



Coronary Track: Friday 18th, 2024

Coronary CTO Case No. 5

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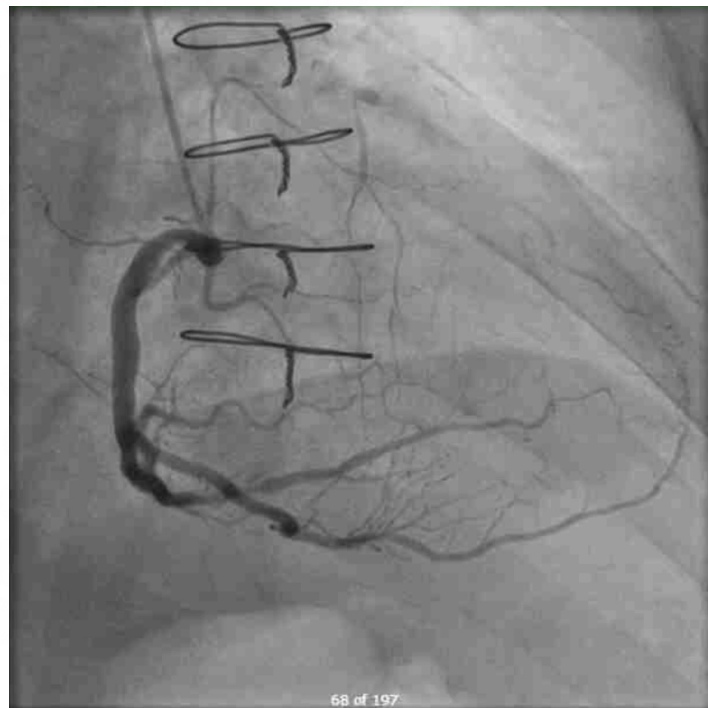
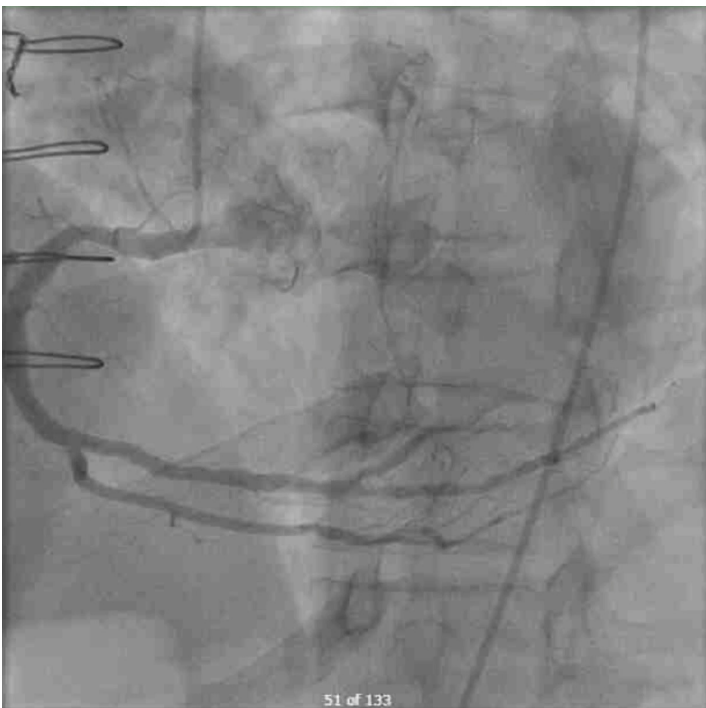
All faculty disclosures for this program can be found at www.cvinnovations.org.

