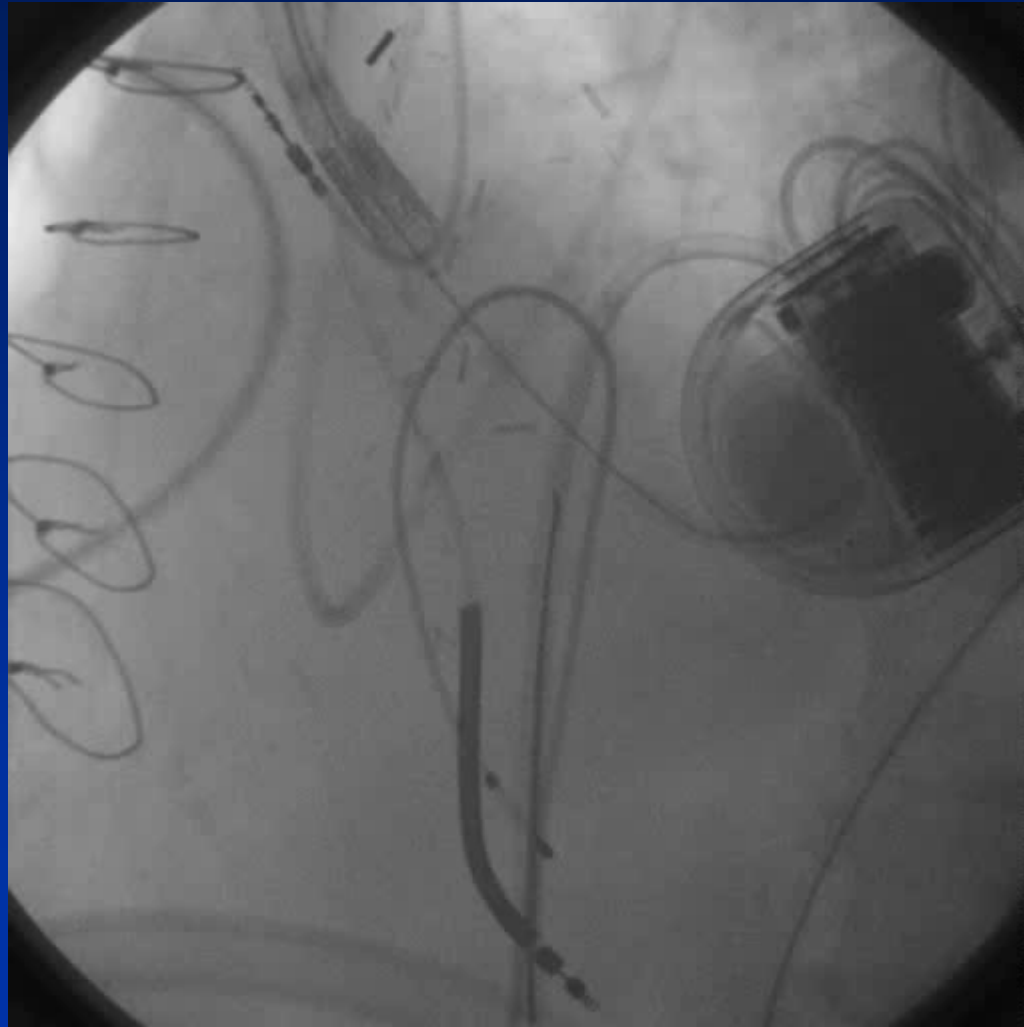
Difficult to Cross with Balloon



