

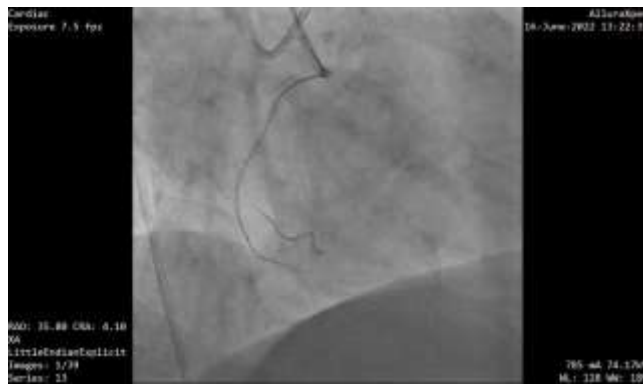
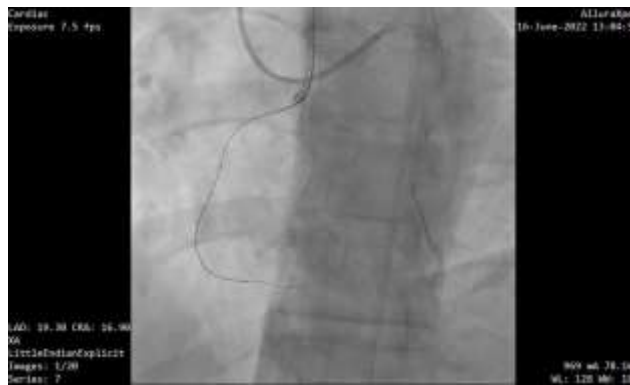
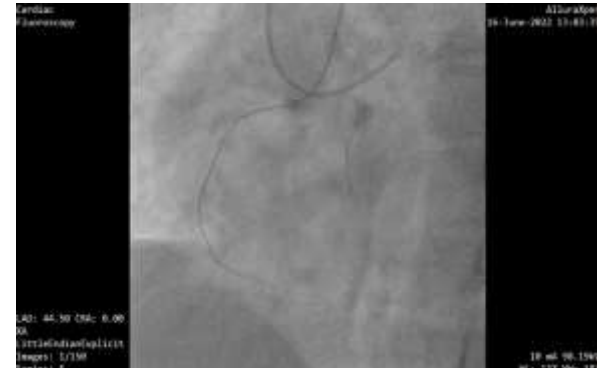
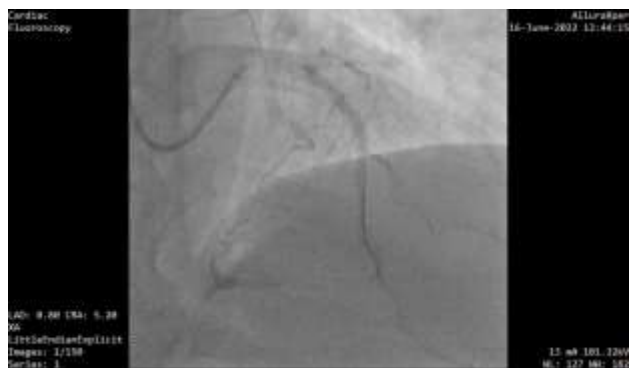
Retrograde CTO PCI of Calcified Right Coronary Artery

