

Shojiro Hirano¹Takayuki Yabe¹, Ryo okubo¹, Hideo Amano¹, Takanori Ikeda¹¹ Department of Cardiovascular Medicine, Toho University, Japan

A man in his fifties with a history of PCI for an LCX CTO ten years earlier presented with chest pain. PCI was performed; however, the procedure was unsuccessful. The patient continued to experience chest symptoms, and transthoracic echocardiography demonstrated inferior wall hypokinesis with preserved wall thickness. Because the patient wished to undergo treatment at our institution, PCI was planned.

The target lesion was the large obtuse marginal branch. The proximal cap was ambiguous despite its somewhat tapered appearance. No continuity with the distal cap was identified, and the proximal and distal caps appeared to be misaligned. The CTO length was approximately 20 mm, and the distal reference vessel diameter ranged from 1 to 3 mm. The distal cap also showed an abrupt entry without calcification or marked tortuosity, with a distal vessel diameter between 1 and 3 mm and no distal bifurcation. No suitable collateral channels were identified from either the ipsilateral coronary artery or the RCA.

The procedural strategy was as follows. First, a microcatheter was advanced from the apical LAD to determine whether a connection to the distal true lumen was present, as this represented the only potential collateral pathway. However, regardless of whether such a connection was identified, the channel was considered too high-risk for a retrograde approach; therefore, an antegrade-first strategy was adopted. XT-R was selected as the initial guidewire. If advancement through the CTO body proved difficult, the wire would be escalated to a Miracle Neo3. Once the microcatheter reached the vicinity of the distal cap, puncture with a stiff guidewire was planned. If puncture with the stiff guidewire was unsuccessful, the Miracle Neo3 would be advanced further to perform the puncture. If the guidewire entered the extraplaque space, the tip-detection ADR technique would be attempted to achieve re-entry into the distal true lumen.

The procedure was initiated via an 8-Fr femoral approach. Tip injection through a microcatheter advanced into the distal LAD failed to demonstrate any collateral connection to the LCX. As planned, an antegrade approach was performed. Wiring was initiated with a Corsair Pro microcatheter and an XT-R guidewire; however, the XT-R advanced only to the mid-CTO segment. The guidewire was then escalated to a Miracle Neo3, which successfully crossed the distal cap. Following advancement of the Corsair Pro, IVUS demonstrated that the guidewire had entered the extraplaque space from the mid-CTO segment. Because the distal true lumen, rather than the distal bifurcation, was clearly visualized by IVUS, a tip-detection ADR strategy was selected. Although a Conquest Pro 12 ST initially engaged the distal true lumen, it quickly entered the subintimal space, making direct wiring impractical. The IVUS catheter was then advanced over this guidewire, and Conquest Pro 12 ST was introduced again. IVUS confirmed that the guidewire was positioned immediately adjacent to the vessel wall and the distal true lumen. Tip-detection ADR was subsequently performed, achieving successful re-entry into the distal true lumen. After predilation, two drug-eluting stents were implanted, followed by post-dilation. Final angiography demonstrated good distal flow without procedural complications.