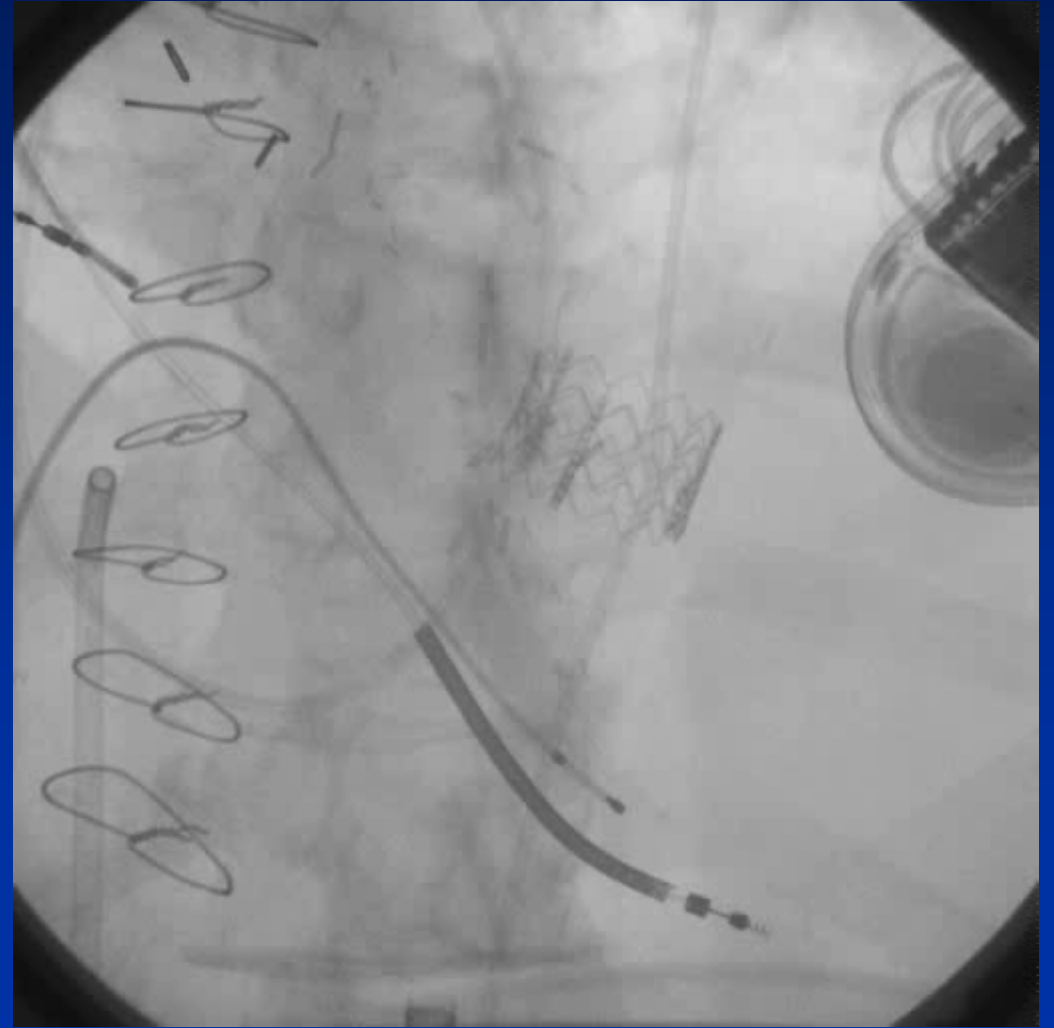
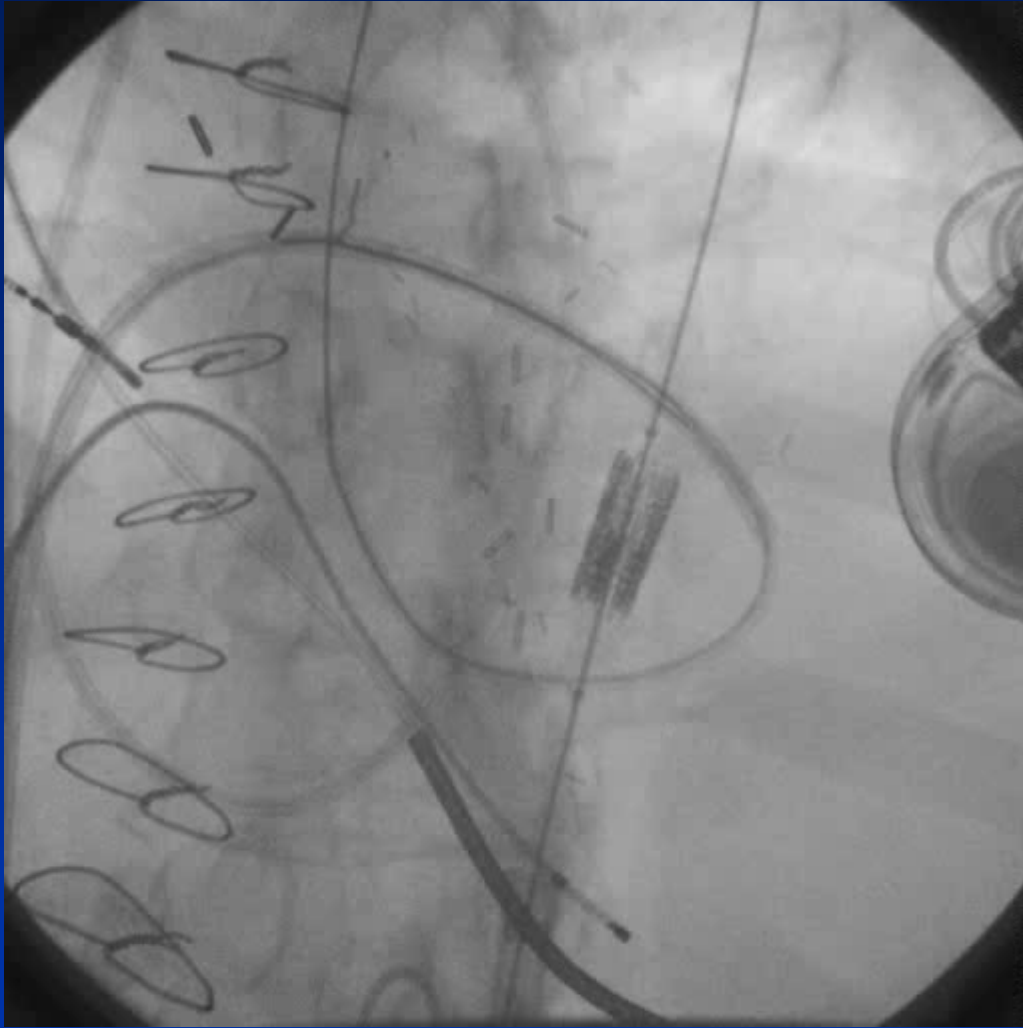
Crossing with a softer wire



