

CTO Angioplasty

Lessons from the Summit

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The 1st International CTO Summit

January 2004

47 faculty from 9 countries

32 didactic presentations

14 live CTO cases

Consensus document



The 1st International CTO Summit

14 live CTO cases

11 successful!

Case time range 42 mins - 3 hrs 48 mins

Median fluoroscopy time 46 minutes

Range 12 minutes to 1 hour 39 minutes

Median contrast 342 cc

Range 110 cc to 996 cc



The 2nd International CTO Summit

February 2005

468 participants from 12 countries

36 didactic presentations

15 live coronary CTO cases

11 successful





Lessons from the first CTO Summit

1) Sometimes CTOs are surprisingly easy!

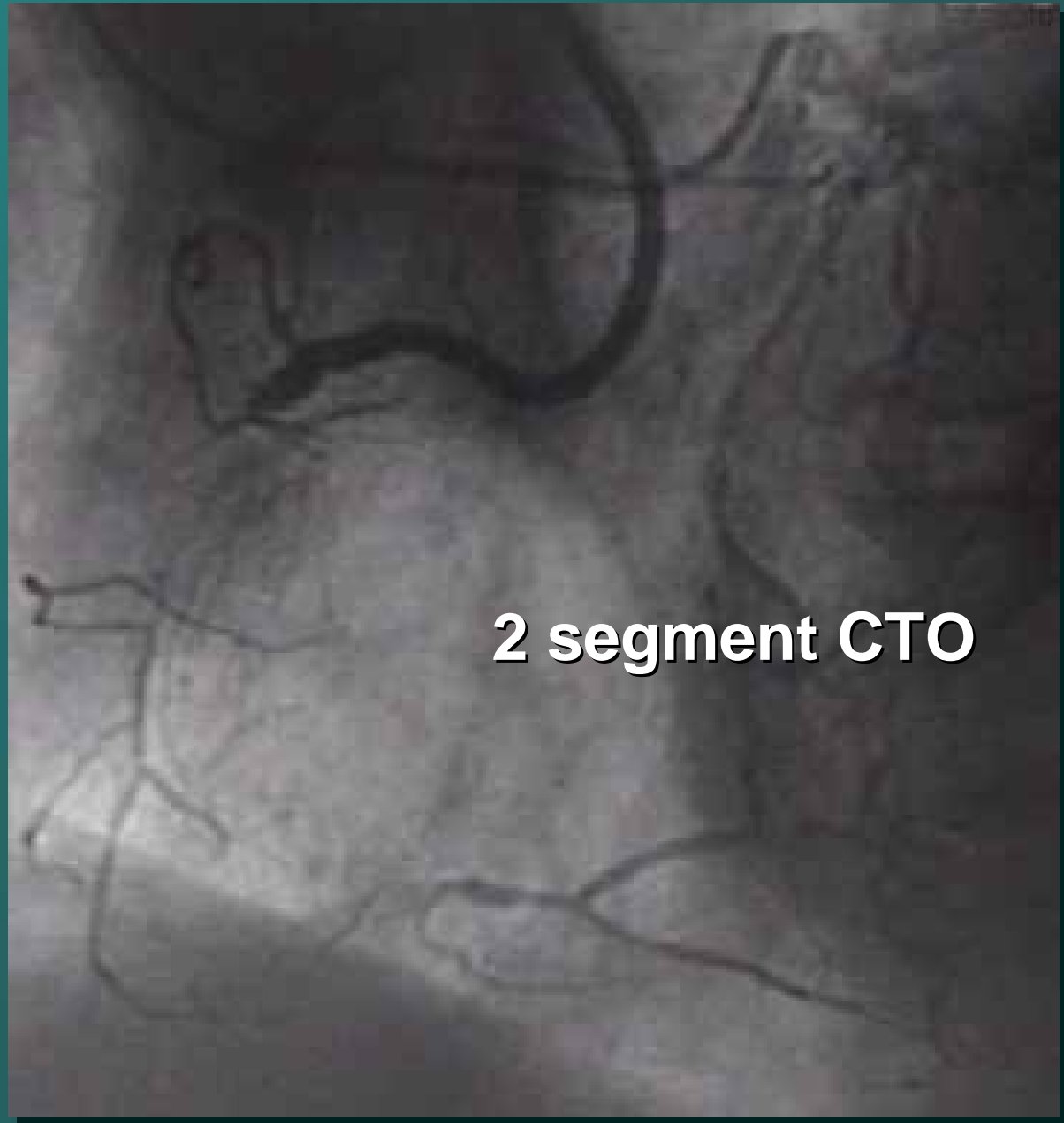
- Always try with a floppy wire for a few minutes!



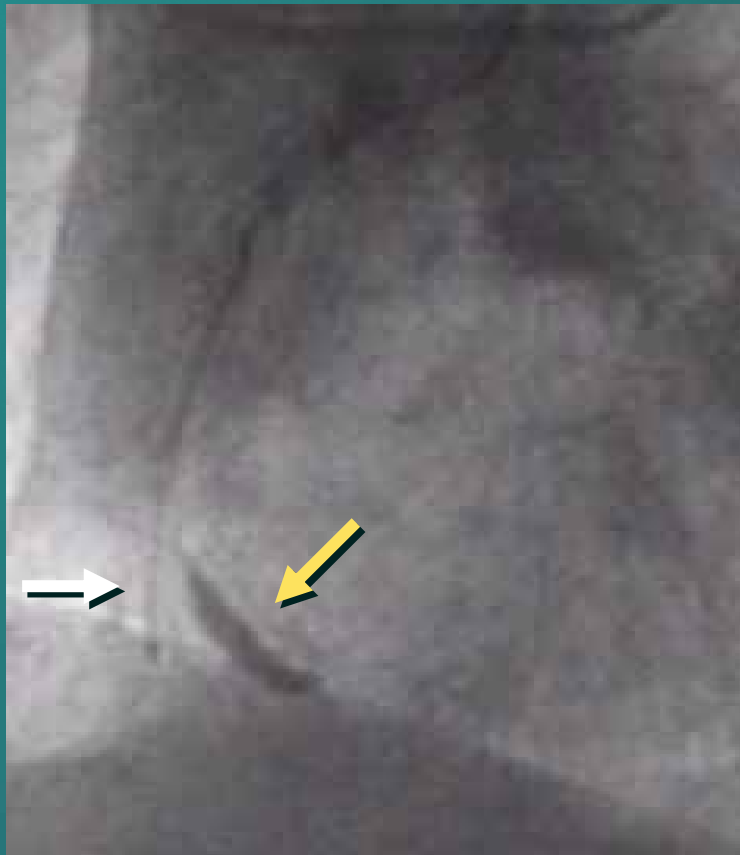
**6. Known CTO
for >10 years
managed
medically**

**Now
?increased
angina**

**Famous
economist
from Princeton**



Miracle 3g wire through first segment



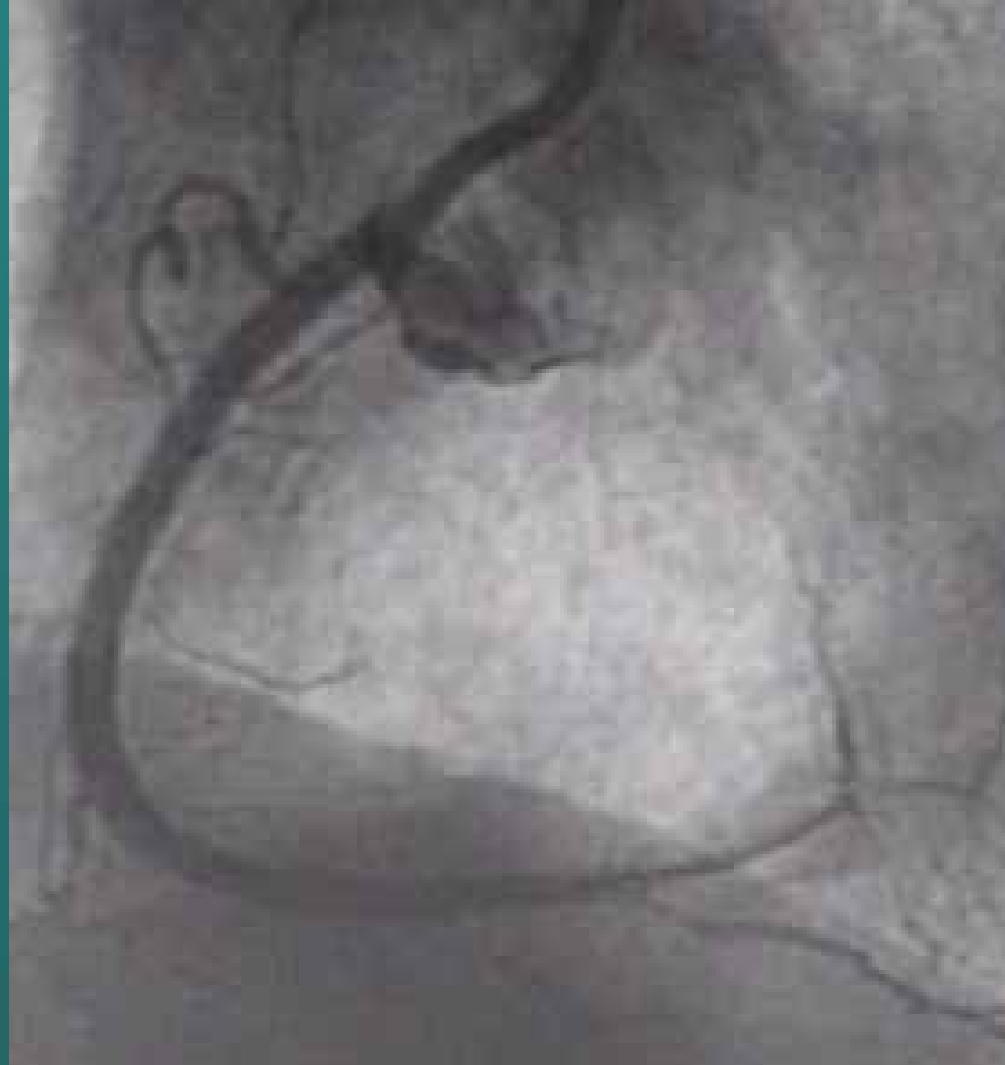
Severe dissection distally

Miracle 3g wire steered around the dissection



Through the distal cap

Final after 2 stents (buddy wire needed)

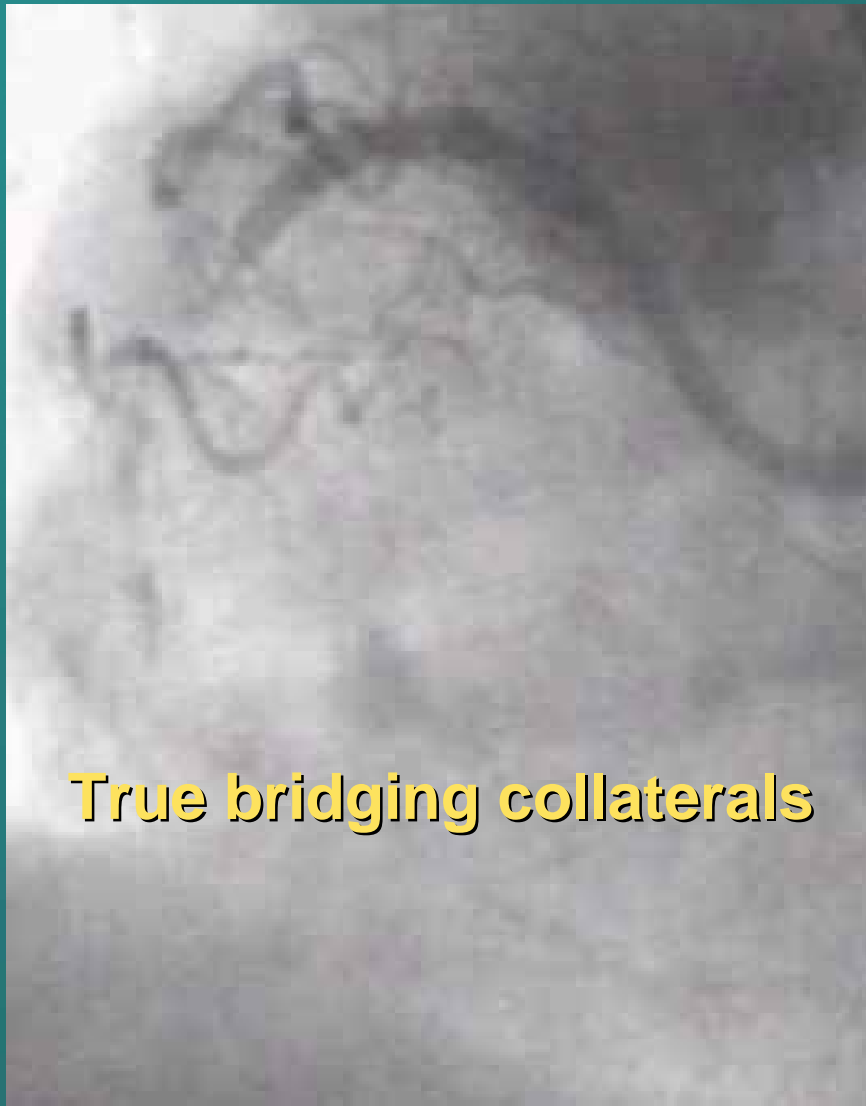


Lessons from the First CTO Summit

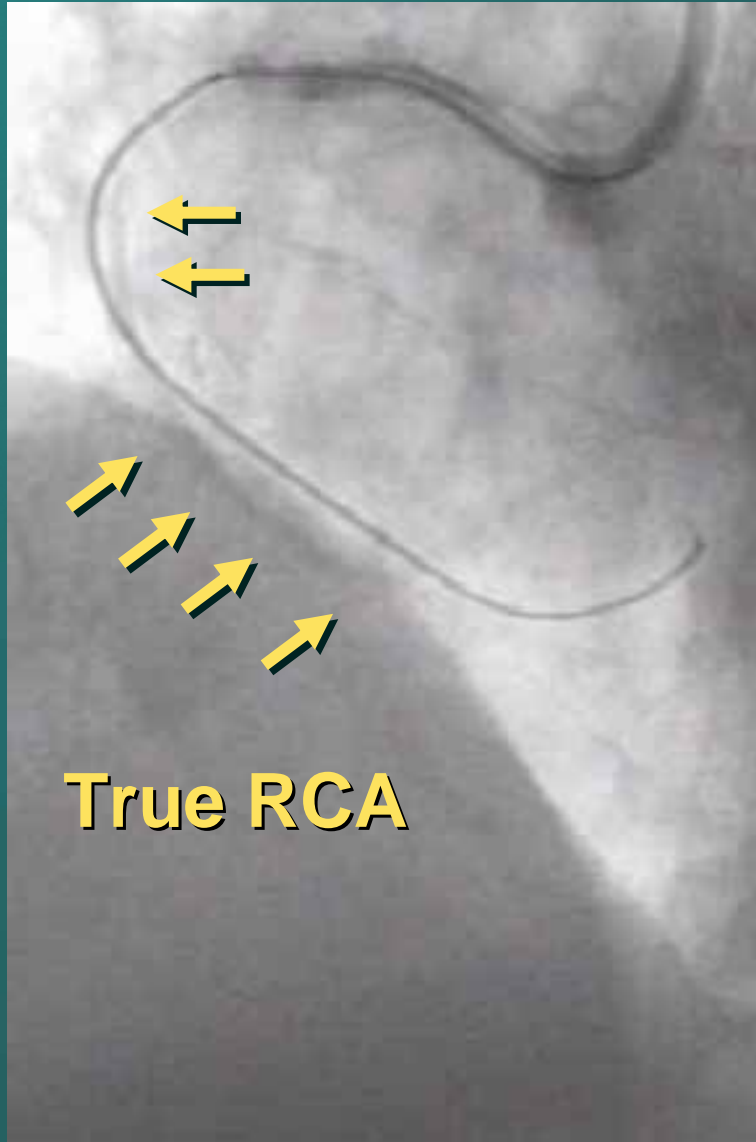
- 1) The latest generation of CTO wires (Asahi Miracle Brothers and Confianza lines) have unsurpassed steerability, tactile response (Miracle) and crossing force (Confianza)**



