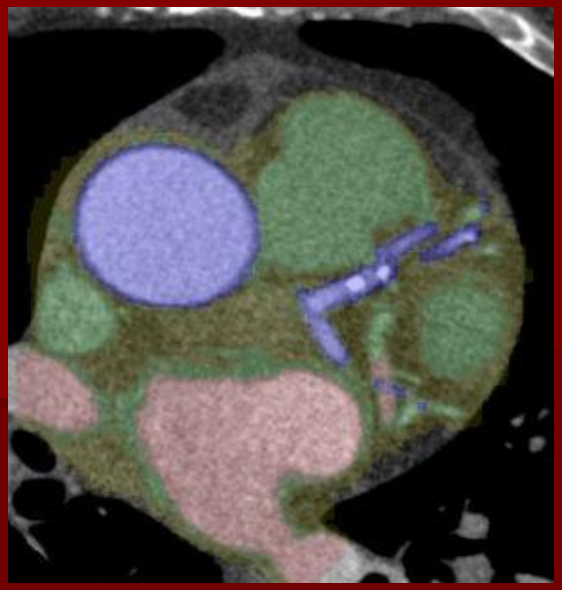
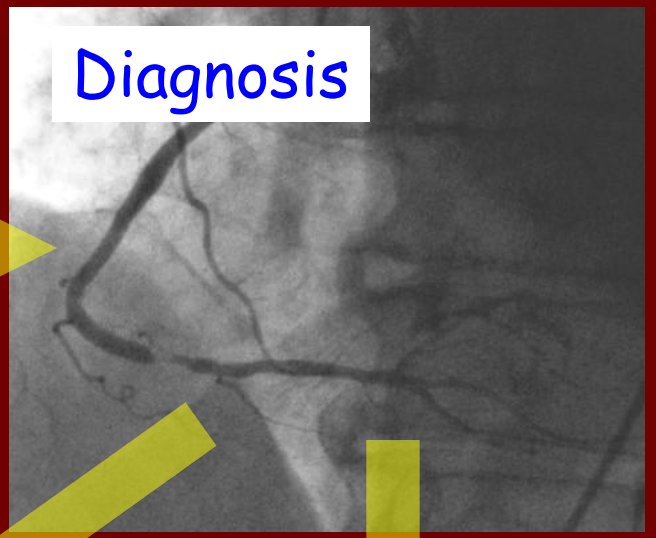
Using Coronary CTA to Guide Intervention for CTO



Traditional Approach



No Intervention

The Cath Lab of the Future

No Intervention

Diagnosis

Planning

Decisions Regarding Intervention on CTO Based on Angiographic Variables

- Discrete lesion / Long lesion

All of these Variables Can Be Visualized and Assessed by 3D Coronary CTA

- Straight segment / Tortuous segment
- Ease of access to segment
- Calcification
- Side branch presence / location

Limitations of Traditional Coronary Angiography

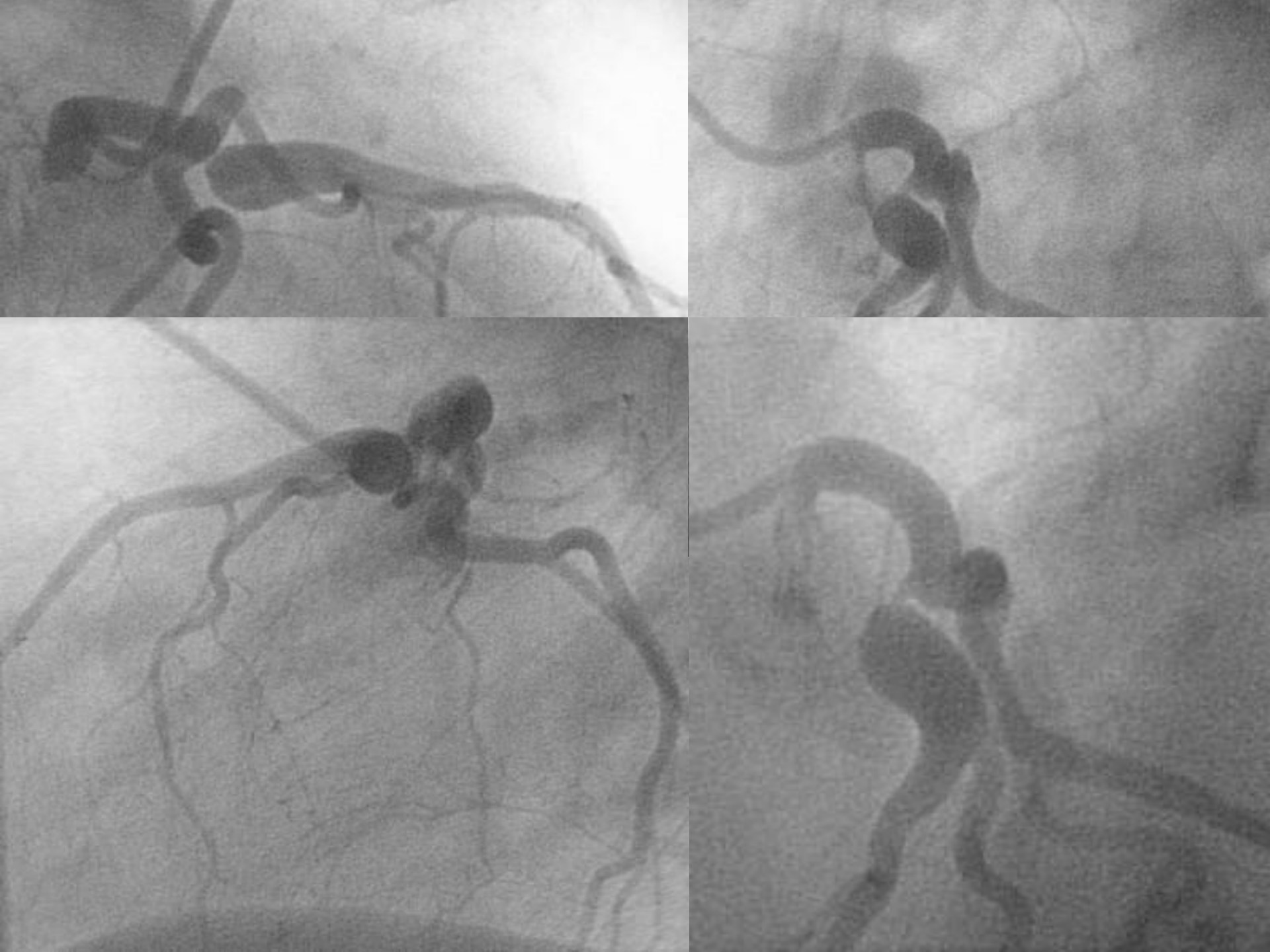
Requires invasive study

Projection images (vessel overlap and foreshortening)

"Lumenogram"

Plaque characterization requires IVUS

Multiple injections & runs for optimal viewing angle



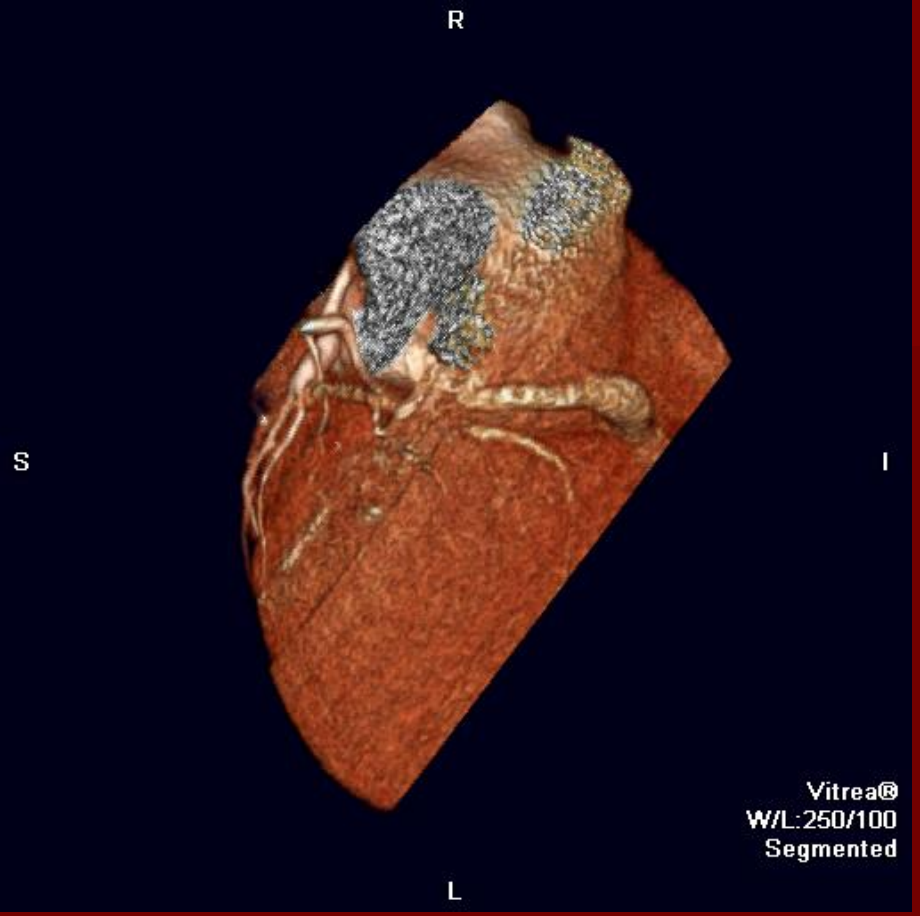
Coronary CTA Provides an Alternative

Non-invasive

3D Volume of Anatomic Data
(No Overlap)

