1163 **Contrast modulation technique: An unconventional approach for crossing CTO lesions during PCI**

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A 73-year-old male smoker with background history of cerebrovascular disease and atrial fibrillation treated with left atrial appendage occluder, presented to the cardiology outpatient clinic with chronic chest tightness. Coronary angiography revealed significant stenosis at the mid-right coronary artery and chronic total occlusion of the proximal left anterior descending artery with collateral circulation from the right coronary artery. The chronic total occlusion was characterised by long length and heavy calcification as visualised under fluoroscopy. The right coronary artery was successfully revascularized with the implantation of a drug-eluting stent. During the same procedure, an attempt was made to treat the chronic total occlusion using antegrade wire escalation approach. Despite progression up to Gaia Next 2 guidewire, successful crossing was not achieved and the procedure was terminated.

Second revascularization attempt for the chronic total occlusion was performed one month later. The J-CTO score was 4 and the size of the collateral vessels were graded as CC2 using the Werner classification. Dual arterial access was established. A 7 French extra back up 3.5 guiding catheter and a Caravel microcatheter were ultilised for antegrade approach. Based on the prior procedural experience, Gaia next 3 guidewire was used as the first wire, and subsequently escalated to Conquest pro 8-20 which still failed to penetrate the proximal cap. An Astato XS 40 guidewire was then used and entered the body successfully. However, due to the acute angle within the chronic total occlusion body, the wire was switched back to Gaia Next 3, which couldn't progress distally. The Carlino technique was attempted by injecting 0.5ml of contrast through the Caravel and resulted in a type 2b staining deposition pattern. Following this, Gaia next 3 advanced further distally until another hard point was encountered that the wire had to switch to Conquest pro 8-20 for further penetration. Retrograde injection revealed subintimal tracking of the Conquest pro 8-20. Due to the difficulty in penetrating the heavily calcified with Gaia next 3, and the tendency of Conquest pro 8-20 to enter the subintimal space due to large curvature of the blood vessel, second Carlino technique was performed and a type 1 staining deposition pattern was noted. Eventually Conquest pro 8-20 passed the chronic total occlusion lesion and retrograde injection revealed wire was within the true lumen. Using Caravel, the wire was switched to a workhorse wire. However, a balloon uncrossable lesion was encountered even with a 1.0mm semi-compliant balloon. Since Caravel also couldn't pass the critical lesion, microcatheter was exchanged to FineCross for rotablation wire switching. Rotation atherectomy with 1.25mm burr size was used for debulking of the whole chronic total occlusion segment. Full dilatation of non-compliant balloons could be achieved afterwards. Stent preparation was optimized and two drug-eluting stents were implanted from distal to proximal left anterior descending artery. The final angiography revealed TIMI 3 flow of left anterior descending artery.

A contrast modulation technique such as the Carlino technique offers a feasible alternative option when antegrade wire escalation with highly penetrating guidewires fails to cross a chronic total occlusion lesion.