Reason for evaluation: 62 year-old man with CAD who presents with **progressive angina** (CCS Class III)

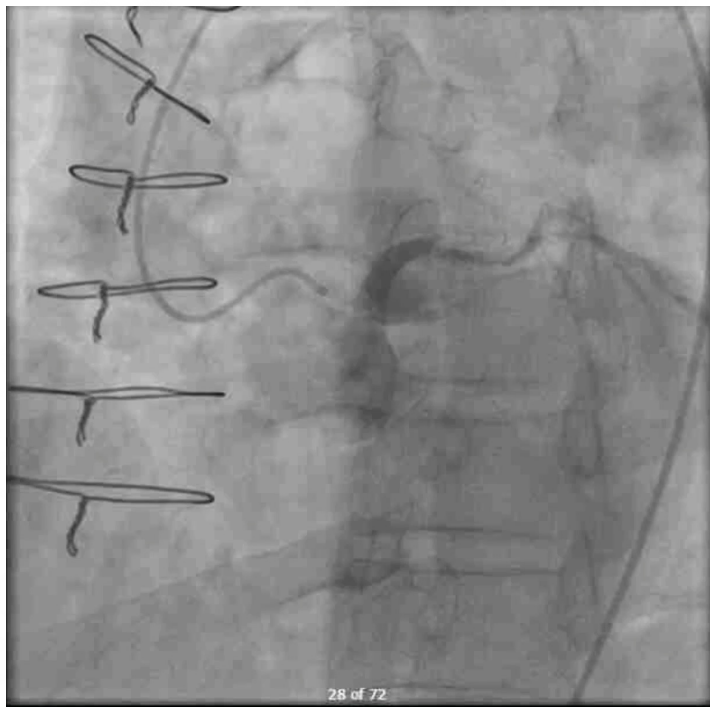
Pertinent CV history:

- Prior 2 vessel CABG (LIMA to LAD, SVG to PDA)
- Co-morbidities: HTN, PAD, DM 2, CKD stage 3
- Medications: metoprolol, ranolazine, isosorbide MN, empagliflozin, losartan

