

ADVANCE CORONARY THERAPEUTICS



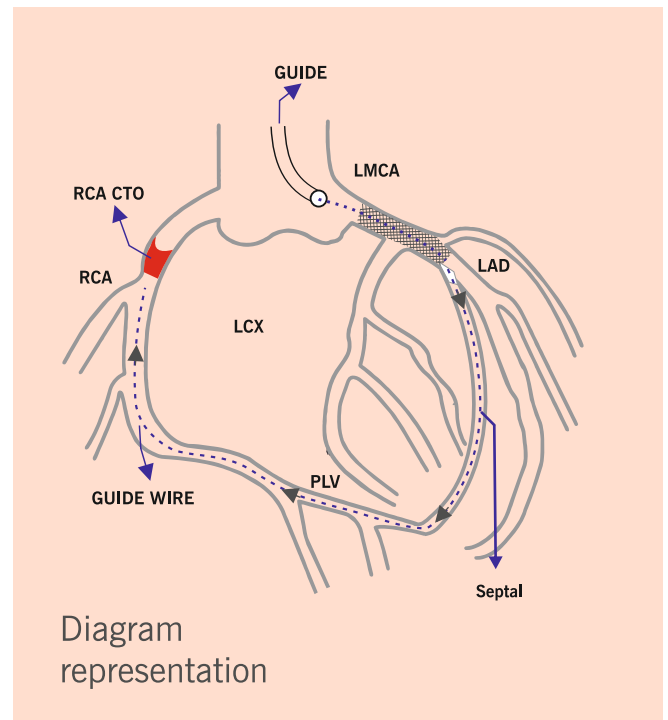
Dr. Bhavesh Roy
MD, DM
Interventional Cardiologist

A total occlusion (100% stenosis), when persists for a duration of more than 3 months, it is considered as chronic total occlusion (CTO). The CTO has always been technically demanding and considered a challenge to treat with coronary intervention. During angiography, CTO is a

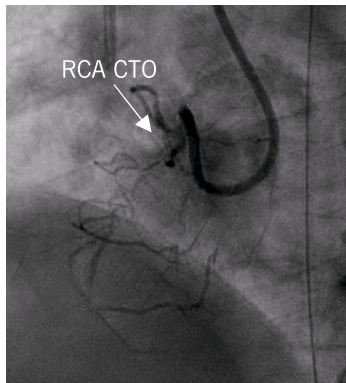
common finding with prevalence rate of 18-52%. The CTO has different compositions like very soft (recanalized lumen), soft (Thrombus, proteoglycans), firm (collagen, elastin) and hard (calcium). Younger CTOs are predominantly soft while older CTOs are hard or calcific. Treatment approach for CTO includes percutaneous coronary intervention (PCI) or bypass surgery. **CTO-PCI is further divided into two approaches; conventional antegrade approach and retrograde approach.** It is generally observed that the proximal cap of CTO is hard than the rest of the body. Thus, conceptually retrograde approach experiences less resistance than the conventional antegrade approach. From operator point of view, retrograde approach requires more caution and higher skills set and if successful, it has better clinical benefits.

Experienced CTO centres can achieve success rates of more than 90%. A Canadian multicentre registry showed 1-16% of attempt rate for CTO-PCI. The low attempt rate suggests that CTO-PCI is often chosen according to institutional and operator experience rather than clinical need of patient. In many cases, PCI should have been commenced in CTO but required skills and tools are absent and an appropriate patient is denied from the rightful treatment. I, Dr Bhavesh Roy – Zydus hospital, faced one such challenging case of CTO which was treated with retrograde PCI.