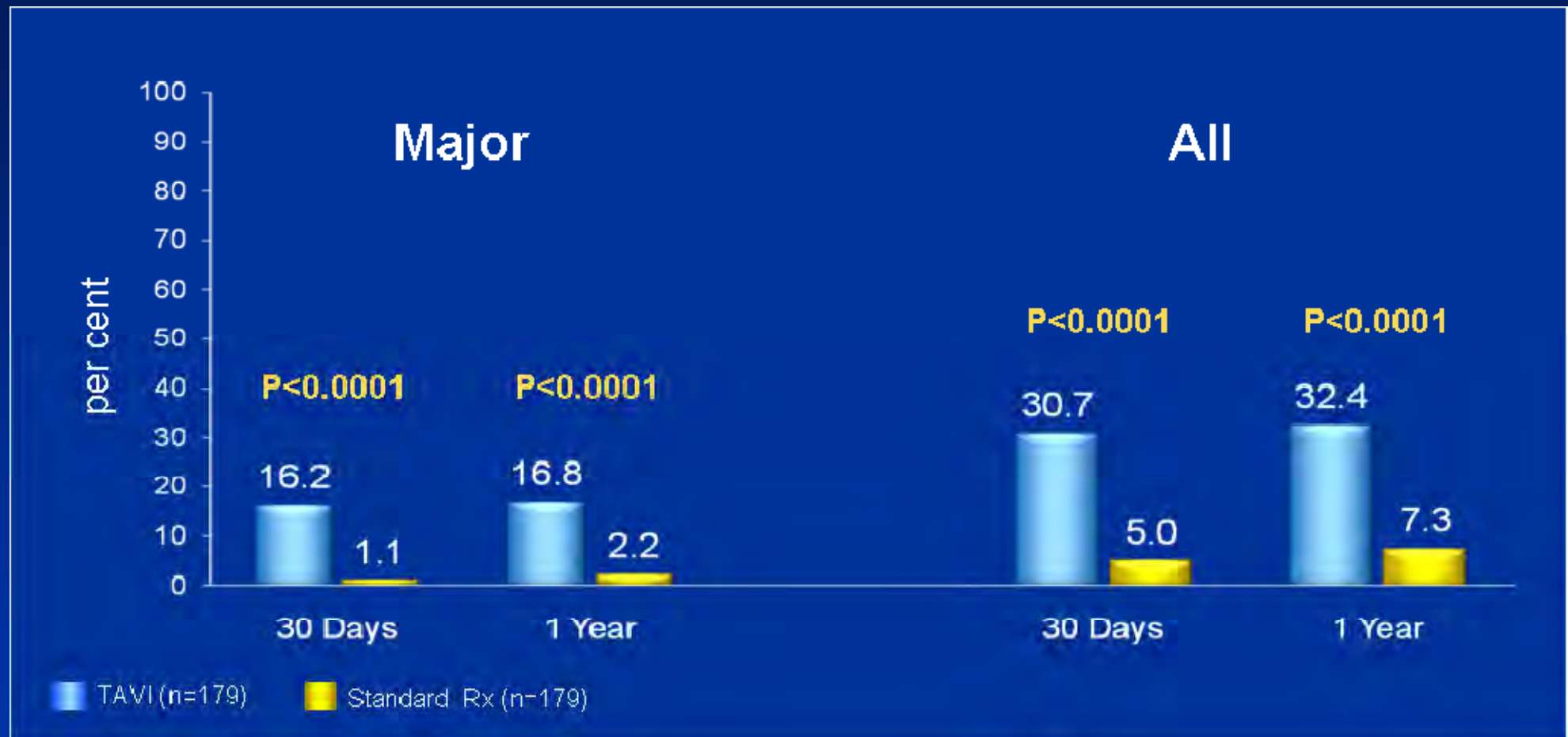
Unable to Deliver Despite Snaring of the Wire