Plaque characterization (calcification)

Volume Data Can Be Infinitely Manipulated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W/L:250/100
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P
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Vitrea®
W/L:250/100
Segmented
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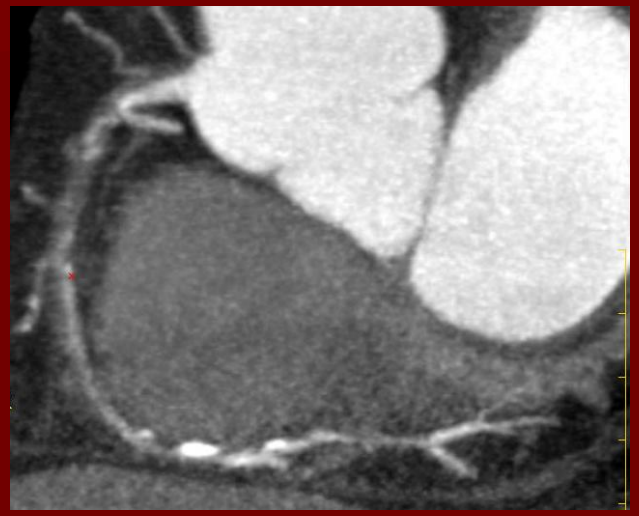
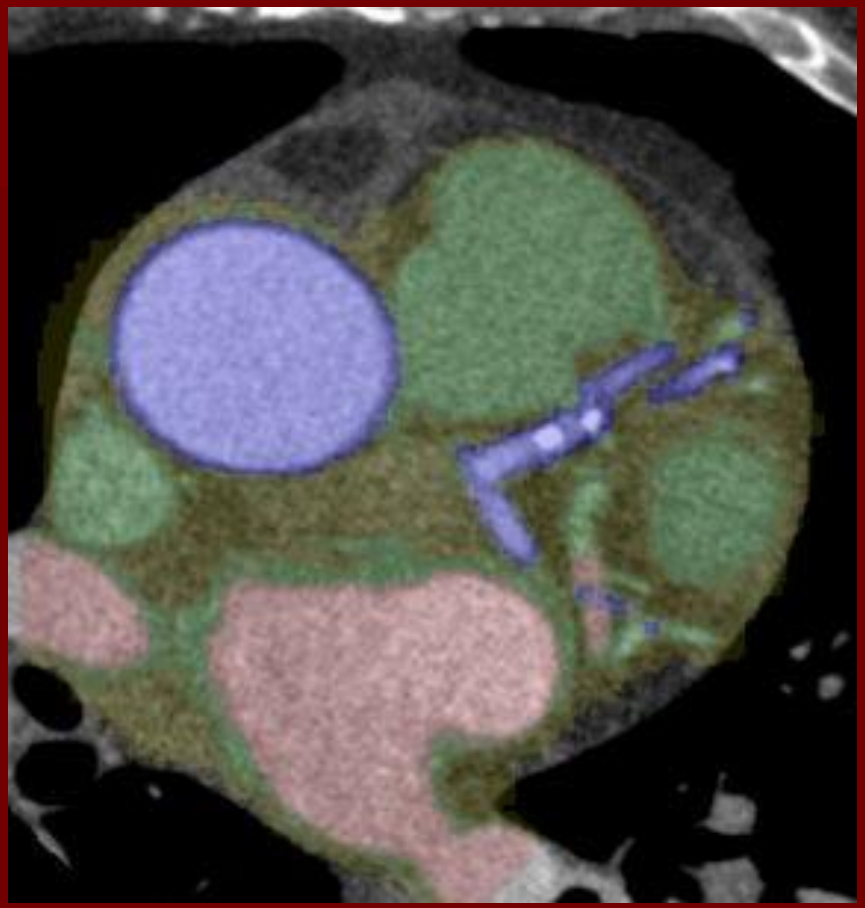
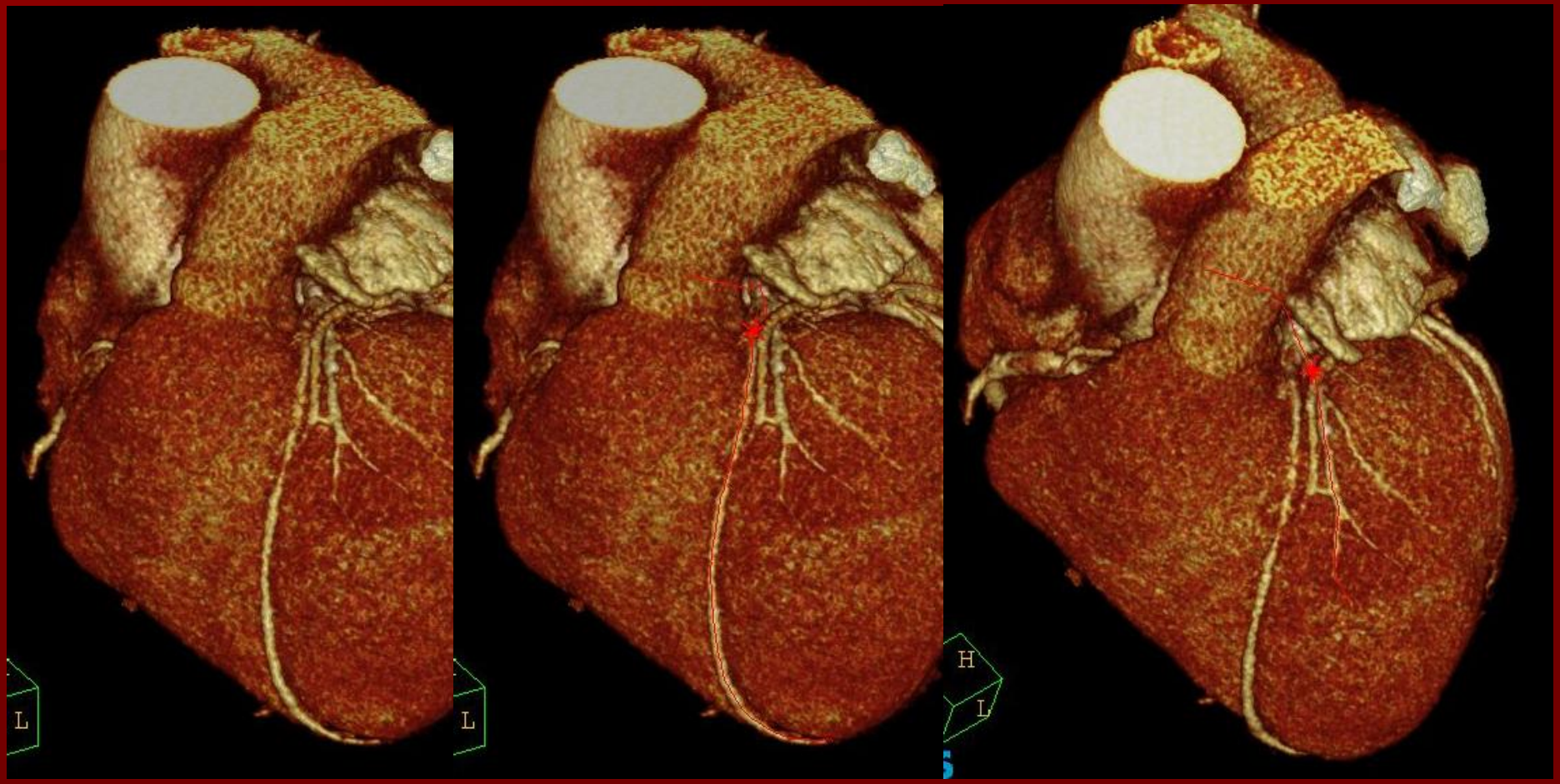
How Coronary CTA is Interpreted & Utilized

- Lesion Length
- Lesion Curvature
- Lesion Access
- Side Branch Locations
- S.B. Origin Angle
- Distal Vessel Caliber
- CTO Plaque Character



