

Coronary CTA for the CTO Intervention

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Traditional Approach to CAD

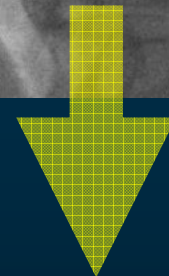
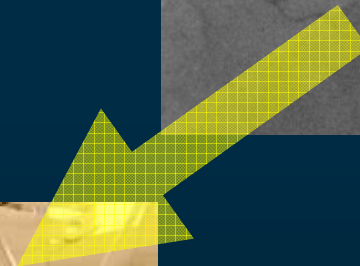
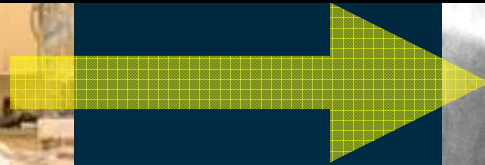


Diagnosis



Intervention

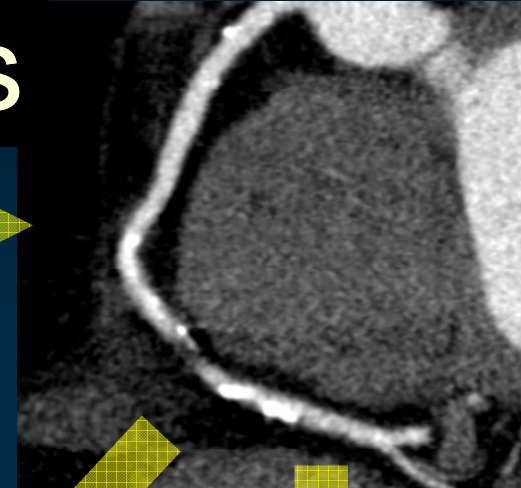
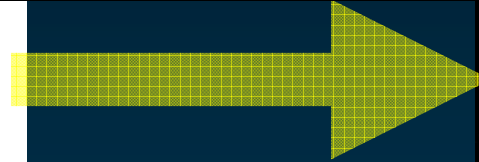
**No
Intervention**



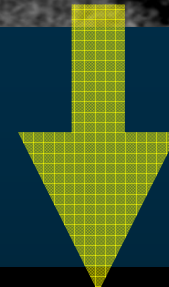
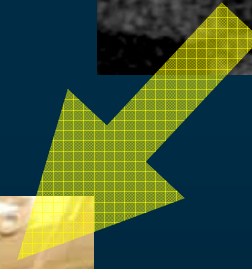
21st Century Approach to CAD



Diagnosis



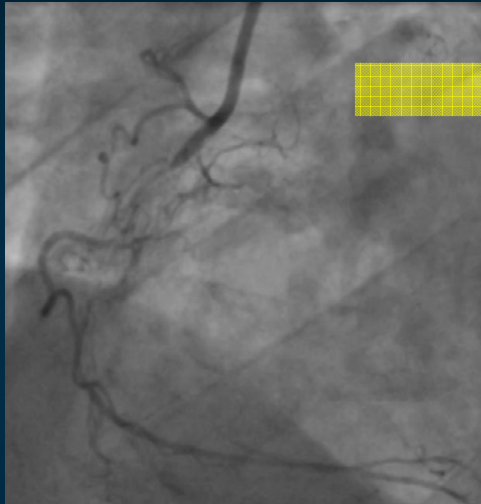
Intervention



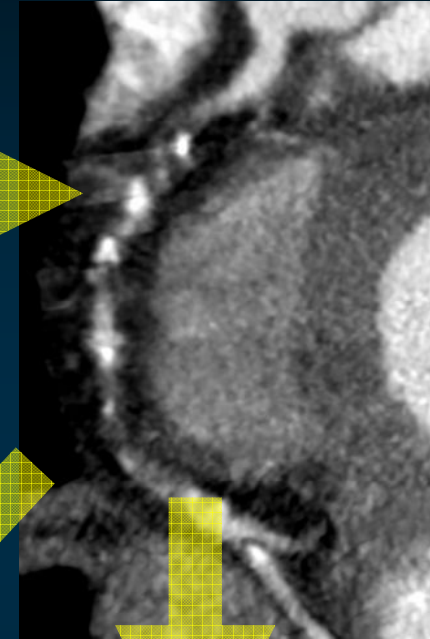
**No
Intervention**

21st Century Approach: CTO

Diagnosis



Evaluation



Intervention



No
Intervention

Decisions Regarding Intervention on CTO Based on Angiographic Variables

- Discrete lesion / Long lesion

These Characteristics Can Also Be
Evaluated by 3D Coronary CTA

- Calcification
- Side branch presence / location

Limitations of Traditional Coronary Angiography

Requires invasive study

“Lumenogram”

Plaque characterization requires IVUS

Projection images (vessel overlap and foreshortening)

Multiple injections & runs for optimal viewing angle

Coronary CTA Provides Unique Perspective

Non-invasive

**3D Volume of
Anatomic Data
(No Overlap)**

**Plaque
characterization
(calcification)**

**Volume Data Can
Be Infinitely
Manipulated**

How Coronary CTA is Interpreted & Utilized

Lesion Length

Lesion Curvature

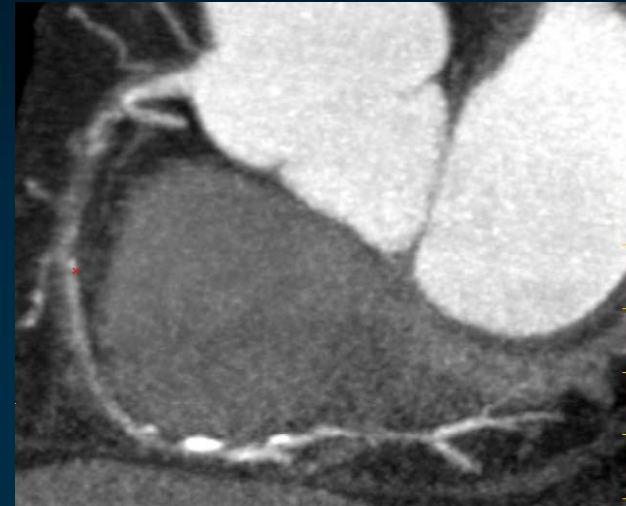
Lesion Access

Side Branch Locations

S.B. Origin Angle

Distal Vessel Caliber

CTO Plaque Character



Angiographic and MSCT Predictors of Procedural Failure

Variable	OR (95% CI)
Tapered stump (angio)	0.09 (0.02-0.48) P < 0.01
Occlusion length >15mm (MSCT)	8.77 (1.58-48.76) P = 0.01
Severe calcification (MSCT)	7.62 (1.33-43.74) P = 0.02

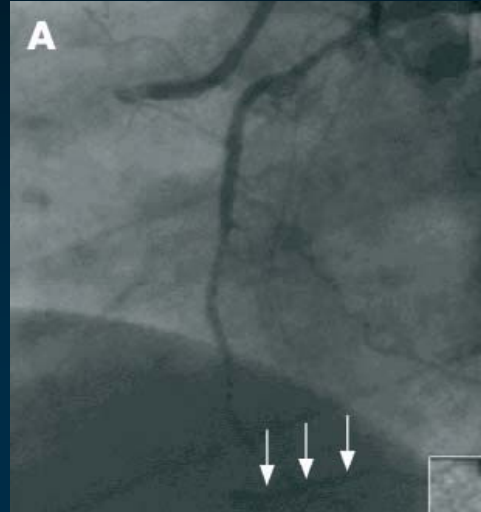
Dense Calcification Predicts Failure

39 pts with 43 CTO
56% successful revascularization overall

Variable	OR (95% CI)
Dense calcification (>50% cross sectional area)	0.10 (0.02 – 0.47)
Blunt stump	0.24 (0.07-0.86)

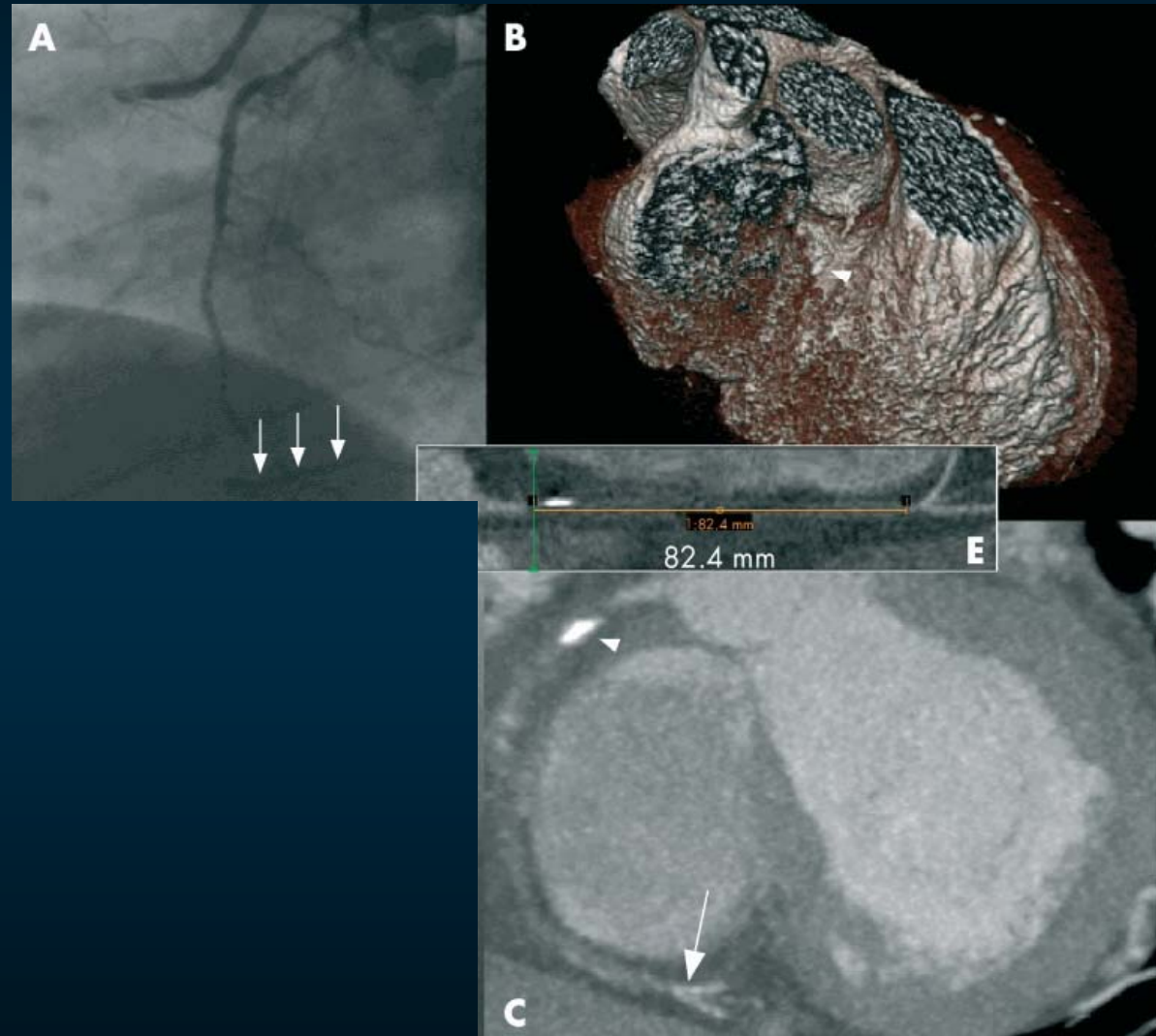
Long, but non-calcified, CTO

- 50 yo man with angina.
- Two previous attempts unsuccessful.



