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Histological Evaluation of Self-Expandable Interwoven Stent After Implantation in the Femoropopliteal Artery

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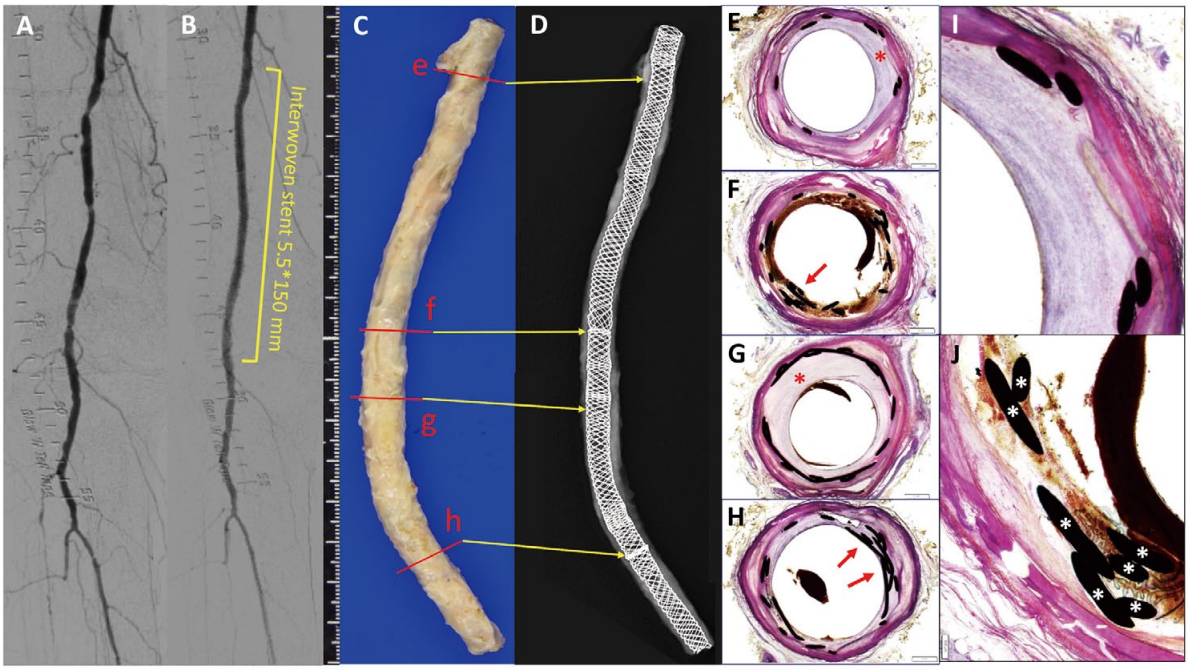

Figure. Stent diameter was 3.6 mm in the short axis and 5.3 mm in the long axis, with minimum and maximum stent areas of 10.7 and 22.1 mm^2, respectively. (**A**,**B**) Digital subtraction angiography of the right femoropopliteal artery before (**A**) and after (**B**) endovascular therapy. (**C**) Appearance and (**D**) X-ray photograph of the right femoropopliteal artery after interwoven stent (IWS) implantation. (**E**–**H**) Histological findings of the IWS at sites "e"–"h" in (**C**), respectively. Red arrows indicate the stented site with invagination; red asterisks indicate neointimal proliferation in the elongated site. (**I**) Moderate neointimal proliferation. (**J**) Invagination of the IWS and uncovered stent strut (asterisks).

An interwoven stent (IWS) is a novel self-expanding nitinol stent with an interwoven-wire design to confer greater radial strength and flexibility. However, there have been no pathological investigations of vascular responses after IWS implantation.

A 70-year-old man with ischemic ulcers underwent endovascular therapy (EVT) using an IWS (Supera, 5.5 mm× 150.0 mm; Abbott Vascular, Chicago, IL, USA) for right femoropopliteal lesions (**Figure A**,**B**). Aspirin and clopidogrel were prescribed at least 1 week before the procedure. The patient died because of sepsis 2 months after EVT. Pathological assessment was accepted by the Ethics Committee of Kansai Rosai Hospital in accordance with the Declaration of Helsinki.

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Histological evaluation revealed moderate neointimal proliferation in the elongated site (**Figure E**,**G**). In contrast, poor neointimal tissue formation was found in the stented site with invagination (**Figure F**,**H**).

In previous reports, primary patency was significantly lower after an IWS was deployed with elongation than without,[1] and a substantial rate of stent thrombosis was observed. From the histological findings, restenosis in the elongated site can be attributed to neointimal hyperplasia, whereas invagination with an uncovered stent strut may provoke stent thrombosis. Suboptimal deployment of an IWS may adversely affect arterial healing.

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Disclosures

None.

IRB Information

This study was approved by the Ethics Committee of Kansai Rosai Hospital (Reference no. 2002007).

Reference

1. Garcia LA, Rosenfield KR, Metzger CD, Zidar F, Pershad A, Popma JJ, et al. SUPERB final 3-year outcomes using interwoven nitinol biomimetic Supera stent. *Catheter Cardiovasc Interv* 2017; **89:** 1259–1267.