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A case of PCI performed on a long lesion of RCA CTO with poor backup

Toku Sakashita1, Atsushi Sakamoto1

[1]Cardiology, IMS Fujimi General Hospital, Japan

Case Presentation (56-year-old male)

In 202X Y-month, the patient was performed coronary angiography due to worsening effort angina.

Angiography revealed total occlusion (100%) of segment #1 (RCA CTO) and 99% stenosis in #6.

The lesion in #6 was considered the culprit for the patient's symptoms, and PCI was performed.

Although the lesion was calcified, due to the presence of collateral flow from the RCA, plaque modification using rotablator or OAS was avoided.

Instead, intravascular lithotripsy (IVL) was selected, which resulted in sufficient lesion expansion and successful stent implantation.

Six months later, PCI was performed for the RCA #1 CTO lesion.

The lesion length was over 30 mm, and there was no significant calcification.

The CTO entry was unclear due to bridging collaterals, while the CTO exit was clearly visualized via contralateral injection.

Collateral channels included:

- LCX-AC channel to #4AV
- LAD-septal to #4PD

The LAD-septal to #4PD channel was considered a promising collateral source.

Procedure details:

Identifying the CTO entry was critical. Initially, IVUS was attempted through a side branch originating near the expected entry point.

However, due to poor guiding catheter backup, proper IVUS visualization was not achieved.

A retrograde approach was therefore selected, utilizing the first septal branch.

Using a Suoh 03 wire and Corsair XS microcatheter, retrograde passage to the CTO exit was achieved without difficulty.

A Miracle Neo 3 wire was then advanced retrogradely to the CTO entry. However, the wire tracked within the subintimal space, and antegrade balloon delivery was not possible.

Using the retrograde wire as a landmark, an antegrade Conquest Pro 12 wire was advanced into the vessel.

As the exact CTO entry point remained unclear, a “scratch and go” technique was employed by targeting a proximal plaque segment to mobilize the cap.

A reverse CART technique was successfully established.

Despite performing balloon anchoring within the antegrade guide catheter, the retrograde microcatheter could not be advanced, prompting a change in the reverse CART entry point.

An antegrade Gladius knuckle wire was then advanced to segment #3, and an extended reverse CART was performed at a more distal location where retrograde microcatheter crossing was also feasible.

At this stage, it was discovered that segment #4AV was also totally occluded (100%).

However, the decision was made to address #4AV in a separate session. Stents were deployed from #1 to #3, and the procedure was concluded.

Conclusion:

In cases with poor guide catheter backup, a retrograde approach may become the first-line strategy.

Once the retrograde wire crosses the lesion, it can serve as a valuable landmark, giving operators the confidence to advance antegrade wires appropriately.

This case illustrates how strategic use of the retrograde wire and reverse CART (including extended reverse CART) techniques can contribute to successful CTO PCI, even in complex anatomical scenarios.