Lessons learned from complex percutaneous coronary interventions

PCI in a patient with a chronic total occlusion:
A case that went well

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Case presentation

- 79 years old man with hypertension and dyslipidemia and a history of permanent atrial fibrillation on oral anticoagulation

- Clinical problem (December 2017):
  - Dyspnea NYHA II, Angina CCS II
  - Transthoracic echo: Impaired LV systolic function (LVEF 40%), inferior hypokinesia
  - Pathological stress test
Coronary angiography

- Eccentric lesion of proximal Left anterior descending artery
- Short lesion of the circumflex
- Right coronary artery with atypical origin + CTO at the mid segment
- Minimal flow during antegrad injection
- Retrograde collaterals to the dominant right coronary artery

SYNTAX Score: 20
J-CTO Score: 3
Logistic EuroSCORE: 9.5

Patient referred for complete revascularization with PCI

- Anticipated challenges for the RCA-CTO:
  - Unstable guiding catheter (atypical take-off)
  - Long calcified CTO
  - Severe lesion in the proximal LAD at the origin of big septal branches that could serve as a retrograde track

- First strategy:
  - Antegrade attempt to revascularize the RCA
Antegrade attempt to recanalize the RCA

Bilateral femoral access 6F AL1.0 SH and EBU4.0

Whisper wire and 2x12 mm balloon in a small proximal branch as anchor

Fielder XT wire + Finecross microcatheter
The wire could not reach peripheral RCA and went into a side branch

Super-selective injection to confirm wire position

Balloon predilatation with 2.5x20 mm balloon

Second occlusion in the vessel

Unsuccessful guidewire escalation (Progress 40, Gaia II, Pilot 150, and Confianza PRO 12)

What would you decide at this stage?

1. Stop here and send patient to surgery

2. PCI of LAD and LCX and leave RCA for medical ttt

3. Ad hoc retrograde attempt to recanalize RCA

4. Staged retrograde attempt to recanalize RCA

5. None of the above
Second strategy:
PCI of LCA to facilitate staged retrograde recanalization of RCA
PCI of Left anterior descending artery

PCI of Circumflex

Retrograde PCI of the RCA
Retrograde PCI of the RCA

Predilatation with 1.5x20 mm and 2.5x20 mm compliant balloons
3x38 mm DES
4x33 mm DES
Result after 2 DES and post dilatation with non-compliant balloons......
Job finished ??

Lessons learned

- Modern PCI techniques allow treatment of complex patients and lesions previously thought to be classical surgical candidates.
- These techniques strongly rely on planning and strategic thinking.
- Advanced CTO interventions (including retrograde ones) further enhanced our strategic abilities but require training and tools!
- Carefully evaluate both ante- and retrograde angiograms when approaching a CTO.
- Do not remove your retrograde guide before a final angiogram!