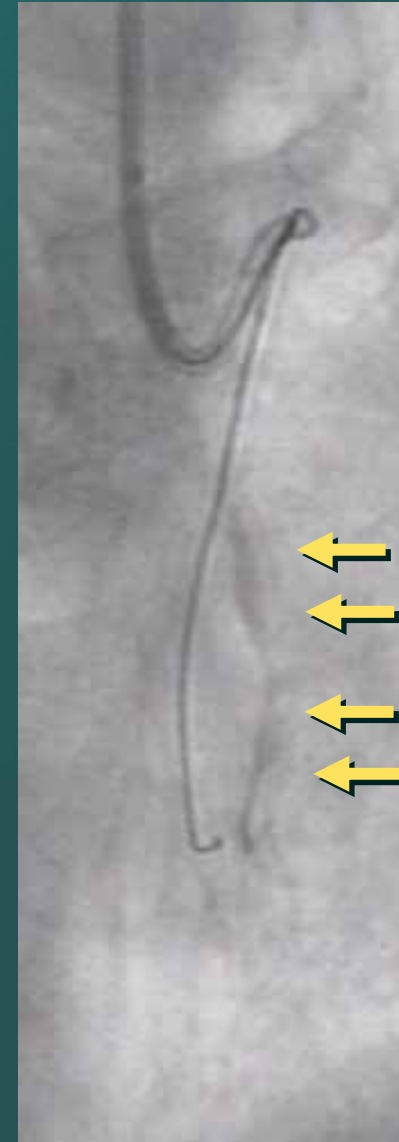
9. CTO of large PRCA (S/P LAD and LCX PCI)



Operator advanced the wire anyway

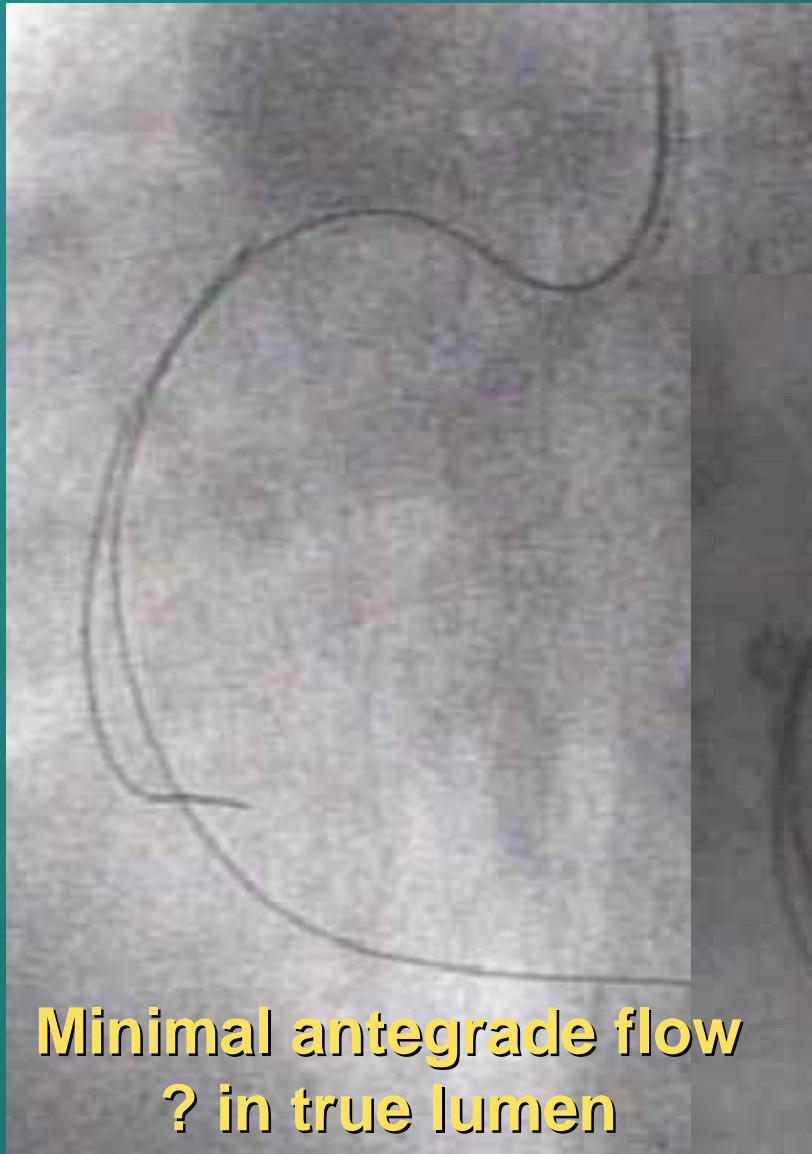


True RCA

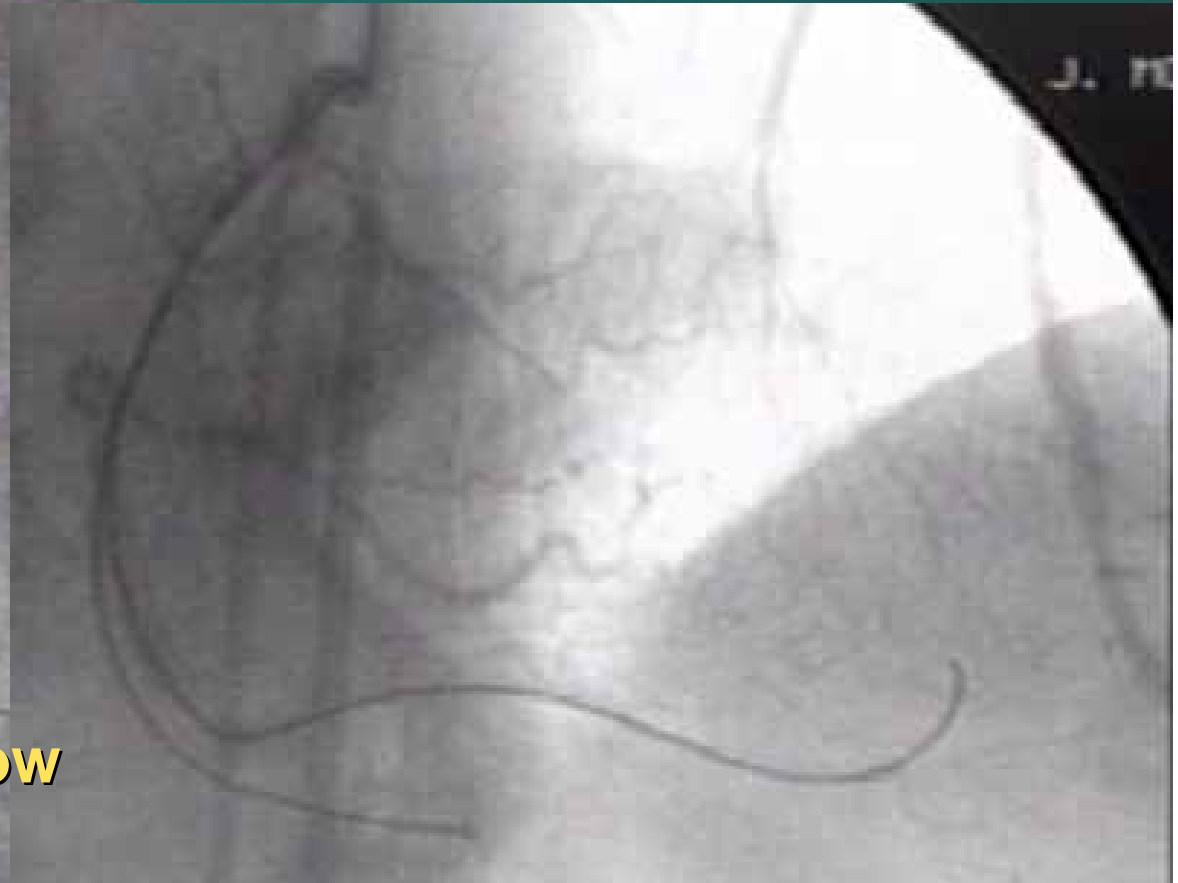


Parallel wire technique – 2nd Miracle 3g

Contralateral groin stick
Collaterals poor, but verified
intraluminal position



Minimal antegrade flow
? in true lumen



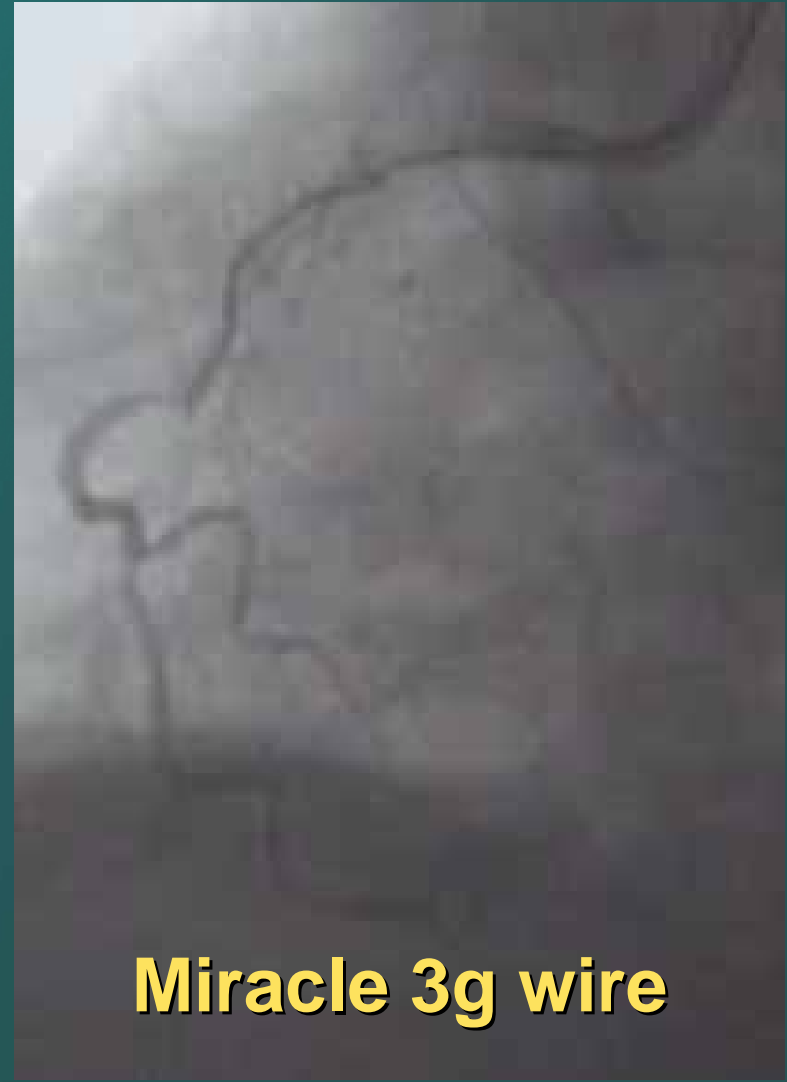
After 1.5 mm PTCA Final after 3.5/28 stent



Lessons from the First CTO Summit

- 1) Visualization in orthogonal projections is essential**
 - **Consider bi-plane**
- 2) Use contralateral injections from the beginning whenever collaterals are present from the opposite coronary artery**
- 3) The parallel wire technique is now a standard routine technique**

12. 87 yo man 1 yr S/P failed Frontrunner of RCA. Severely dissected. Class 3 angina



Miracle 3g wire

Miracle 3 gram wire crossed



**Final
After 3 stents**



Lessons from the First CTO Summit

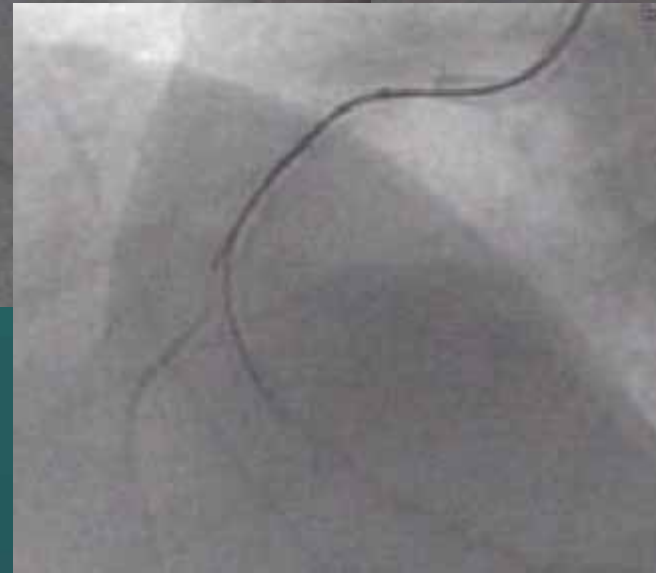
- 1) 2nd attempts after failed CTOs may be successful in up to 50% of cases**
 - Prior dissections do not preclude success**