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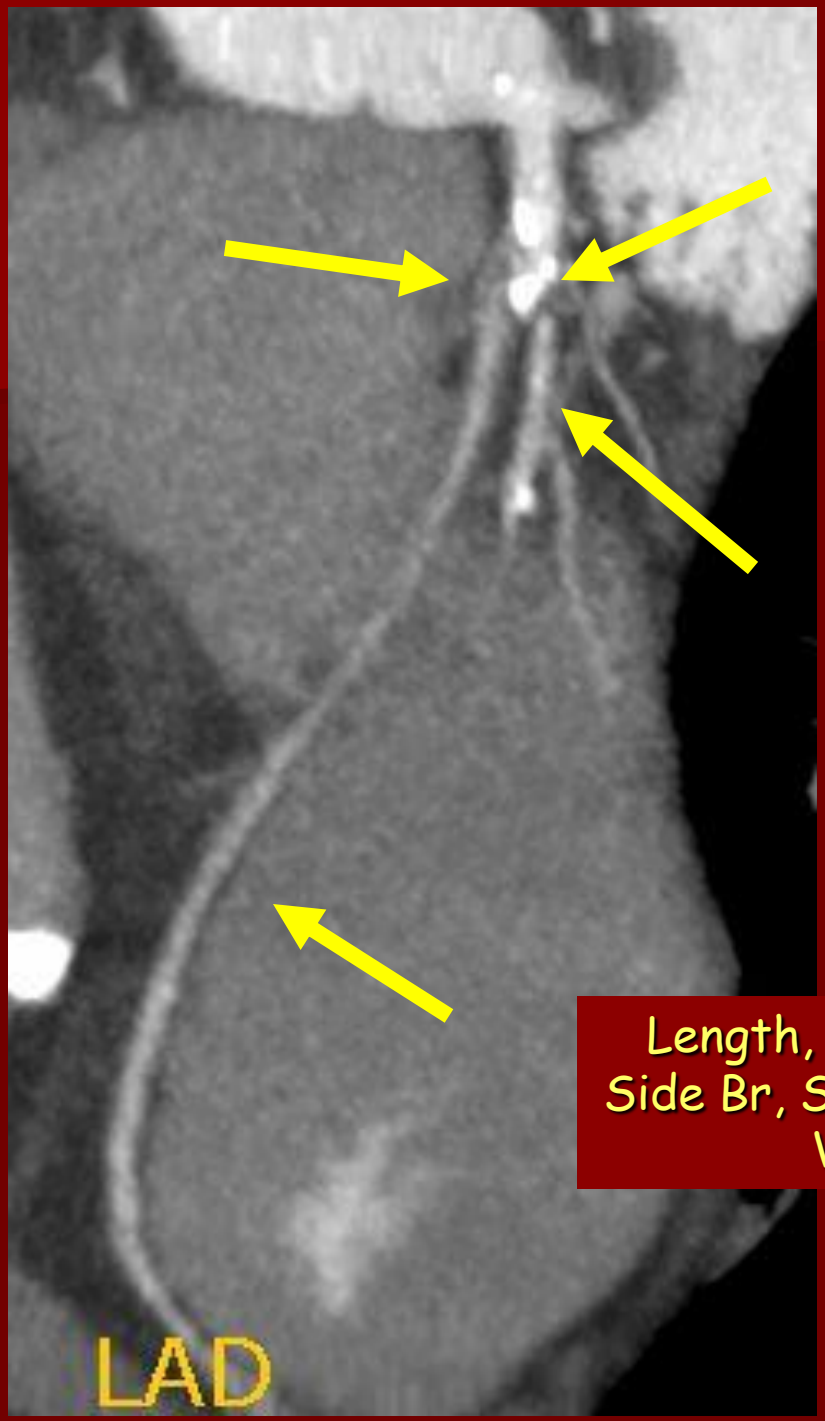
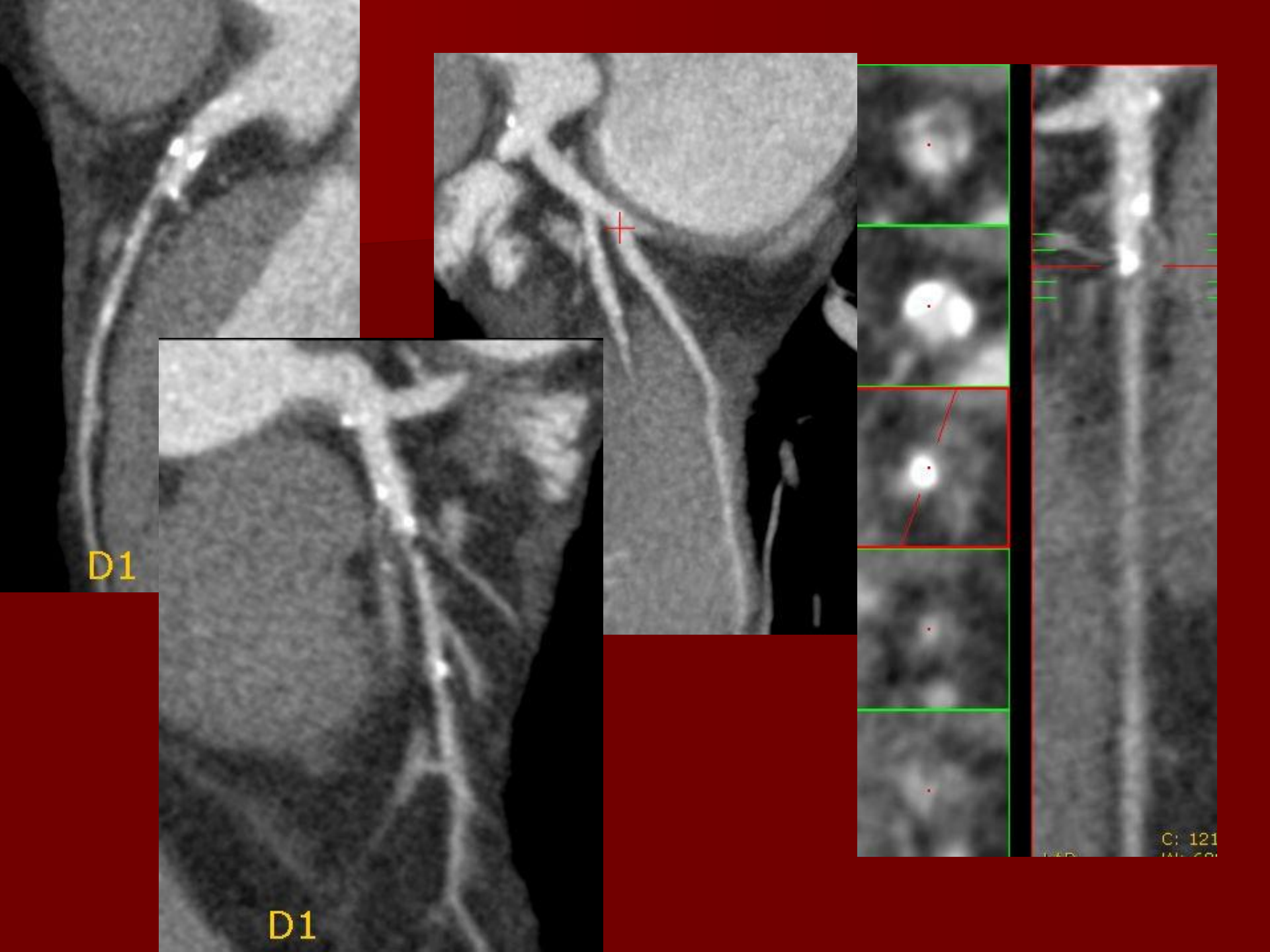