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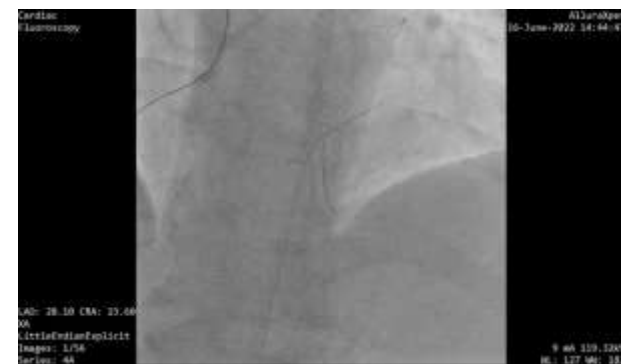
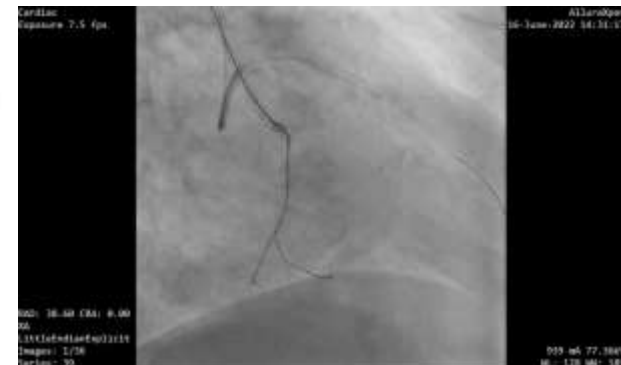
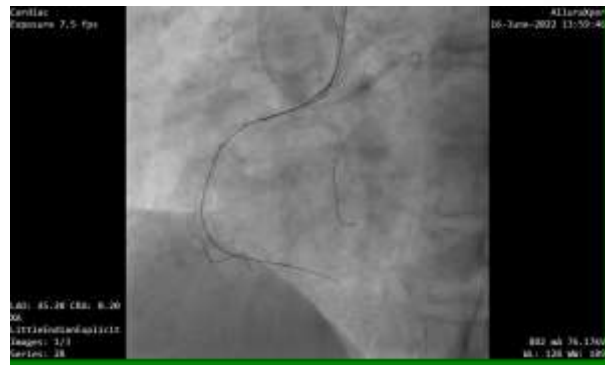
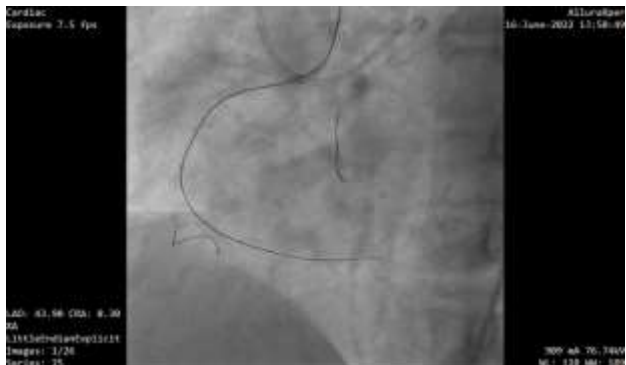
Clinical Presentation

- **61 year old patient named Mr U S**
- **History of Inferior Wall Myocardial Infarction 6 months back**
- **Coronary Angiogram done outside suggestive of total occlusion of right coronary and obtuse marginal branches. Attempted PCI to right coronary artery 2 months back(failed)**
- **Current Complaints- Persistent Angina on exertion**
- **Electrocardiogram- q waves in 2, 3, aVF; Echocardiogram suggestive of mild hypokinesia in right coronary artery territory with preserved wall thickness**

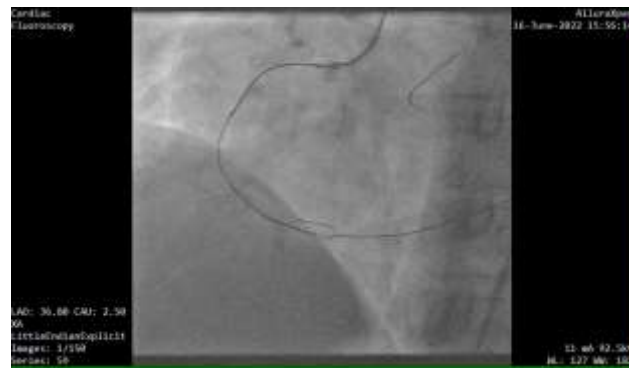
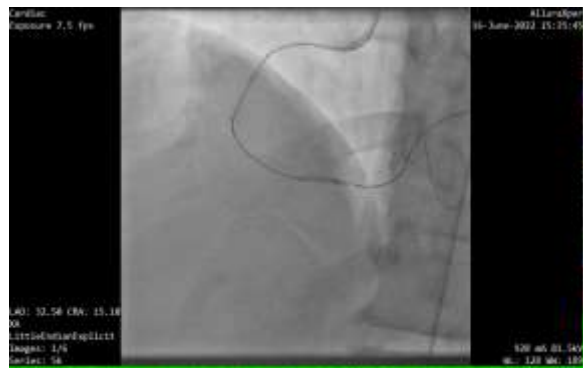
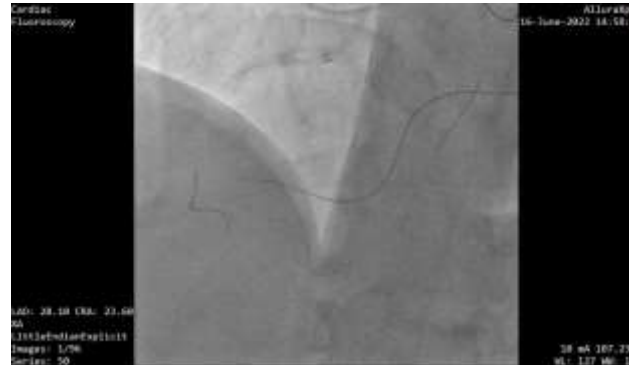
Safety wire in LAD; AL-1 caused some staining at ostium of RCA; switched to JR 7F and put a work horse wire in RCA; Decided to avoid antegrade injection to prevent propagation of Ostial dissection; Started off with a Fielder XT-A and Finecross Microcatheter but failed; Switched to Gaia 3rd and made some progress; Put a workhorse wire in a RV branch to stabilize the guide; Were able to reach distal Cap with CP 12