Horizontal Entry



Vascular Complications: PARTNER



“Moderately Difficult” Access

<6 mm
Severe Ca
Severe ∟

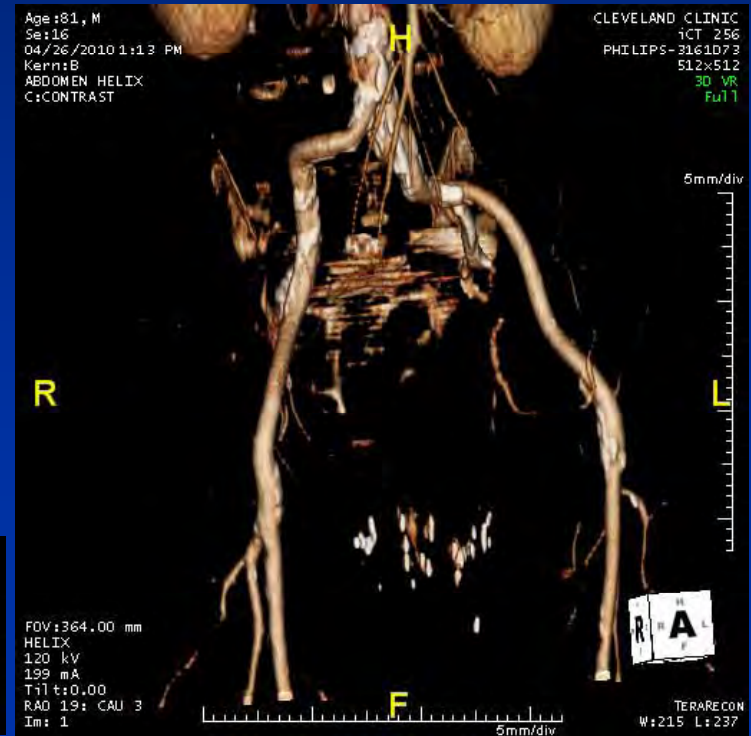
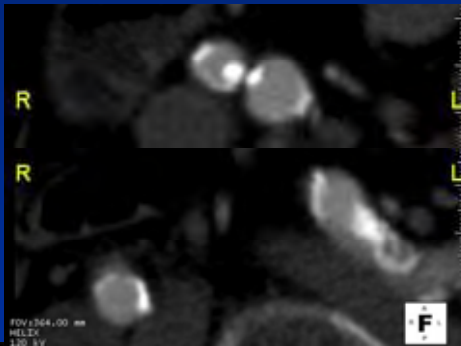
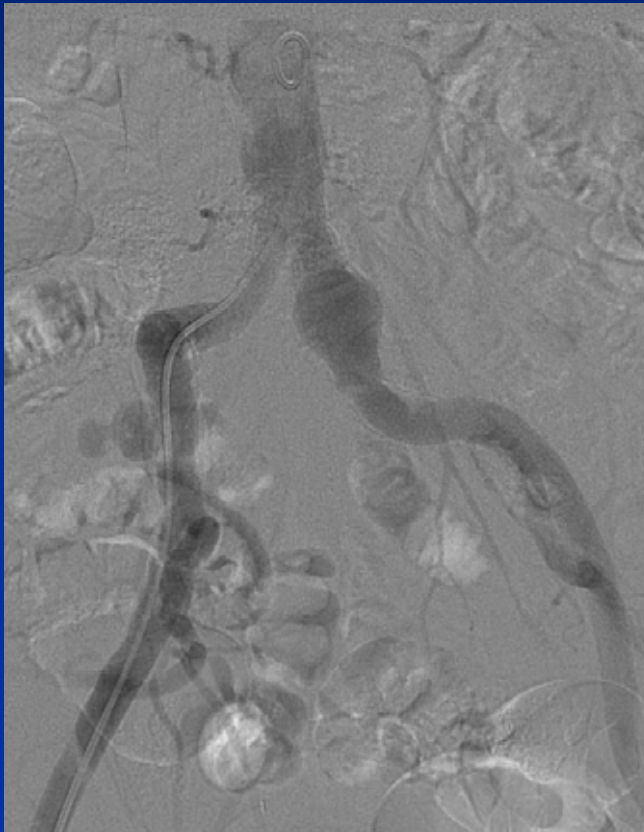
Poor