3. Prior Failed RCA

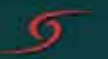
6 wks later: Contralateral injection

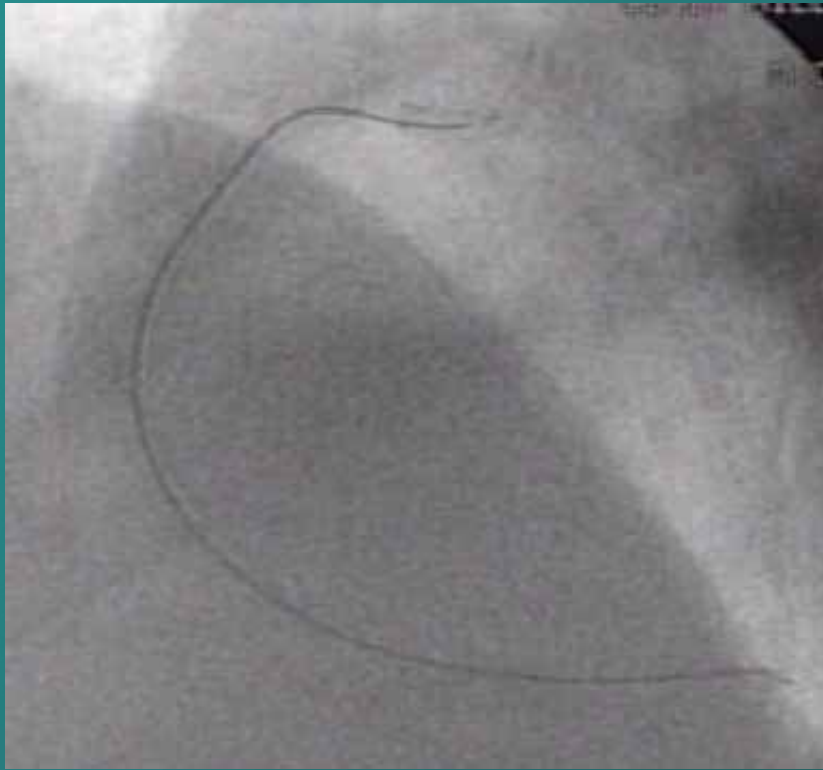


**Extraluminal wire
Parallel wire failed**



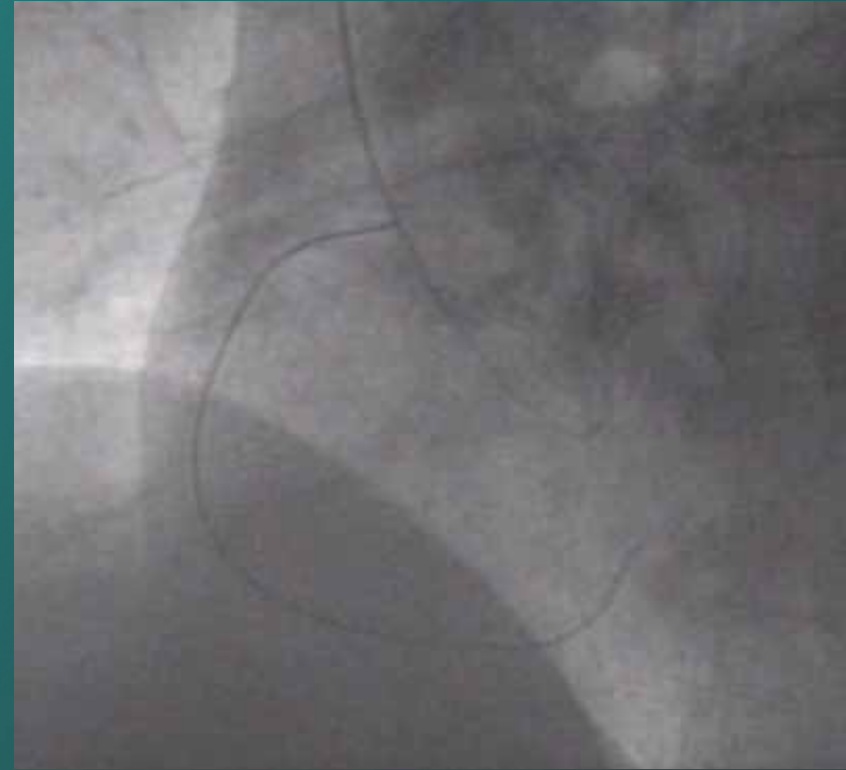
**Parallel wire
Miracle 6g in false lumen
Confianza in 2nd false lumen**





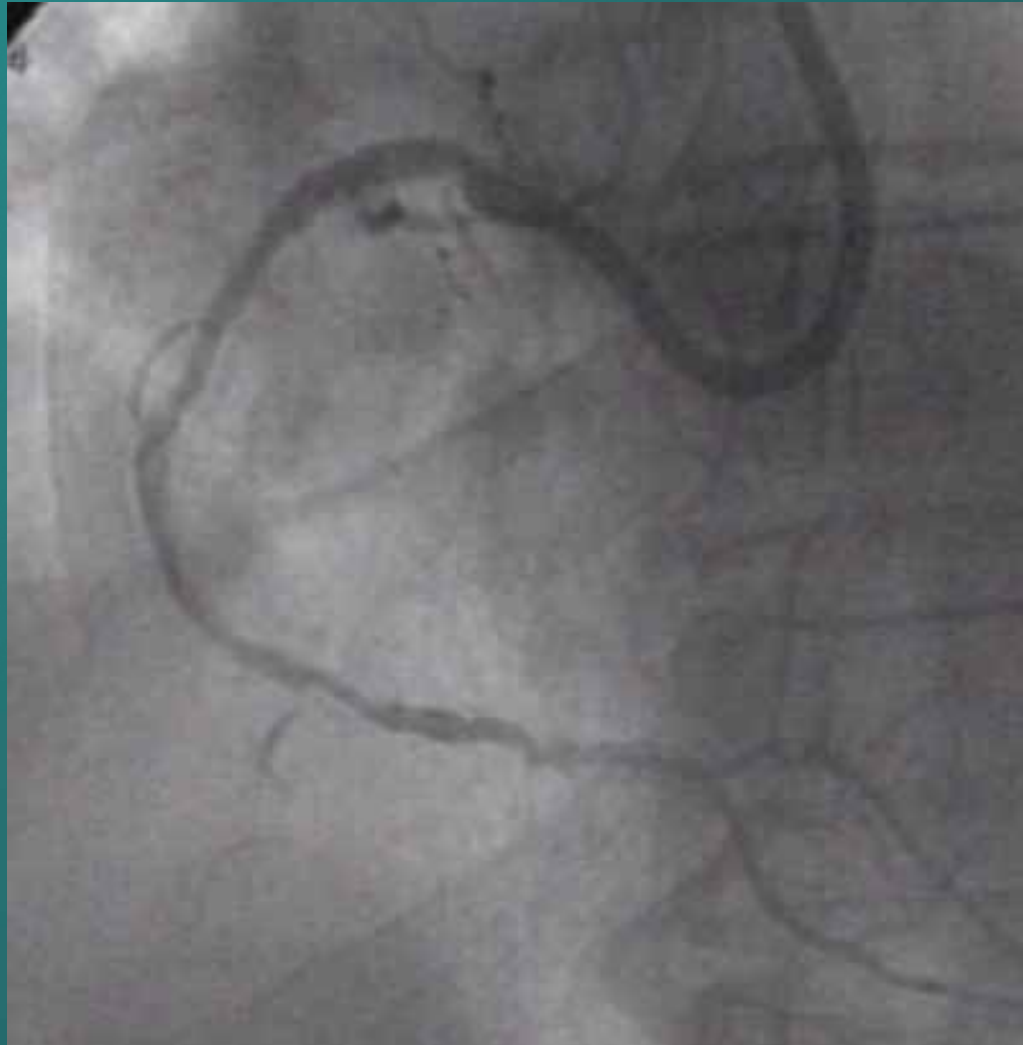
**Parallel wire technique
Miracle 6g wire re-steered
into true lumen**

**Unable to cross
with any balloon (JR4)
Despite 2nd wire for support**



**Changed guide over
0.014" + 0.038" in aorta
to AL-1**





**1.5 mm balloon crossed easily
After pre-dilatation
Then stented successfully (stem to stern)**



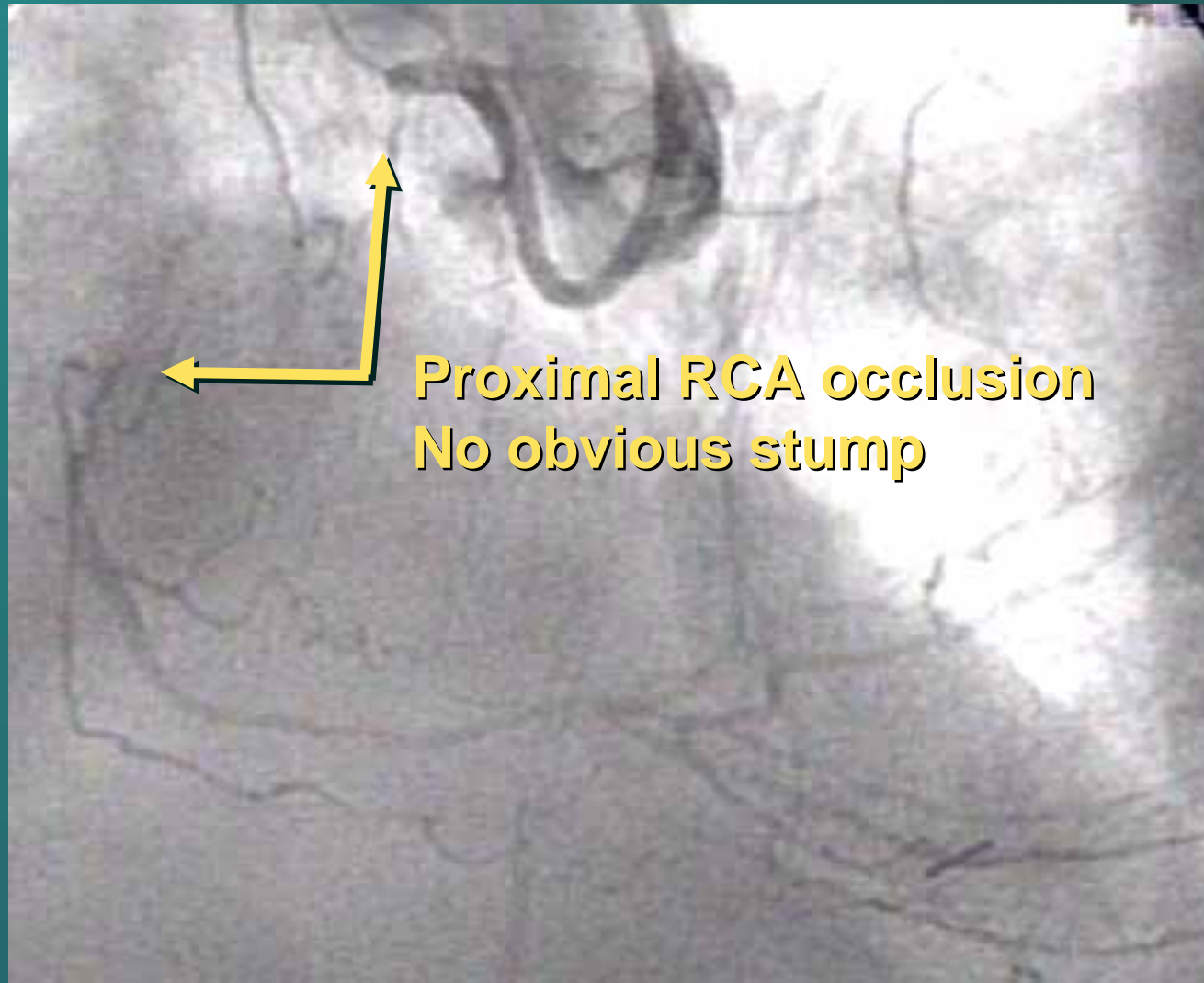
Lessons from the First CTO Summit

1) Anticipate the need for excellent guide support!

- **Amplatz catheters for RCA, extra force back-up catheters for LCA**



10. 89 y.o. f s/p anterior MI & LAD PCI



Pilot 150 wire (hydrophilic)



Looking good so far



In true lumen (4' wire time)!