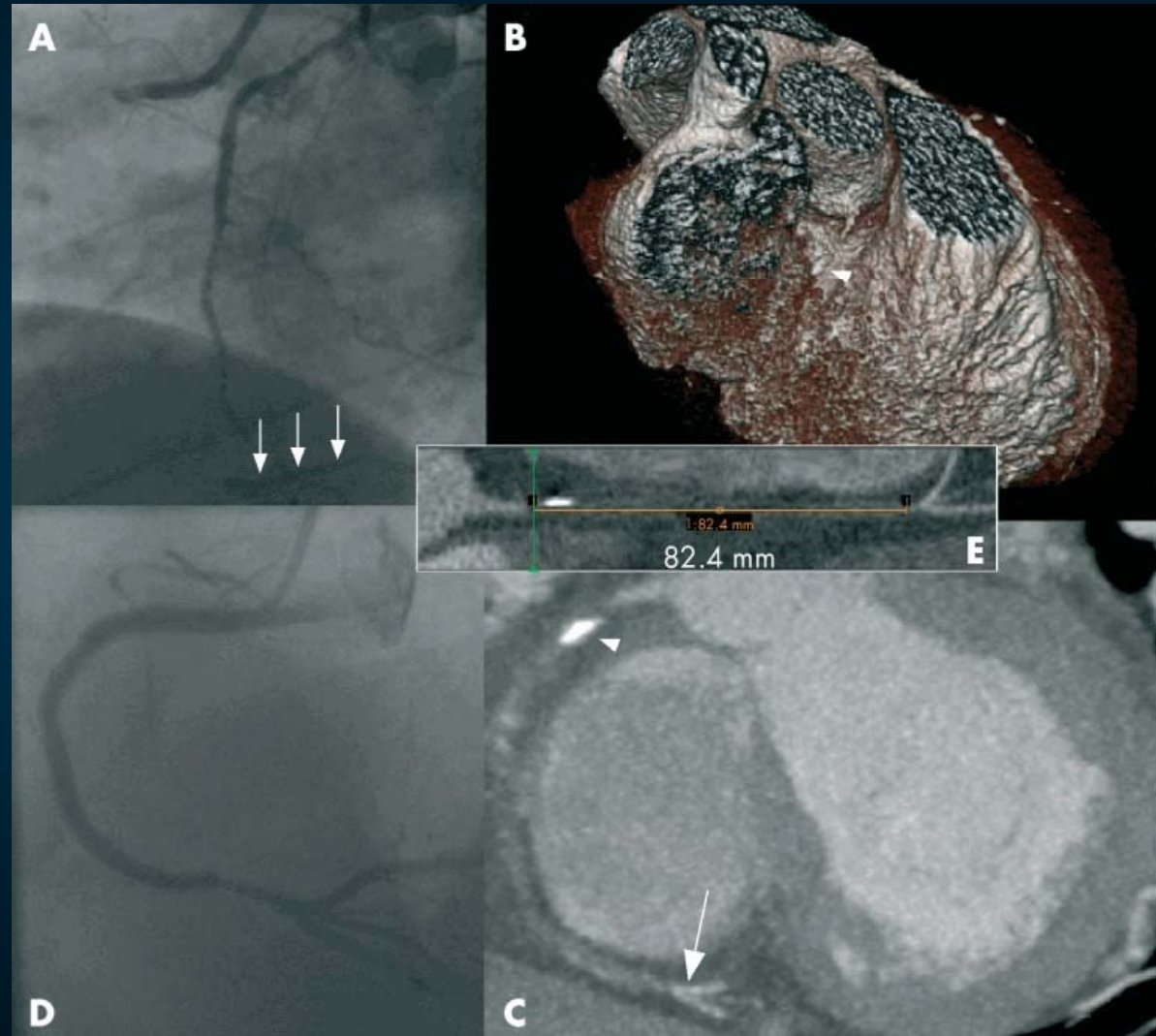
Long, but non-calcified, CTO

- 50 yo man with angina.
- Two previous attempts unsuccessful.
- Ablation of proximal calcium followed by conventional guidewire.
- Three DES.

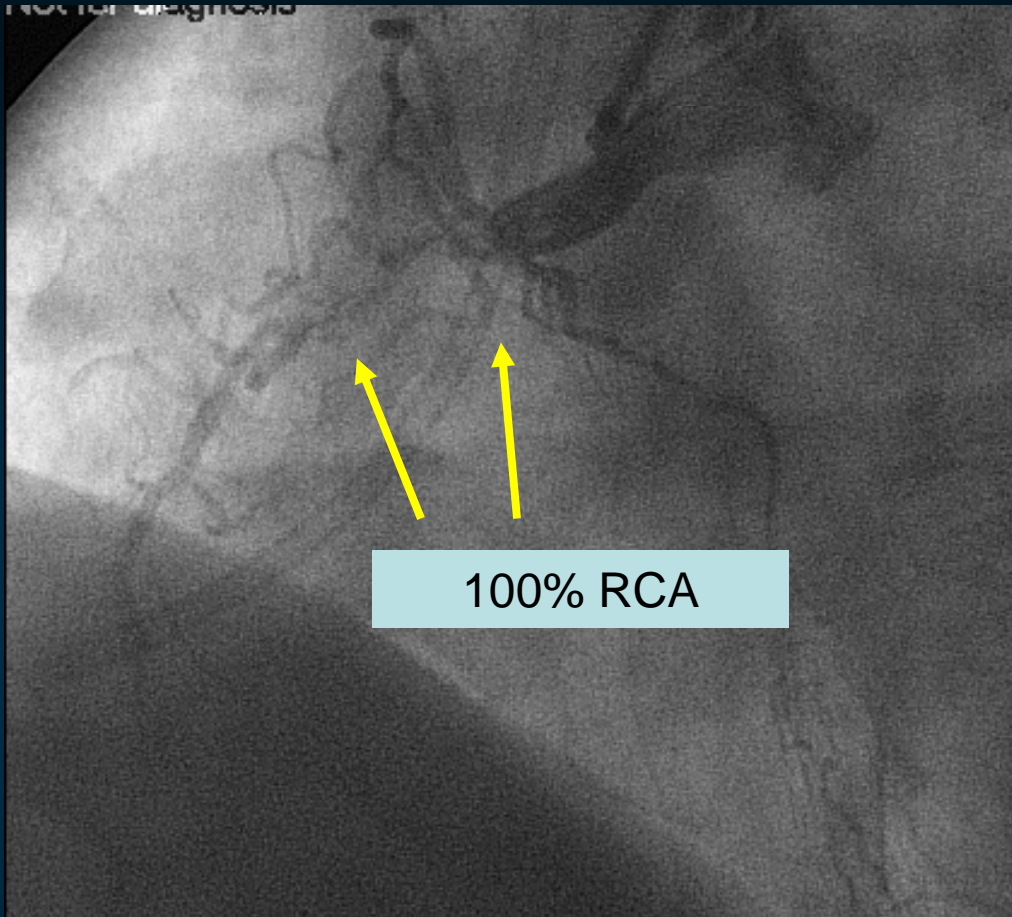


Long, but non-calcified, CTO

- 50 yo man with angina.
- Two previous attempts unsuccessful.
- Ablation of proximal calcium followed by conventional guidewire.
- Three DES.
- Six month follow-up.



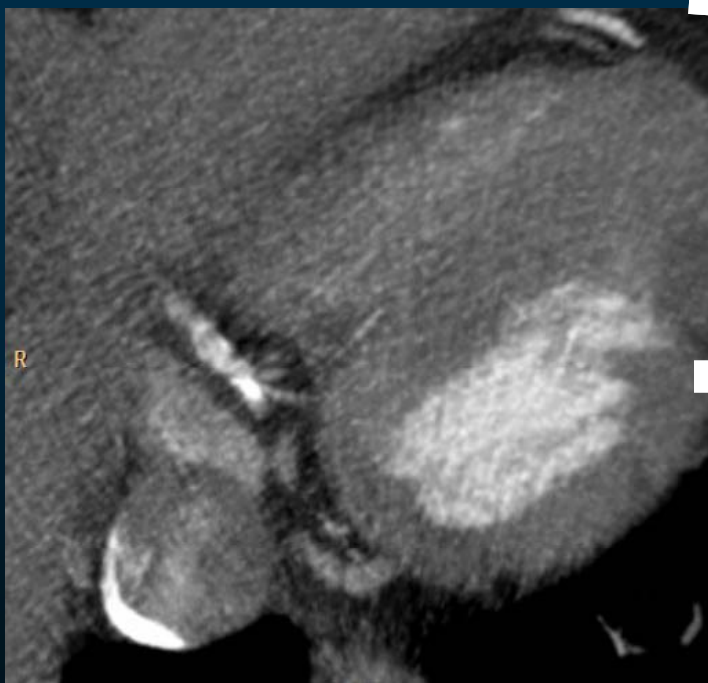
Not for diagnosis

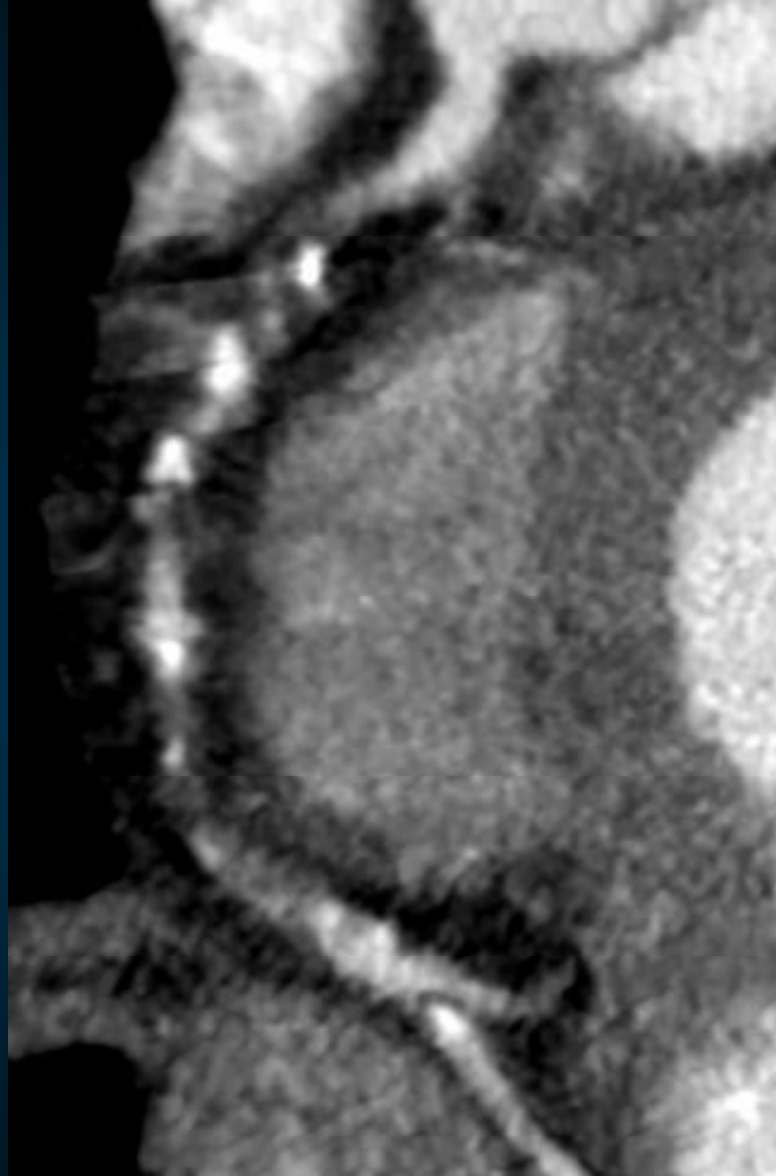


100% RCA









TrueView



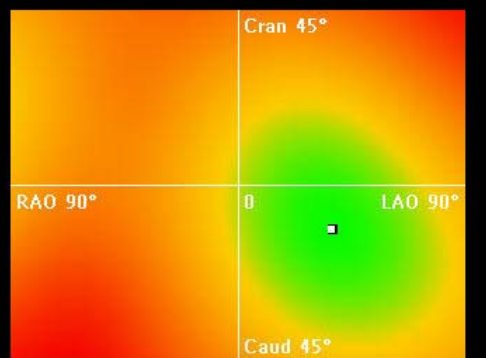
Analyse a subsegment by dragging the controls on the slider or by dragging the rings on the image of the model.