Length, Calcification, Side Br, SB Angle, Distal Vessel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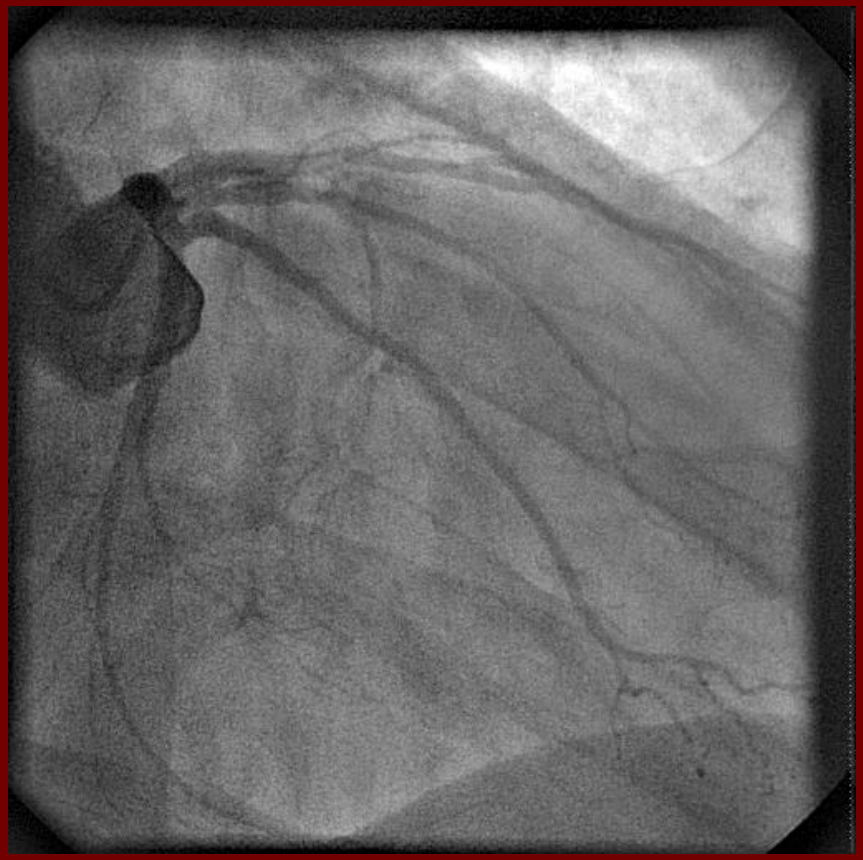
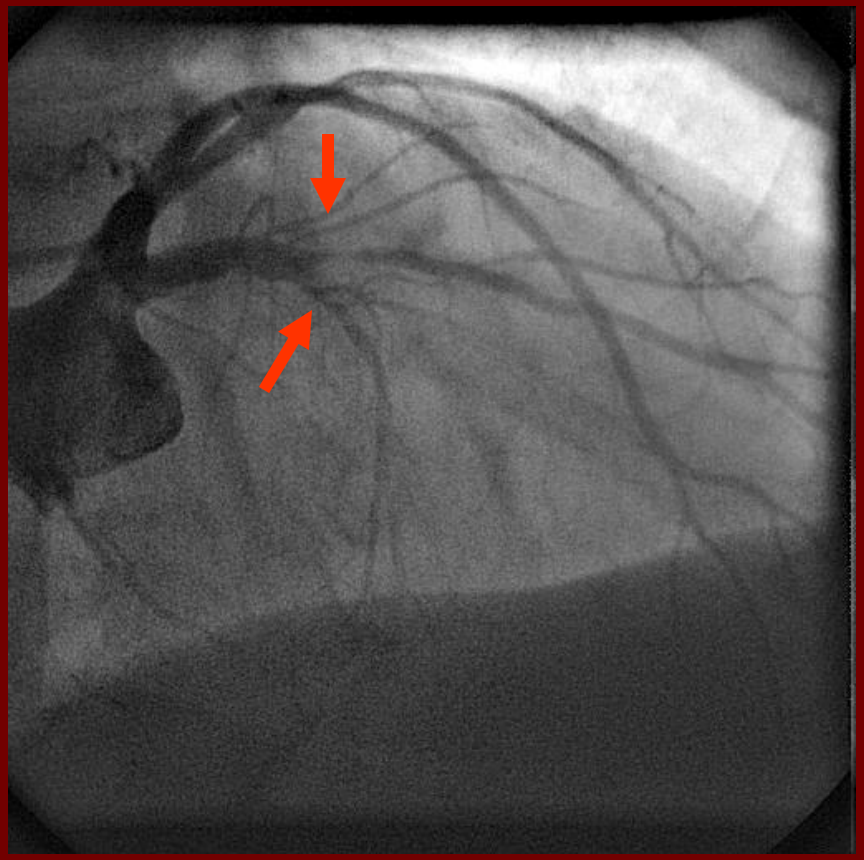
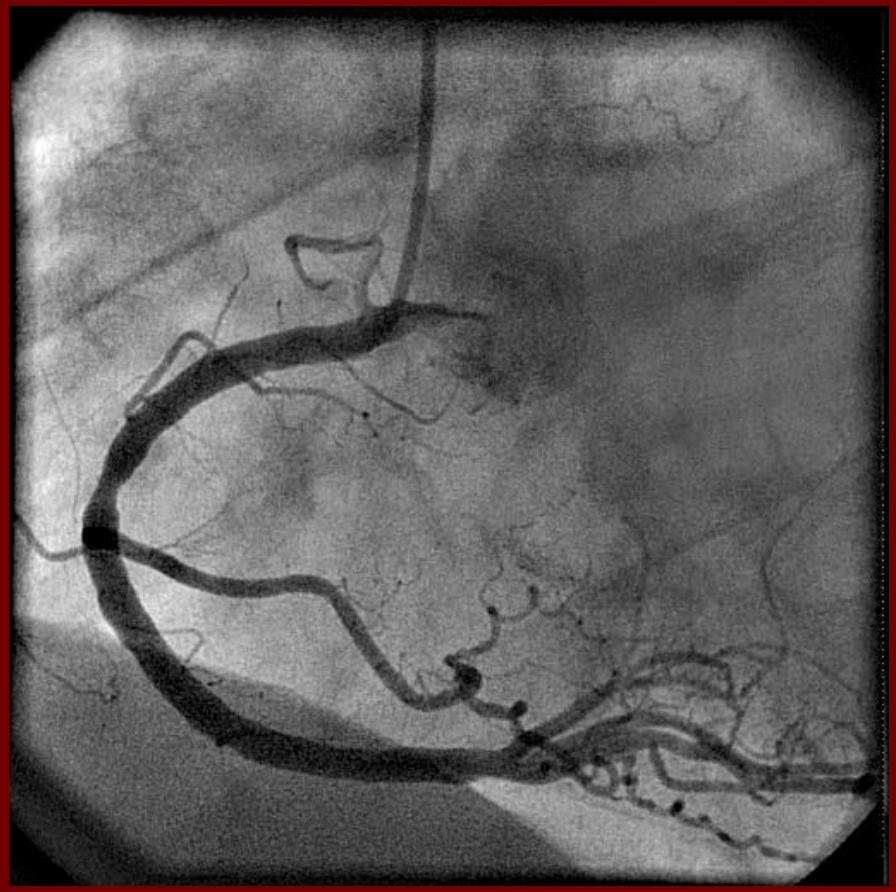
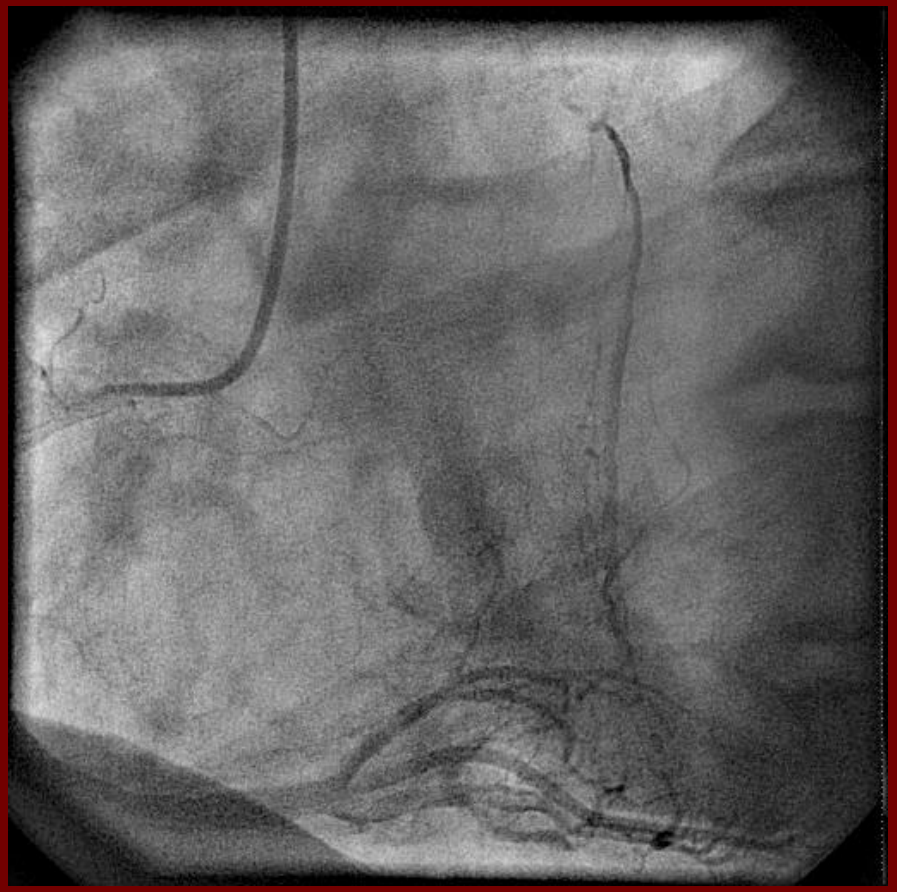
LAD & Diagonal