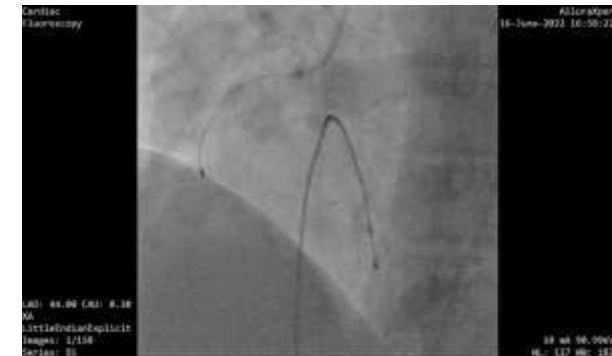
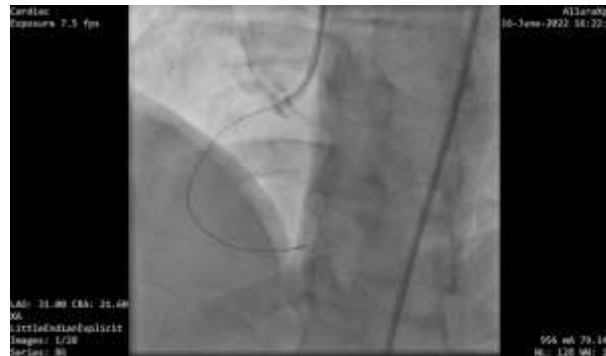
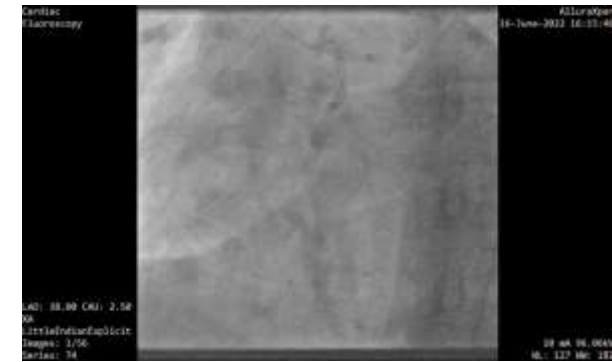
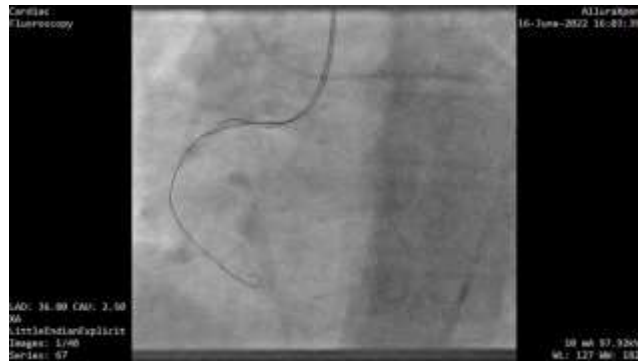
CP 12 entered extraplaque space as confirmed by orthogonal views; Attempts to do parallel wiring failed as microcatheter would not cross the proximal calcified RCA stenosis; Attempts to cross and dilate the proximal stenosis failed as the lesion could not be crossed with any balloon even with guide extension; Switched to Retrograde; Tried multiple septals via septal surfing using Sion wire but failed to connect; Microcatheter Tip injection failed to show any septal connection to RCA; Switched to epicardial collateral; Used Finecross 150cm with Sion wire; Used microcatheter tip injection to guide wire manipulation; used a SUOH 3 to navigate the epicardial collateral and reach the PLV branch