Unfortunately, no balloon would cross



Farthest balloon position

0.9 mm Spectanetics X-80 laser

Fluence 80 mJ/mm², RR 40 Hz

No reason to flush

Crossed easily





Post laser



Final



Lessons from the First CTO Summit

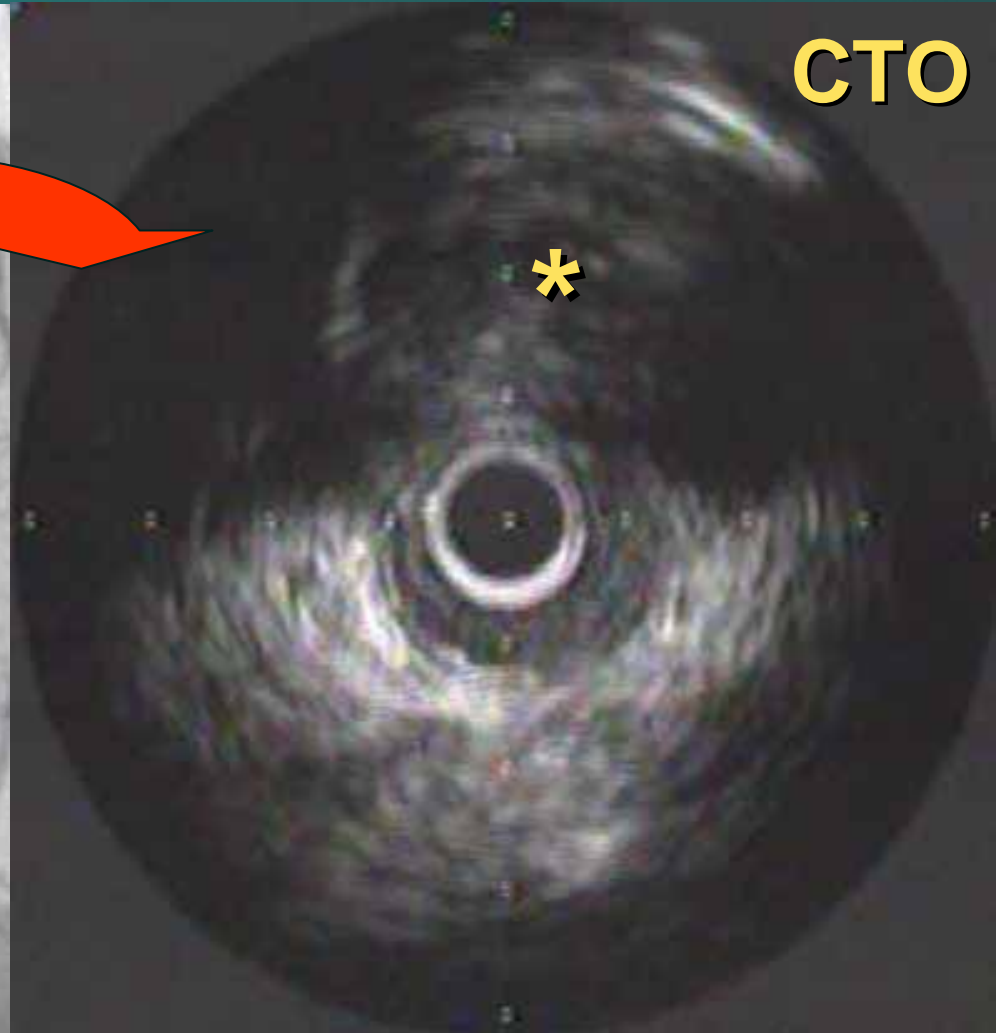
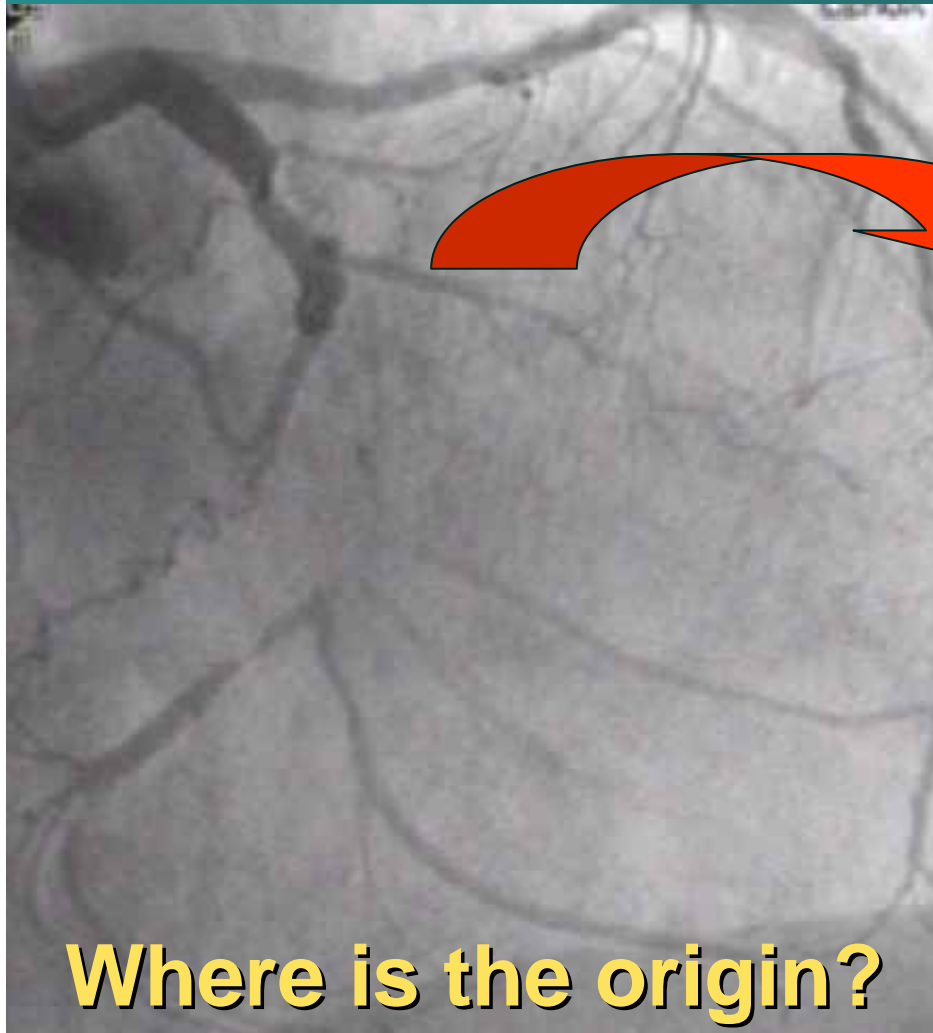
1) Hydophilic wires shorten the case, one way or another

- **They either cross or they dissect – quick!**
- **Most senior operators don't favor these wires, but the younger generation tend to like them**
 - **Do you want to be experienced or young?**

2) Consider laser and rotational atherectomy to cross “uncrossable” CTOs

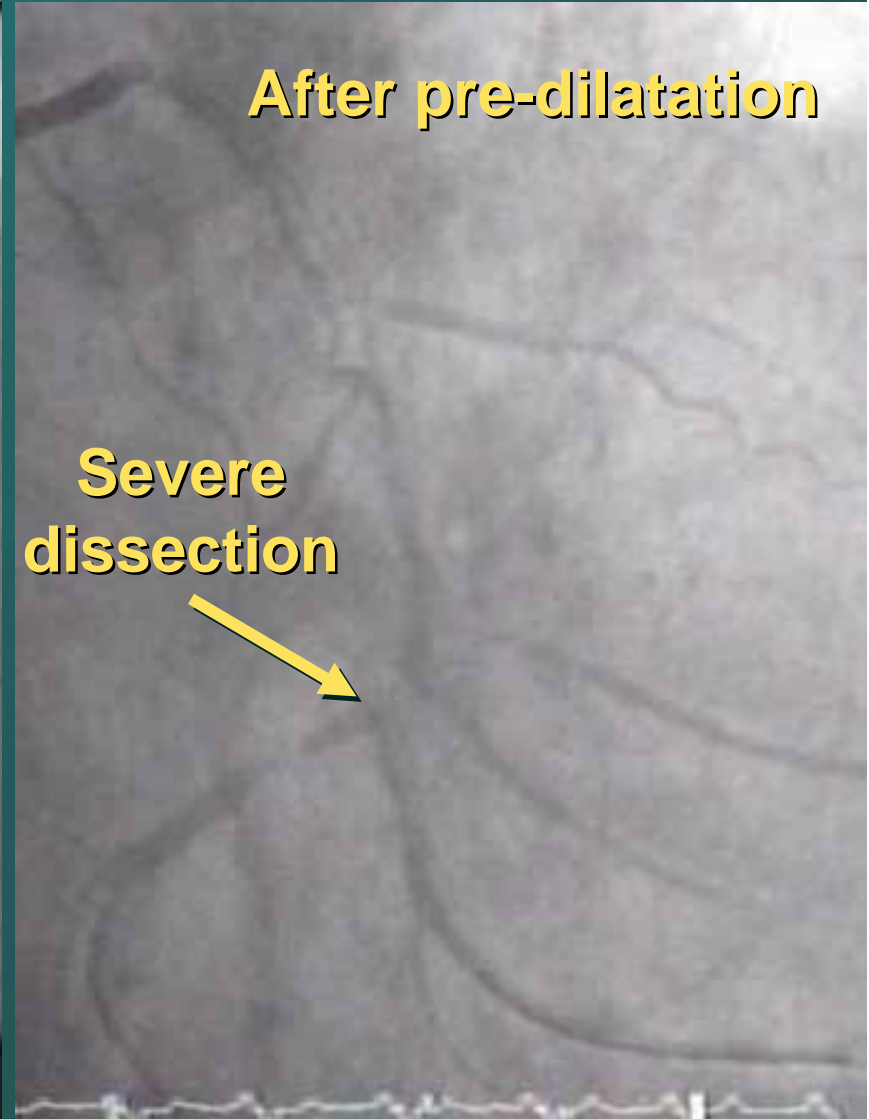
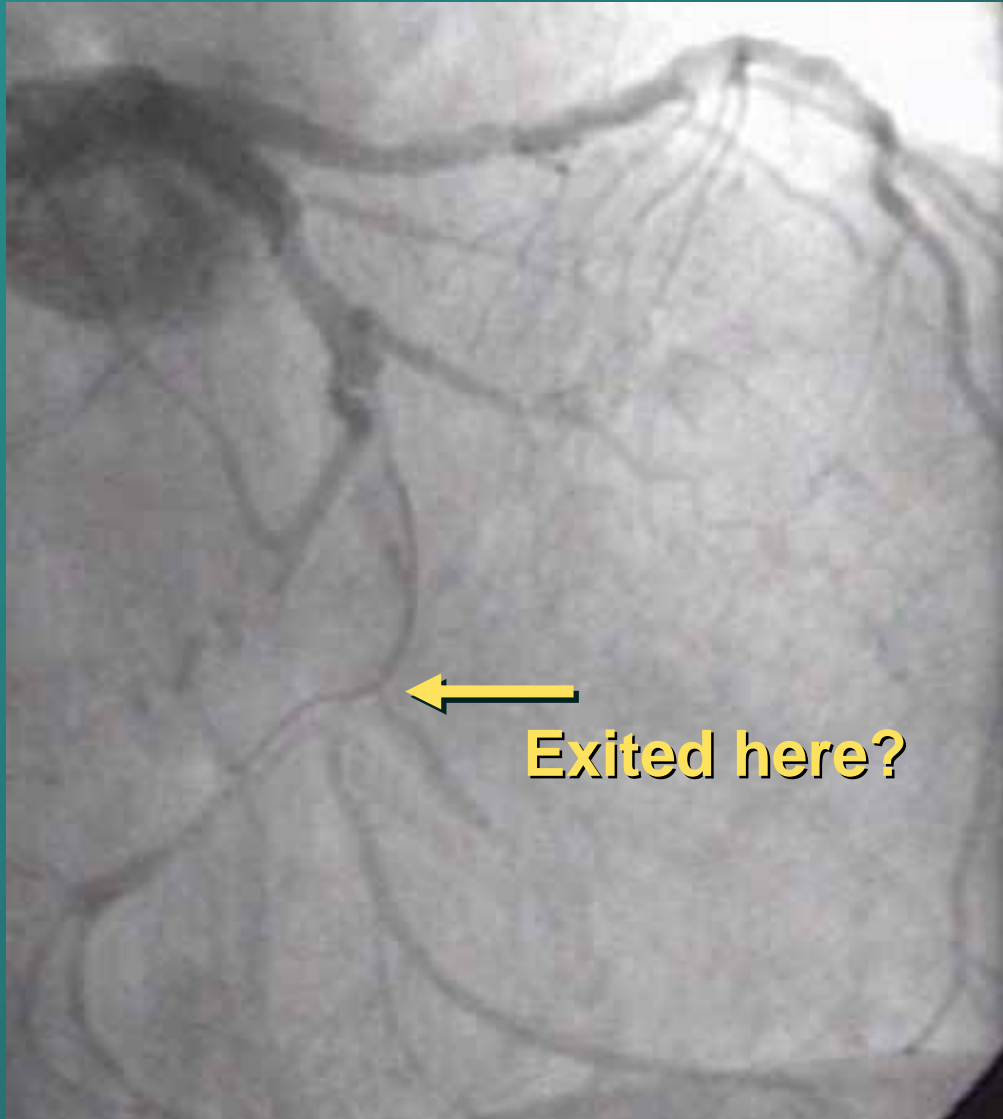
6. Complex CTO of MLCX

