

IMAGES IN INTERVENTION

Newly Designed Side-Grooved Guiding Sheath for the Endovascular Treatment of Superficial Femoral Artery Chronic Total Occlusion



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A 72-year-old man with a history of diabetes presented with right intermittent claudication. The ankle-brachial index of the right leg was 0.38. Computed tomography angiography showed chronic total occlusion (CTO) of the right superficial femoral artery (SFA) (Figure 1A). Ipsilateral antegrade endovascular treatment was performed using a side-grooved guiding sheath system. After inserting a 0.035-inch guidewire into the deep femoral artery (DFA), our newly designed side-grooved guiding sheath (Zeon Medical, Tokyo, Japan) was inserted into the DFA, and angiography confirmed CTO of the SFA (Figures 1B and 1C, Online Videos 1 and 2). The side groove was aligned with the SFA-DFA bifurcation (Figure 1D). A 0.035-inch wire with a microcatheter was advanced into the CTO through the side groove using the wire-loop technique. Subsequently, re-entry to the distal true lumen was successfully performed with an OUTBACK catheter (Cordis, Milpitas, California) (Figure 1E, Online Video 3). After balloon dilatation, an INNOVA self-expandable stent (Boston Scientific, Marlborough, Massachusetts) was smoothly passed through the side groove and implanted in the SFA (Figure 1F, Online Video 4). Final angiography

showed good results (Figure 1G, Online Video 5), and the patient's symptoms resolved quickly.

The original side-grooved guiding sheath (Medikit, Tokyo, Japan) was first introduced by Yamaguchi et al. (1) as a treatment strategy for femoropopliteal lesions. This sheath has advantages, such as ease of insertion, high stability, and less contrast medium requirement. However, a larger device of more than 5-F catheter was impossible to pass through the side groove (1.0 mm × 5.0 mm), and therefore, the treatment strategy was limited, especially for implanting stents. Our new sheath is 6-F catheter and has a larger side groove (1.6 mm × 6.0 mm), which enables the passage of 6F catheter-compatible devices, including an OUTBACK catheter and most metallic stents. The side-grooved guiding sheath system has been established as an effective and useful treatment strategy for SFA CTO.

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FIGURE 1 Endovascular Treatment of Superficial Femoral Artery Chronic Total Occlusion Using a Side-Grooved Guiding Sheath System



(A) Computed tomography angiography showing CTO (arrows) of the right SFA. (B and C) Our newly designed side-grooved guiding sheath is inserted into the DFA, and angiography shows CTO (arrows) of the right SFA (B, proximal, [Online Video 1](#); C, distal, [Online Video 2](#)). (D) The side groove (arrowhead) is aligned with the SFA-DFA bifurcation. (E) Re-entry to the distal true lumen is successfully performed with an OUTBACK catheter ([Online Video 3](#)). (F) An INNOVA self-expandable stent is smoothly passed through the side groove and implanted in the right SFA ([Online Video 4](#)). (G) Final angiography shows good results ([Online Video 5](#)). CTO = chronic total occlusion; DFA = deep femoral artery; SFA = superficial femoral artery.

REFERENCE

1. Yamaguchi S, Zen K, Kambayashi D. A side-grooved guiding sheath as an effective treatment strategy for femoro-popliteal artery lesions. *Catheter Cardiovasc Interv* 2016;87:451-6.

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APPENDIX For supplemental videos and their legends, please see the online version of this article.