TrueLength TrueView Views

Current Foreshortening: 1.9 %

Minimum Foreshortening: 1.9 %

LAO 38° Caud 11°



Swap

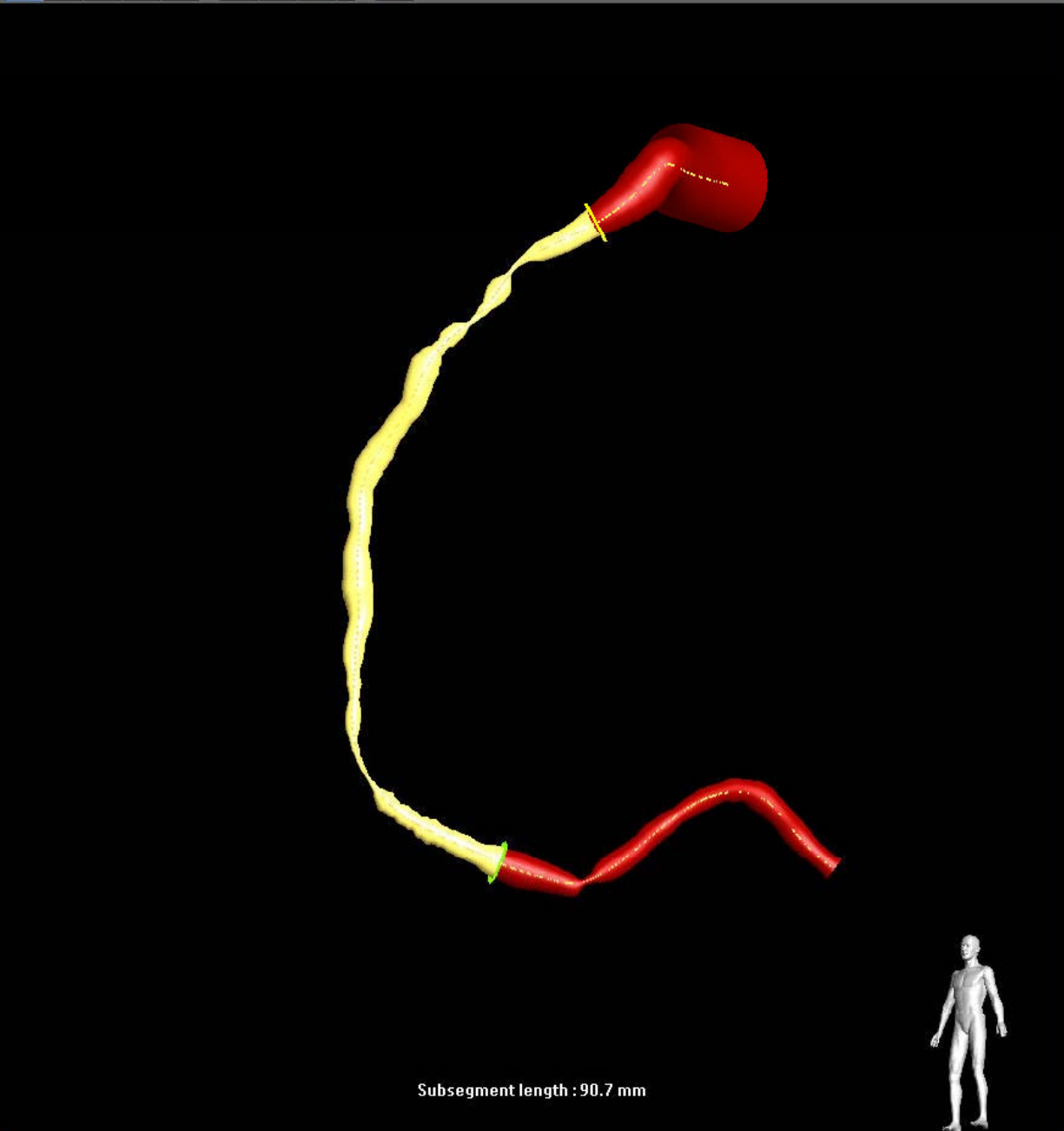
Settings

LAO 37°

Caud 11°



Exit

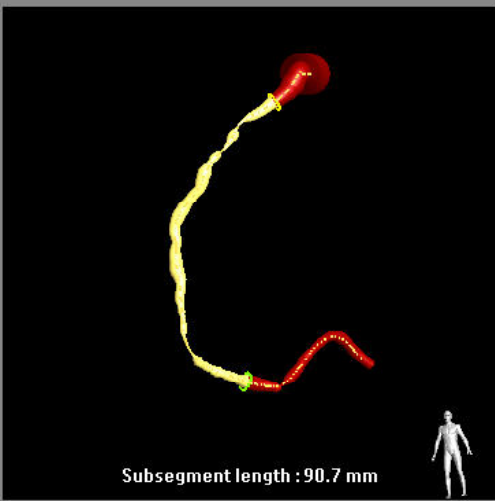


Subsegment length : 90.7 mm

TrueView

Analyse a subsegment by dragging the controls on the slider or by dragging the rings on the image of the model.

TrueLength TrueView Views



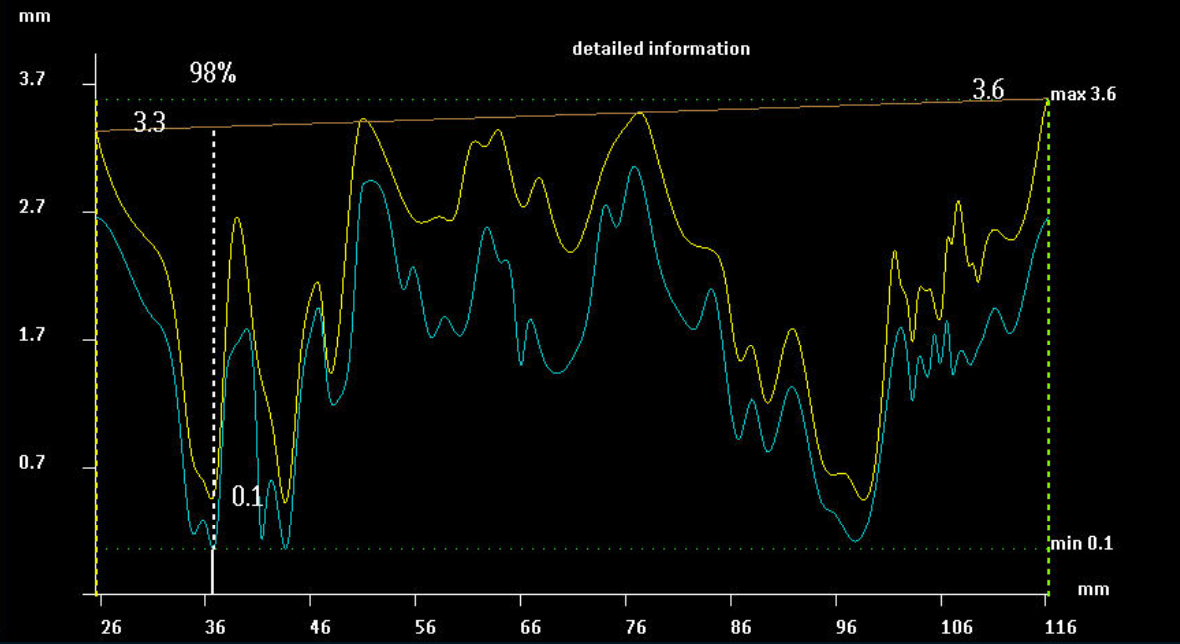
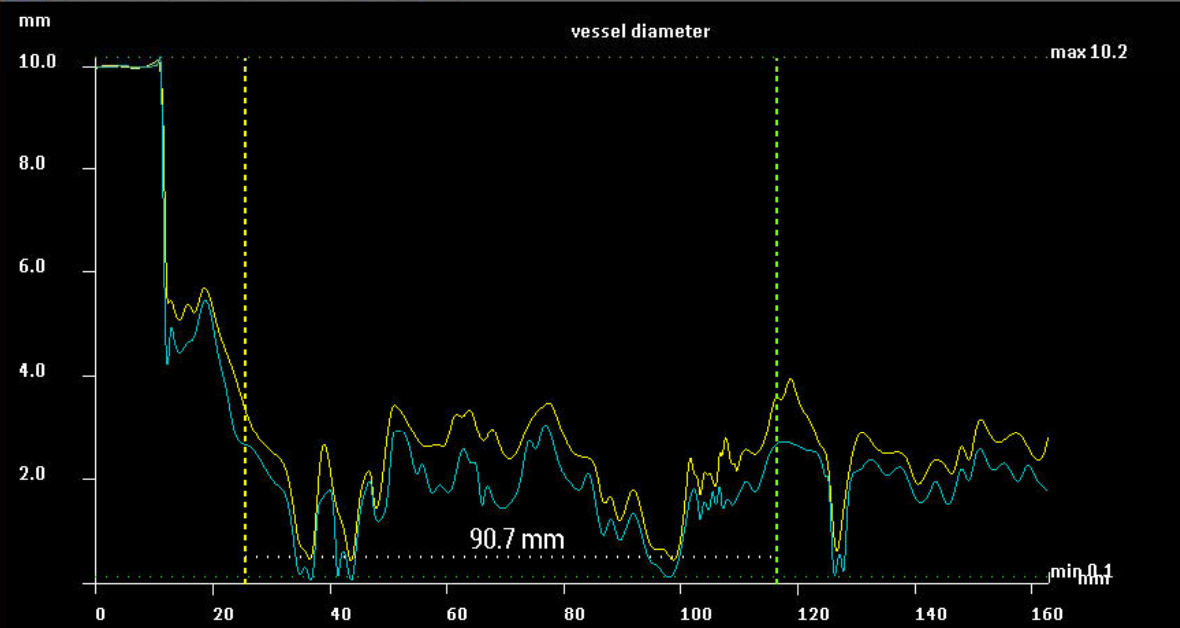
Effective Diameter
Minimum Diameter

Swap

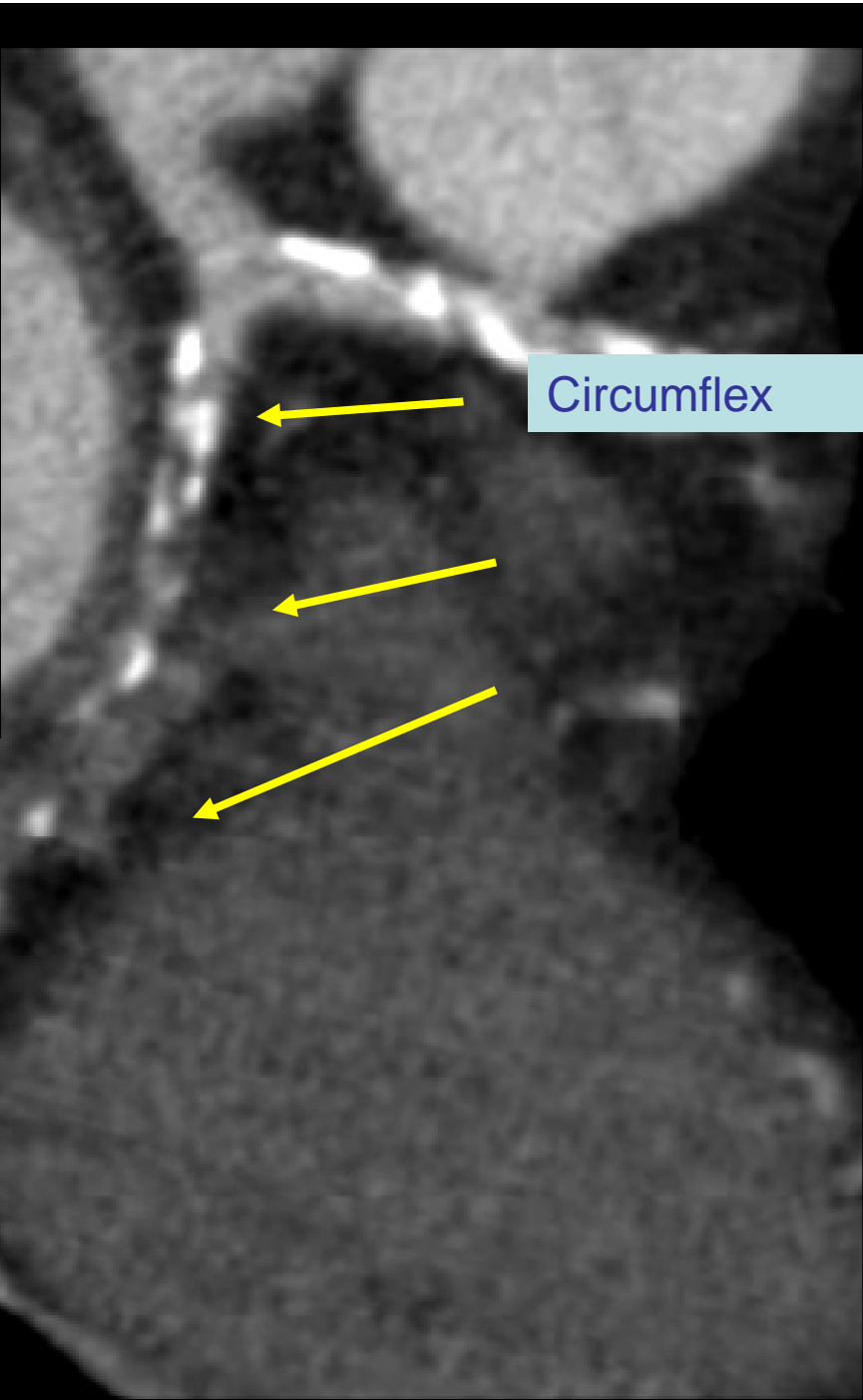
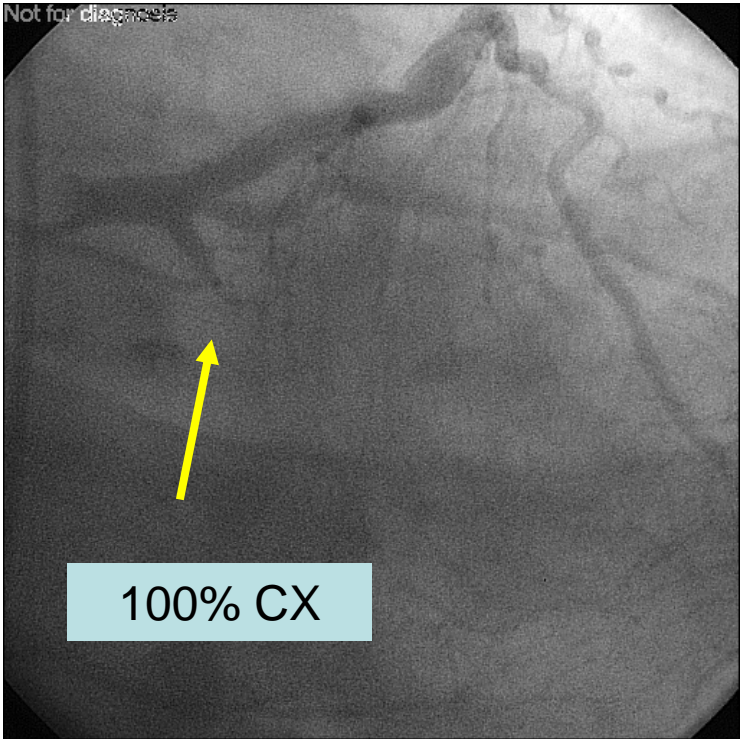
Settings