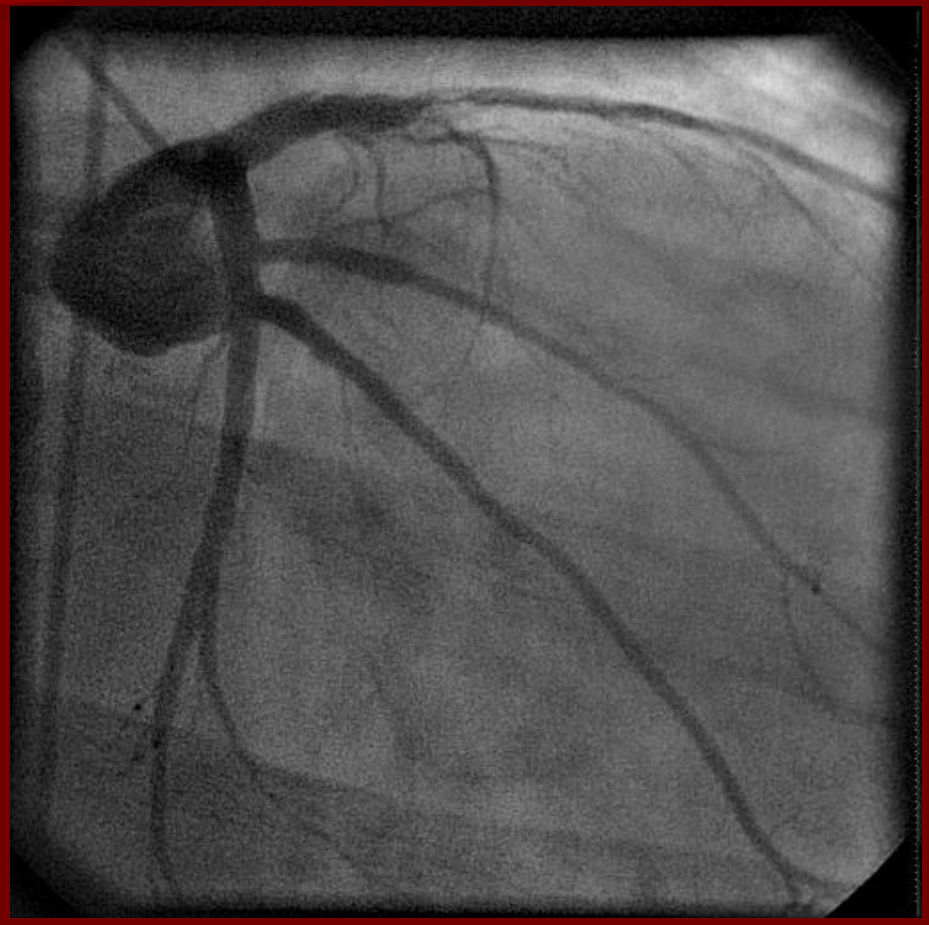


RCA

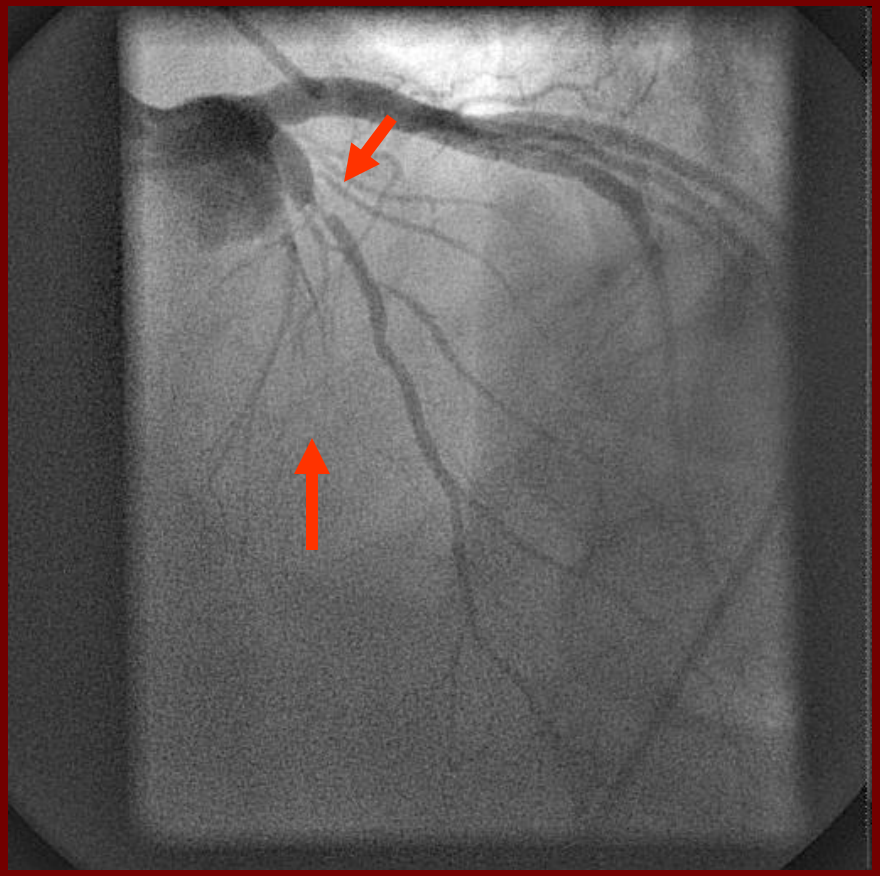


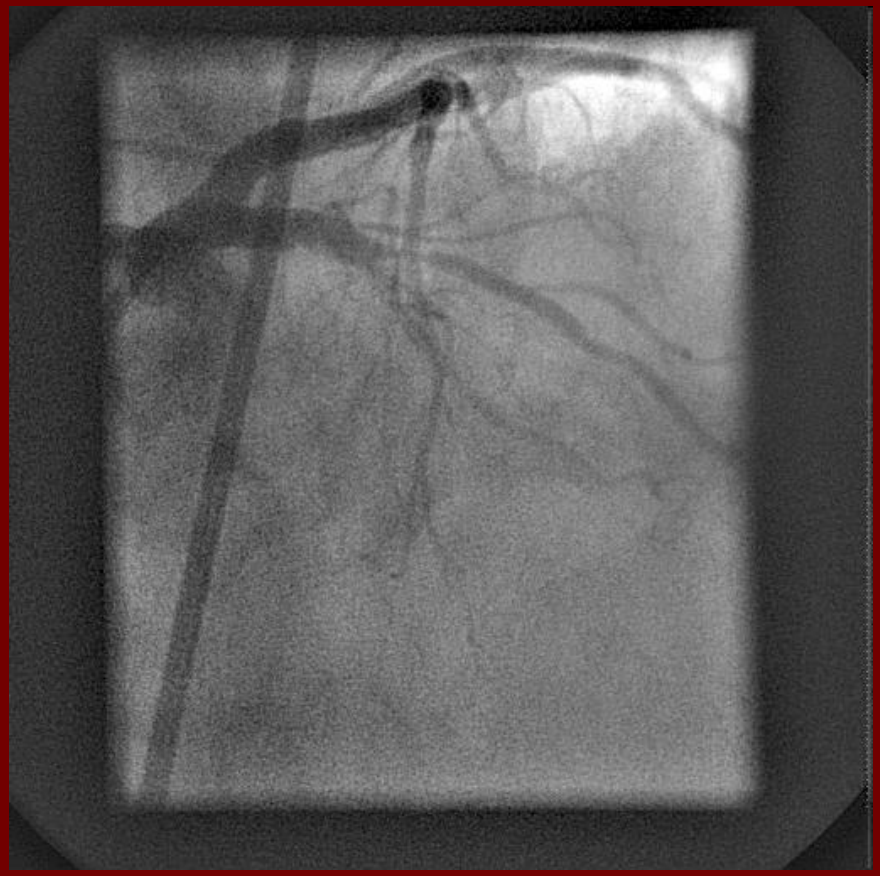


LAD & Diagonal

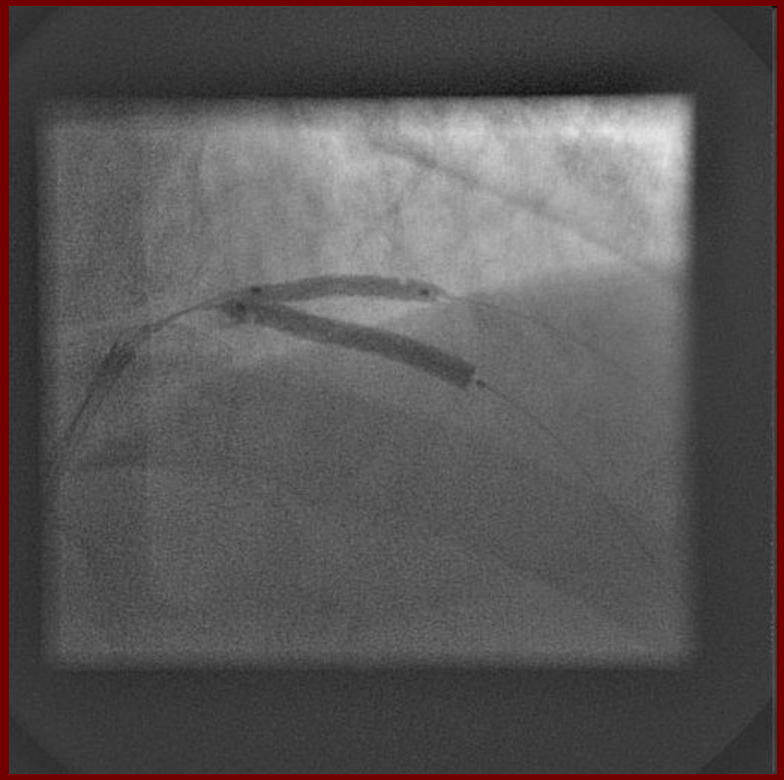


LAD & Diagonal





Angioplasty

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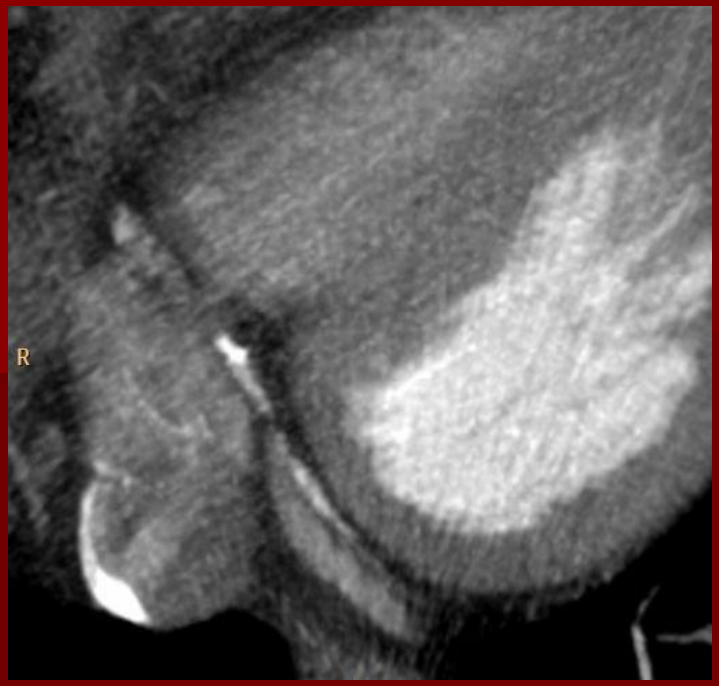