Diagnostic Angiogram



Diagnostic Angiogram

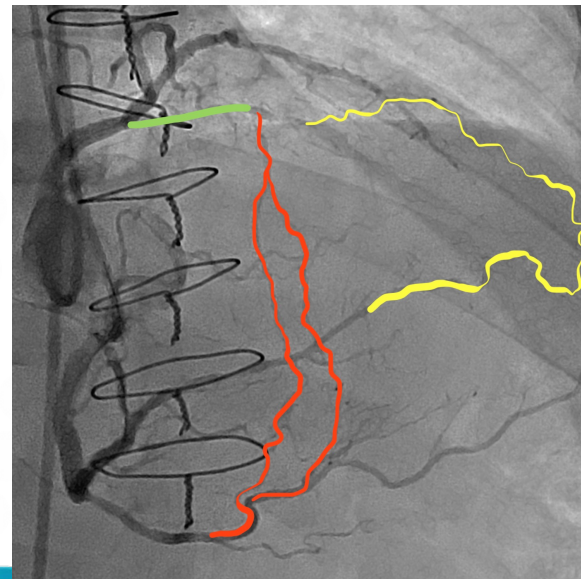


Diagnostic Angiogram



The Clinical Challenge

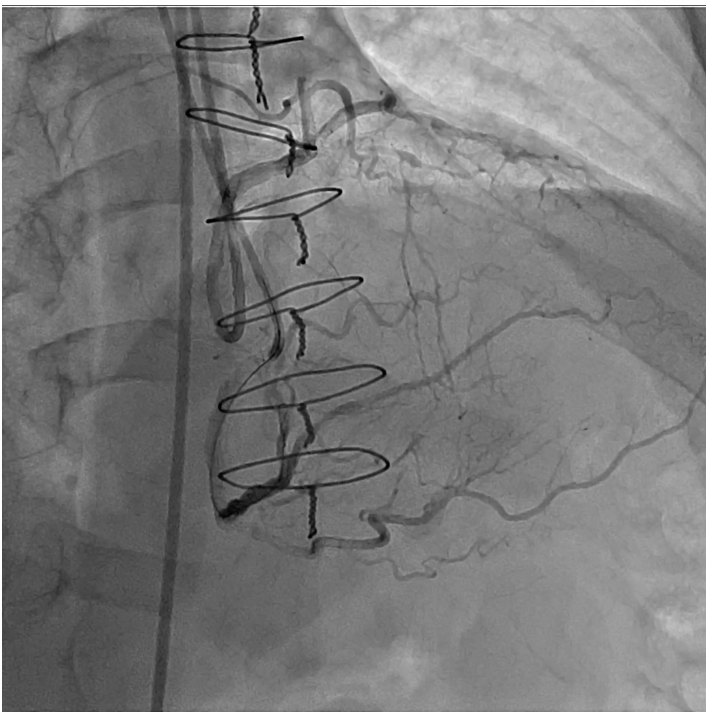
1. **Where is the ischemia coming from?**
2. What to tackle first: **native disease vs. CTO?**
3. **CTO PCI strategy?** Pros and cons...
 - a. Anomalous LM, wide aortic root
 - b. Short CTO
 - c. Calcified native artery
 - d. Retrograde options?



Resolution of the Challenge

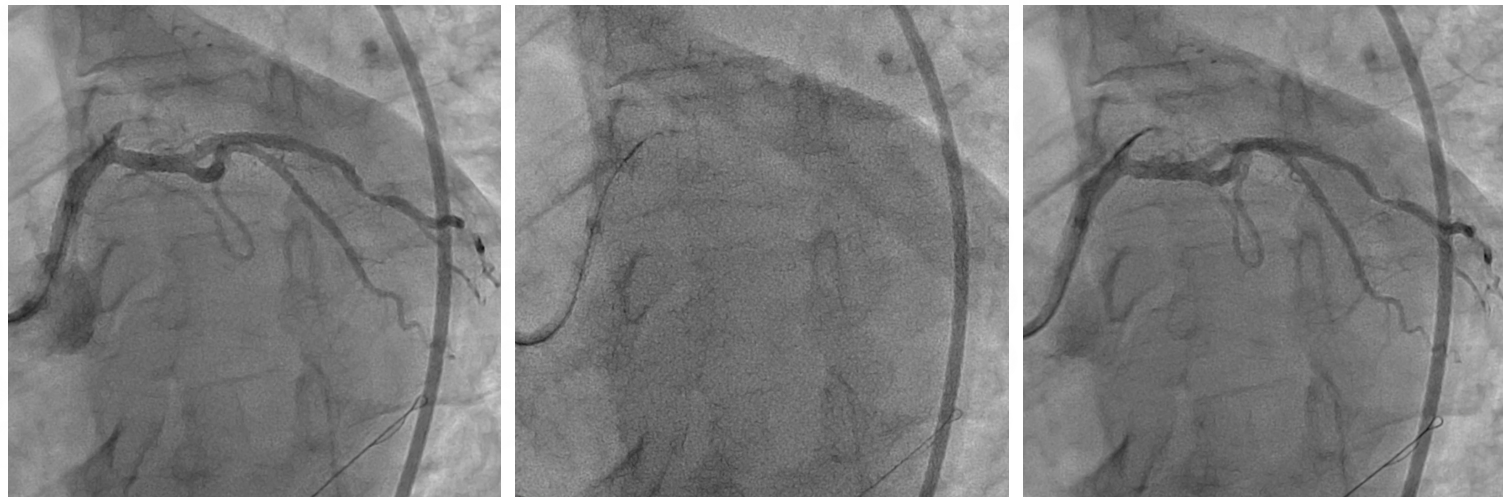


Resolution of the Challenge



Resolution of the Challenge

Step 1: Proximal cap puncture with a Gaia-2 wire...