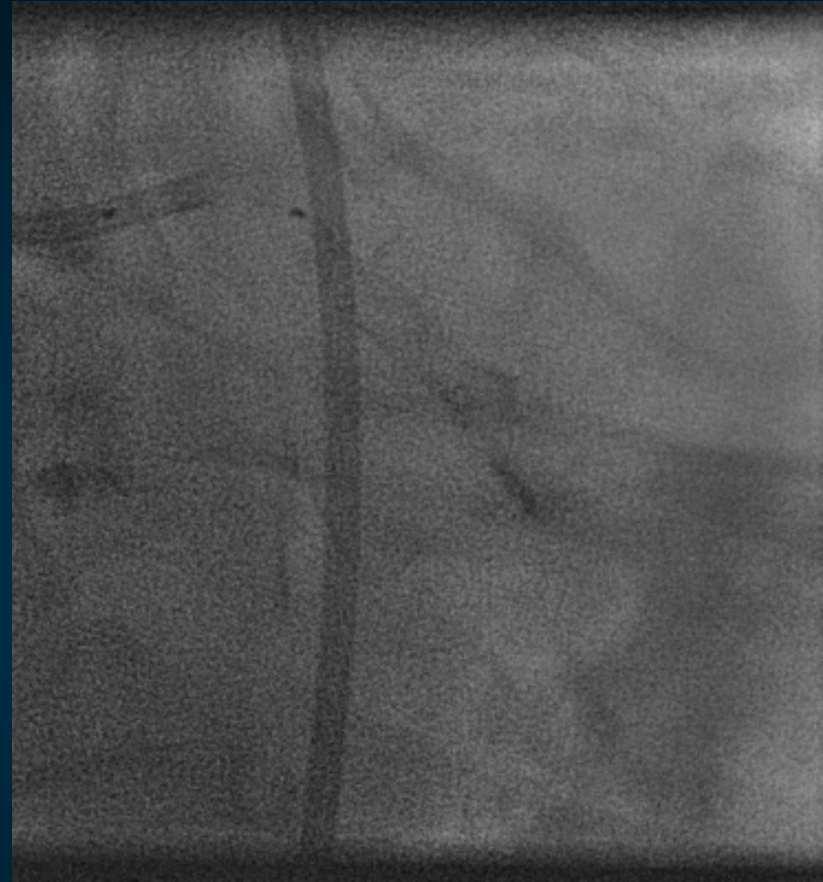
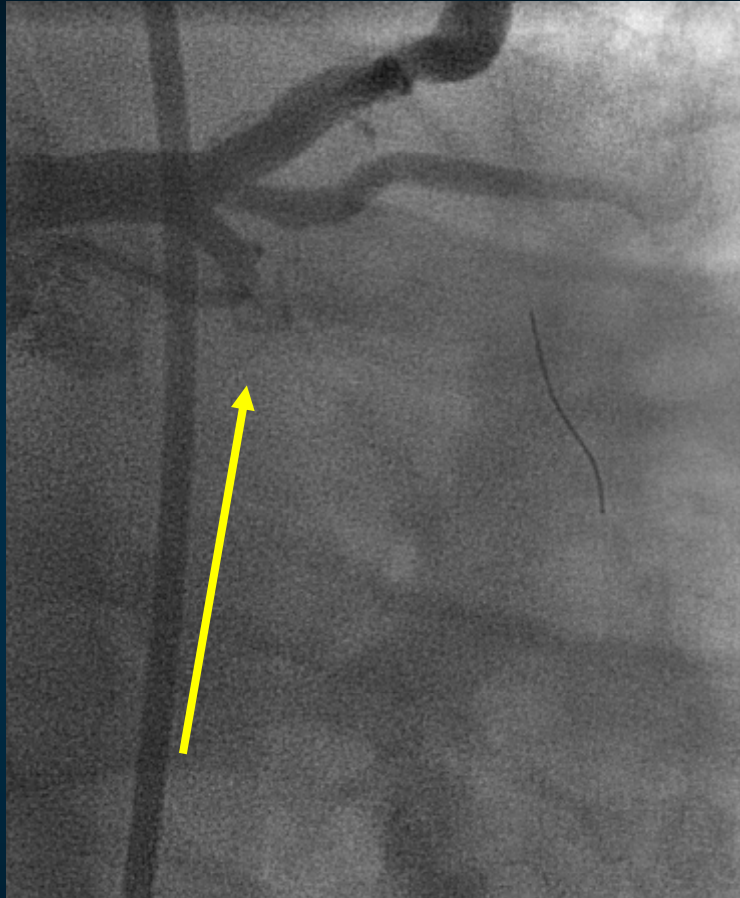
LAO 16°
Caud 3°

Exit

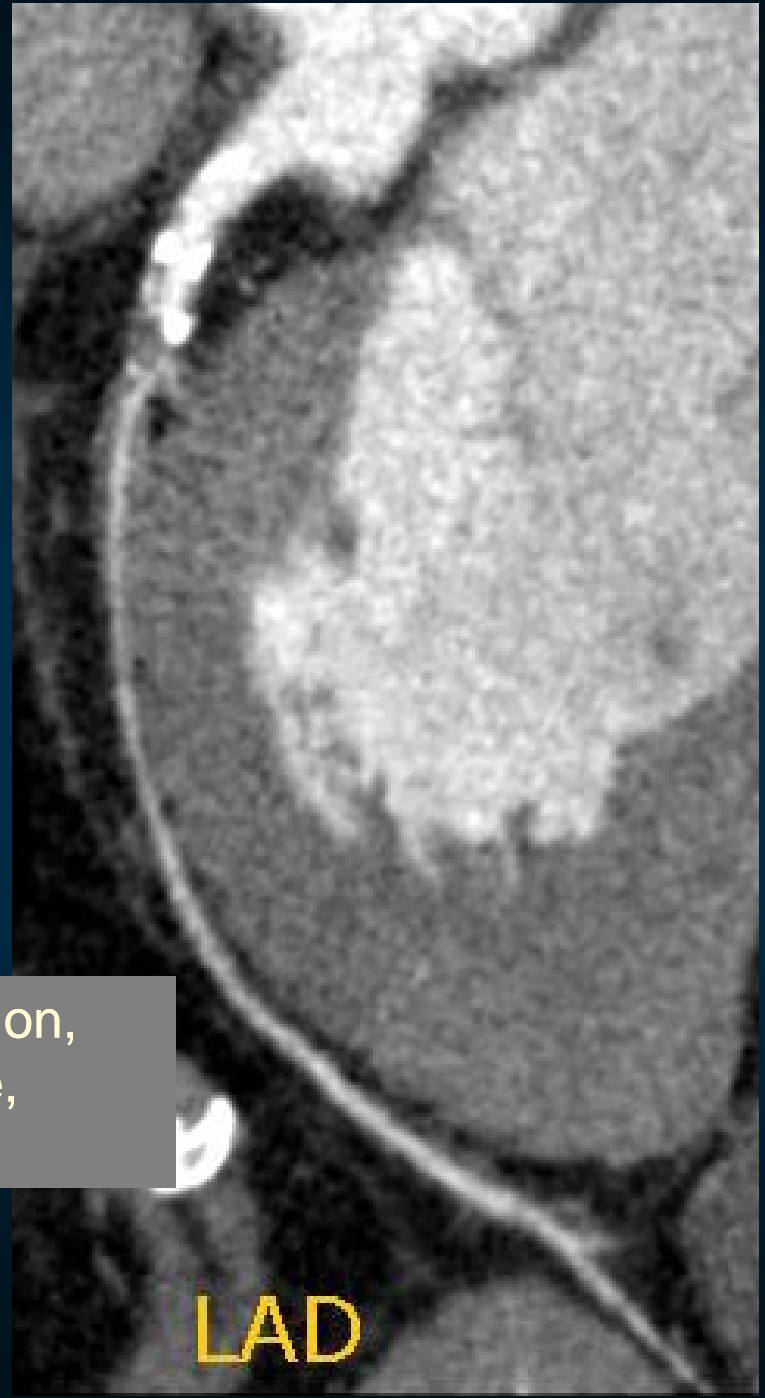
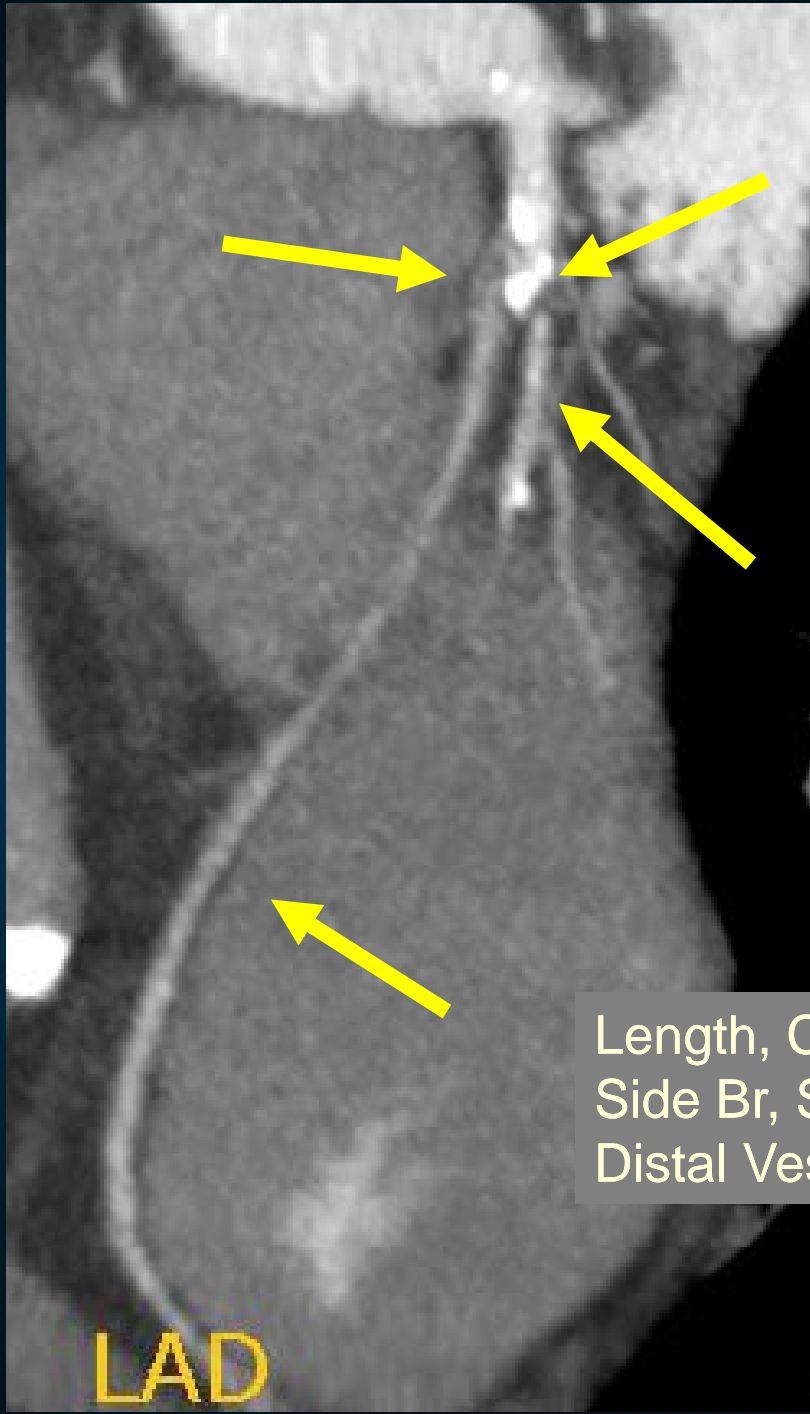


