**Title: “Evolution of complex endovascular aortic repair – simplifying non-sheath Technique”.**

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**Objective:** The rising complexity of endovascular aortic repair with fenestrated/branched devices (F/B-EVAR) drives evolution of technical aspects of bridging stent graft (BSG) delivery approaches to target vessels (TVs). This study aimed to assess the Vienna modified simplified bare-wire target vessel (SMART) technique, implying stenting of TV without conventional sheath support and to compare its outcome to standard F/B-EVAR performed with historically established sheath support.

**Design, materials and methods**: A retrospective analysis of 102 consecutive patients treated with F/B-EVAR from January 2020 to May 2022 was undertaken. According to BSG delivery approach, study population was divided into three groups – non-sheath (NSG), sheath (SG) and SMART group. Primary endpoints were radiation exposure (dose-area product, DAP), fluoroscopy time (FT), contrast agent (CA) load, operation time and rate of intraoperative TV complications and additional procedures. Analysis of covariance (ANOVA) with the Tukey post hoc test was used to test for statically significant differences of continuous variables. Freedom from secondary TV related intervention at early- mid- and long-term follow-up were secondary endpoints, assessed using a Kaplan-Meier curve analyses.

**Results:** A total of 168 TVs (47.6% visceral arteries, [VA]; 50% renal arteries [RA]) in NSG, 182 TVs (38.8% VA; 55.6% RA) in SG and 36 TVs (44.4% VA, 55.6% RA) in SMART group were accessed through a mean of an equally distributed number of fenestrations, branches, and BSGs. DAP as well as operation time were found to be significantly decreased in NSG and SMART groups vs. SG (*P* = 0.007, *P* = 0.004, respectively). SMART technique and its modified version have additionally resulted in a significant decrease of intraoperative TV related complication in comparison to SG (*P* = 0.008). Although not statistically significant, superior results in terms of freedom from TV related secondary reinterventions could be confirmed for NSG and SMART groups vs. SG.

**Conclusion:** This study presents the first report on the assessment of different currently available TV stenting approaches**.** Previously reported SMART technique, and its modified Vienna NSG group during F/B-EVAR proved to be a safe alternative to standard repair with historically established sheath support, demonstrating superior procedure related outcomes and TV patency.