My first Retrograde CTO PCI

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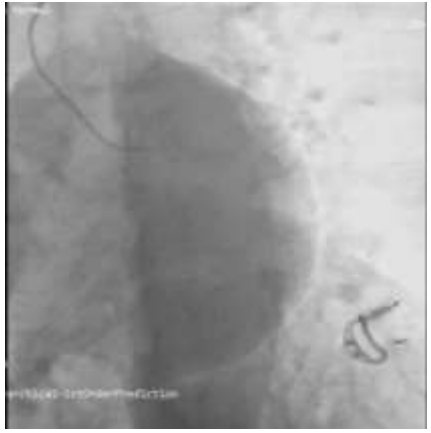
Clinical details

- Hypertension(5 years), Dyslipidemia(5 years), Diabetes(recently diagnosed), old Anterior wall Myocardial infarction(1 year back)
- Presentation- Repeated episodes of Unstable Angina requiring sublingual nitrates
- ECG- Preserved R waves in Anterior leads, Rest ECG findings unremarkable
- ECHO- EF-45% with preserved wall thickness in all territories, Trace Mitral Regurgitation
- CAG(done 1 year back)- Double Vessel Disease(proximal LAD-critical stenosis and RCA CTO) and advised CABG/MVPCI

Coronary angiogram





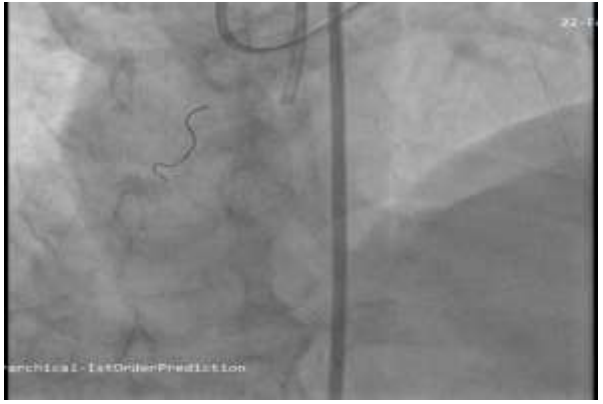


Interventional Plan

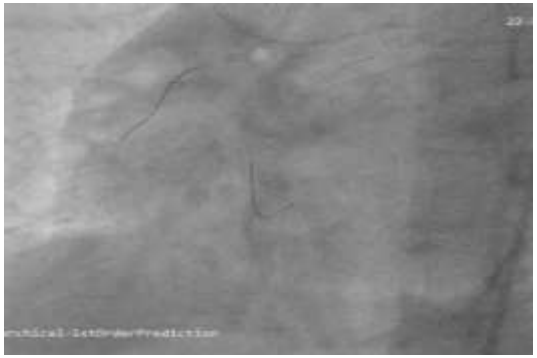
- Target Vessel- LAD and RCA CTO(First fix LAD and then attempt RCA CTO)
- Access- Right Femoral- 7F JR; Right Radial- 6F EBU
- Strategy for RCA CTO- 1) Antegrade Wire escalation

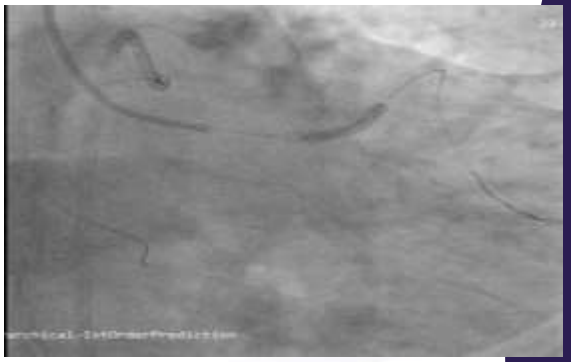
  2) Retrograde via septal collaterals from LAD

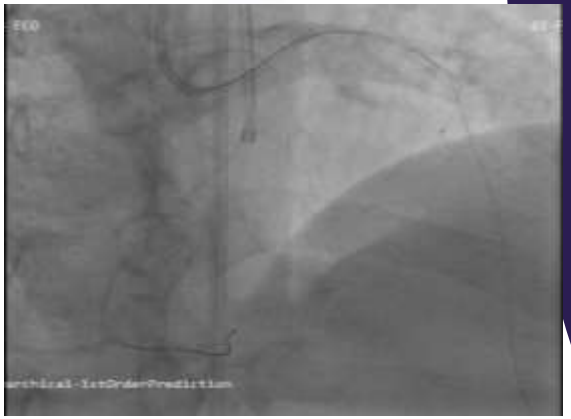
LAD was wired with a workhorse wire. Dual injections were taken. The proximal cap remained ambiguous despite various projections