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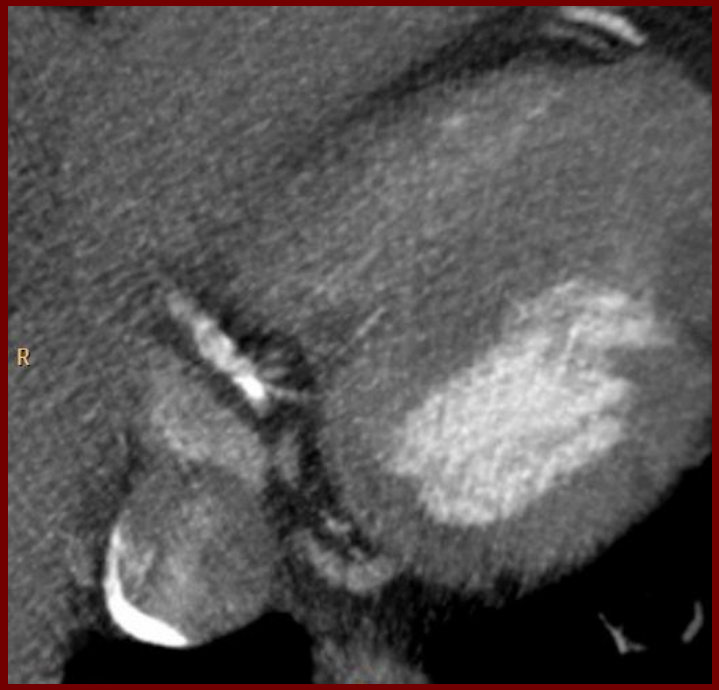
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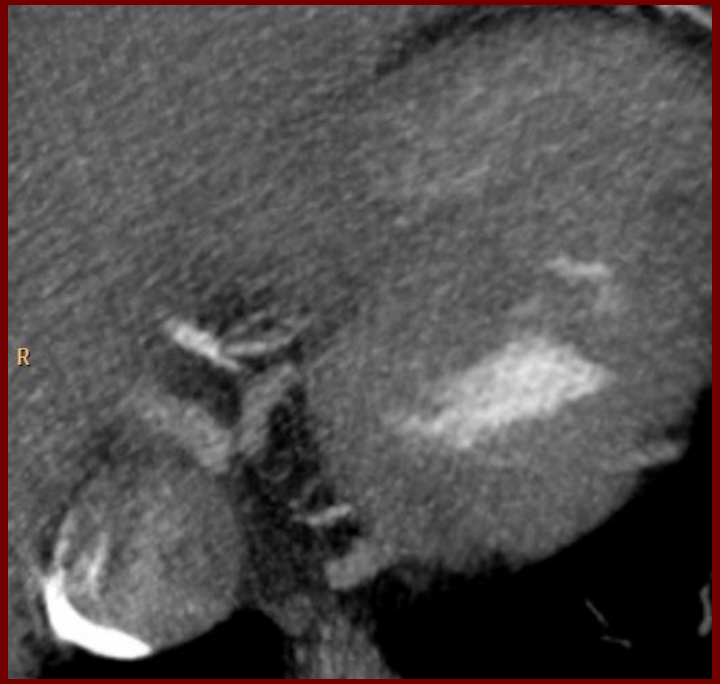
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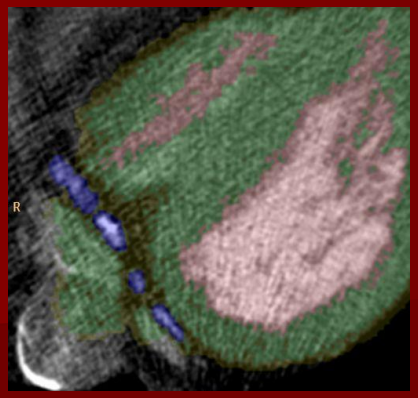