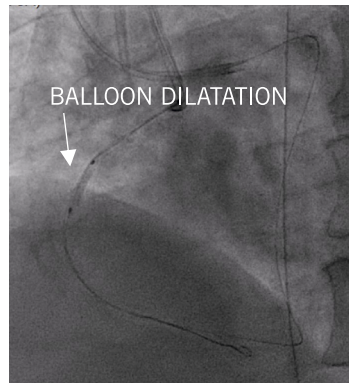
A 66-years-old male patient was admitted to a different facility with complaints of chest pain and shortness of breath. He had hypertension, diabetes mellitus and cerebrovascular accident 6 years ago. He was diagnosed with acute coronary syndrome, acute left ventricular failure and high Troponin-I levels. He was initially managed with dual antiplatelet therapy,



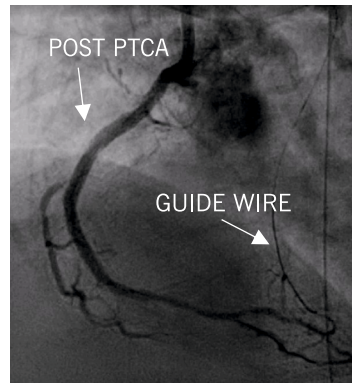
low-molecular-weight heparin and non-invasive ventilator support. The patient did not respond to the therapy and gradually his condition got worse and required mechanical ventilator support. He was referred and shifted to our facility on ventilator with sedation and nitroglycerin intravenous (NTG IV) infusion.



CAG



During procedure



Post procedure

The patient was evaluated with series of tests. His electrocardiography (ECG) showed inversion of T wave in inferior leads. 2D echocardiography showed no motion abnormalities and left ventricular ejection fraction was 55-60%. His blood analysis showed troponin-I levels were 0.21 and NT-proBNP was 1120. His chest X-ray revealed soft tissue opacity with air bronchogram suggestive of pneumonic consolidation, atelectasis in left retrocardiac region above dome of diaphragm. His angiogram revealed long diffuse lesion in left anterior descending

artery (LAD) from proximal to mid region and focal lesion in ostial 1st obtuse marginal (OM1). Right angiogram revealed **Chronic Total Occlusion (CTO)** in the proximal right coronary artery (RCA). Retrograde filling was visible in the distal RCA. Considering, his clinical symptoms, ECG and 2D-echo changes he was advised for percutaneous coronary intervention (PCI).

Left coronary artery was engaged with guiding catheter; lesion was crossed with guidewire and pre-dilated with balloon. The LAD proximal lesion was negotiated with Drug Eluting Stent (DES) and inflated. Then, RCA was engaged with guiding catheter, lesion was attempted to cross with several guidewires and failed. After several failed antegrade attempts, retrograde approach was considered to cross the lesion. It was decided to cross the lesion through LAD septal collateral with the help of micro-catheter support. Guidewire was entered in right posterior descending artery through septal collateral and reached up to the CTO body and CTO was crossed by wire and externalized. Then, RCA was pre-dilated with various different dimensions of balloons and stented. Post procedure patient was stable and taken off the ventilator. Patient was discharged after four days.

Many of such CTO patient will have significant angina and will be kept on medical management, they may benefits from this retro-grade technique to open failed CTOs.

DEPARTMENT OF CARDIAC SCIENCES

CARDIOLOGY

- **DR. SUNIL S. THANVI**
MD, DM, FACC, FCCP
- **DR. BHAVESH ROY**
MD, DM
- **DR. ABHISHEKA TRIPATHI**
MD, DNB (CARDIOLOGY) GOLD MEDALIST
- **DR. NIRAJ YADAV**
MD, DM, PDF (EP)
- **DR. KETAN M. VEKARIYA**
MD, DM

CARDIAC SURGERY

- **DR. RAJESH N. DESAI**
MS, M.CH
- **DR. SANDEEP AGARWALA**
MS, M.CH, F.R.C.S. (C-TH.)



Zydus Hospitals & Healthcare Research Pvt. Ltd.

Nr. Sola Bridge, S.G. Highway, Thaltej, Ahmedabad-380 054 Gujarat, India. E: infoahd@zydushospitals.com

[f](#) /ZydusHospitals | [t](#) @ZydusHospitals | [in](#) /ZydusHospitals