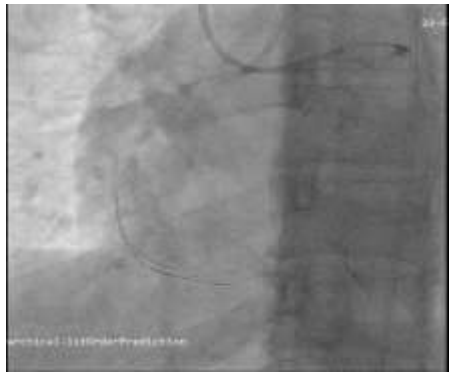
The marginal branch of RCA was wired with a workhorse BMW wire. We decided to fix the LAD lesion taking care not to jail the first septal branch. The lad was predilated with a 3.0 mm non compliant balloon. A 3.0*20 mm DES was placed from ostium of LAD. We decided to go retrograde in view of ambiguous proximal cap. We used a finecross 150 cm microcatheter and a workhorse wire to enter the septal. Microcatheter tip injection defined the septal path to distal RCA.

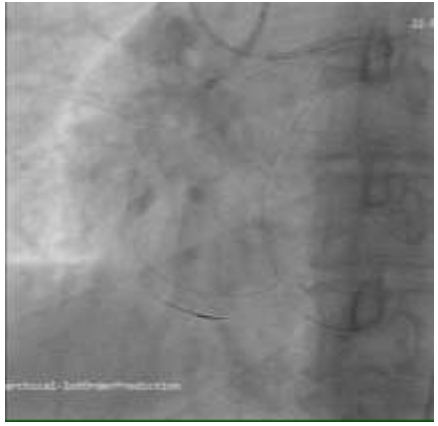




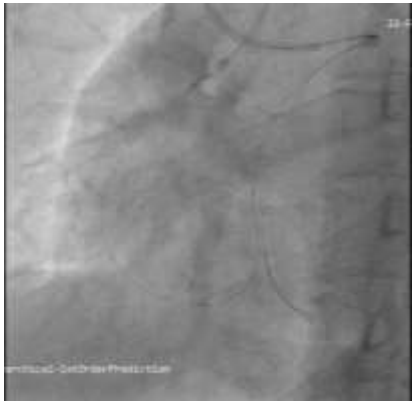


We used a whisper MS wire to cross the septal and reach the distal RCA. Themicrocatheter followed easily. To our surprise the Whisper MS could penetrate the distal cap and could make its way into the Antegrade guiding catheter. We inflated a balloon in the Antegrade guiding catheter to pin the retrograde wire. We were able to manipulate the finecross into the Antegrade guiding catheter. In the absence of an RG3 wire, we used a Spartacore wire for externalization. We disengaged the left guide and pulled the finecross towards the septal.

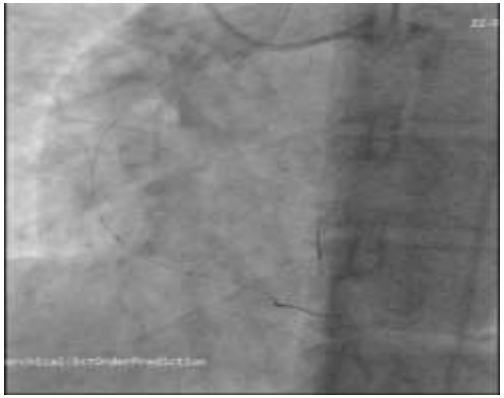

We dilated the RCA with a 2.0 semi compliant and 2.5 mm non compliant balloon. We wired the PDA branch of rca using a thrombus aspiration catheter as a dual lumen microcatheter. We had extreme difficulty in withdrawing the spartacore wire. The patient developed severe pain and hypotension. With continuous gentle traction and pulling, we were able to pull out the sparatacore wire. There was generalized spasm of entire left system which was relieved by vasodilators. We checked for the integrity of the septal keeping the microcatheter within the septal.

