C038

Successful antegrade PCI for LCX instent CTO with a very hard gap formed by a stent fracture, torsion of the axes of the stents, and a tiny distal true lumen

A 64-year-old man was referred for preoperative evaluation. He suffered from acute lateral myocardial infarction at the age of 54, when he underwent bare-metal stent implantation in the total occlusion of the mid LCX. Since then, he had received implantation of 3 Cypher stents in total one after another for restenosis and fracture. Eight years later, at the age of 64, he was diagnosed as having lung cancer and underwent coronary angiography as preoperative evaluation of ischemic heart disease. It was revealed that the stents were totally occluded with a stent fracture and a gap formed by the fracture, with a tiny distal true lumen receiving Rentrop grade III collaterals. Also, he had a significant stenotic lesion in the distal RCA. The LCX territory was proven to be viable through Tc myocardial perfusion scan. Exercise stress test was positive for ischemia, but demonstrated good exercise tolerance. We planned an earlier surgery for lung cancer, subsequent RCA PCI, and finally LCX CTO PCI.

As planned, we carried out LCX CTO PCI at his age of 65. The vascular access was established via the right femoral artery. The guide was 7Fr AL2. We started with SION and Corsair Pro. Because of old, hard tissue within the stents, soft wires were not able to pierce the CTO. Stepping up guide wires, we achieved advancement of a Conquest Pro to the site of fracture, which was the entry of the gap, and delivery of a Tornus Pro there by giving a twist motion. Hampered by a major change in direction of the vessel, torsion of the axes of the proximal and distal stents, extremely hard tissue, we could not turn the head of the Conquest Pro around. Reshape of the guide wire and SASUKE parallel did not work, but we were able to advance beyond the gap a Gaia Third and Corsair Pro (in exchange of Tornus Pro) into the distal piece of the stent. This combination reached the distal end of the stents. Although we stepped down to XT-R here, the most distal part of the CTO was too tough to penetrate. We again brought the Gaia Third. Imaging in my head and visualizing through fluoroscopy the position of the shaft within the CTO, the direction, deflection, and rotation of the tip, we carefully advanced the guide wire. After several times of attempt, we finally got the tiny distal true lumen visualized via the collaterals. We advanced the Corsair Pro distally, then exchanged the Gaia Third to the SION. Dilating with smaller to larger balloons sequentially, protecting a major side branch, observing through IVUS, and bailing out slow flow and thrombus formation, we finally applied two drug-coated balloons, then ended with a satisfactory result. Two months later, we confirmed a complete patency of the treated vessel.

Taking advantage of the property of Gaia Third of intentional manipulation and deflection, we were able to track the right path within the stents and the distal part of the CTO. With a clear “Road Map” provided by the stents, this procedure was as close as advancement of a stiff guide wire within an ETOSS. But it was not easy to accomplish because it involved an interruption of the road map, a curved gap of hard tissue, torsion of axes of the stents and a distal part out of the road map. In this regard, this case was very educational for beginners of CTO PCI. On the other hand, we should reflect upon exposure of a high radiation dose (7Gy in total) and use of a high amount of radiocontrast dye (208mL).