CTAP C-096
False Lumen Tracking in RCA CTO? What Did IVUS Tell Us
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[Clinical Information]
Patient initials or identifier number: 56 years old male, with history of HTN and dyslipidemia
Relevant clinical history and physical exam: Hx of old inferior MI, in 2004, s/p PTCA with BMS stenitng. s/p PCI over LAD and Lcx but with low EF
RCA CTO noted since 2007, failed PCI at local H
Relevant test results prior to catheterization: Cardiac SPECT: ischemia over inferior wall, 30%
Echocardiogram: severe LV systolic dysfunction, EF: 32%
Relevant catheterization findings:
RCA: CTO, in-stent total occlusion

[Interventional Management]
Procedural step:
Antegrade failed initially. Low ejection fraction made procedure risky. Finally, antegrade wire passed.
Case Summary:
Antegrade: failed initially, then retrograde approach. But conquest Pro wire not easy to pass.
Finally antegrade wire enter distal true lumen IVUS make sure previous BMS undersizing and new antegrade wire just run outside stent, but inside true lumen. New DES covered only at outside stent but inside true lumen area
Final TIMI III flow

TCTAP C-097
Intervention of Left Circumflex Artery Chronic Total Occlusion via Left-to-left Retrograde Approach in a Left Dominant System - The Risk You Cannot Ignore
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[Clinical Information]
Patient initials or identifier number: CSL
Relevant clinical history and physical exam: A 49-year-old man, with history of small perimembranous ventricular septal defect, was admitted to our unit for non-ST elevation myocardial infarction and acute pulmonary edema. He presented with chest discomfort for 2 days, with increasing shortness of breath on admission. He required supplementary oxygen therapy via the nasal cannula.
Relevant test results prior to catheterization: Chest X-ray showed pulmonary congestion with bilateral pleural effusion. Electrocardiogram revealed sinus tachycardia at 110 beats per minute. The QRS morphology was right bundle branch block pattern. We did not have the old electrocardiogram for comparison. He had modest elevation of troponin-I of 0.21ng/ml (reference <0.03ng/ml). On echocardiogram, the left ventricular systolic function was markedly impaired (left ventricular ejection fraction was around 20%), with hypokinesia over the anterior, lateral and inferoseptal left ventricular wall. A restrictive perimembranous ventricular septal defect was located.
The patient was stabilized by double antiplatelet agents, subcutaneous enoxaparin, oxygen, and diuretic. He received a coronary angiogram on the second day of hospitalization.
Relevant catheterization findings: The coronary angiogram revealed a left dominant system. The right coronary artery was small. Tight stenotic lesions were found over the proximal and mid part of left anterior descending artery (LAD) and mid left circumflex artery (LCx). The blood flow was maintained at TIMI III. A chronic total occlusion (CTO) was found at distal LCx. The collateral flow distal to the CTO and to the left posterior descending artery (PDA) was supplied by the LAD through the septal perforators. A brief attempt of antegrade wiring of the distal LCx CTO lesion with a Fielder FC guidewire was made but was unsuccessful. Percutaneous coronary intervention (PCI) to the proximal and mid LAD lesions, and the mid LCx lesion was uneventful with 3 drug eluting stents (DES) implanted (Xience V 2.75x23mm and 3.0x18mm in LAD, and Xience V 2.75x18mm in LCx).
The patient was discharged after 8 days of hospitalization. The patient was electively admitted 3 months later for repeat PCI to the CTO lesion.

[Interventional Management]
Procedural step:
The patient received an elective repeat PCI to the distal LCx CTO lesion (Fig 1, asterisk). The EBU 8/3.5 guiding catheter through the right femoral arterial access provided good support for left coronary artery intervention. Antegrade wiring of the distal LCx CTO lesion was attempted with Fielder FC, Fielder XT, Miracle 3, Miracle 6, Conquest Pro 12, and then Conquest Pro 8-20 guidewires. Crusade microcatheter was used to enhance guidewire support. But antegrade wiring was still failed which ended up with guidewire trauma and contrast staining of the myocardium. Retrograde approach was then contemplated. Due to the left dominant system and the collateral
supply of PDA from LAD, a large part of the heart was dependent on the LAD. The operative risk of PCI with retrograde approach by using the LAD as donor artery was considered high. We got the inotropes, intra-aortic balloon pump (IABP), and extracorporeal membranous oxygenator ready in the catheterization laboratory, in order to provide prompt hemodynamic support when necessary.