Intermediate

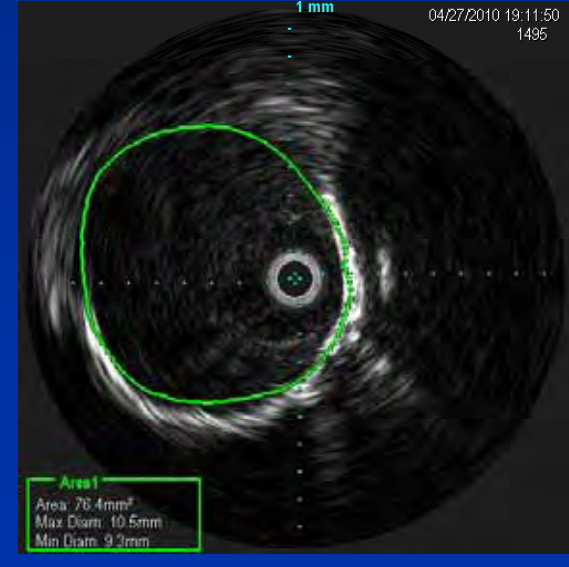
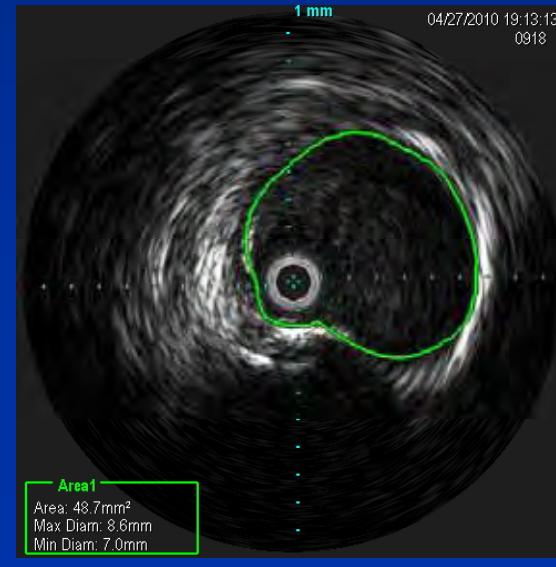
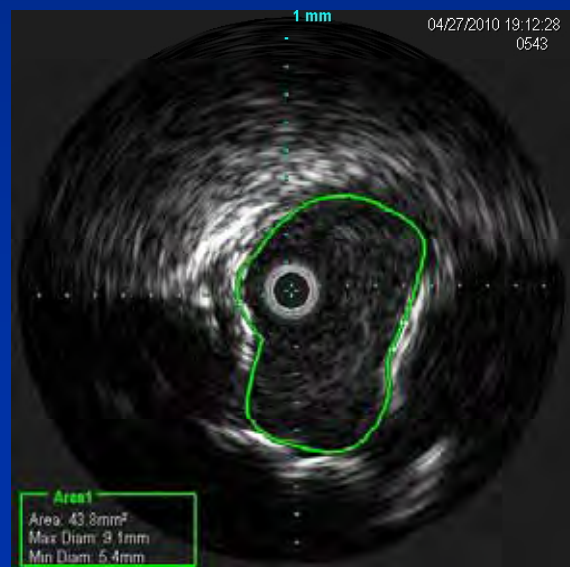
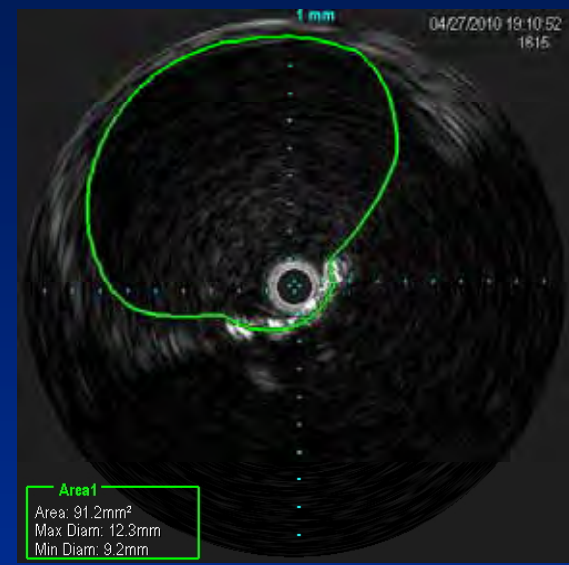
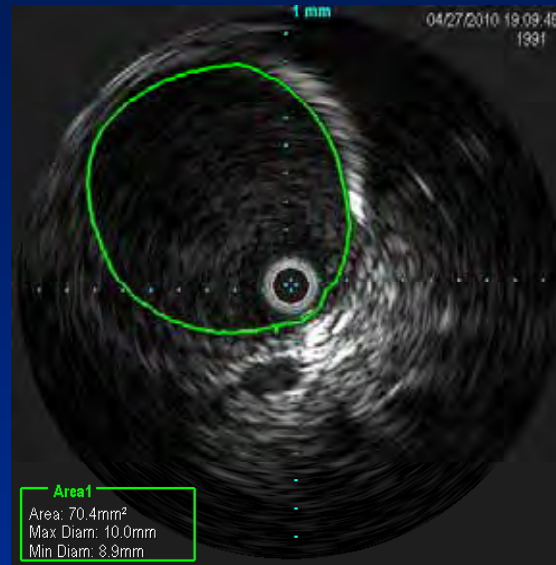
Excellent