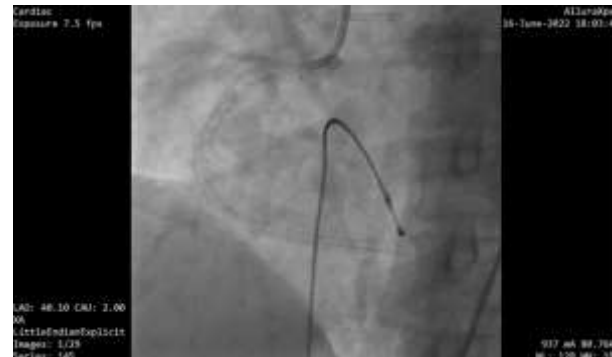
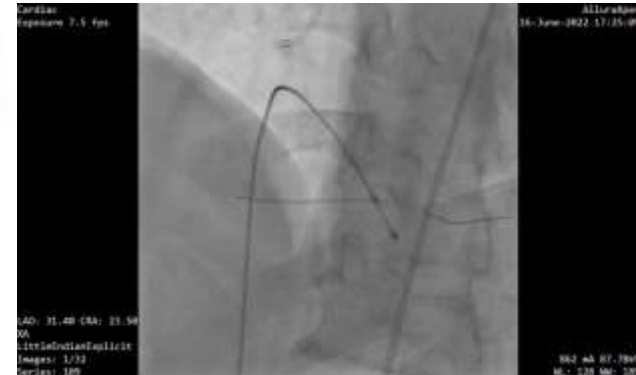
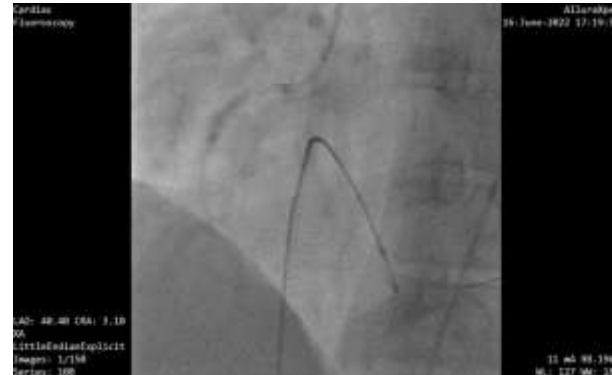
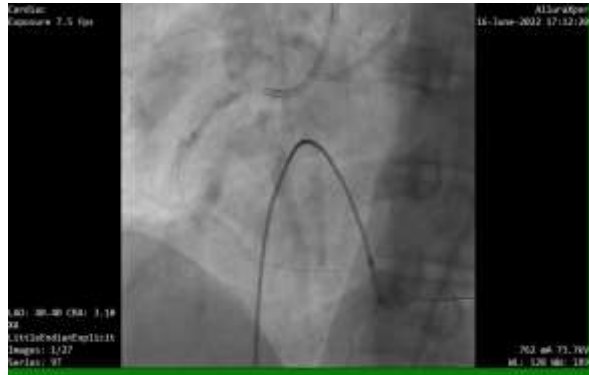
Used a Whisper MS wire to redirect wire from Posterolateral branch to distal RCA; Using Gaia 3rd , attempted retrograde true lumen puncture but failed; Switched to a Corsair PRO XS microcatheter with Gaia 3rd wire; Gaia 3rd knuckle created within CTO segment; Attempts to set up Guideliner assisted reverse CART failed as Guideliner failed to cross the proximal calcified stenosis; Performed Contemporary Reverse CART using 2.5*12 NC balloon; Gaia 3rd entered the true lumen and was negotiated into antegrade guide catheter after some effort