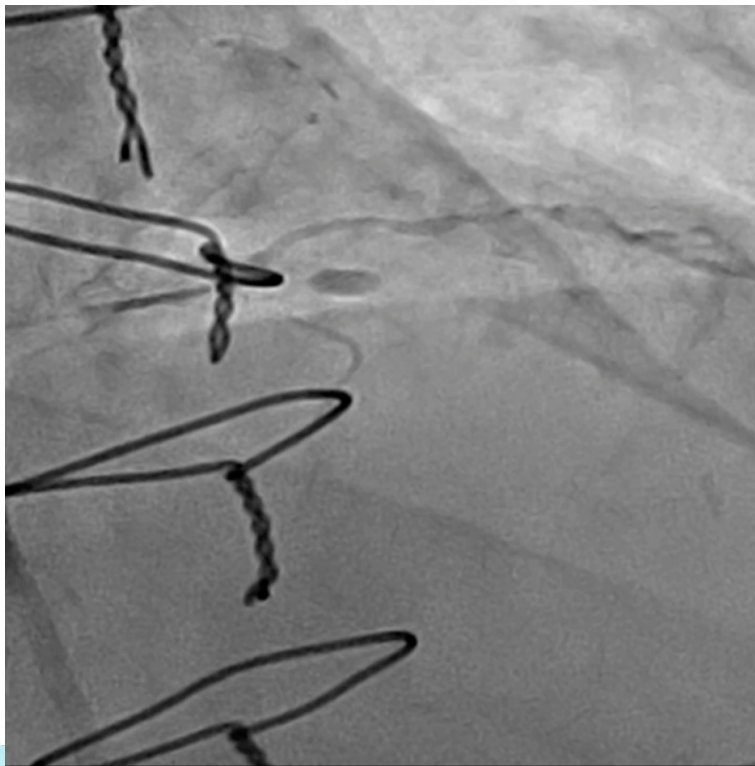
Resolution of the Challenge

Step 2: Confirmation
of MC tip position...

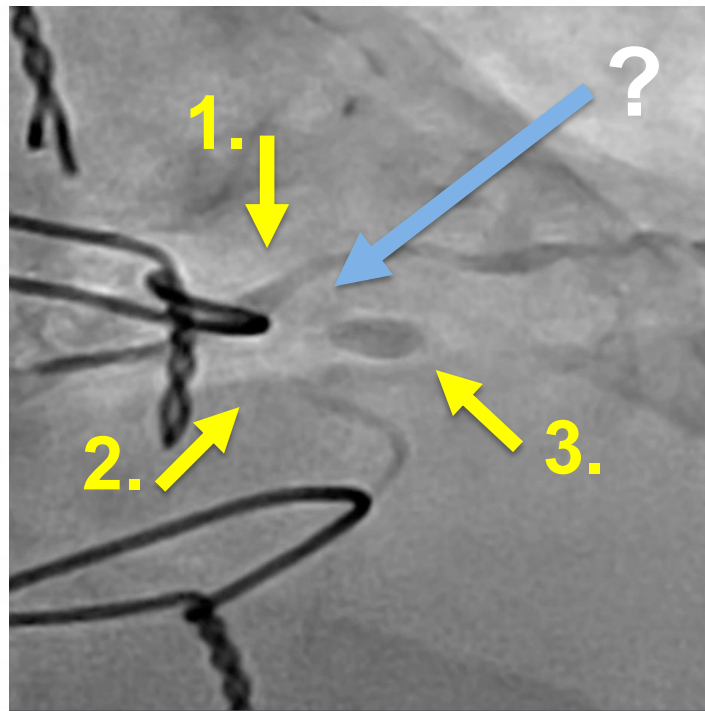


Now for something unexpected...

Step 3: A contrast injection...