>8 mm
no Ca
No ∟

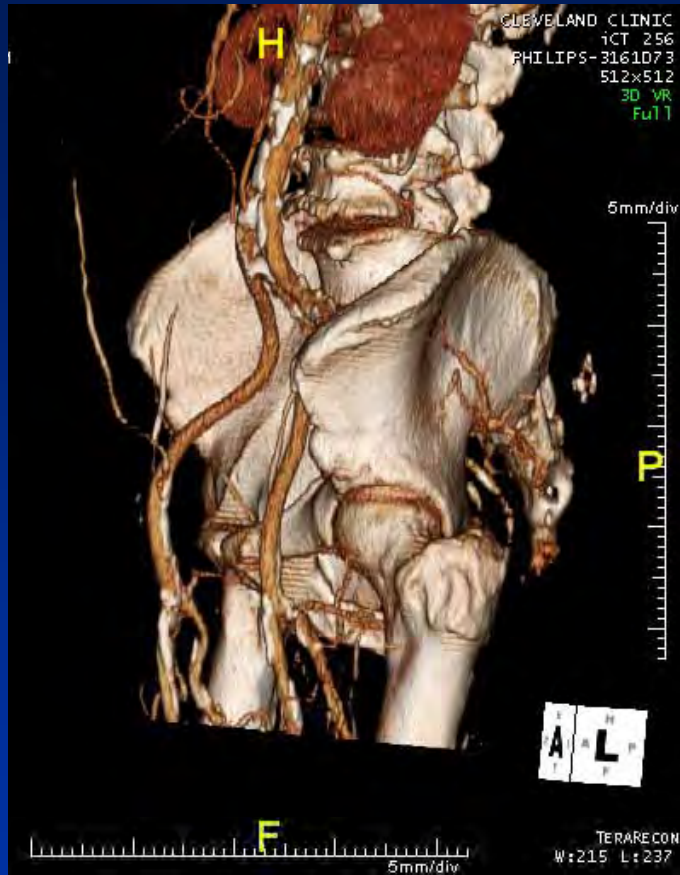
Size 6-8 mm, Moderate calcium, Moderate tortuosity
(IVUS, Stiff wires, “trial”)