Not for diagnosis





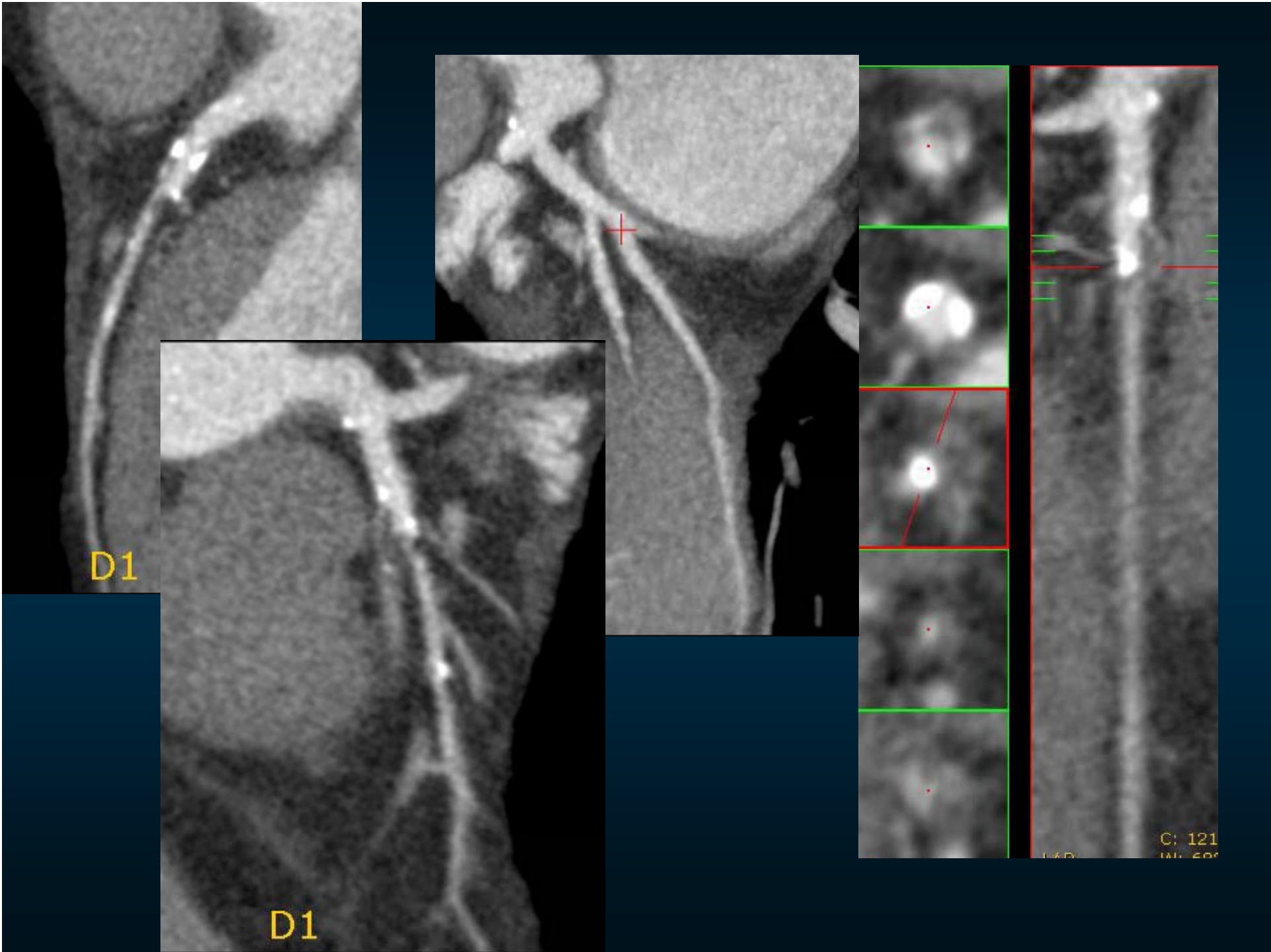
CX after partial wire crossing



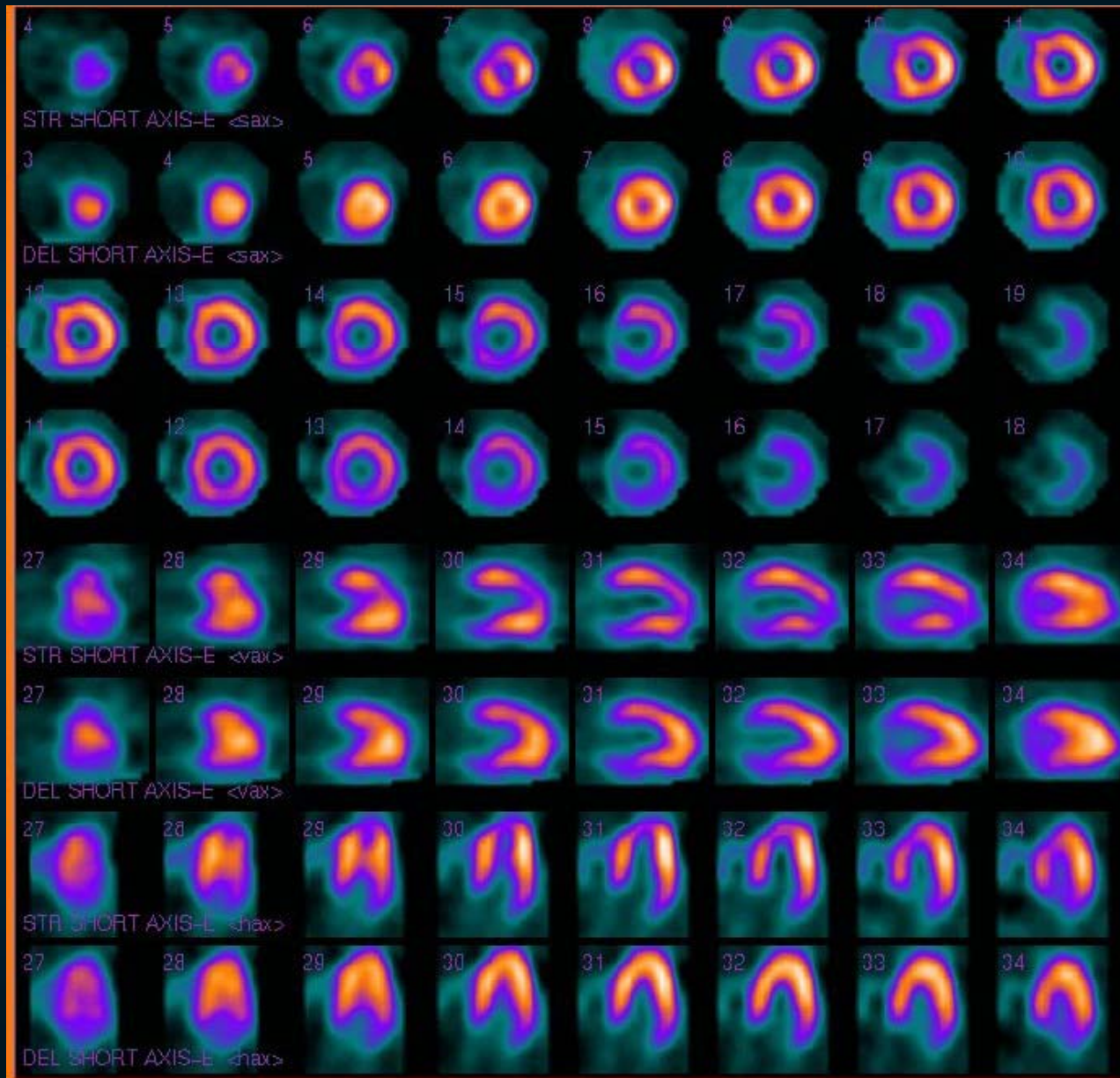
Length, Calcification,
Side Br, SB Angle,
Distal Vessel

LAD

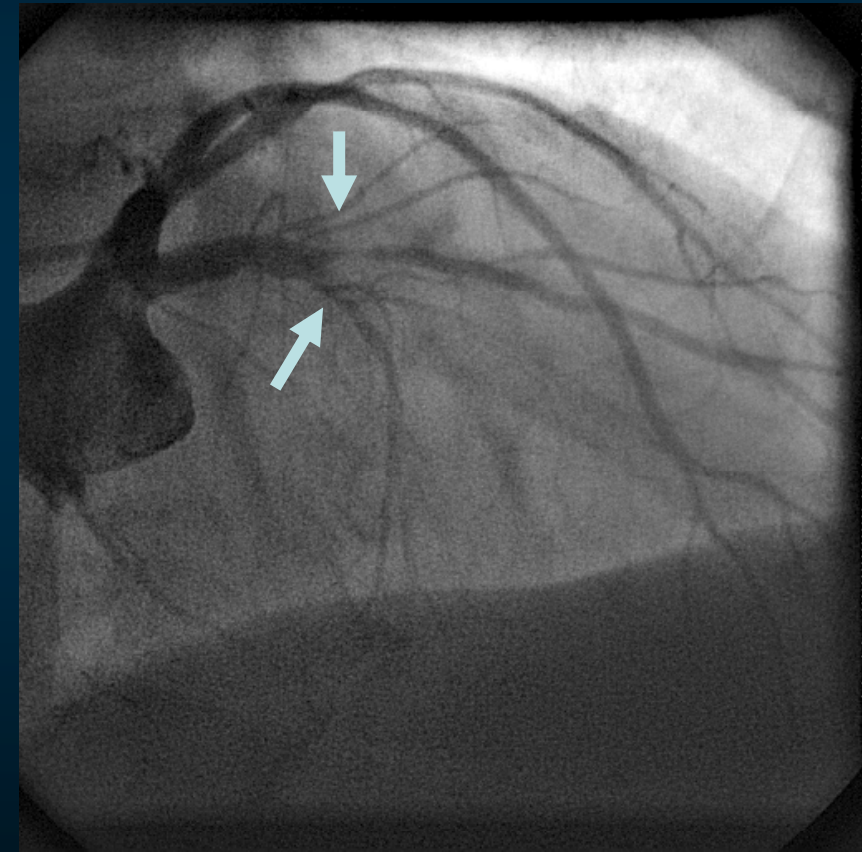
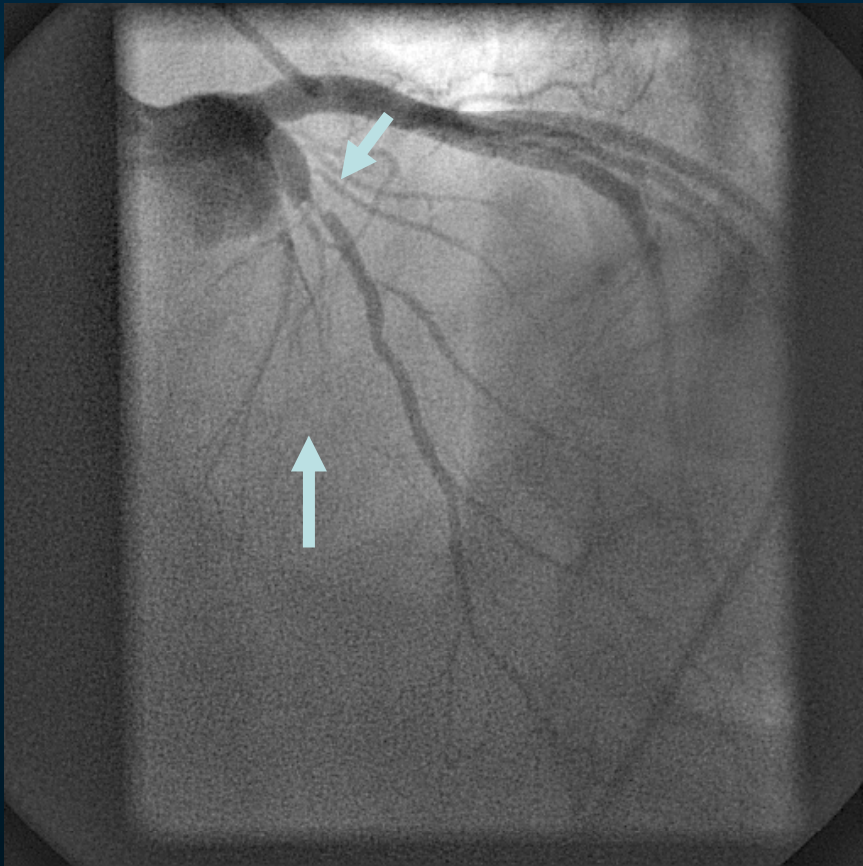
LAD