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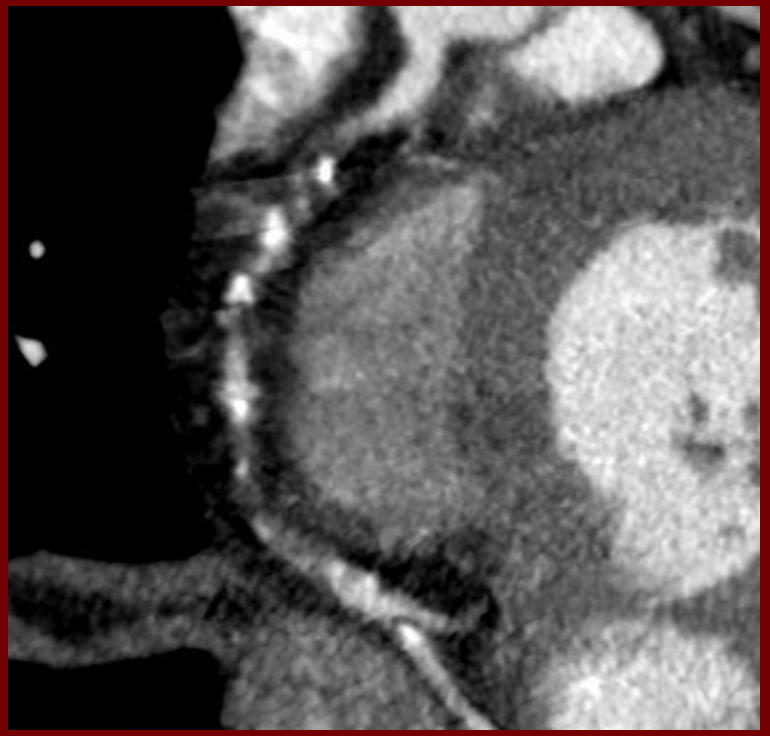
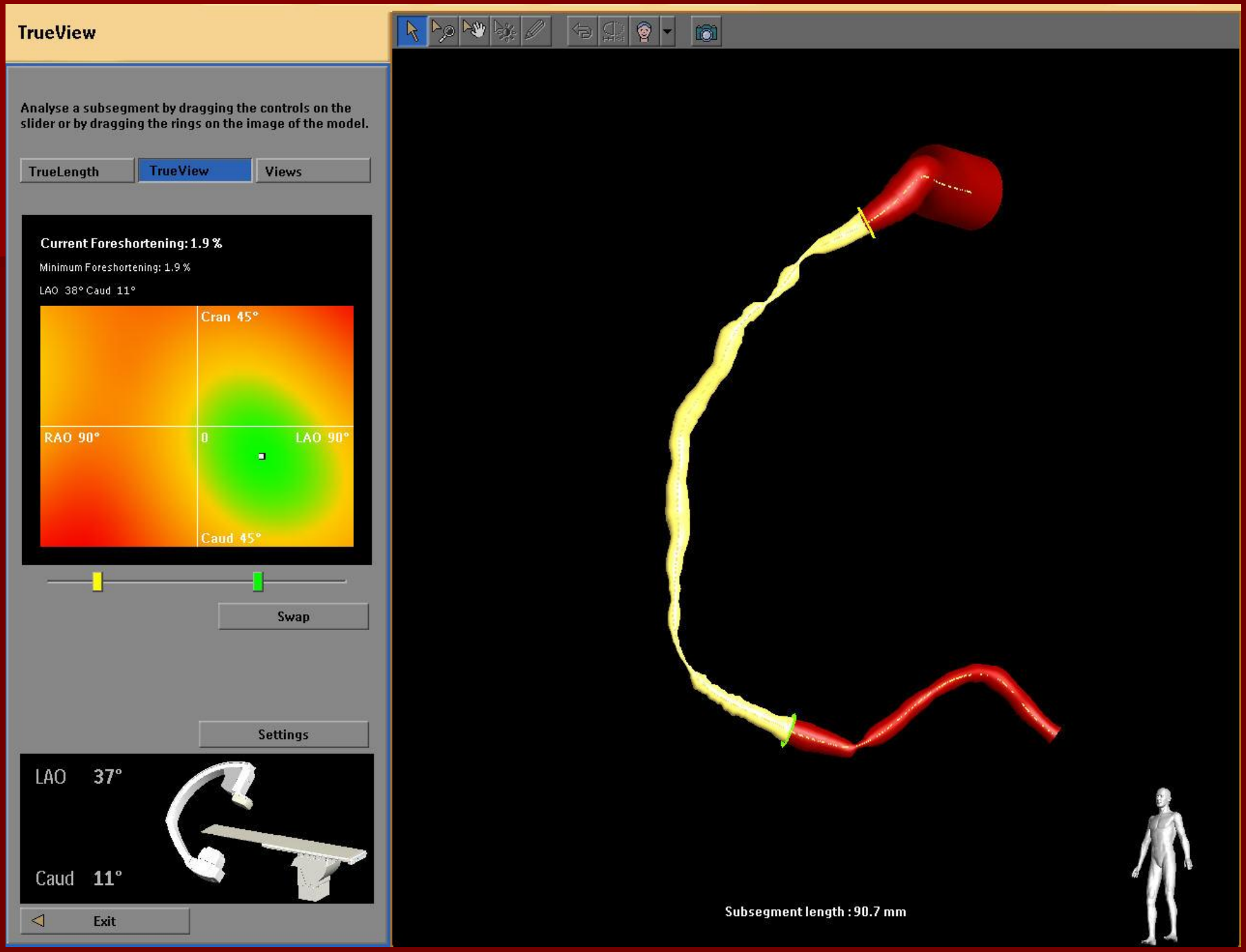
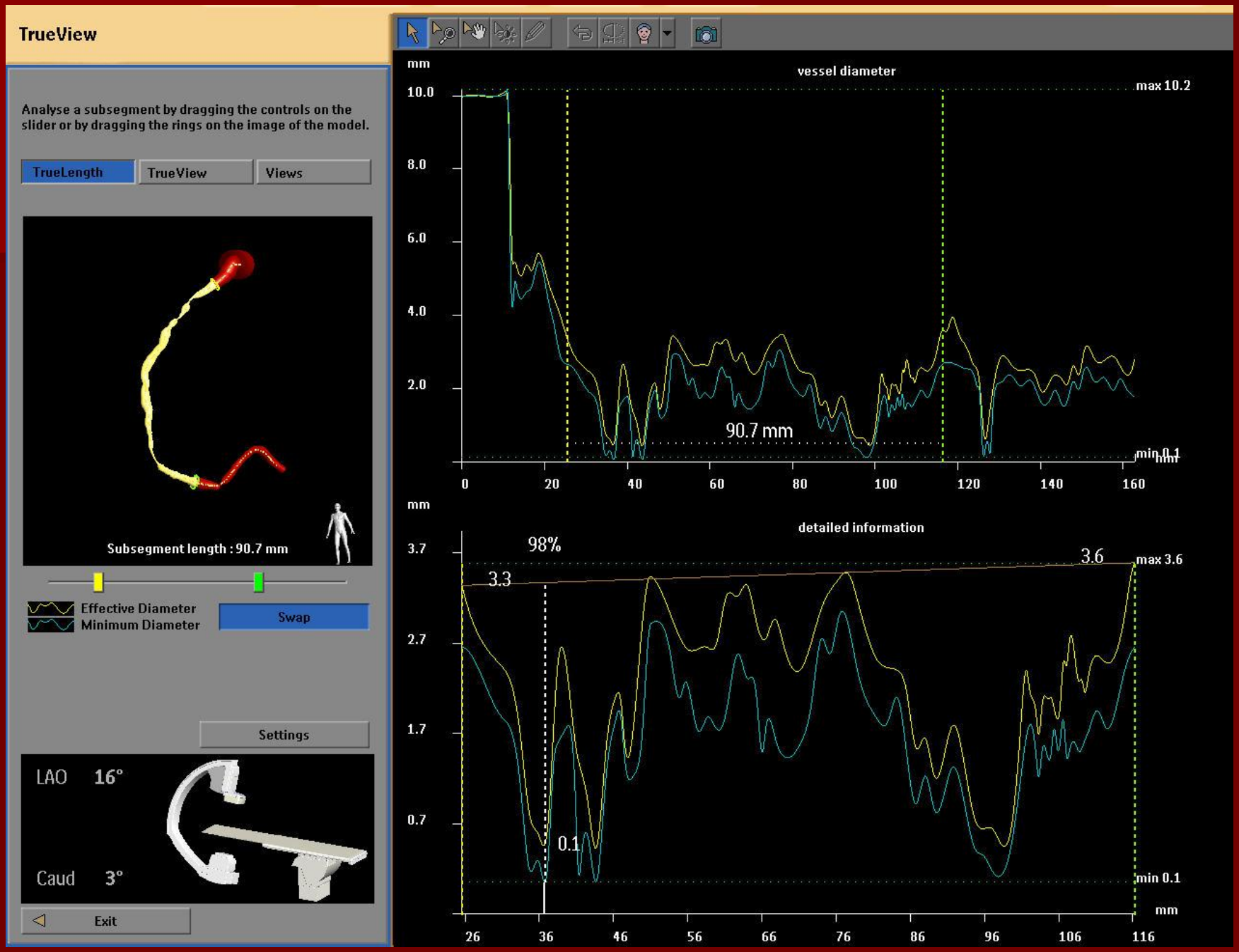
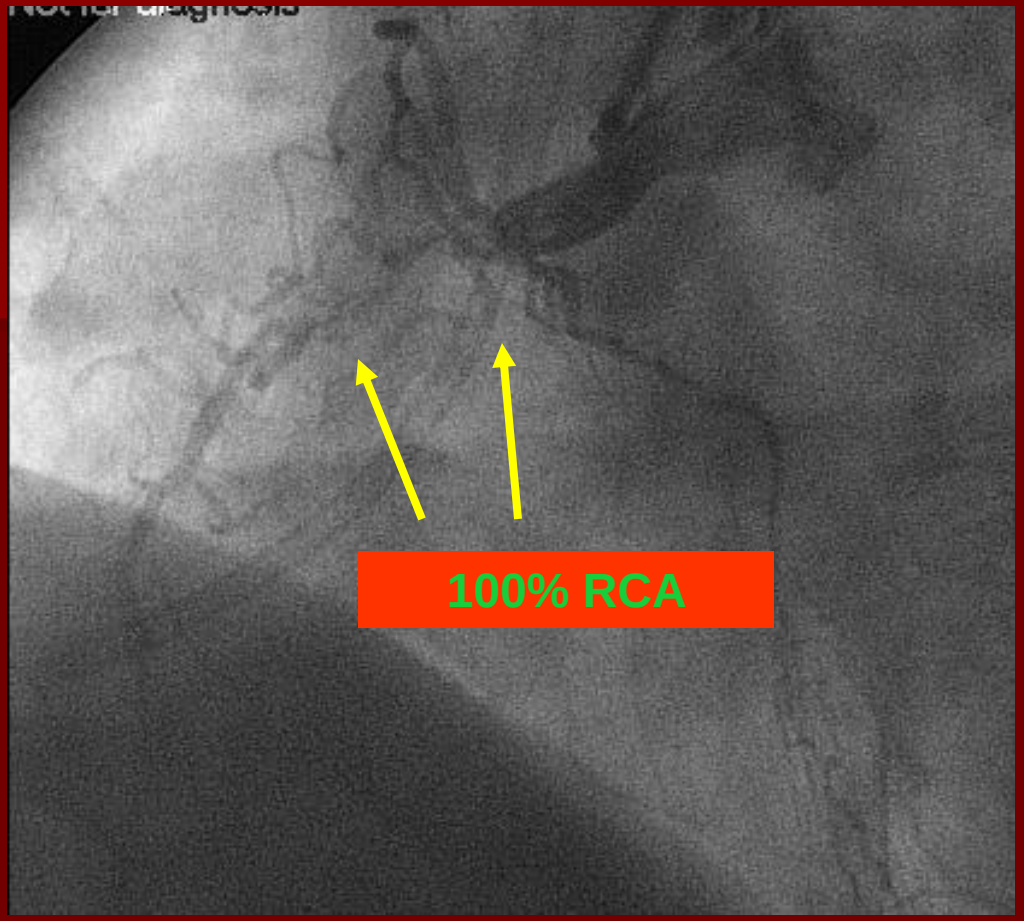
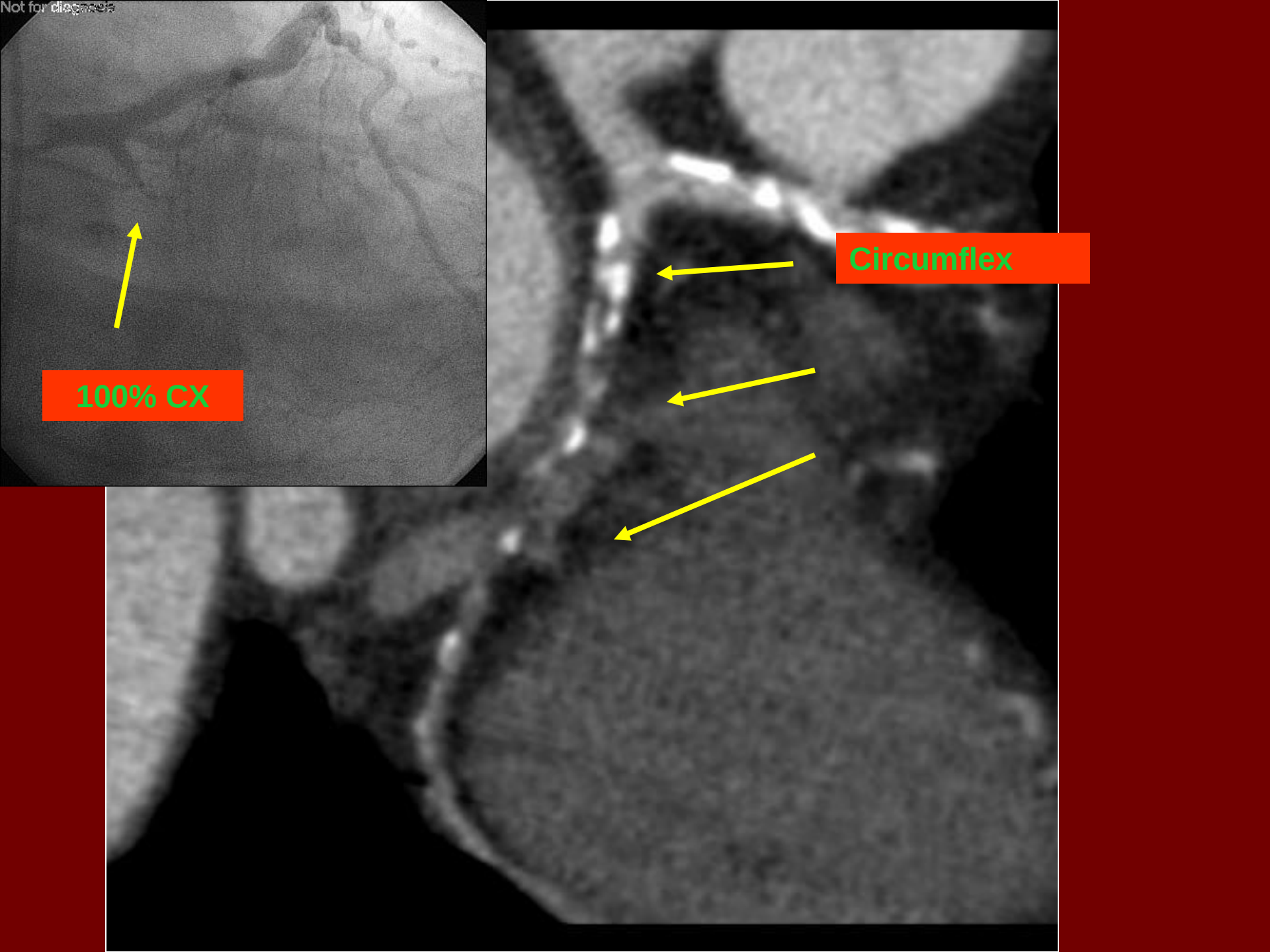
RCA