IVUS in LA branch

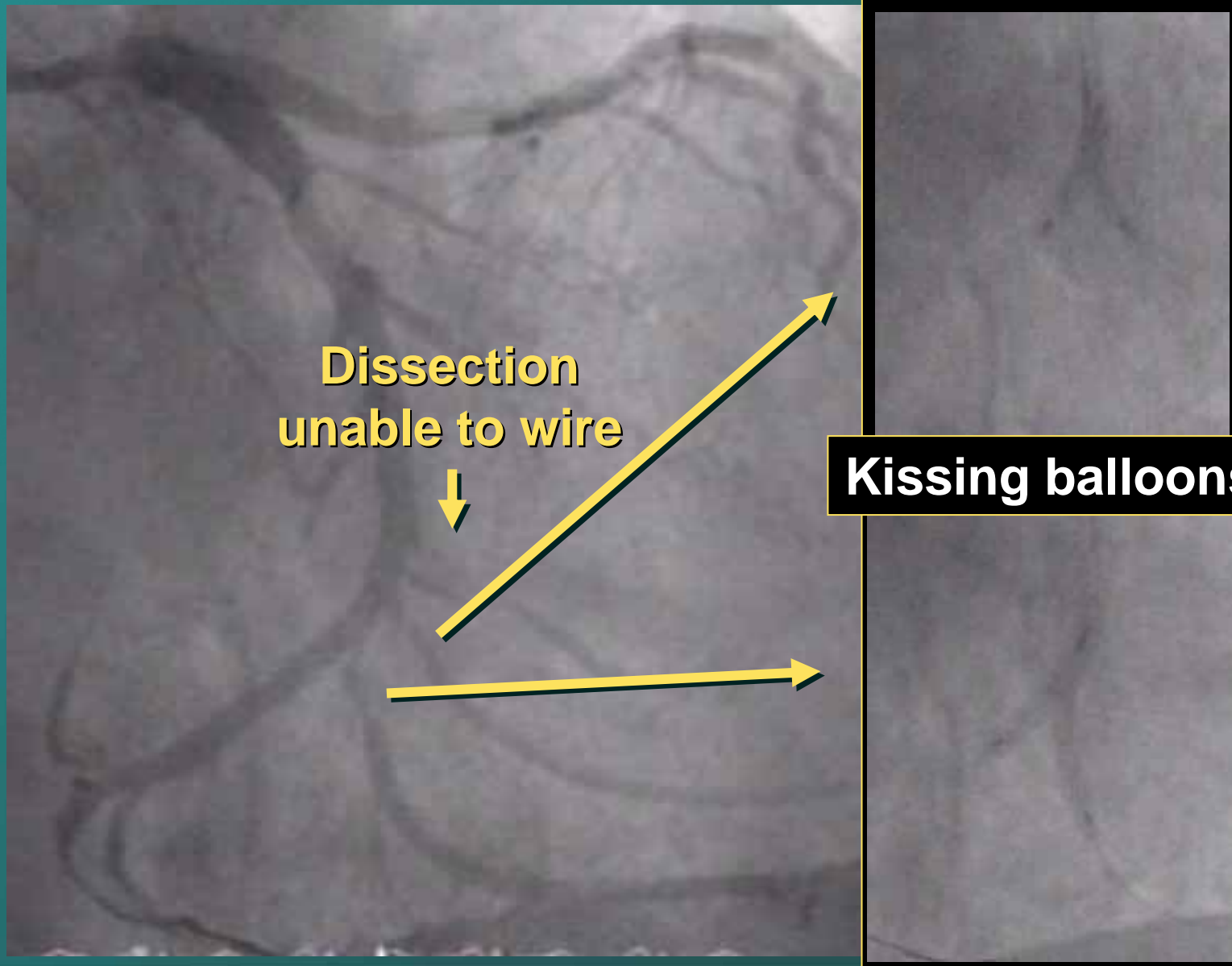


Cross-it 100 False lumen distally

Redirected wire into 5th OM



2 stents in LCX



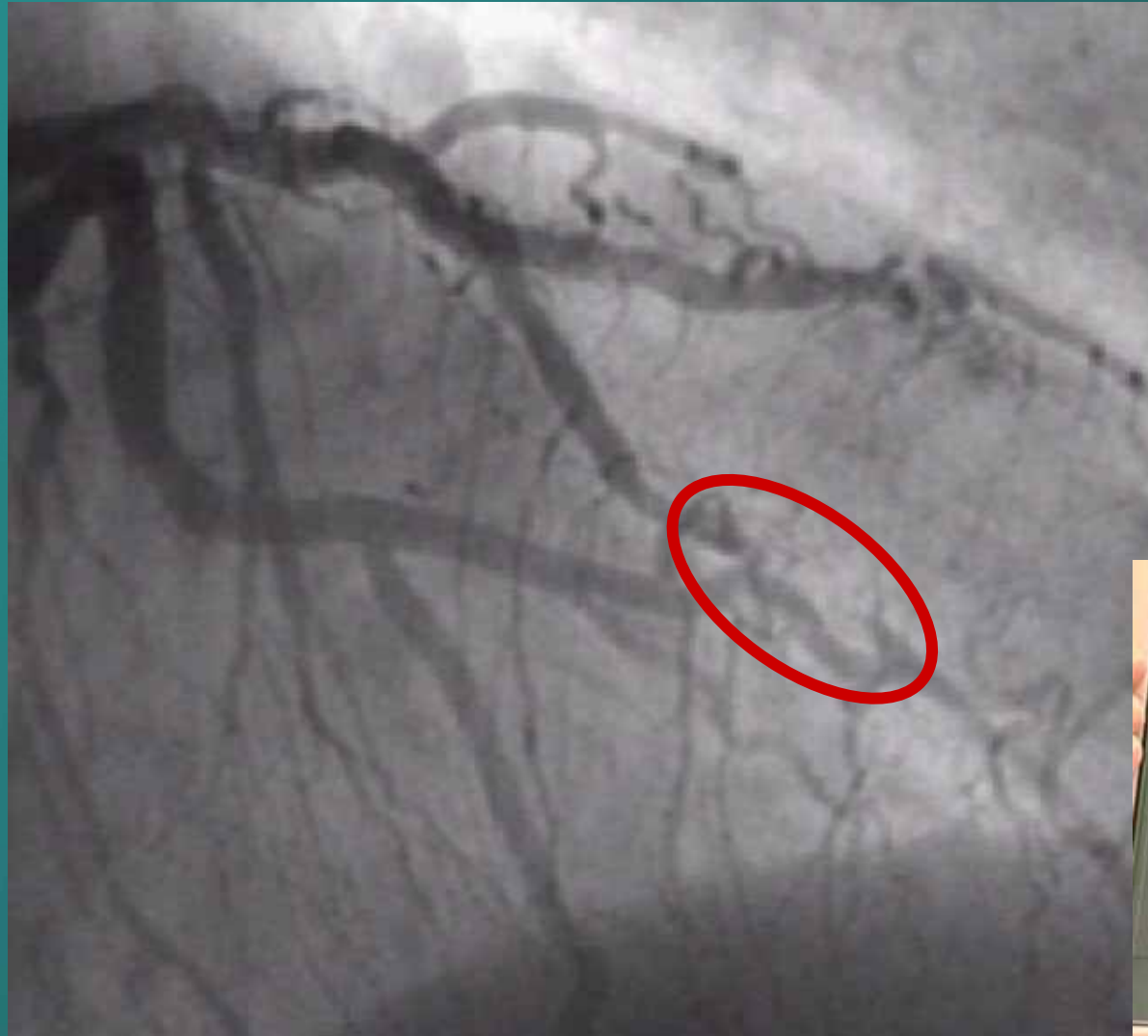
Final result



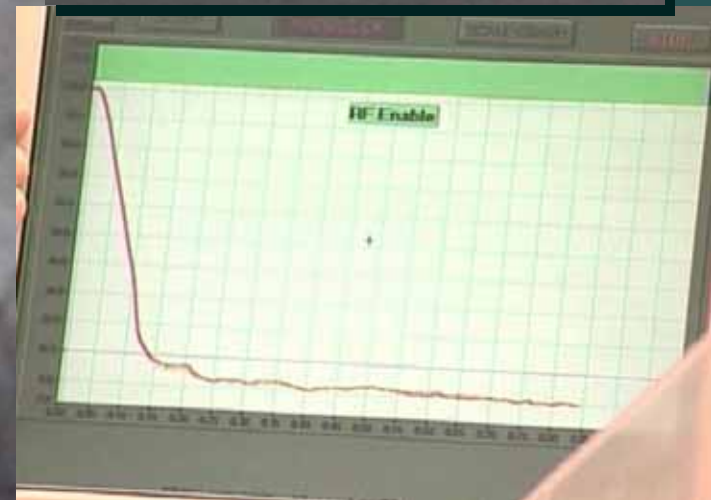
Lessons from the First CTO Summit

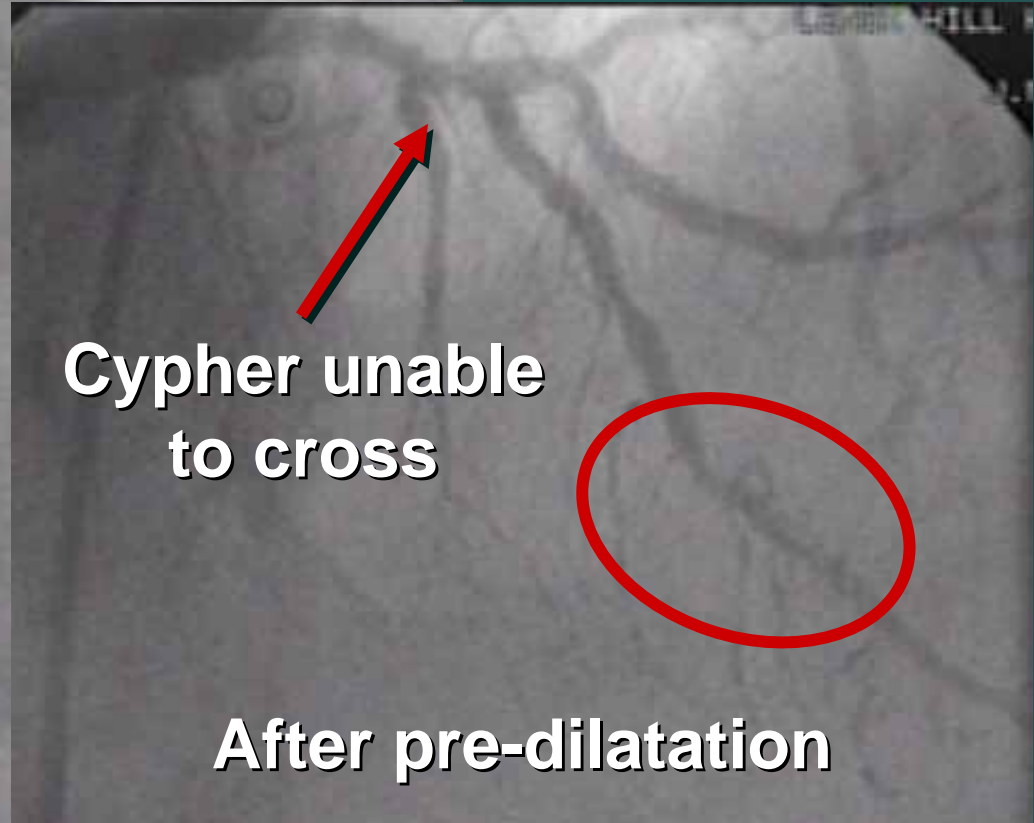
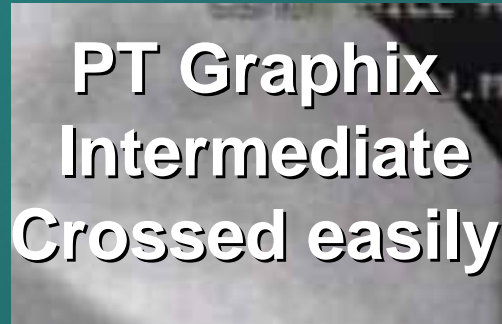
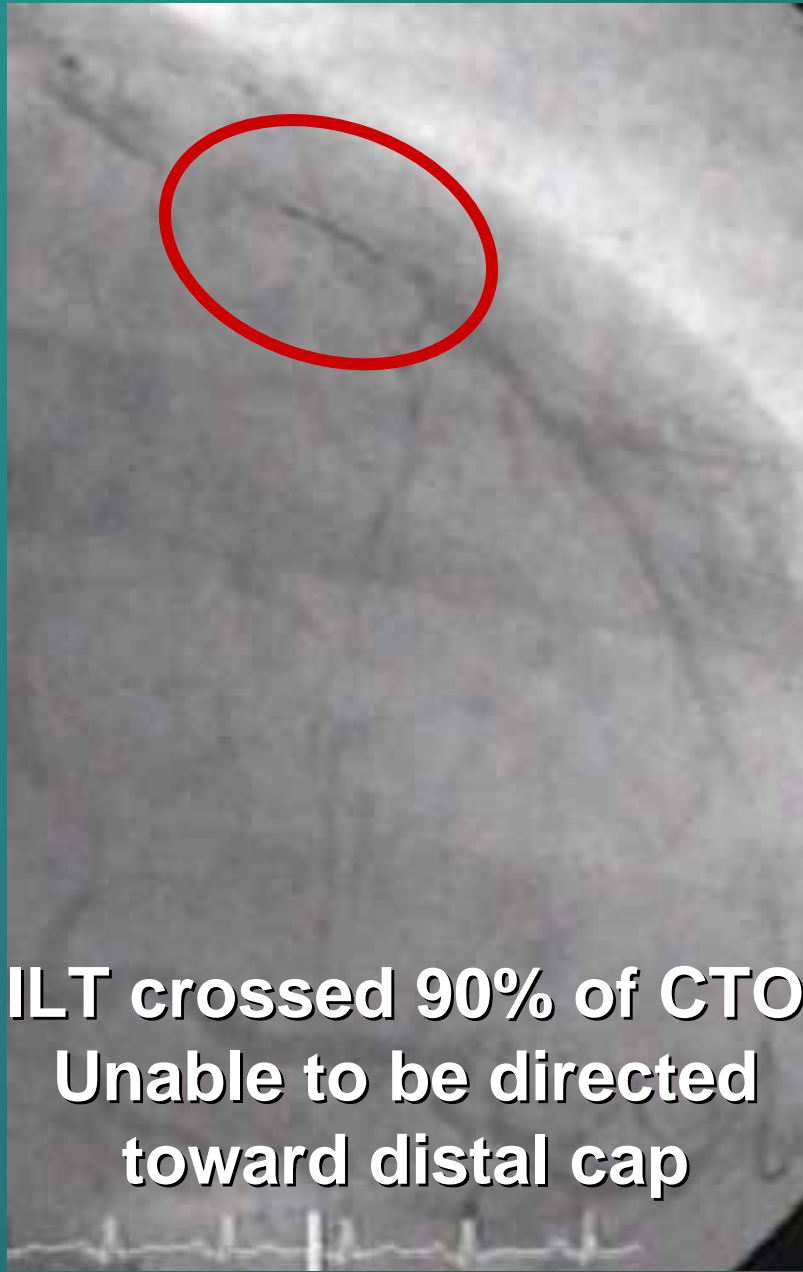
- 1) Diffuse distal disease and bifurcation lesions are common at the site of and distal to CTOs, should be anticipated, and may be difficult to manage.**