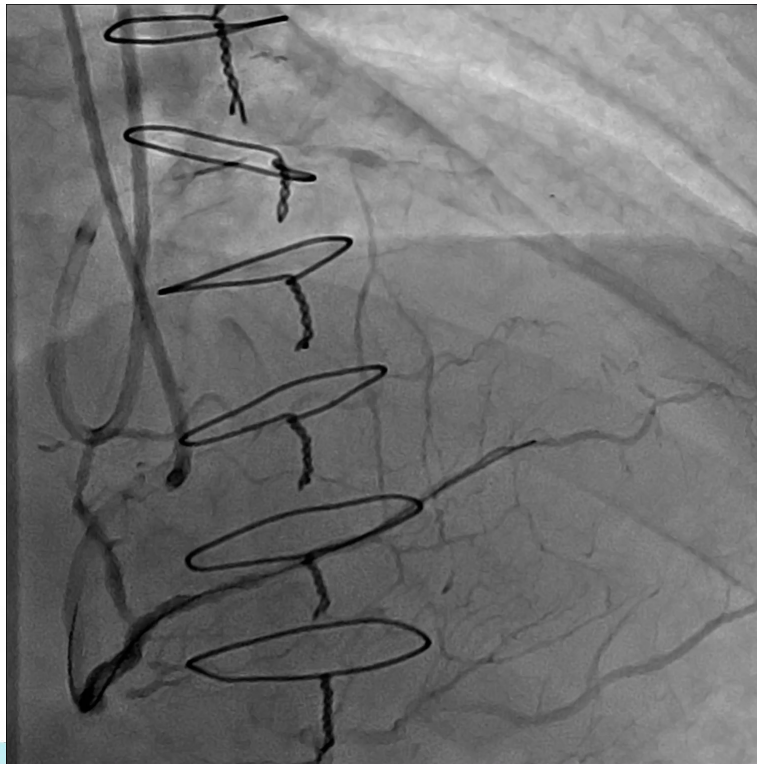


Anatomy of a Modified Carlino injection:



Resolution of the Challenge

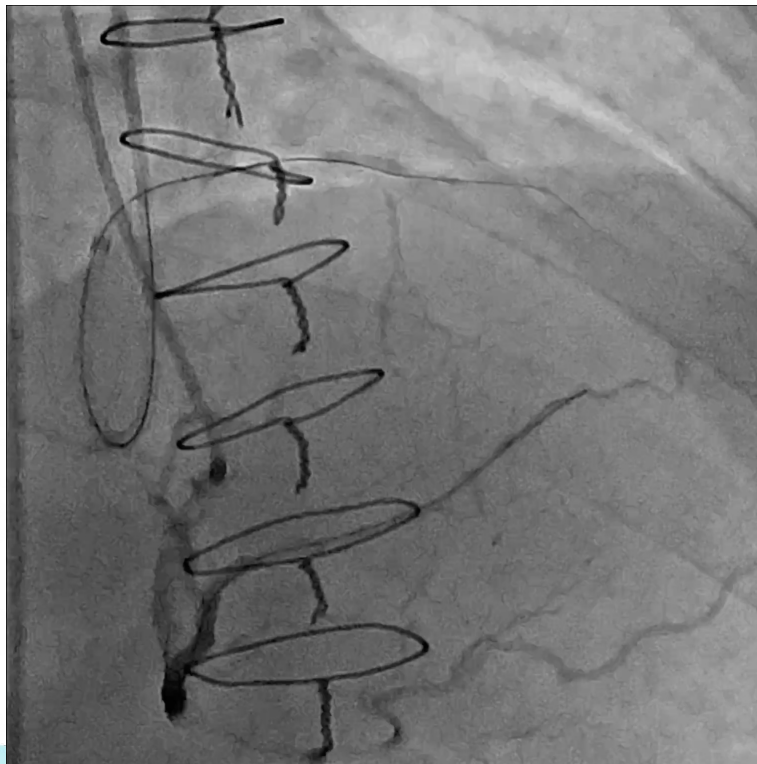
Step 4: Contralateral injection to visualize the distal target...



Resolution of the Challenge

Step 5: Wire
advanced under
fluoro guidance...

No tip Fielder XT-R!