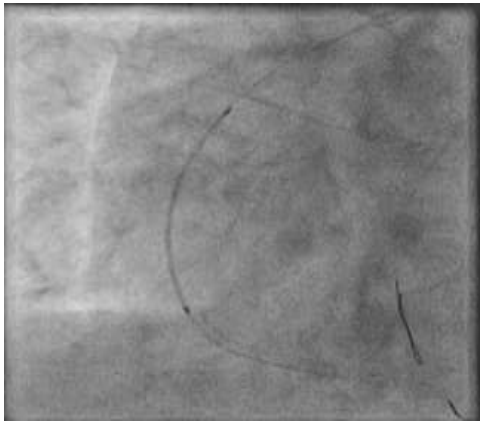
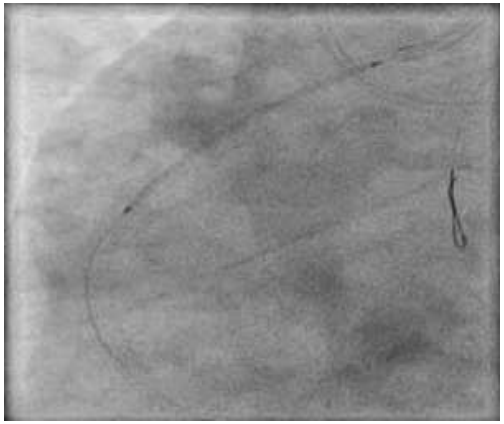
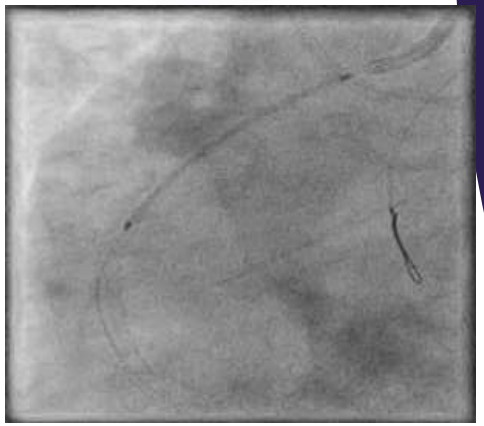





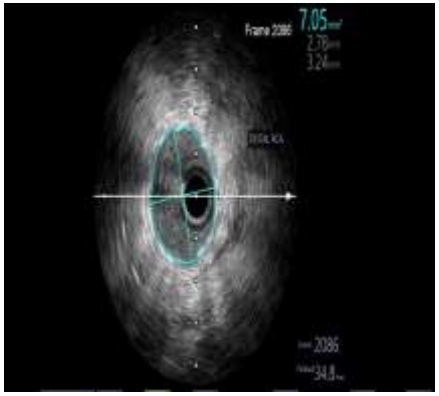
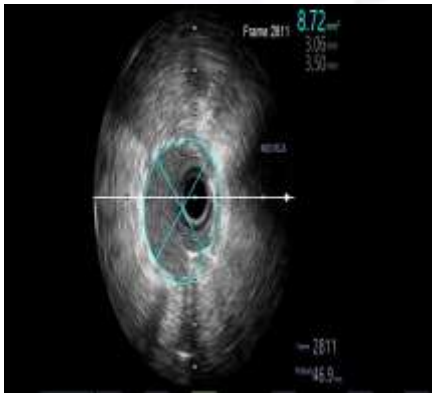
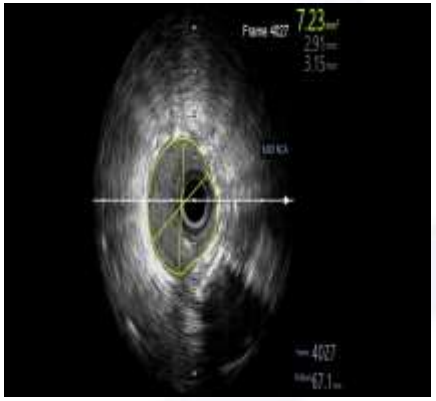
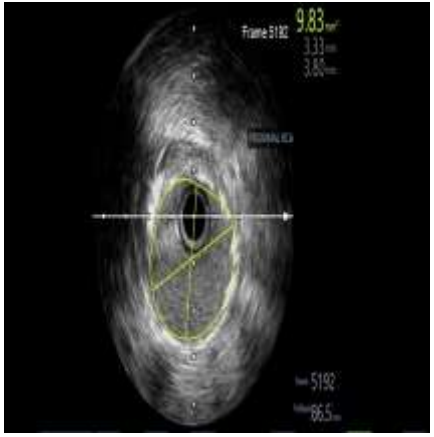
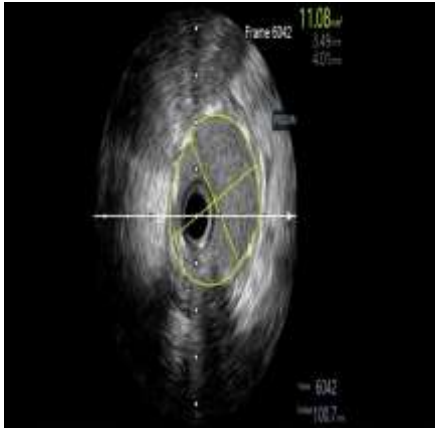