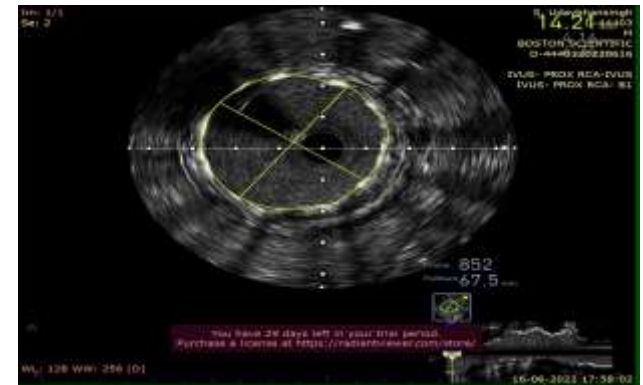
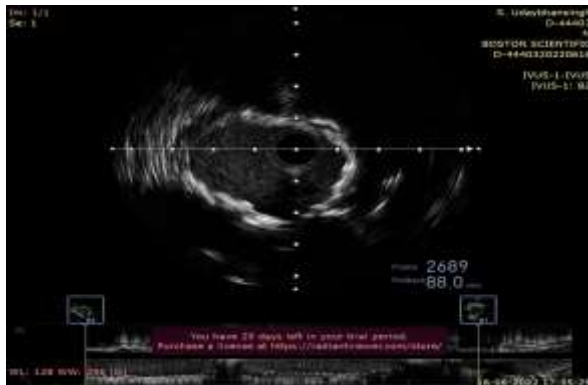
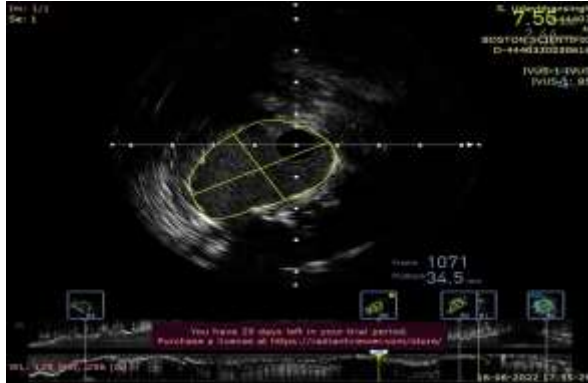
Retrograde wire was trapped with a balloon in Antegrade guide; Finecross followed half way but we were unable to negotiate the microcatheter across the calcified Right coronary stenosis; Multiple balloon dilations on the antegrade wire created some space and we were able to navigate the Finecross into antegrade guide; RG3 was used for externalization; Retrograde microcatheter pulled back towards epicardial collateral making sure that the retrograde guide was disengaged; balloon dilation performed on RG3 to facilitate microcatheter insertion antegrade; Antegrade injection created an Aorto-coronary dissection; 3.0 Non Complaint balloon failed to cross the calcified RCA stenosis; Put a Caravel Microcatheter over the RG3 till we crossed the CTO segment; Retrograde wire and Microcatheter taken back into the collateral, checked for integrity of Epicardial Collateral afrom left system and removed the retrograde gear; Rotablation performed with 1.5 mm burr from ostioproximal to distal RCA



The artery was predilated with 3.0 and 3.5 mm NC balloons; Proximal calcified stenosis was undilatable with 3.0 mm balloon at 28 mm Hg; Grenadoplasty with 3.5 mm Non compliant balloon at 28 ATM resulted in successful dilation; 3 overlapping DES- 3.5*38, 3.5*38 and 4*38 placed under IVUS guidance; Artery postdilated with 3.5, 4 & 4.5 mm non compliant balloon; Final Angiographic and IVUS results satisfactory with no damage to collateral or donor artery



IVUS findings showed satisfactory results



Take home messages

- **CTO PCI requires meticulous planning and knowledge of hardware**
- **Familiarity with use of Antegrade and Retrograde approach increases the success of CTO PCI**
- **Calcium modifying tools are a must have in balloon uncrossable and balloon undilatable lesions**
- **Imaging helps in improving long term success of CTO PCI**