

Optical frequency domain imaging of the scoring balloon elements shift

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Abstract

Here, we report a case of endovascular treatment in which optical frequency domain imaging (OFDI) evaluated the scoring balloon elements shift when three inflations without shaft rotation performed with a scoring balloon.

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Abstract

Here, we report a case of endovascular treatment in which optical frequency domain imaging evaluated the scoring balloon elements shift when three inflations without shaft rotation performed with a scoring balloon.

Keywords

scoring balloon, optical frequency domain imaging, endovascular treatment

Case presentation

Endovascular treatment was performed for an 89-year-old male with a symptomatic chronic total occlusion in the right superficial femoral artery (Figure 1A). After crossing the chronic total occlusion with a 0.014-inch wire, a red clot was collected by catheter thrombectomy. A 5.0 x 40-mm-long non-slip element percutaneous transluminal balloon angioplasty (NSE PTA) —a scoring balloon— (Nipro Corporation, Osaka, Japan) was inflated three times without shaft rotation (NSE three inflations) (Figure 1B). After that, angiography showed no significant dissection (Figure 1C). In addition, five of the scores induced by the NSE PTA balloon were detected by optical frequency domain imaging (OFDI) (Terumo Corporation, Tokyo, Japan) (Figure 1D).

We previously evaluated the efficacy of NSE three inflations to reduce the severe dissection in the treatment of femoropopliteal lesions [1]. In that study, when the NSE three inflations performed with a NSE PTA balloon, the elements shift of NSE PTA balloon could detect in vitro experiment, while could not in patients with intravascular ultrasound (IVUS) due to the insufficient resolution of IVUS.

The resolution of OFDI is approximately 10 times greater than that of IVUS [2], OFDI could detect the scores induced by the NSE PTA balloon. Moreover, OFDI detected five scores after the NSE three inflations. Because the NSE PTA balloon has three elements, the image of OFDI proved the elements shift of the NSE PTA balloon when the NSE three inflations was performed in a patient.

Author contributions

Eiji Karashima wrote the initial draft of the manuscript. **Takeo Kaneko** revised the manuscript and supervised the case study.

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Conflict of interest

None.

Data availability statement

All data are included in the case report.

Consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Ethical approval

Not applicable.

References:

1. Karashima E, Yoda S, Yasuda S, Kajiyama S, Ito H, Kaneko T. Usefulness of the "non-slip element" percutaneous transluminal angioplasty balloon in the treatment of femoropopliteal arterial lesions. *J Endovasc Ther.* 2020;27:102-108. doi.org/10.1177/1526602819887954.
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Figure legends:

Figure 1

(A-C) Angiography of the endovascular treatment with three inflations of a 5.0 x 40-mm-long NSE PTA balloon for the right superficial femoral arterial occlusion. (D) OFDI after the NSE three inflations. Arrows showed the scores induced by a NSE PTA balloon.