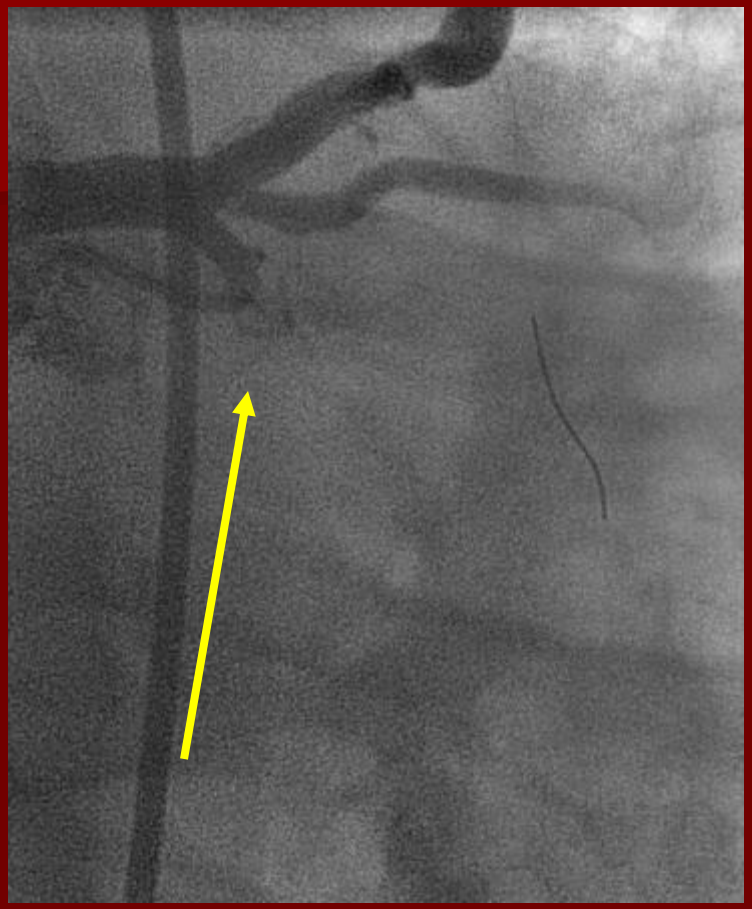


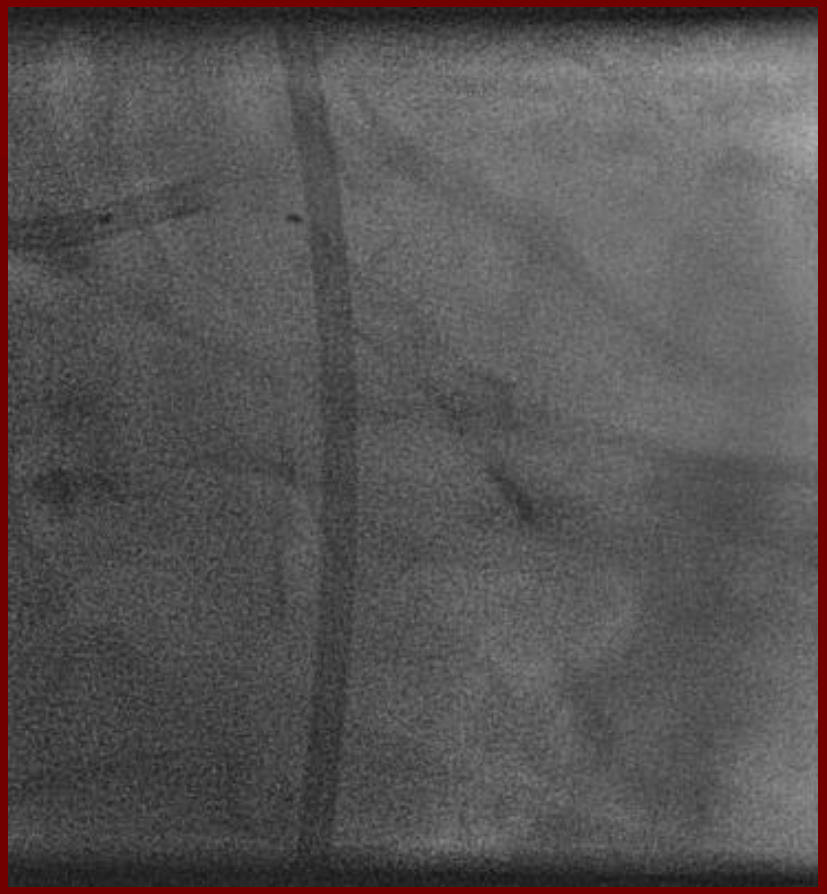

TrueView
Analyse a subsegment by dragging the controls on the slider or by dragging the rings on the image of the model.
TrueLength
TrueView
Views
Current Foreshortening: 1.9 %
Minimum Foreshortening: 1.9 %
LAO 38° Caud 11°
Cran 45°
RAO 90°
0
LAO 90°
Caud 45°
Swap
Settings
LAO 37°
Caud 11°
Exit
Subsegment 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
Subsegment length : 90.7 mm
Effective Diameter
Minimum Diameter
Swap
Settings
LAO 16°
Caud 3°
Exit
vessel diameter
mm
10.0
8.0
6.0
4.0
2.0
max 10.2
90.7 mm
min 0.1
mm
0
20
40
60
80
100
120
140
160
detailed information
mm
3.7
2.7
1.7
0.7
98%
3.3
3.6
max 3.6
0.1
min 0.1
mm
26
36
46
56
66
76
86
96
106
116


100% RCA


Not for diagnosis
100% CX
Circumflex





CX after partial wire crossing

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:
  - Better patient selection
  - Decreased time / contrast in the lab
  - Decreased complications
  - Better patient outcomes