The distal RCA was predilated with a 2.5 mm non complaint balloon. The proximal to mid RCA was dilated with 3.0 non compliant balloon. A 2.5*38 mm stent was placed from PDA branch. Another 3*38 mm stent was placed overlapping the previous stent. A third overlapping DES placed from ostium of the RCA overlapping the 2nd stent

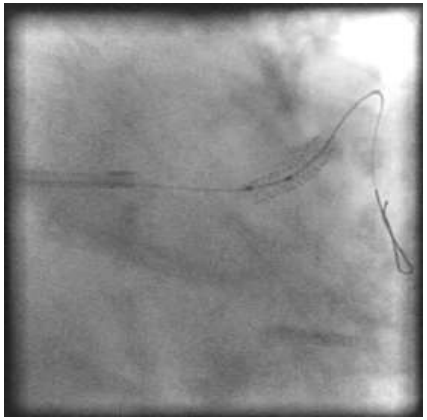



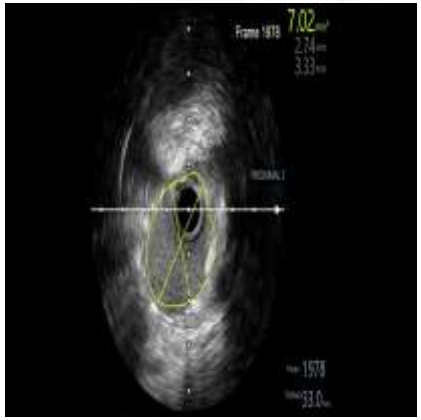




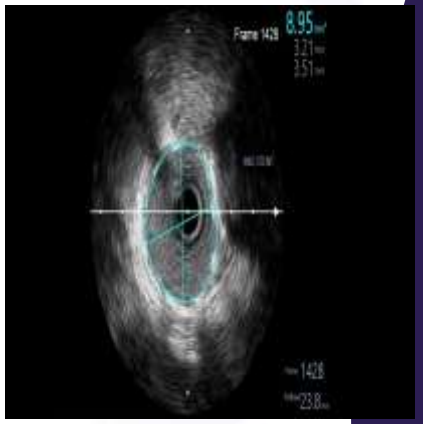
IVUS from RCA was performed and stent optimized with 4.0, 3.5 and 3.0 mm NC balloon. Final Angiographic result of RCA

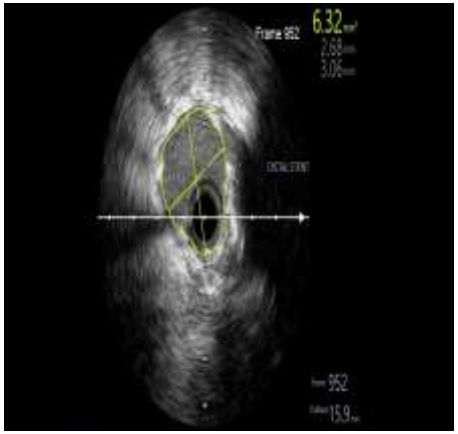







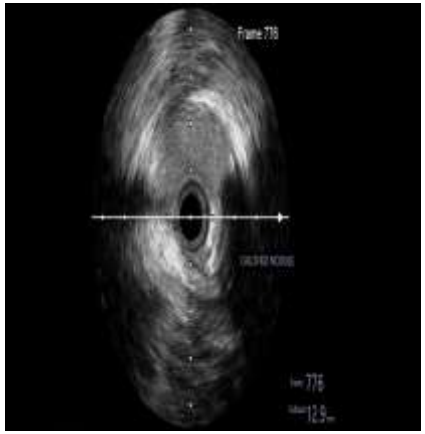
The LAD stent was optimized with 3.5 mm non compliant balloon. IVUS from the LAD showed a calcified nodule at distal edge. We decided to leave it alone as the MLA was good. Final angiographic result of LAD

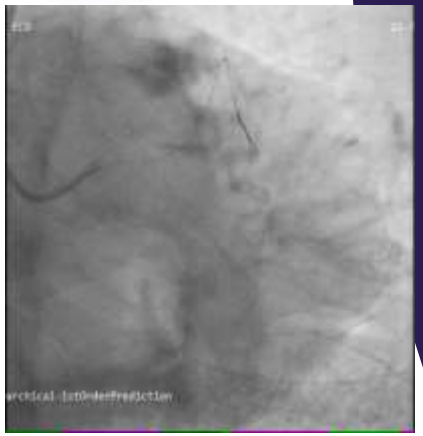












Take home messages

- Retrograde approach in CTO PCI can be effective and safe approach in selected cases
- One should be aware of the basic hardware and the alternative bailout in case of failure and unavaliability of standard equipment
- Imaging is extremely useful in improving short and long term outcomes in CTO PCI