

Steerable Sheath for Cannulation and Bridging Stenting of Challenging Target Visceral Vessels in Fenestrated and Branched Endografting

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INTRODUCTION

This multicenter retrospective study investigated the ability for steerable sheaths to facilitate fenestrated and branched endovascular aneurysm repair (FB-EVAR) in cases of challenging target visceral vessels (TVV) during the repair of juxtarenal/pararenal abdominal - (J/P AAA) and thoracoabdominal- aortic aneurysms (TAAA).

METHODS

Medical records of patients undergoing FB-EVAR at four vascular surgery centers were analyzed.

- Planned and bailout (after failure of standard cannulation technique) procedures using the steerable sheath comprised a subset of the total number of cases.
- The ergonomic handle of the steerable sheath with a rotating collar allows precise 180° deflection of the sheath tip, eliminating the need for multiple fixed curve catheters.
- Cook Flexor™ sheaths and/or angiographic catheters were used with steerable sheaths to cannulate (13%) and advance bridging stents (21%) of TVVs, while the steerable sheath was used alone in 66% of TVVs.
- To follow-up, all patients underwent laboratory evaluation of renal, hepatic, and pancreatic function and thoracoabdominal computed tomography angiography.

TECHNICAL SUCCESS:

Correct TVV cannulation and bridging stenting, and complication-free patency at the completion of angioplasty (lack of dissection, stenosis, kinking or type I/III endoleaks).

RESULTS

Technical success was achieved in 61/62 (98%) TVV procedures facilitated by the steerable sheath in 33 patients. 29 (47%) were planned procedures, while 33 (53%) were used only after the failure of the standard cannulation technique.

- No cases of occlusion and TVV-related reinterventions at a median follow-up of 12 months.
- No type I/III endoleaks detected.
- 4 type II endoleaks detected (no aneurysm sac enlargement).
- 2 cases of spinal cord ischemia.
- 4 postoperative respiratory morbidities.
- 3 percutaneous arterial access complications.
- 1 patient death at 6 months due to unrelated cause (aneurysm).
- Technical failure was reported in 1 patient with a type IV TAAA treated by an off-the-shelf multibranching device.

DISCUSSION

- The use of the steerable sheath may be helpful in navigating challenging TVV cannulation during FB-EVAR such as in vessels with an acute downward orientation, ostial stenosis >50%, severe calcification, or presence of a previous endograft in front of TVV origin.
- The steerable sheath is particularly effective as a bailout technique when traditional interventions have failed, and in cases of hostile TVV anatomy.
- Despite its cost, these devices should be present in the storerooms of vascular surgery units performing complex/advanced endovascular aortic procedures.