4. CTO of MLAD over 1.5 cm BMW unable to cross



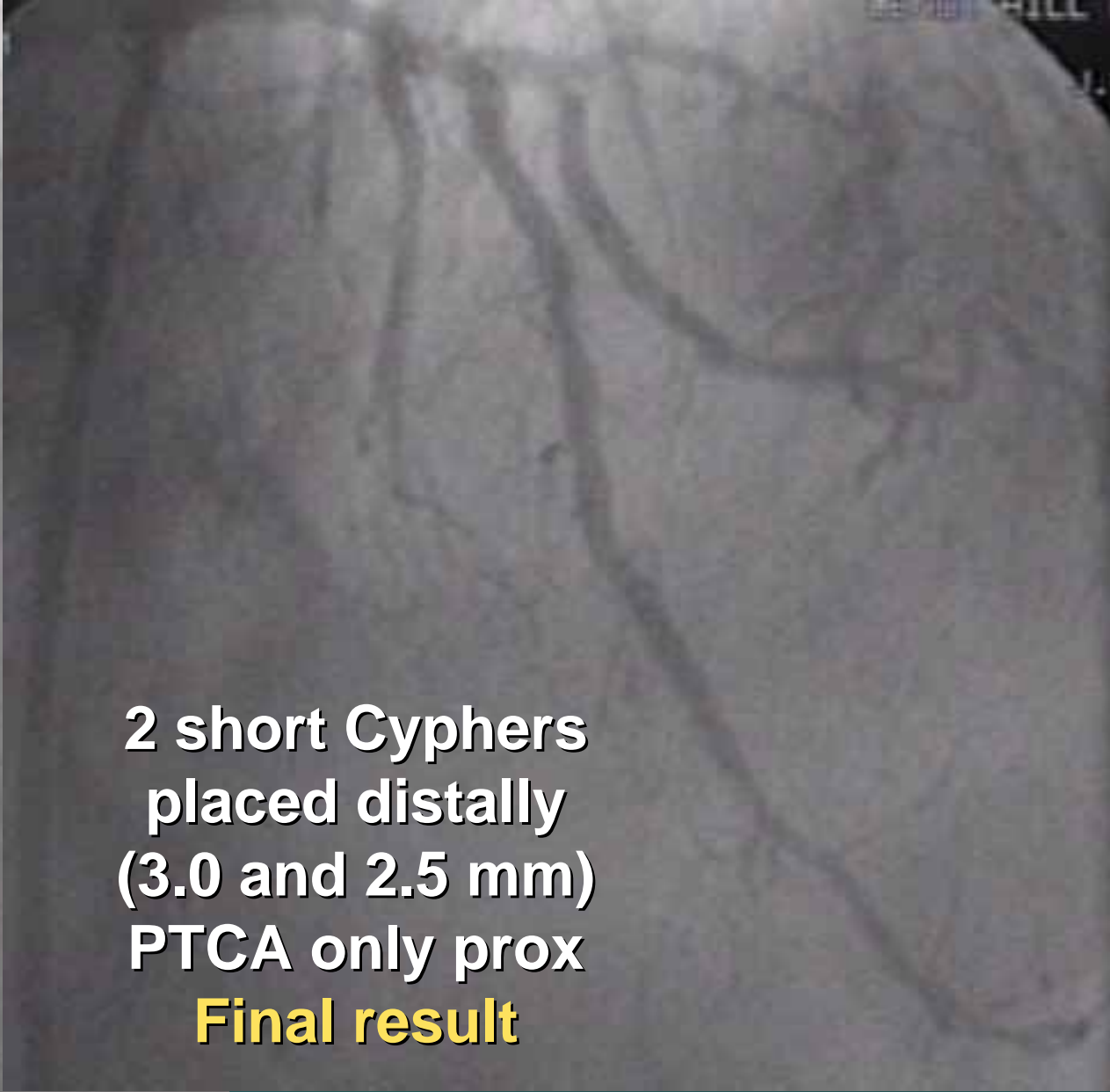
ILT SafeCross







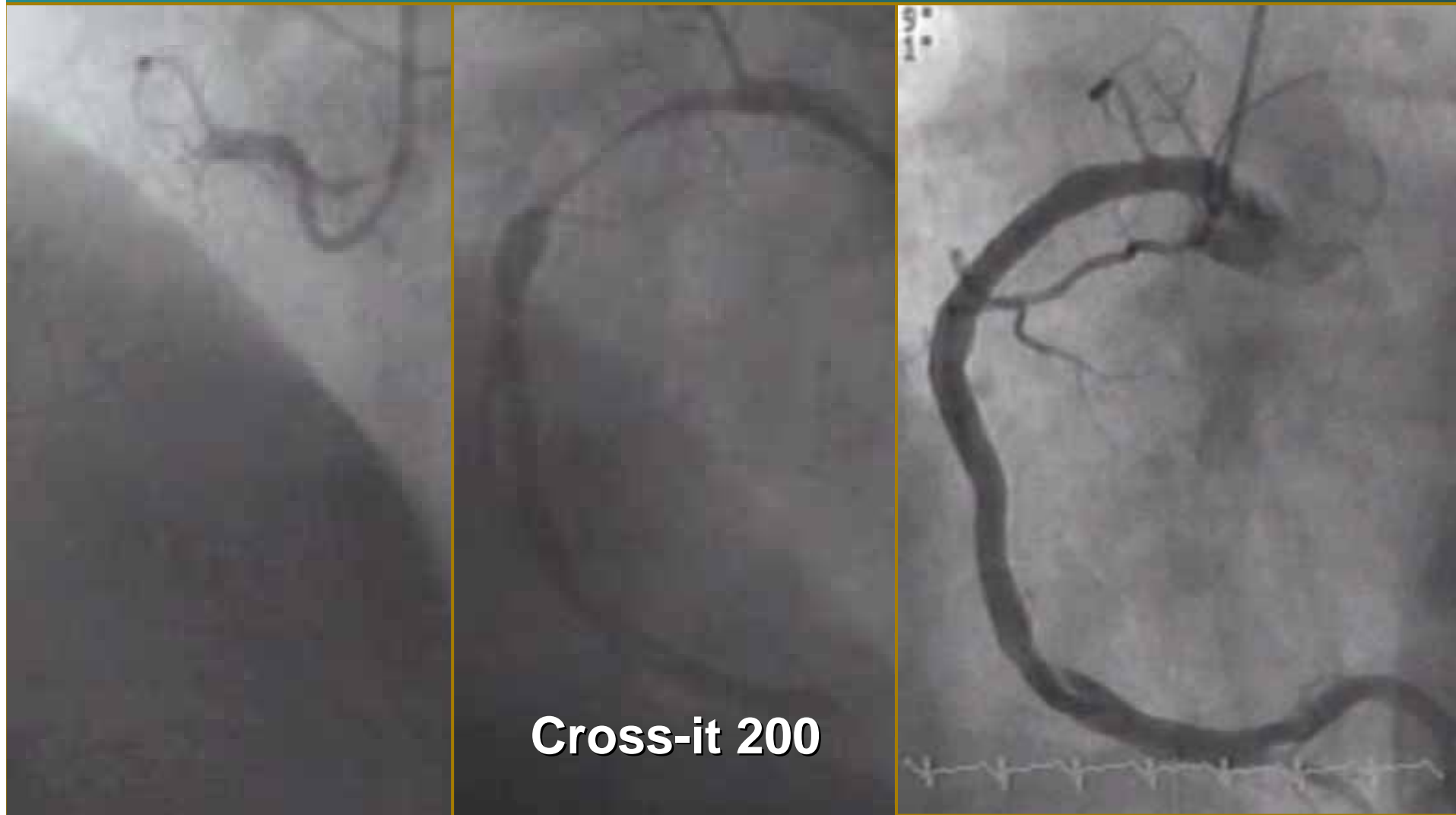
**3.0 mm balloon
18 atm**



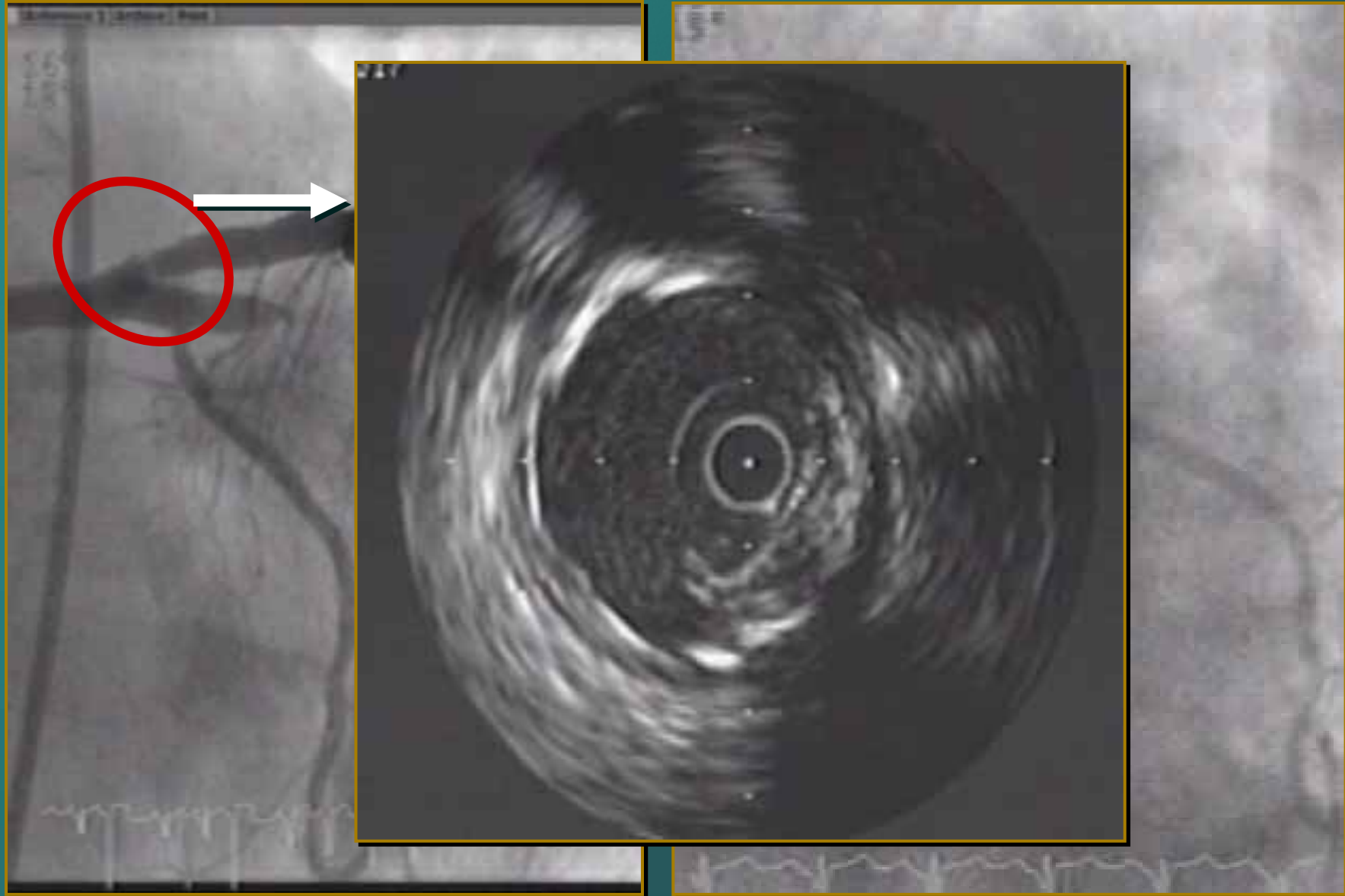
**2 short Cyphers
placed distally
(3.0 and 2.5 mm)
PTCA only prox
Final result**



2. Pt with two CTOs. RCA 1 month prior.



CTO of LCX (failed previously)