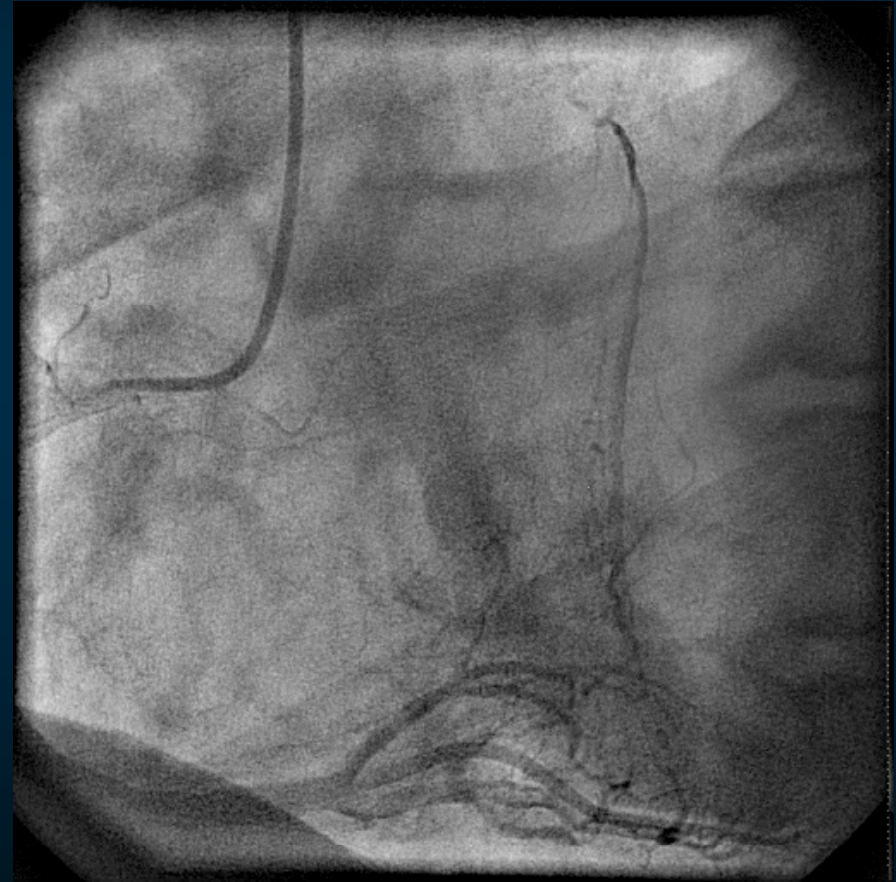
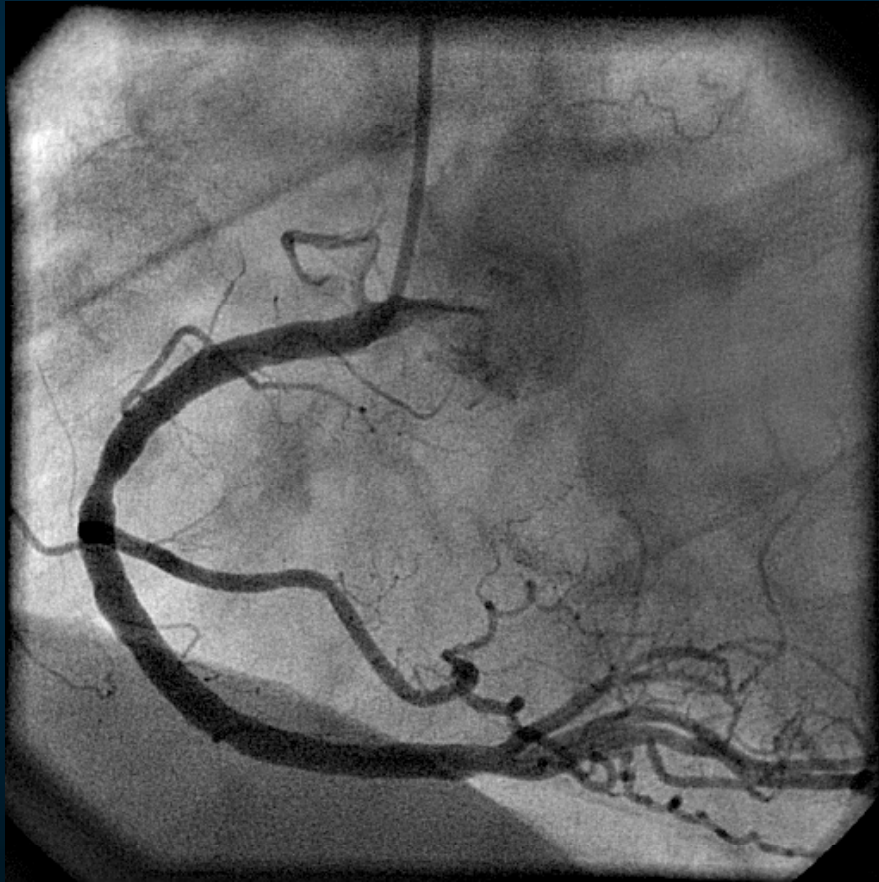
Sestamibi SPECT



