1033 **The Utility of HydroDynamic Contrast Recanalization (HDR) for Chronic Total Occlusion of the Superficial Femoral Artery.**

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A 74-year-old man was referred to our hospital with a chief complaint of intermittent claudication. He has several vascular risk factors including hypertension, diabetes mellitus, and dyslipidemia. Due to an ankle-brachial index of 0.84 in the right lower limb, he was diagnosed with peripheral arterial disease. Contrast-enhanced computed tomography scan revealed a 210 mm CTO lesion in the right superficial femoral artery (SFA), and the patient was admitted to our department for endovascular treatment (EVT).

EVT was performed via the right common femoral artery, and a 6Fr Parent Plus guiding sheath was inserted. A polymer-jacketed wire (Gladius 0.014) supported by microcatheter (Corsair PV) was successfully punctured center of the intra-plaque at the proximal occlusion site. Based on the intravascular ultrasound (IVUS) images, we confirmed that the guide wire was within the intra-plaque, and then advanced the microcatheter to that site. We adopted a strategy of performing HydroDynamic Contrast Recanalization (HDR), administering the minimal amount of contrast agent under controlled pressure from the microcatheter. By gently injecting 0.5 to 1.0 ml of contrast agent, certain structures within the intra-plaque were visualized, allowing the Gladius 0.014 wire to be easily advanced along the designated route. Repeating this technique several times and performing the final contrast injection near the distal end allowed for clear confirmation of the route to the distal true lumen. As a result, the Gladius 0.014 wire was successfully navigated across without encountering resistance. Subsequently, the guide wire was replaced with the Chevalier 14 Universal, and the Corsair PV was removed using an extension wire. The guide wire passage was completed in just 17 minutes, and the amount of contrast agent used was less than 10 ml.

After examining the IVUS, it was confirmed that the guide wire was correctly positioned within the intra-plaque area along the entire length of the CTO. Due to the presence of a thrombotic lesion in a portion of the CTO, thrombus aspiration was performed using an 8Fr TVAC aspiration catheter, and as much thrombus as possible was retrieved. Subsequently, distal protection was achieved by compressing the popliteal artery (so-called HIRANO-Dome). Following this, prolonged dilation was performed using a SHIDEN HP 5.0 mm × 300 mm balloon. Finally, stent deployment was completed with the placement of ELUVIA 7.0 mm × 80 mm and 7.0 mm × 150 mm stents, after which post-dilation was performed using a SHIDEN HP 5.0 mm × 300 mm balloon. IVUS confirmed that both stent apposition and dilation were satisfactory, and the procedure was concluded. After EVT, the ABI of the right lower limb increased to 1.04, and the intermittent claudication improved.

HDR is a new approach utilizes both diagnostic and therapeutic intraplaque contrast injections to facilitate the primary crossing of coronary CTOs. While HDR has several advantages, it can sometimes cause side branch occlusion and subintimal space expansion, which may reduce the success rate and lead to adverse events in the treatment of coronary CTOs.

Anatomically, the SFA has fewer branches and a lower risk of side branch occlusion. Furthermore, even if the subintimal space is enlarged, SFA CTO treatment is more likely to be successful by using techniques such as tip-detection antegrade dissection re-entry technique. Therefore, the SFA may be a suitable candidate for HDR procedures.

We present our clinical experience with HDR procedure for SFA CTO, along with some literature review.