A septal perforator with a good collateral channel was identified by selective contrast injection through the Corsair microcatheter. Miracle 6 guidewire was brought to the distal CTO cap via the retrograde route. An intravascular ultrasound over the antegrade guidewire confirmed the subintimal position of the retrograde guidewire and the native vessel size. Reverse controlled antegrade and retrograde subintimal tracking (CART) technique with a Sprinter Legend 3.0x15mm balloon was performed at the proximal CTO cap. The retrograde guidewire was able to get across the CTO through the subintimal track and then reached the guiding catheter. However it was difficult to manipulate the Corsair microcatheter through the LCx into the guiding catheter. The Miracle 6 guidewire in the retrograde route was exchanged to a 300cm Fielder FC guidewire. It was manipulated back into the guiding catheter for externalization. Instead of working on the guidewire loop for subsequent steps of intervention, we preferred to minimize the device load in the donor artery. Therefore the Corsair in the retrograde route was withdrawn to the septal branch, and a Finecross microcatheter was brought antegradely through the guidewire across the CTO. Through the Finecross, antegrade guidewire into the distal LCx was established, and the devices in the retrograde system were withdrawn. The activated clotting time was monitored regularly to ensure a therapeutic range.

A thrombus was then noticed over the ostium of LCx (Fig 2, asterisk). Thrombus aspiration by a 7F Export catheter yielded large amount of red thrombus. Intra-coronary eptiplate was given, followed by intra-venous infusion. However the therapeutic load rapidly increased and propagated into the left main artery and caused LCx acute closure. There was also clot embolization into the distal LAD. At that juncture, the patient developed chest pain and hypotension (blood pressure 60/35mmHg). Bolus intravenous adrenaline and dopamine infusion were promptly given and IABP was inserted quickly, in order to prevent further spiral downhill of clinical condition. The residual thrombi in LCx and LAD were squashed by balloon angioplasty with a Sprinter Legend 2.5x20mm balloon. A Xience V 2.25/18mm stent was positioned across the CTO. At the LCx and obtuse marginal branch bifurcation just proximal to the CTO, bifurcation stenting with 2 DES (Xience V 2.5x23mm in LCx, and Xience V 2.25x18mm in obtuse marginal branch) was performed. The final angiogram showed that the antegrade flow across the CTO was established (Fig 3). The patient was able to wean off inotropic and IABP support in the coronary care unit and was discharged 5 days later.

**Case Summary:**
In summary, the patient had a left dominant coronary system and he received distal LCx CTO PCI by left-to-left retrograde approach. LAD, the major feeding artery of the heart, was use as the route for retrograde intervention. Acute thrombosis first developed at the ostial LCx, which later propagated to involve the left main artery and LAD. The blood flow to the whole myocardium was jeopardized and hemodynamic instability was the result. As CTO intervention is complex and is associated with certain operative risk, a comprehensive risk-benefit assessment, in the context of clinical and coronary anatomical profiles, should be exercised before the decision to intervene. Under this high-risk profile, interventionists should be able to identify and treat any complication promptly, in order to avoid a spiral downhill course.

**TCTAP C-098**
Transradial Coronary Intervention of Vein Graft Chronic Total Occlusion by the Beginner

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[Clinical Information]
Patient initials or identifier number:
K.S. Lee

Relevant clinical history and physical exam:
She had hypertension for 20 years and no other cardiovascular risk factors. She underwent coronary artery bypass graft (CABG, SV to mLAD & SV to OM) at 1994. In