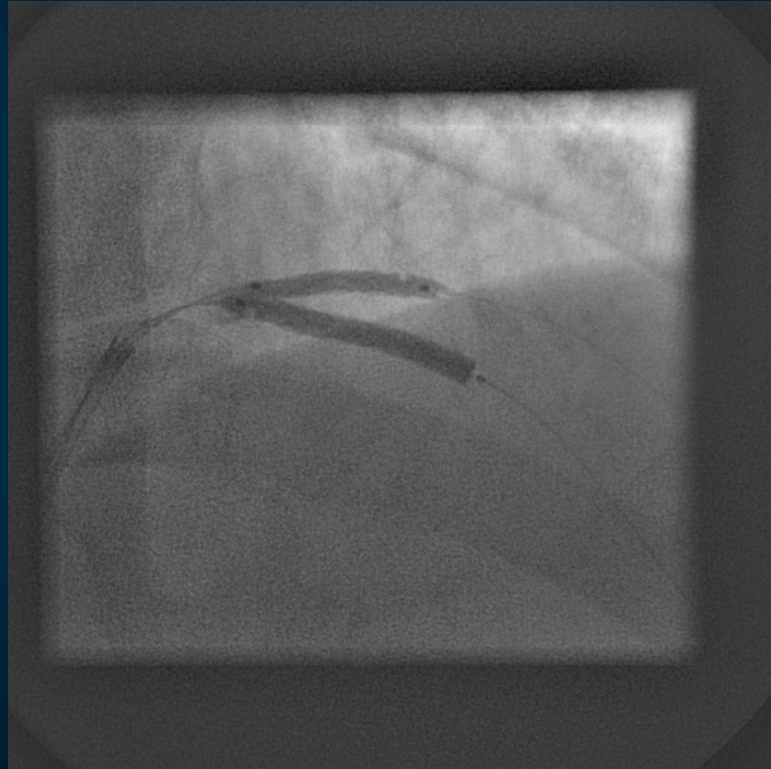
LAD & Diagonal

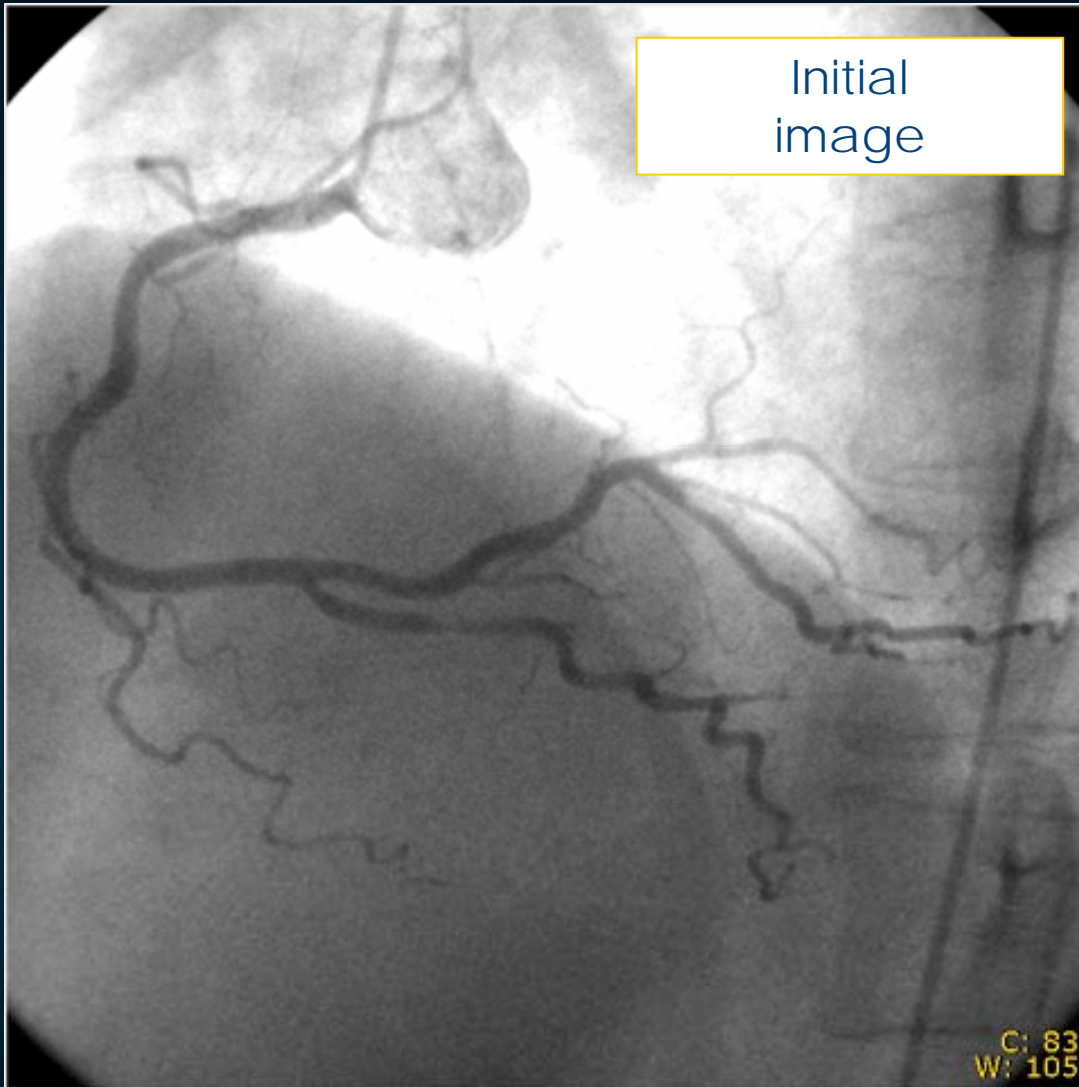


RCA

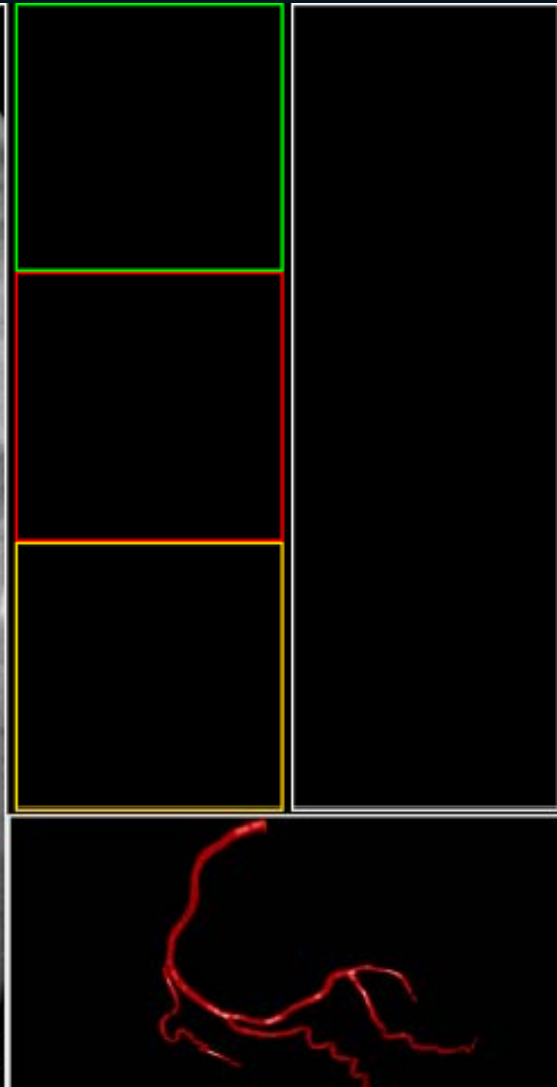


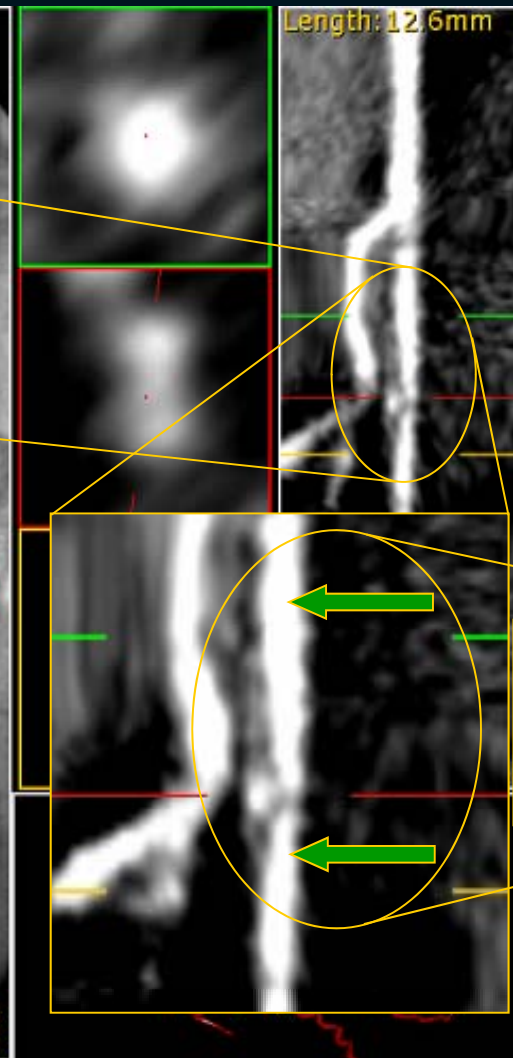
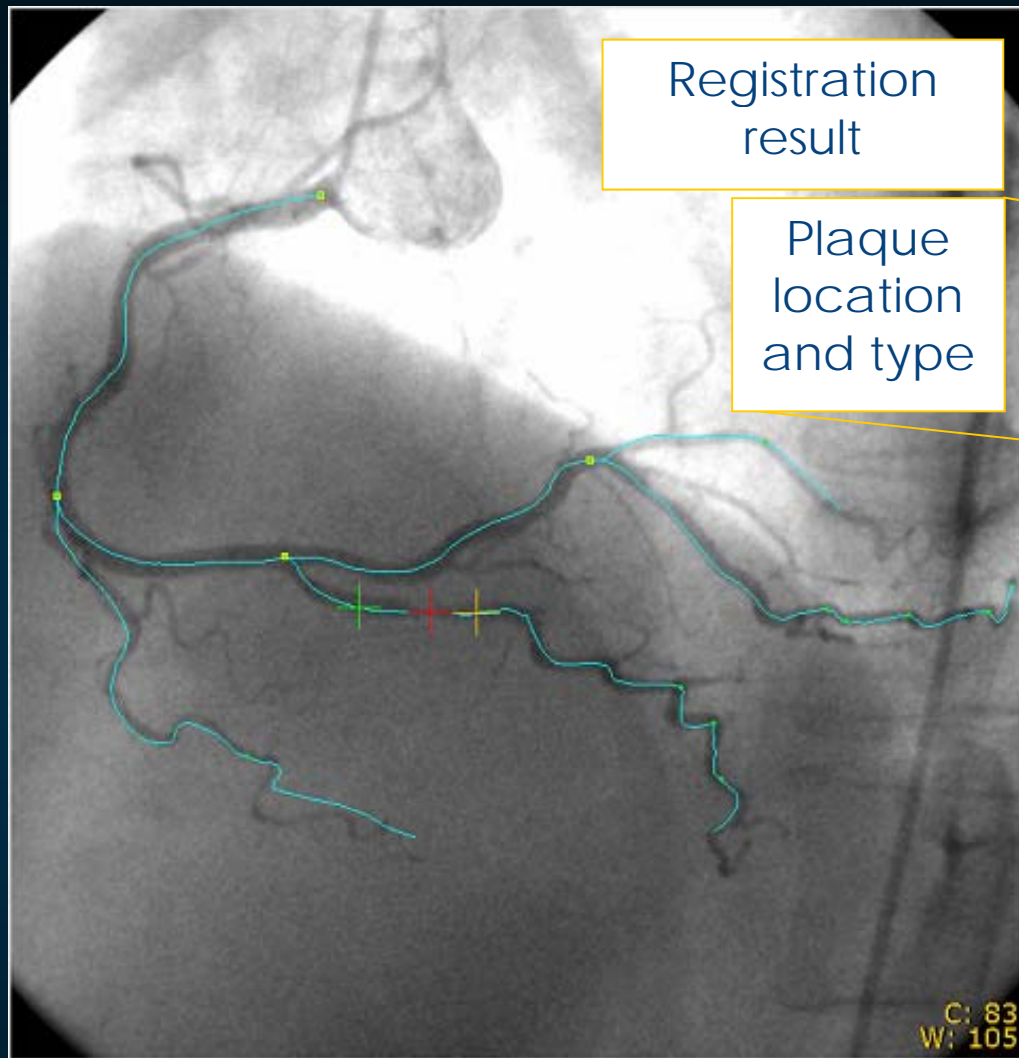
Angioplasty