IVUS

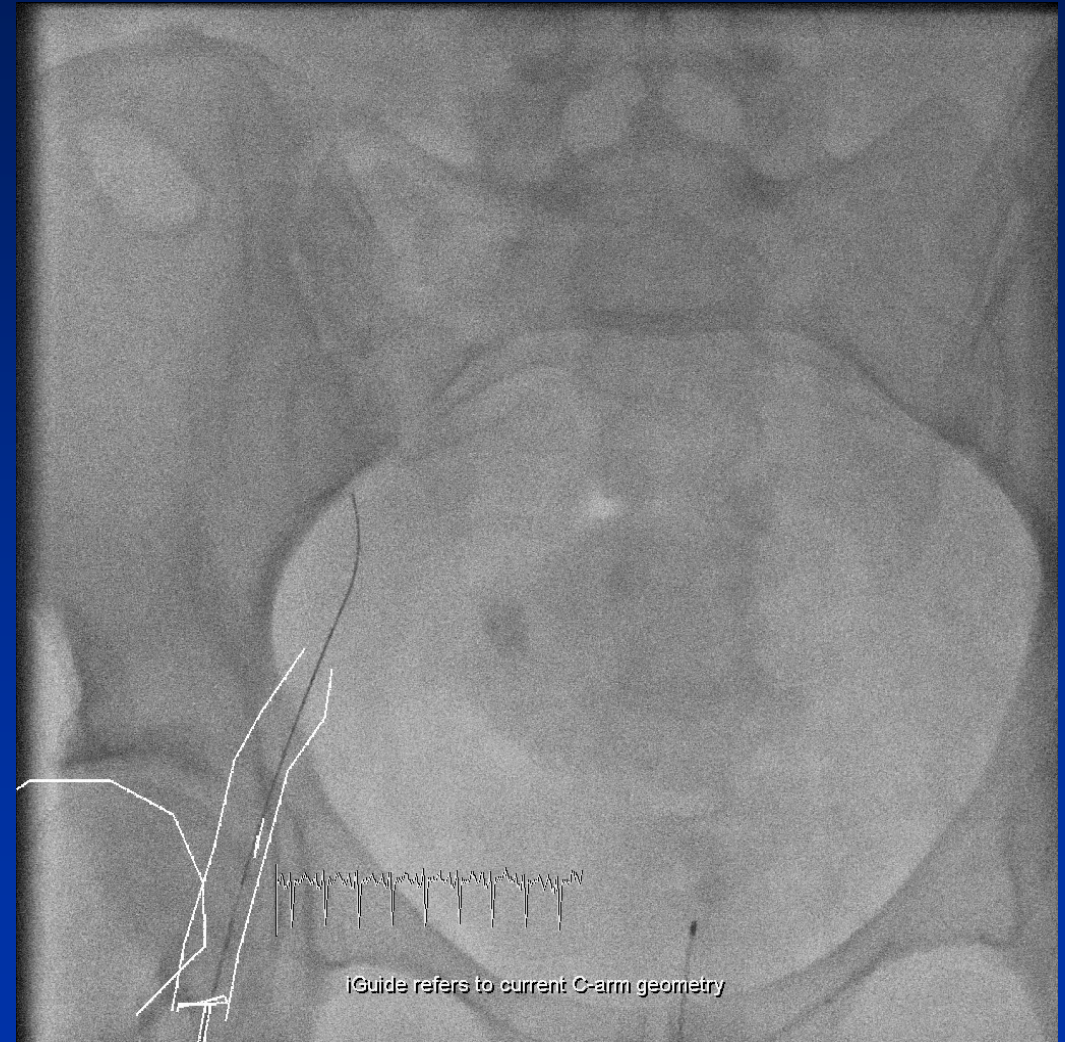
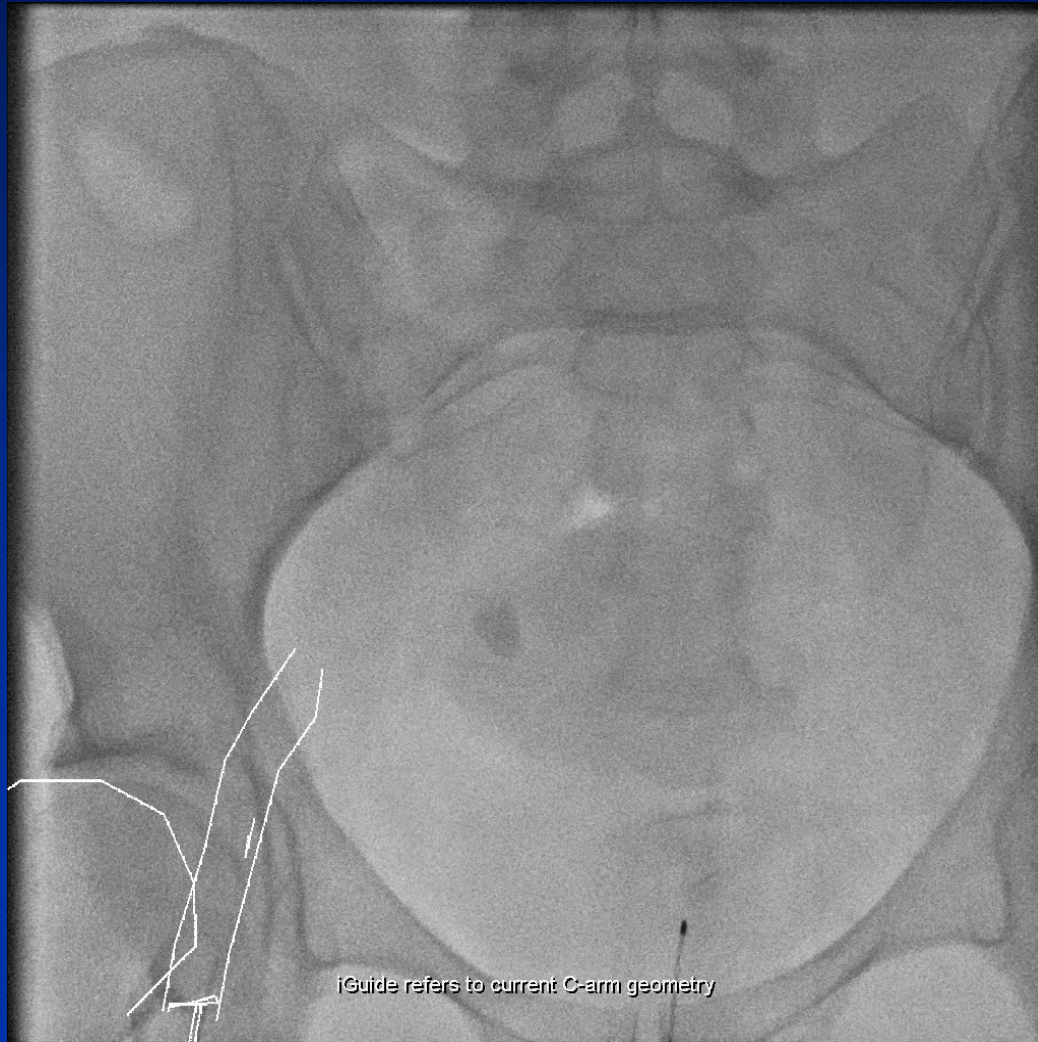