Attempt with Frontrunner

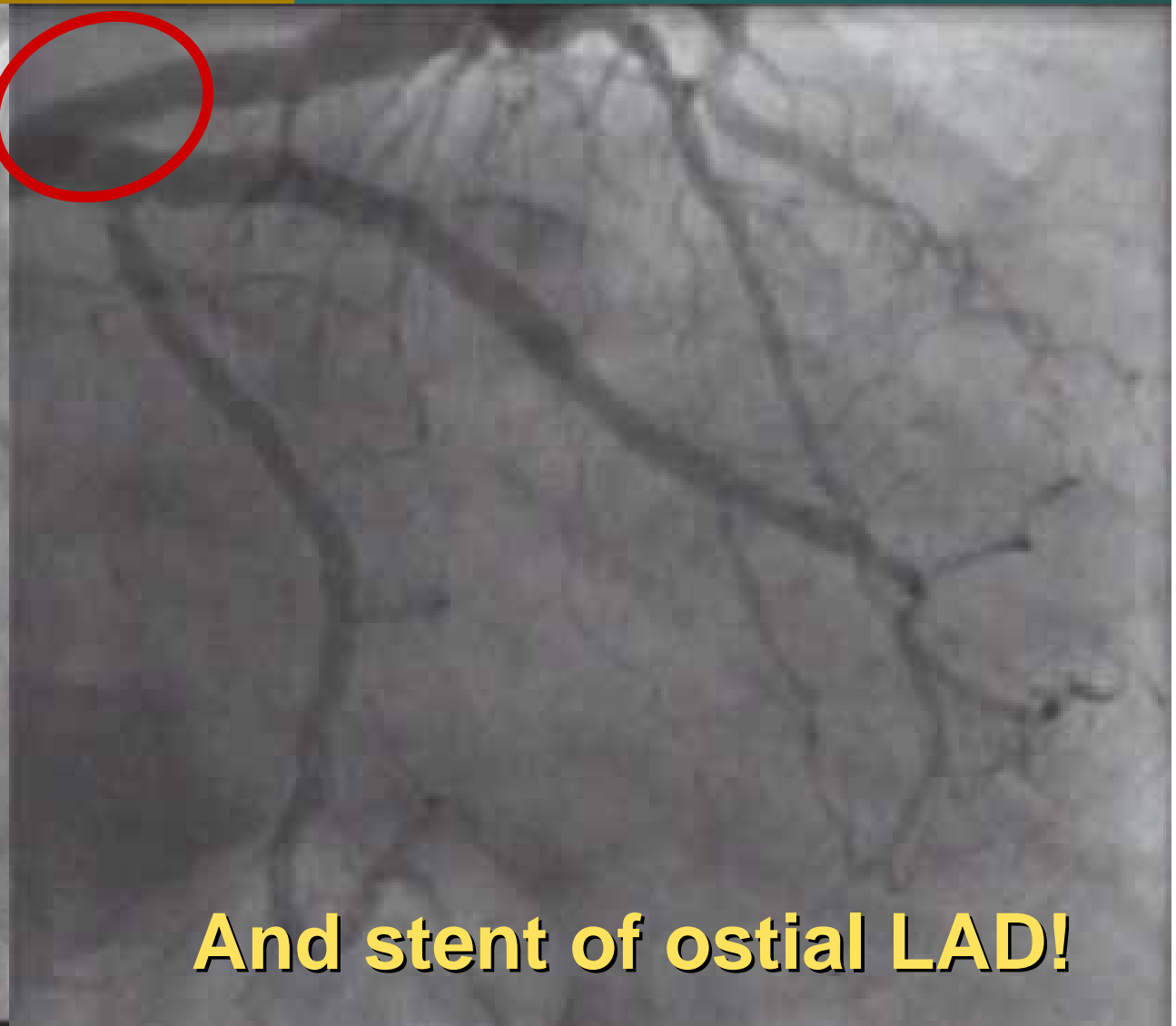


Maximal advancement



**Whisper wire
crossed easily**

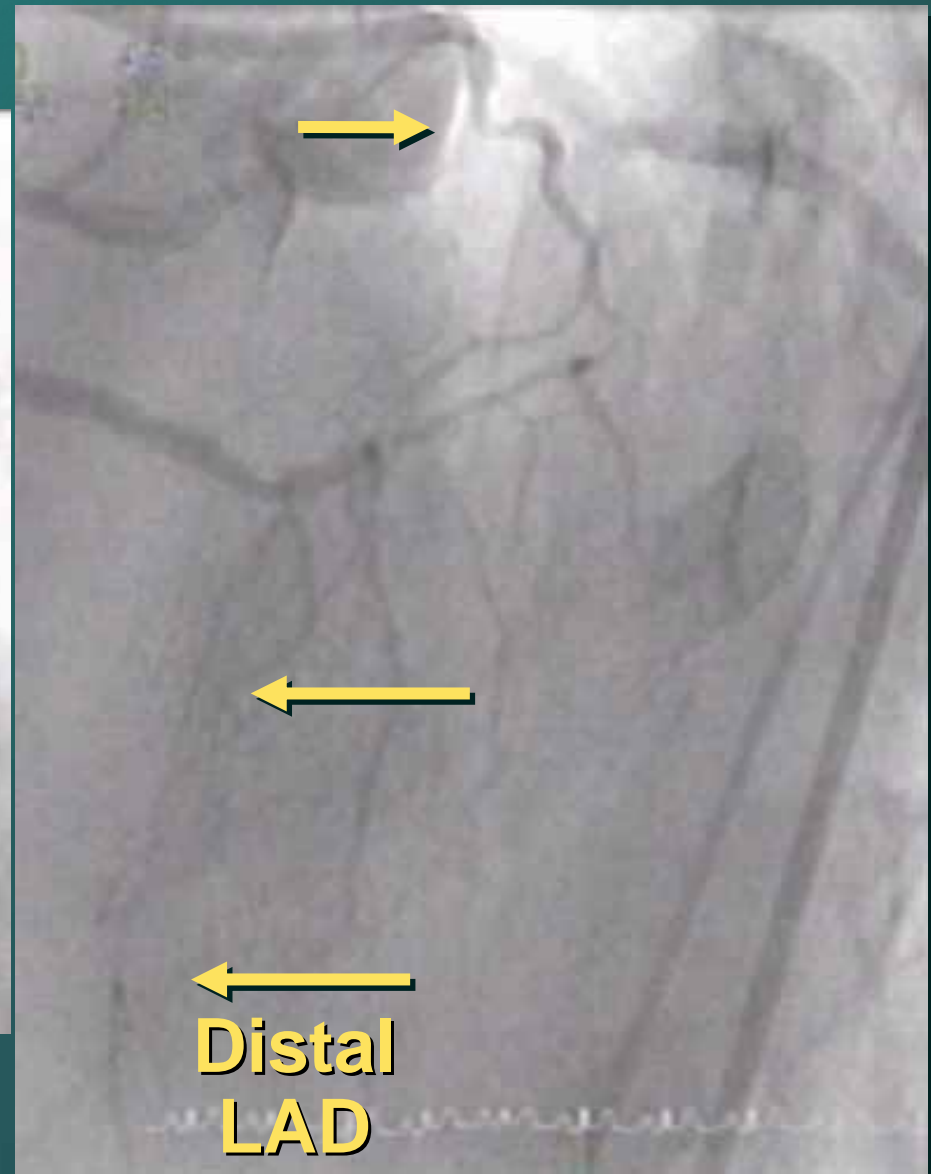
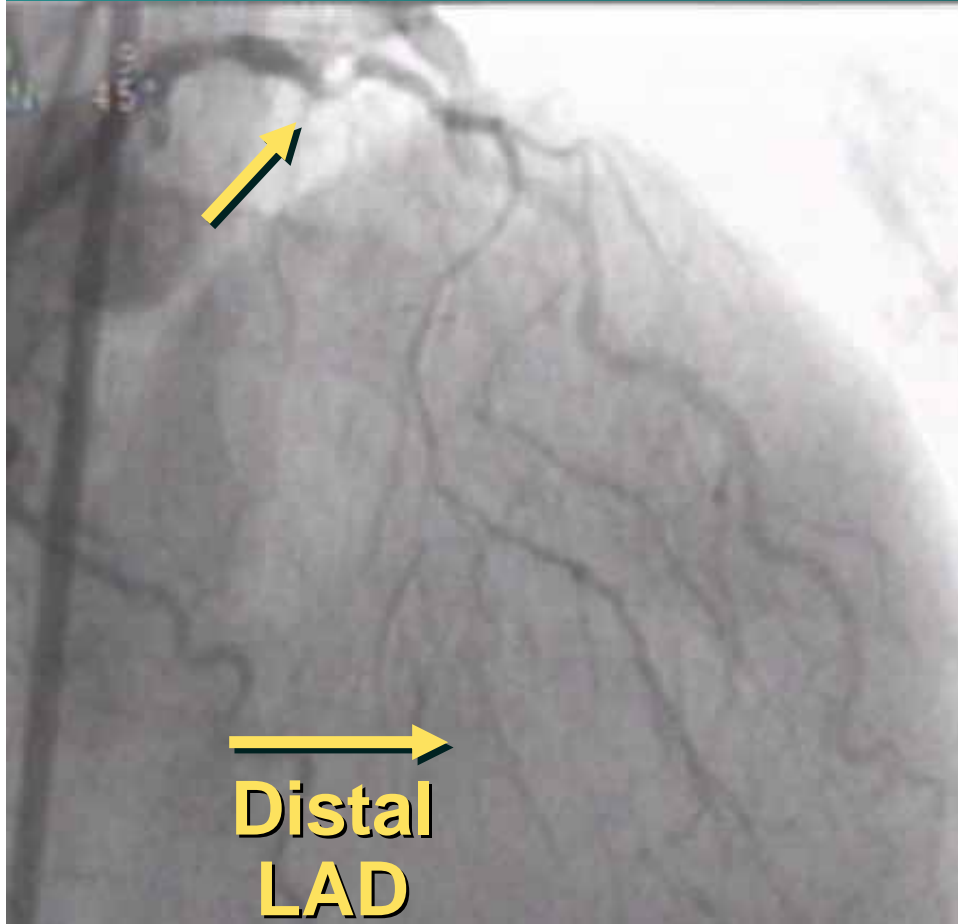
Final, after 2 stents



Lessons from the First CTO Summit

- 1) The role of complementary devices is evolving**
 - a. ILT Safe Cross**
 - b. Lumend Frontrunner**
- 2) We have no clue how and whether to treat non flow limiting vulnerable or ruptured plaque!**

8. 45 y.o. with flush occlusion of LAD after Dg1



Pre

**Miracle 3
20°, 30°, 45° bend**

**Confianza Pro
in Dg**



Confianza Pro in MLAD and Dg



See Saw
technique

2 Confianza
Pros, both in
false lumen

LAD from
contralateral
injection



Lessons from the First CTO Summit

- 1) Long CTOs, without good distal visualization, are still extraordinarily difficult.**

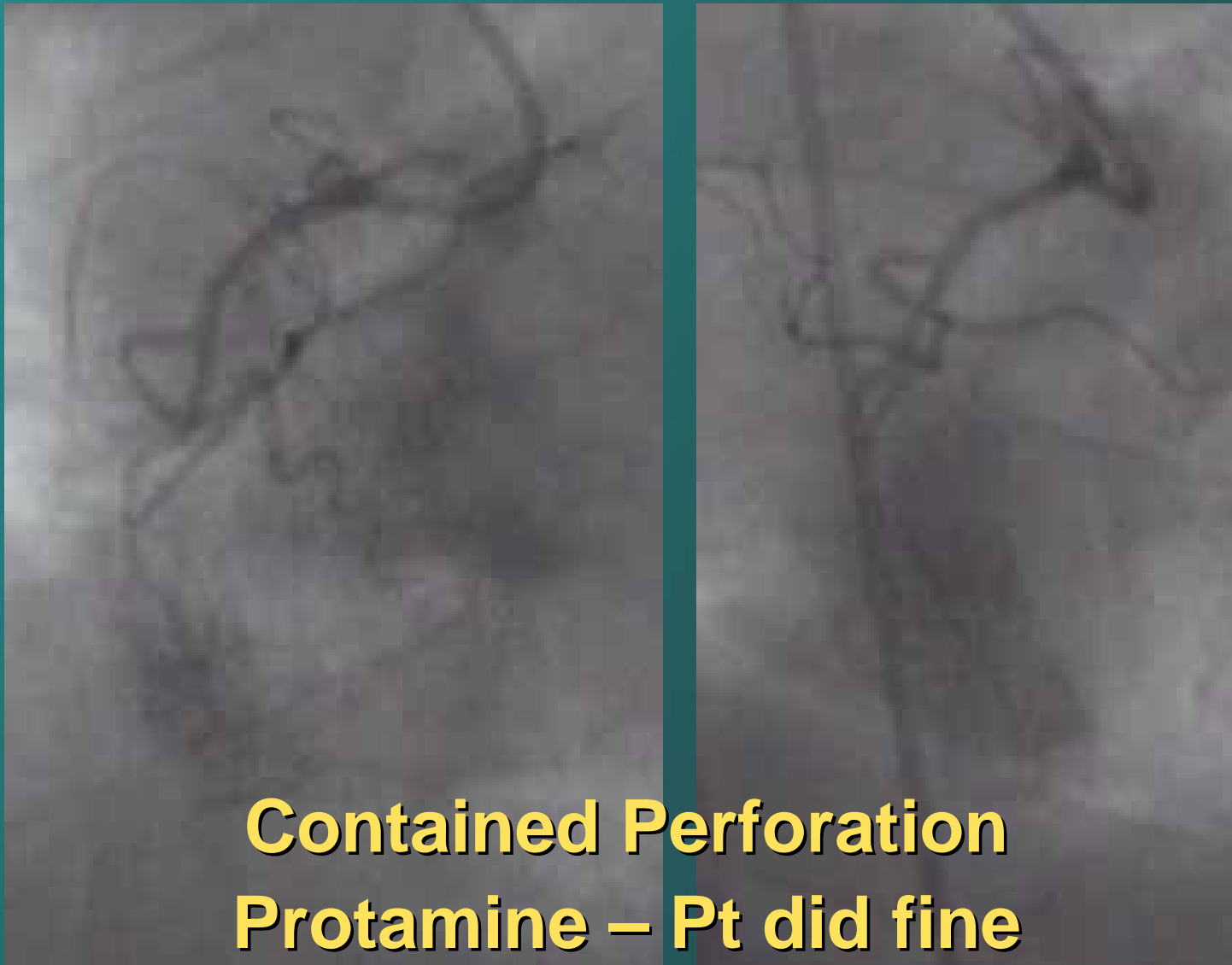


13. CTO of RCA with ? faint antegrade channel



**Cross-it 300
Believed to be in
RVM branch**

PTCA with 1.5 mm balloon into “RVM”



**Contained Perforation
Protamine – Pt did fine**



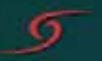
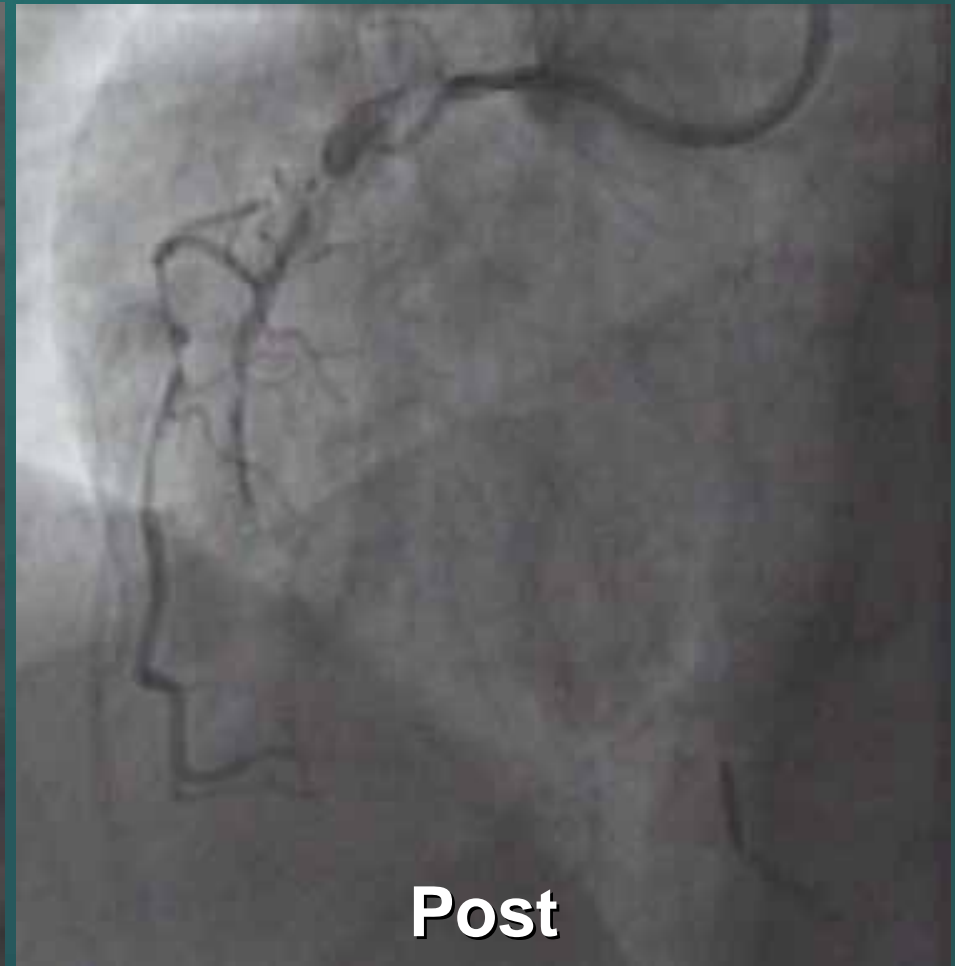
Lessons from the First CTO Summit

- 1) Don't blow up a balloon unless you're absolutely SURE you're in a large enough vessel (and in the true lumen)**
- 2) Always start CTOs with UFH (not bivalirudin or IIb/IIIa inhibitors), so anticoagulation can be reversed (clopidogrel is OK however)**
- 3) Know how to tap the pericardium!**