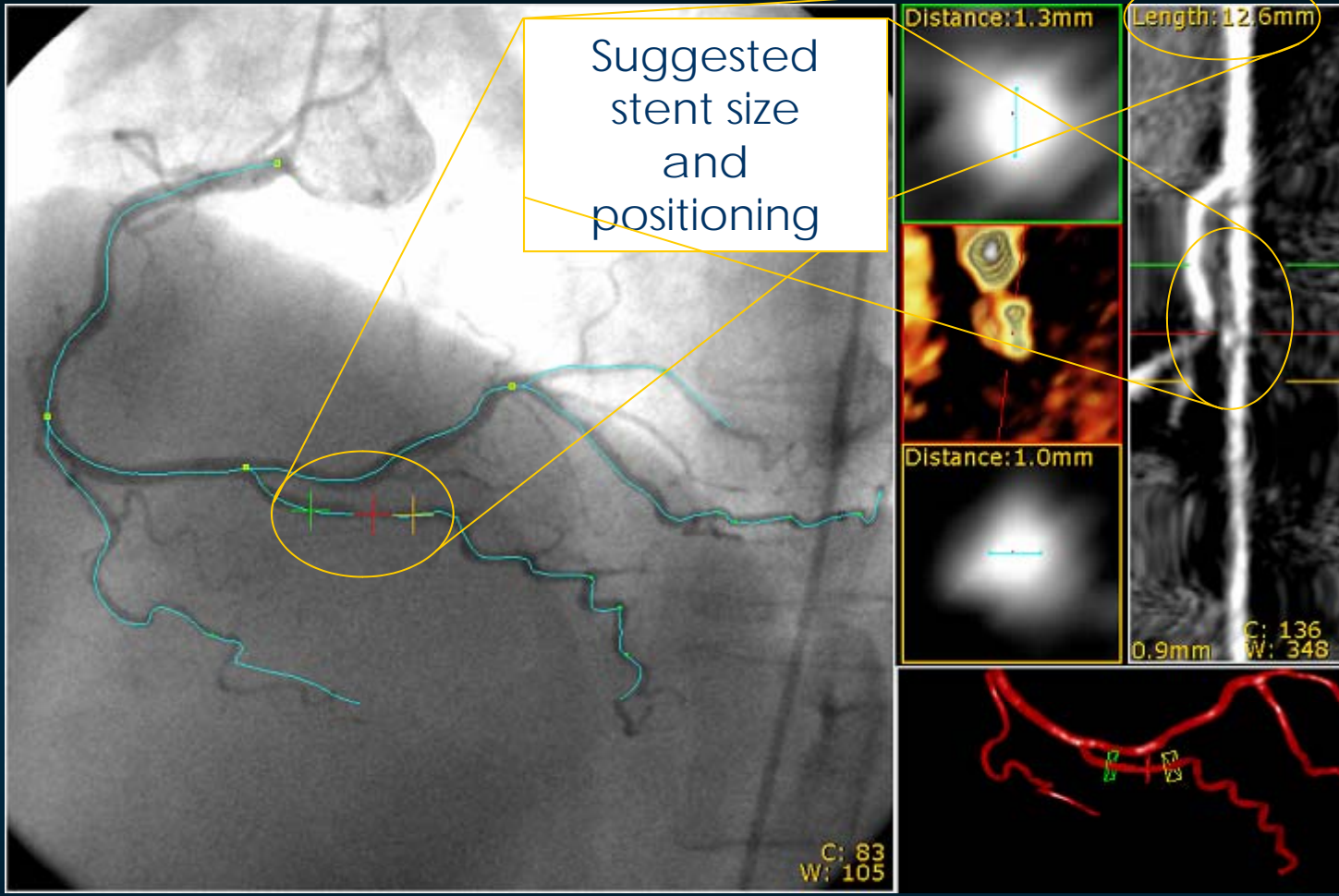


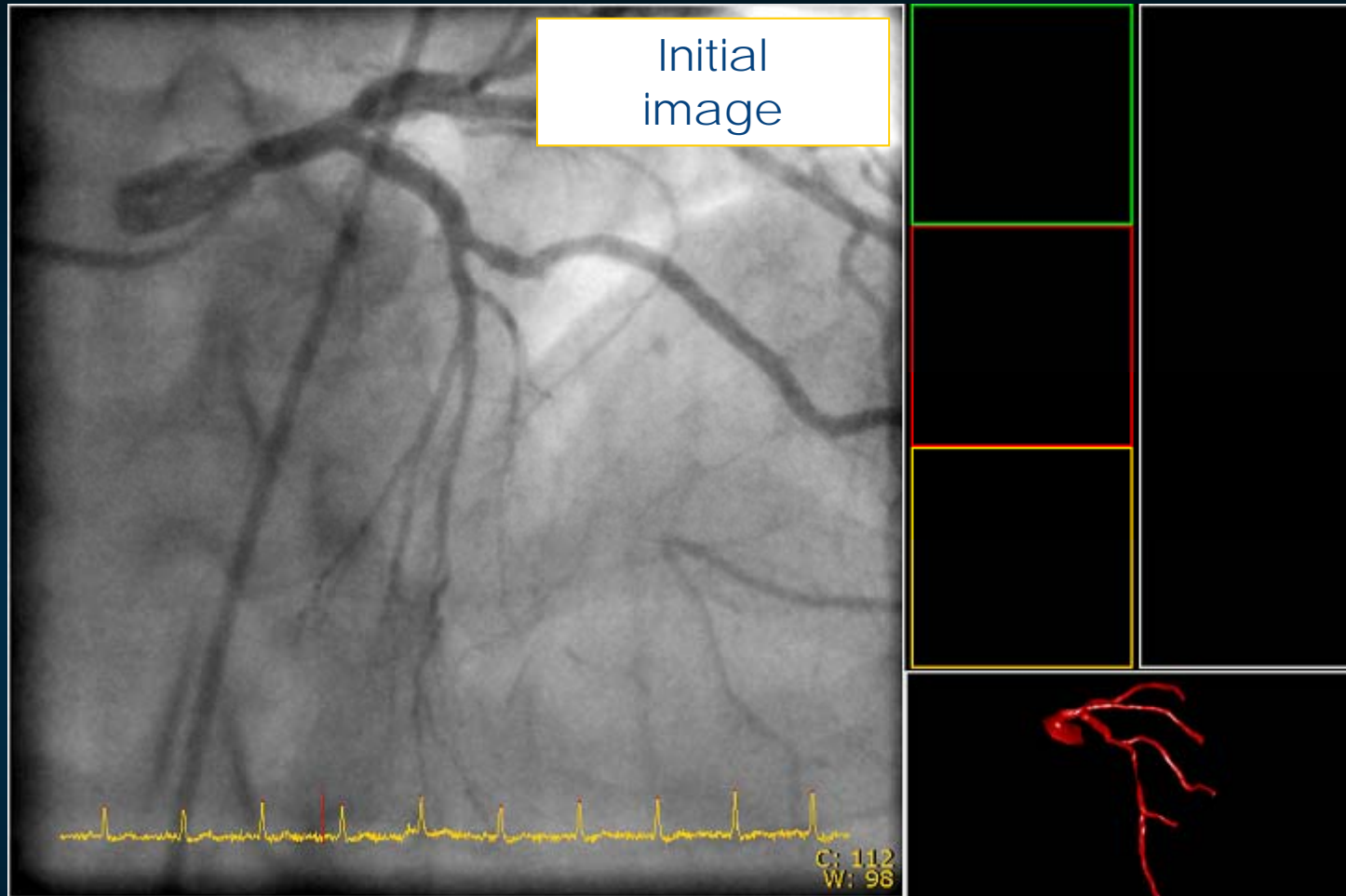
Initial image

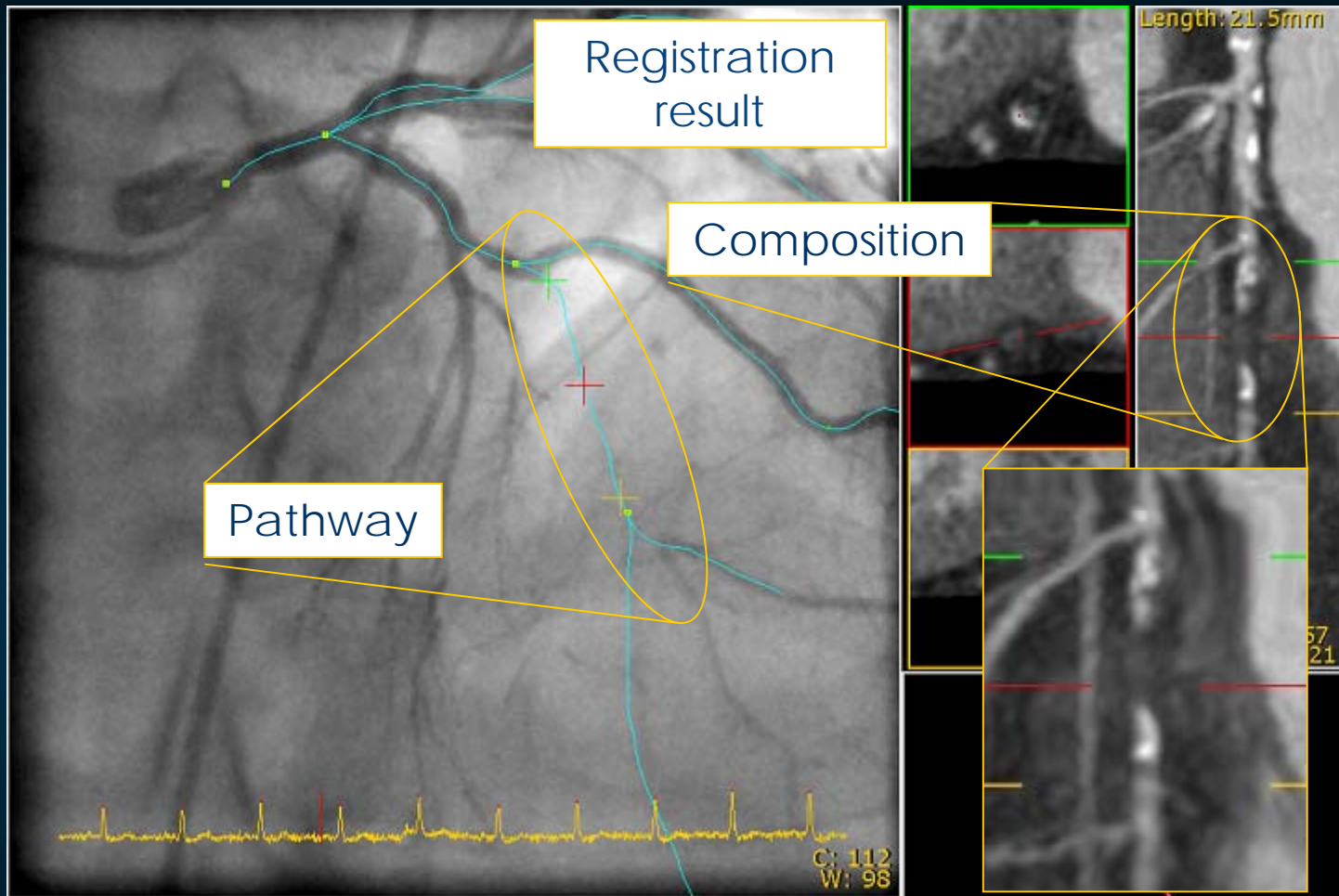


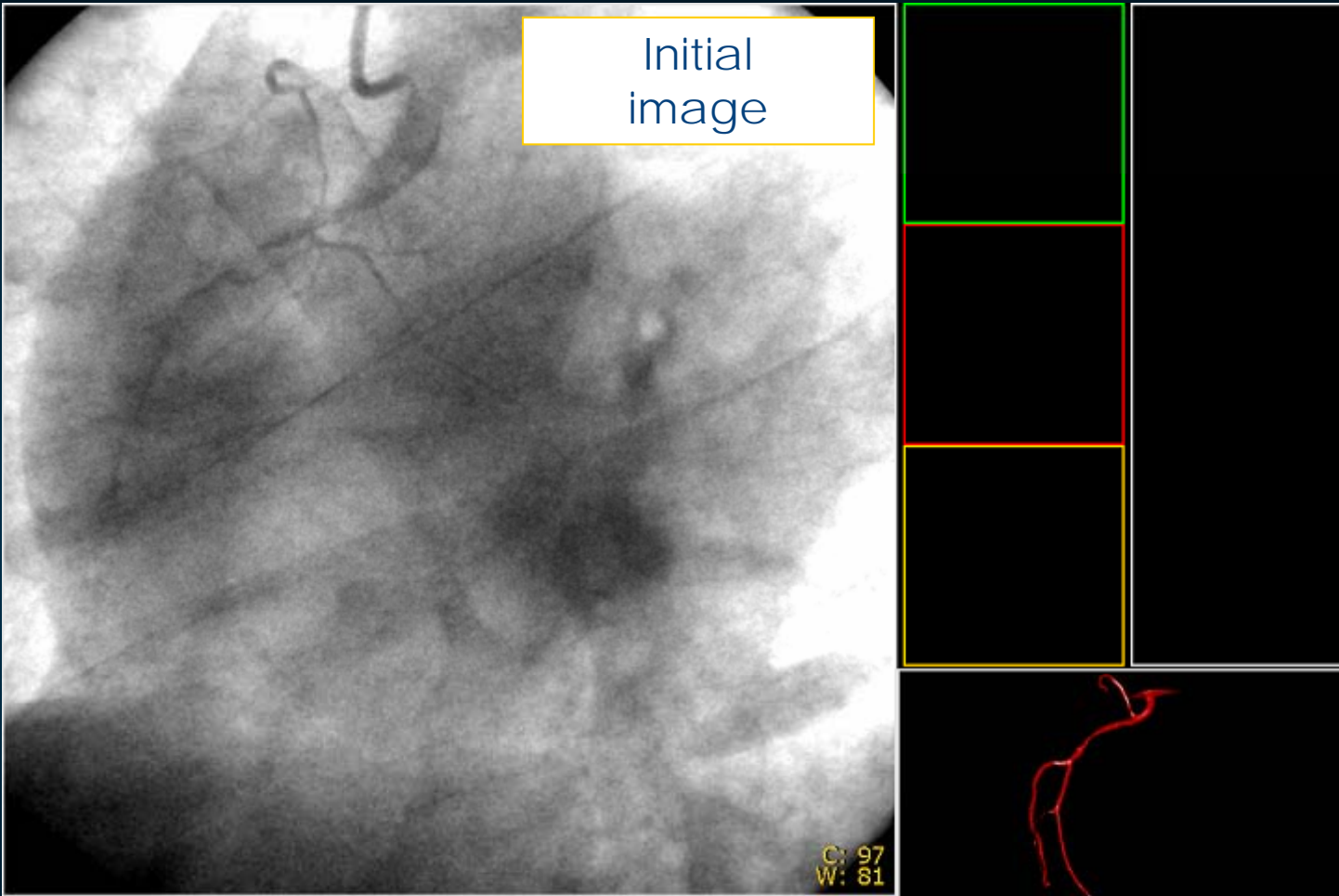


Lesion length (12.6mm)

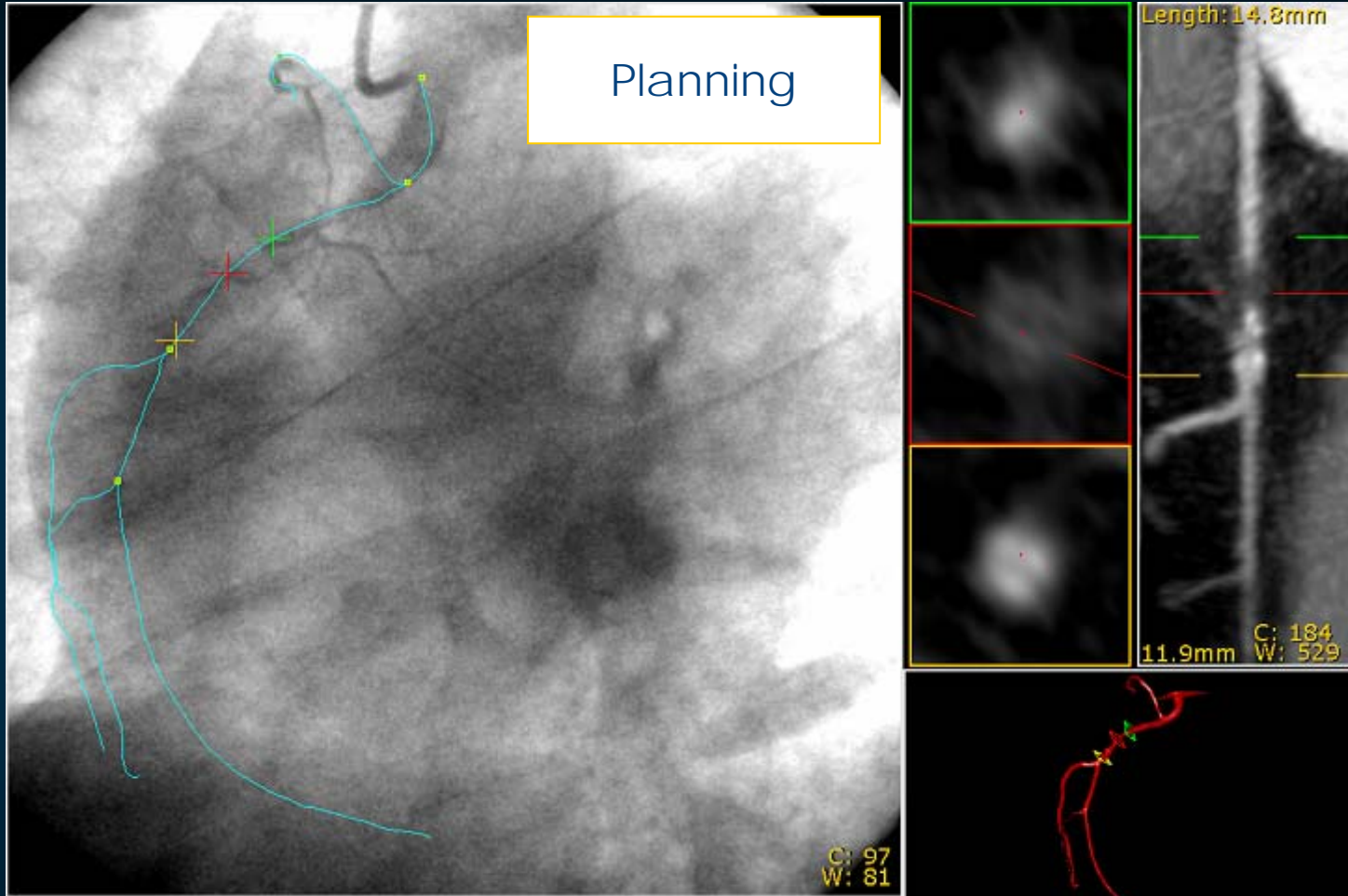




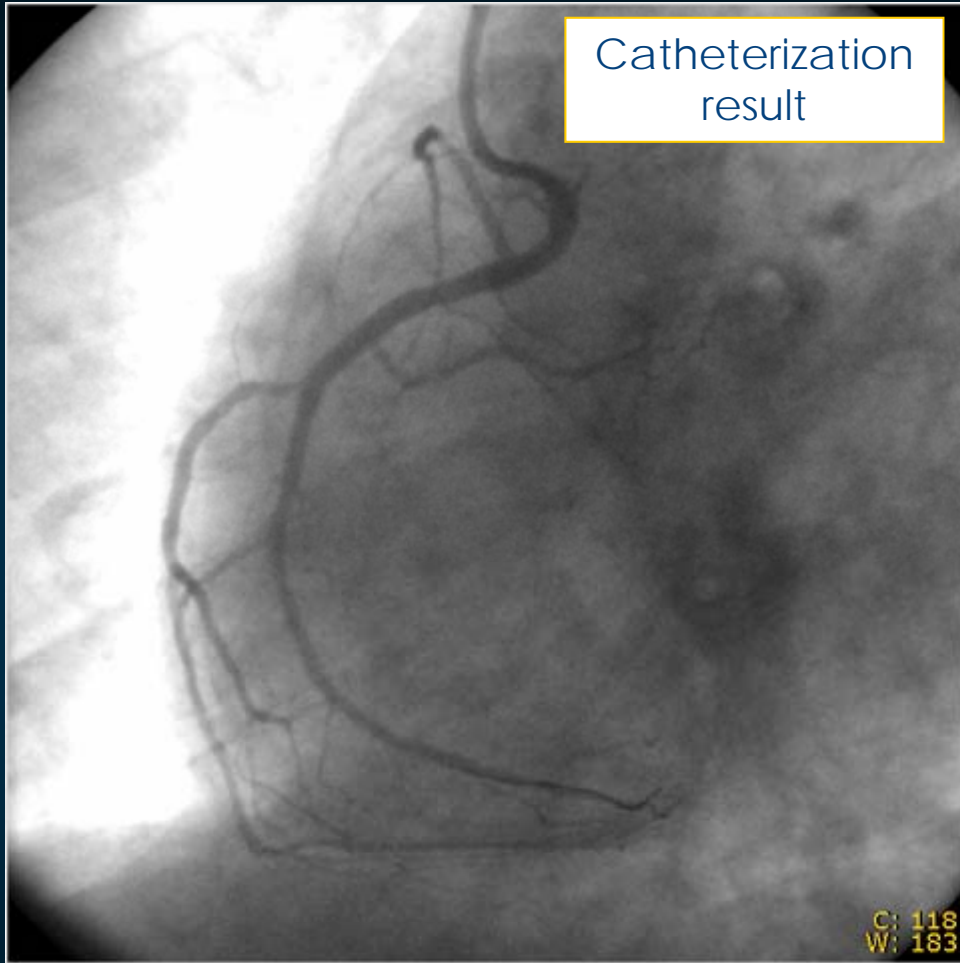




Planning



Catheterization
result



Conclusions

- Coronary CTA is highly sensitive for the detection of CAD & stenosis
- Beyond diagnosis, Cor CTA may provide information useful for the planning of PCI
- Especially in PCI of CTO, the ability to visualize the plaque and the distal vessel will prove useful in planning the intervention
- The goals:
 - Improve patient selection
 - Decrease time, contrast, complications in the lab
 - Improve patient outcomes