Resolution of the Challenge

Step 6: Microcatheter advanced across the occlusion...



Resolution of the Challenge

Step 7: Distal tip
injection...



Completion Angiogram

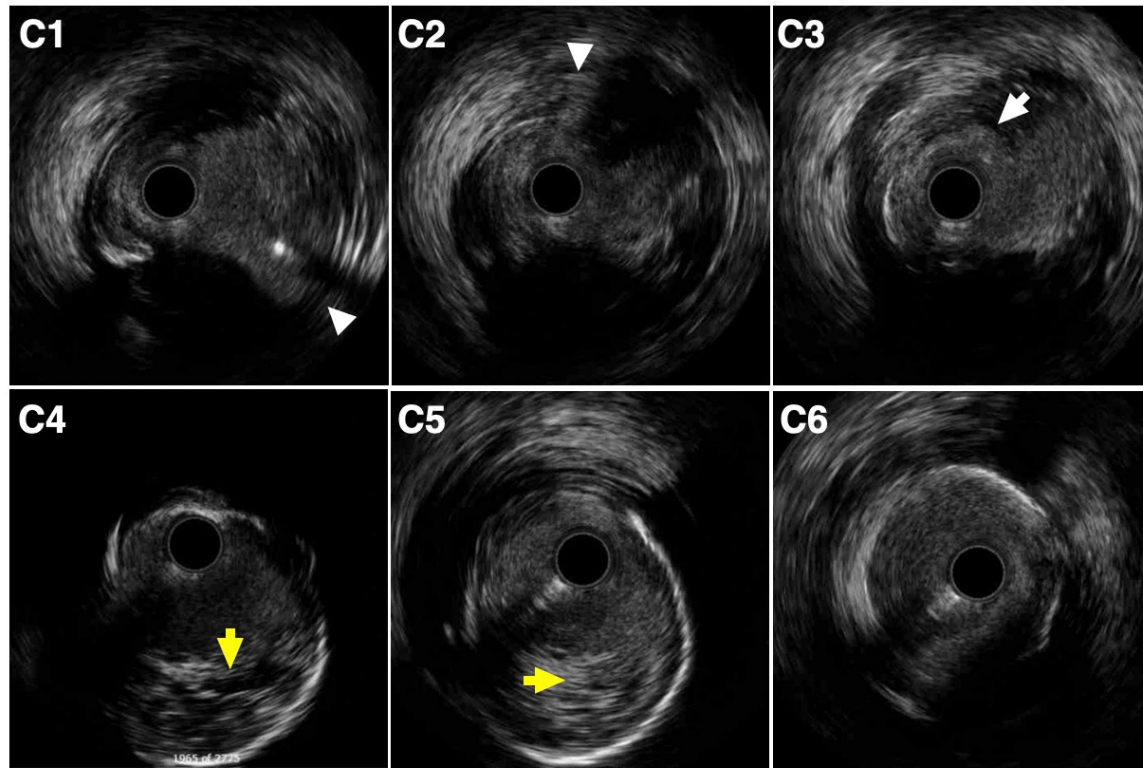


HydroDynamic Contrast Recanalization

1. Novel CTO crossing strategy with two essential components
2. Intraplaque injection of contrast – must be done **very gently**
3. Use of hydrophilic wires with small tip angles
4. Upshot: Standard technique (the wire leads the way) vs. HDR (contrast leads the way)
5. **“Trust the contrast!”**

How does HDR work?

The **microchannel recruitment** theory –
evidence from IVUS



Key Learnings for the Operator and Team

1. Hydrodynamic contrast recanalization (HDR) is a **novel antegrade crossing** technique
2. HDR utilizes (**gentle!!**) intraplaque contrast injections to facilitate polymer jacketed wire passage
3. HDR **differs** from prior iterations of the Carlino method in several important ways
4. HDR is a **paradigm shift** in how we can utilize contrast during CTO PCI



Thank You!

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