Common Femoral Imaging



Precise planning for the “skin entry” and anticipation of the “depth”

Guided Femoral Entry



Contrast Sparing CTA

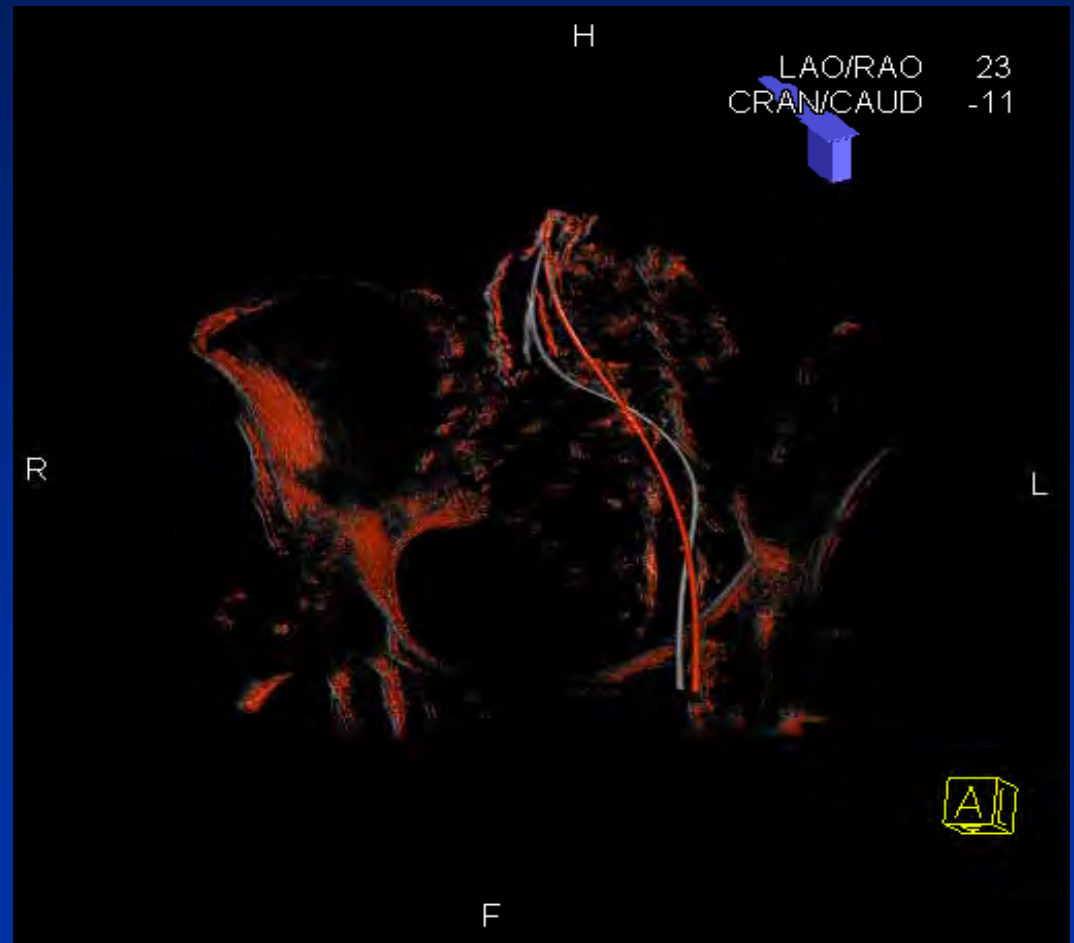


- 5F pigtail in abdominal aorta
- Mix 20cc contrast + 60 cc saline
- Inject at 4 cc/sec for 10 seconds
- 13 cc of contrast



90 cc IV Contrast

Tortuosity: Can it Straighten?



“Thinking is more interesting than knowing, but less interesting than looking”

- Goethe