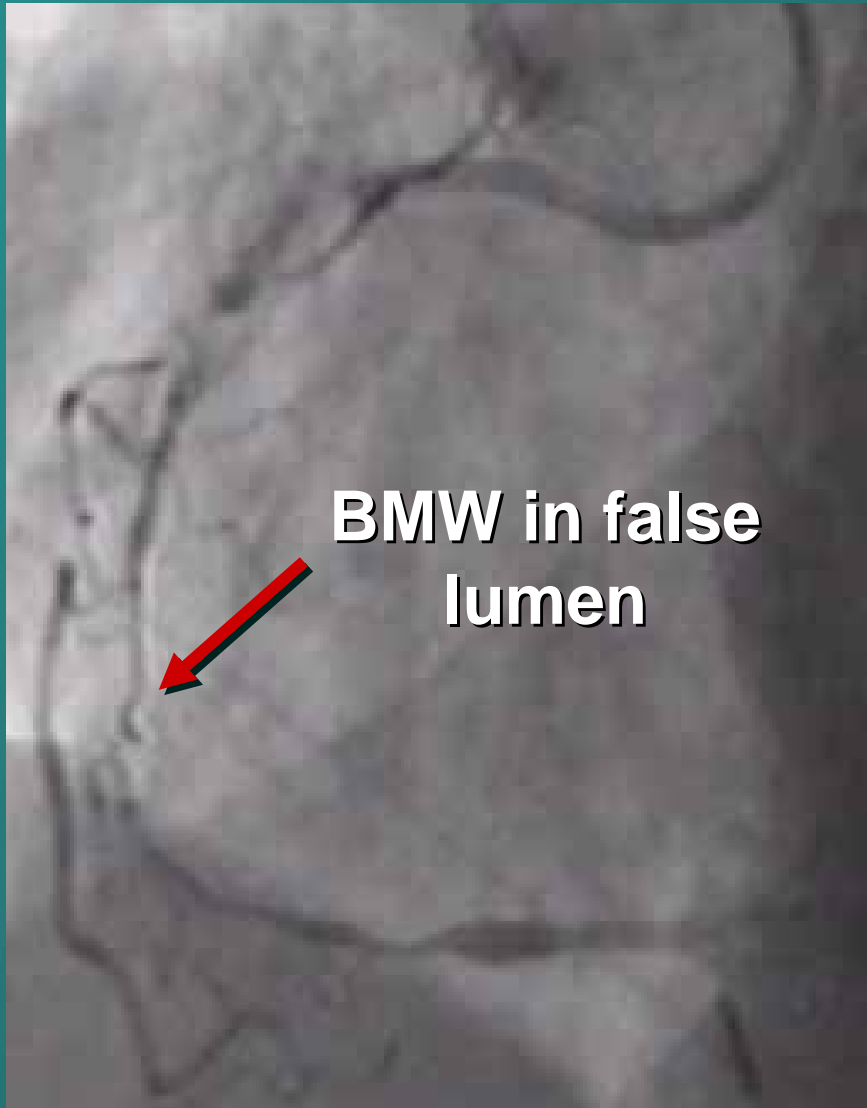


5. CTO of RCA

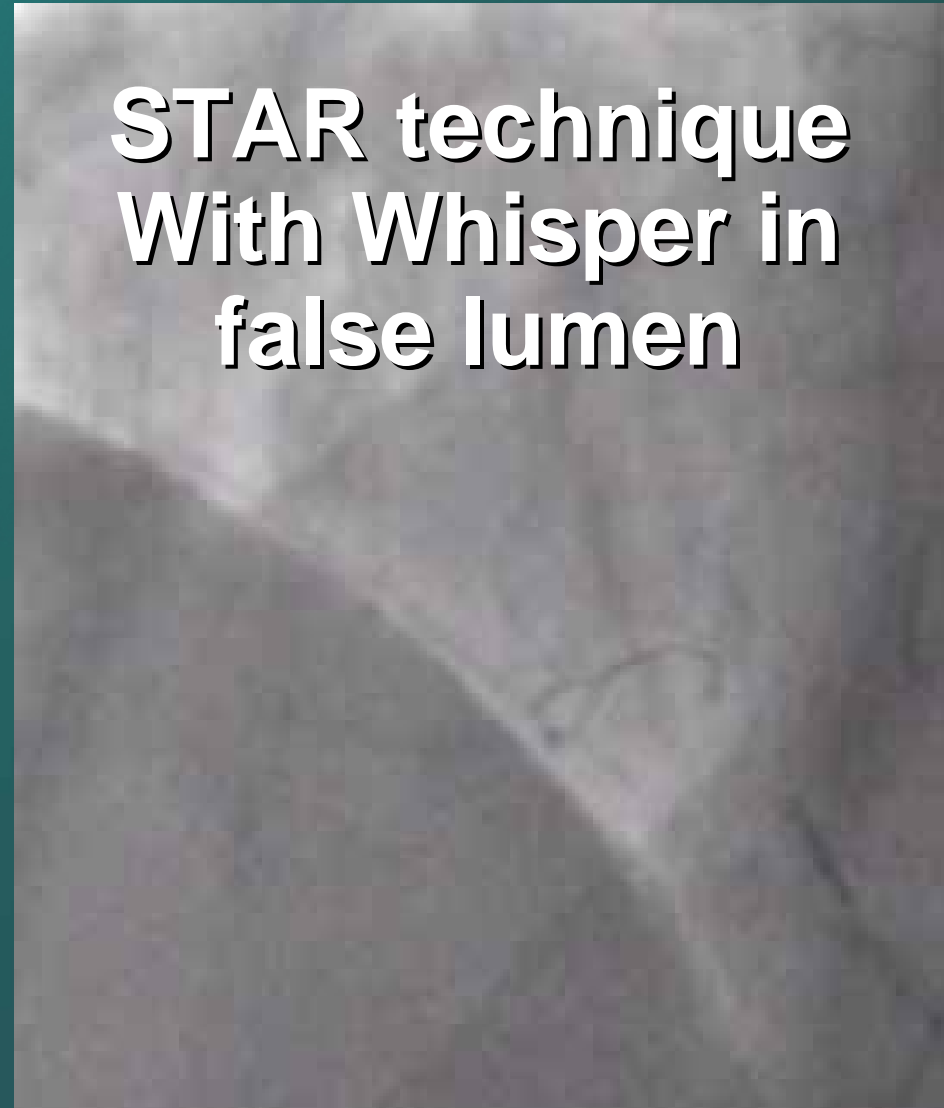
Failed prior attempt with parallel wire technique, resulting in dissection



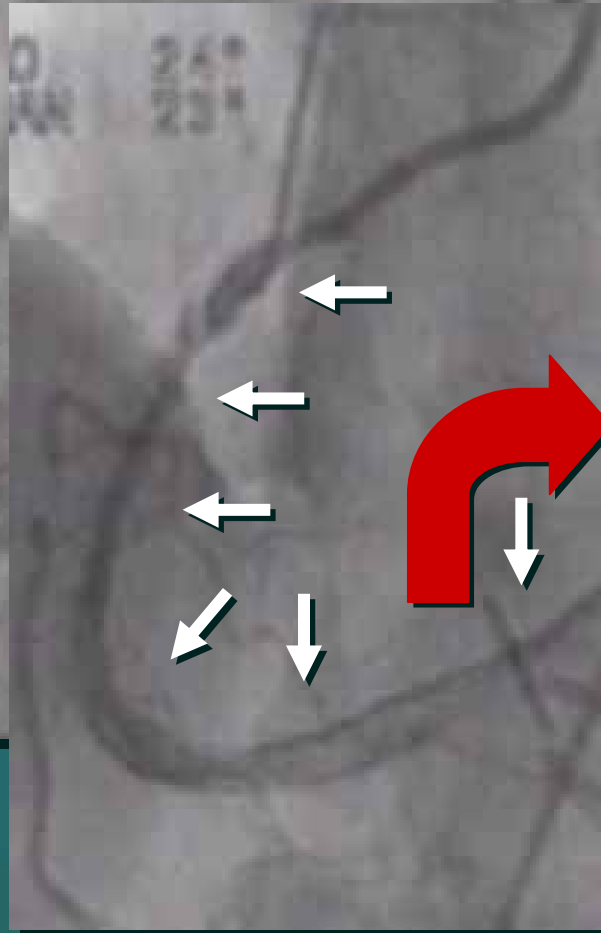
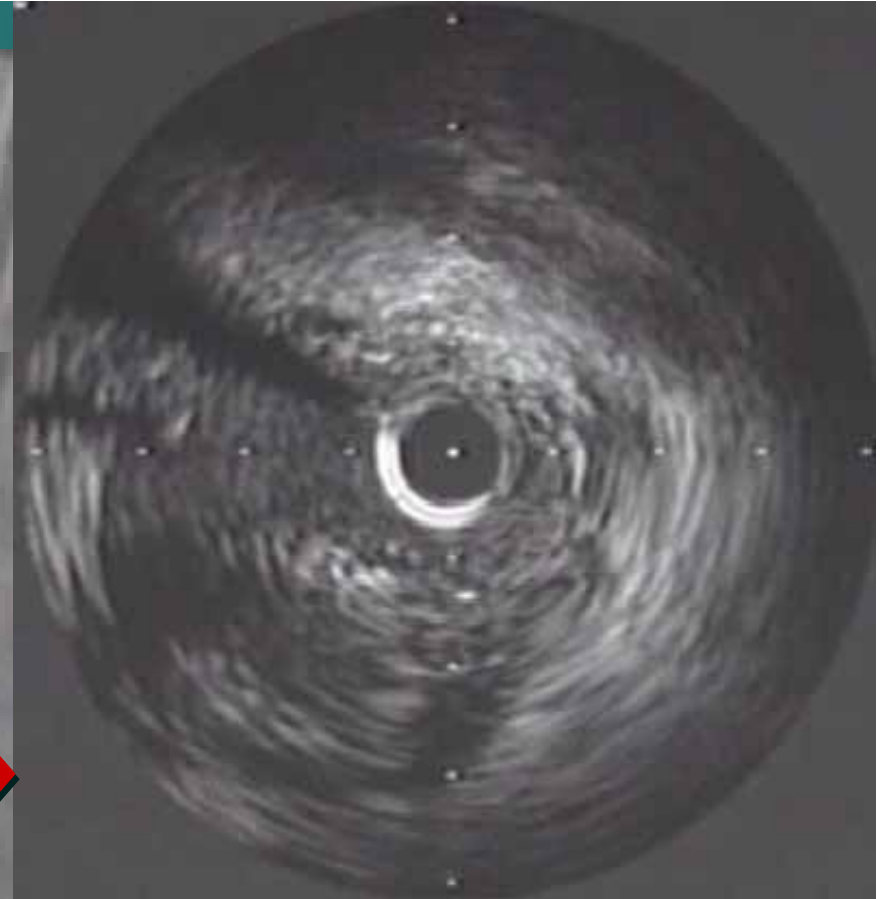
6 weeks later



**Parallel wire technique
with 2 Confienzas failed**



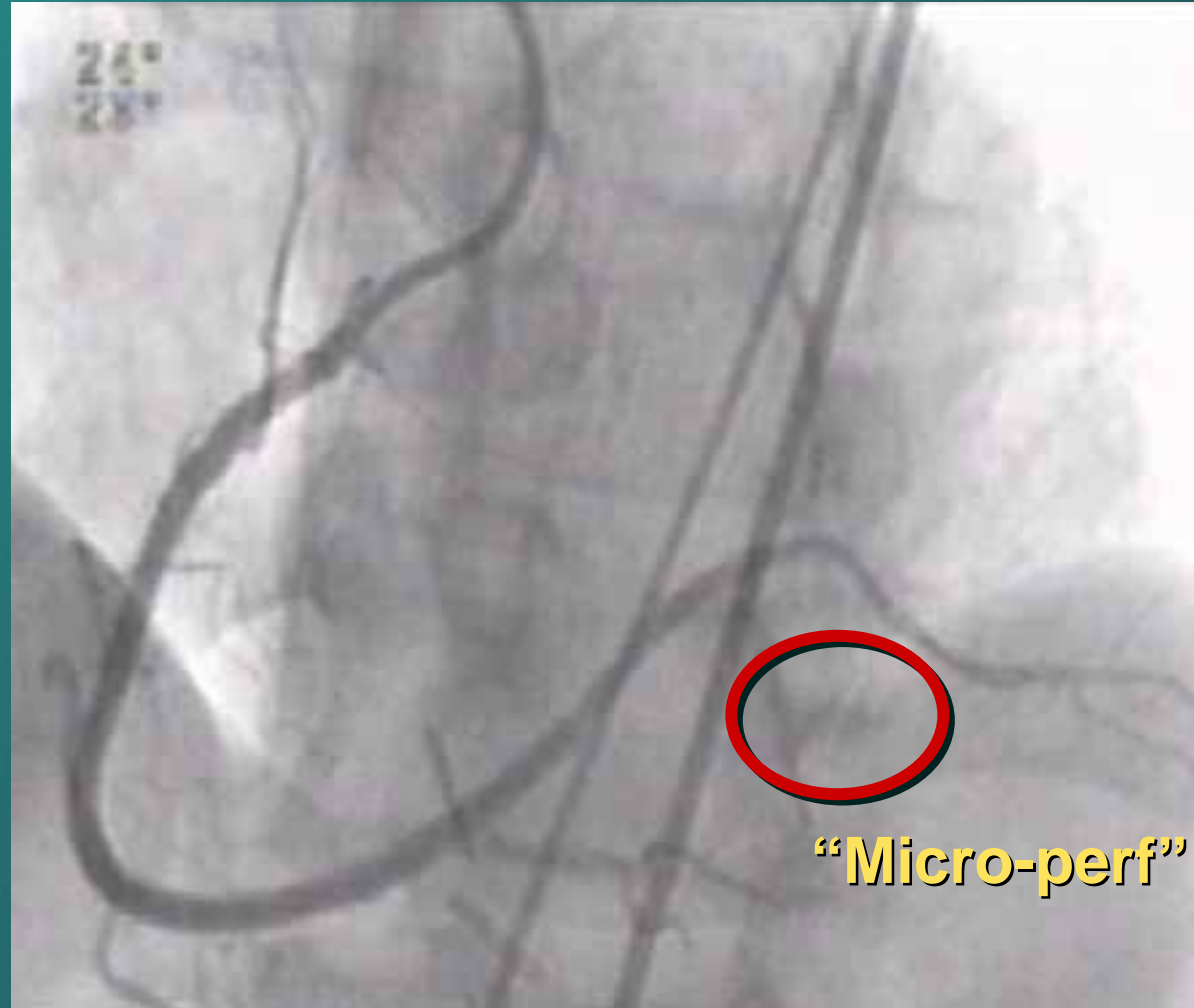
Percutaneous endarterectomy



Post PTCA
(arrow sites)



Final result after 5 stents and PTCA of PLA and PDA



Lessons from the First CTO Summit

- 1) Antonio Colombo is a creative and fearless guy (and gets away with stuff most of us should never try)!**

