Modified Reverse CART technique in a near-ostial RCA CTO

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CART= Controlled Antergrade & Retrograde subintimal Tracking
Disclosure Statement of Financial Interest

I, Dr. On-Hing Kwok, DO NOT have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.
Case History

- M/59yr
- Ex-smoker
- Hypertension and dyslipidemia
- Known ischemic heart disease with positive exercise thallium scan showing inferior ischemia 6 years before
- Defaulted further intervention and treatment
- Self-medicated with over-the-counter drug called “vessel scavenger”
- c/o increasing exertional dyspnoea and chest discomfort
- CT angiogram showed near-ostial RCA long-segment total occlusion
320 CT Coronary Angiogram
Coronary Angiogram

7Fr right femoral approach
6Fr JL4 Diagnostic catheter
Left-to-right collaterals
Coronary Angiogram
Right Coronary Angiogram

Challenges:

- Near-ostial RCA long-segment total occlusion
- Faint right-to-right collateral
- Blunt occlusion stump
- Side-branch at entry & exit of total occlusion
- Advantage: not much calcification
Attempt antegrade approach

7Fr AL 1.0 SH (90cm)
Medtronic guiding catheter

Miracle 3 gm loaded on a
Finecross microcatheter
Failure to traverse through the intra-luminal pathway
Still subintimal...
Retrograde approach

• 7 Fr Left femoral approach
• 7Fr EBU 3.5 (90cm) Medtronic Guiding catheter
• 0.014” Fielder XT guidewire
• Finecross microcatheter
• Selective septal angiogram
Selective Septal Angiogram
Advancing the Fielder XT
• Fielder could not advance further

• Tortuous bend also precluded the advancement of the Finecross microcatheter

• Corsair micro-channel dilator not available
The micro-channel was gently dilated with a 1.3x10mm Lacrosse balloon at 4-6 ATM.
Finecross was advanced
Retrograde wire: Miracle 3 gm

Guidewires Kissing inside same subintimal space
• Subintimal space expanded
• Spiral dissections more obvious
• But antegrade and retrograde wires both could not be advanced further
Contained perforation

- Antegrade wire ‘exit’ through the false lumen
- A contained perforation/hematoma was noted
- Patient remained hemodynamically stable
Limitation:
• almost always require septal channel dilatation
• Retrograde balloon passage is sometimes difficult even after septal dilatation
• Passage of long retrograde balloon may damage the septal collaterals, causing septal perforation or hematoma

(J Invasive Cardiol 2006;18:334-8)
• 2.0x15mm Apex balloon inflated at 6 ATM
• The contained perforation precluded the use of IVUS as it may expand the spiral dissection/perforation
• N.B. Solid-state Eagle-Eye IVUS catheter not available
• Failed to advance the Retrograde wire up, probably because of the tortuous bend...

• Instead, the antegrade wire was retrieved a little and re-advanced through the intraluminal pathway following the retrograde wire

• Risk: Collapsed “common subintimal space” and created another dissection/expanding distal dissection

• Alternatives: (Not available)

• Use of Corsair microcatheter to support the retrograde wire may help advance of the retrograde wire up

• Use of Snare-wire (Soutenir)
Antegrade Finecross catheter advanced down the PLV
Diffuse RCA disease
No damage done on the Lt System
Still a lot of work...
Triple wires...
After aggressive predilatation, the distal RCA-PLV was stented with a 2.5x33mm Xience Prime LL stent.

A 2.25x18mm Xience V stent was deployed at the distal RCA-PDA in a culotte manner

Final kissing with 2.5/2.5mm balloons.
Full metal jacket!!
Full metal jacket!!

- 3.5x38mm Xience Prime LL
- 3.0x38mm Xience Prime LL
- 3.0x33mm Xience Prime LL

- All post-dilated up to 3.5mm
Post-dilation with NC balloon

3.5x15mm Voyager NC up to 18ATM
Final angiogram (Diagnostic JR 4)
Pre-PCI vs Post-PCI
Sometimes this is how we see ourselves as interventional cardiologists.

**CTO Interventions:**

Never Give Up!