

Huzairi Sani¹

1 Cardiology, Pantai Hospital Klang, Malaysia

Mr. K, 48-year-old Indian gentleman.

Risk Factors: Hyperlipidemia; history of stented coronary artery disease.

Clinical Presentation: Admitted for peptic ulcer disease and reflux disease. He reported atypical chest symptoms, prompting a cardiac evaluation. A stress test revealed significant ST-T changes suggestive of ischemia in the LAD territory.

Invasive coronary angiography demonstrated a chronic total occlusion of the proximal LAD (ISR pattern IV) with evidence of a complex "2 sandwich stent" construct. Additional sandwich stents were noted in the mid-to-distal LAD. The LCx and RCA were free of significant stenosis. This represented a high-risk, complex CTO (high J-CTO score) due to the presence of multi-layer ISR .

First Attempt & Investment Procedure

Strategy: Given the complexity, an antegrade wire escalation strategy was employed.

Challenge: However, the wire could not be advanced through the long, diseased mid-LAD segment, confirming the complexity of the lesion.

Investment Decision: The proximal segment was predilated with a balloon to modify the proximal cap and occlusive segment, creating a "pathway" for future attempts.

Second Attempt (Completion Procedure)

Approach: An antegrade strategy was again chosen, utilizing intravascular ultrasound with near-infrared spectroscopy (IVUS-NIRS) for precise lesion characterization.

Findings: The guidewire successfully crossed the mid-distal ISR. IVUS-NIRS revealed a high Lipid Core Burden Index (LCBI) , indicating a lipid-rich, high-risk plaque, which is associated with a greater risk of complications . The imaging also identified a vessel hematoma, making it challenging to decide between a full drug-coated balloon (DCB) strategy or a hybrid PCI approach.

Outcome: Despite the complexity, the final angiographic result was good with restored TIMI 3 flow.

The staged "investment" procedure is a crucial strategy in the modern CTO operator's armamentarium. This case reinforces the principle that "good investment" is essential to assist in the success of future attempts in CTO PCI and should be considered in the management of anatomically complex lesions.