Value Of Open Rescue After Failed TEVAR And EVAR Procedures: Tips And Tricks
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Introduction:
As endovascular aortic repair has become largely used in the last two decades to treat abdominal (EVAR) and thoracic (TEVAR) aortic disease, stent-graft related accidents have been increasingly observed, often requiring reintervention. Secondary procedures are mainly carried out by endovascular means, and open conversion with or without stent-graft explant is usually left for cases not amenable to endovascular techniques. The aim of this study is to report the indications, technical aspects and outcomes of a single-center experience with open conversions following failed EVAR and TEVAR procedures.

Methods:
EVAR and TEVAR patients requiring early (≤30 days) or delayed open conversion between 2005 and 2013 were prospectively collected in a computerized database including demographics, anatomic details, procedural and clinical success, and postoperative complications.

Results:
Overall, 73 patients (84% male, mean age 72 ± 5 years) were submitted to open surgical conversion in the study period (58 EVAR patients, and 15 TEVAR patients). Early conversion was required in 3 EVAR patients due to accidental coverage of renal vessels (1) and acute stent-graft thrombosis (2), and in 2 TEVAR patients due to retrograde ascending aortic dissection (1), and technical failure of the delivery system (1).

Indications for delayed open conversion (n = 68) included: 38 type I and III endoleaks (56%), 13 type II endoleaks with aneurysm growth (19%), 7 cases of stent-graft infection or fistulization (10%), 5 cases of material failure (7%), 3 retrograde dissections (4%), and 2 cases of intra-graft thrombosis (3%). The average time from the index operation to delayed open conversion was 49 months (range 2–102 months). The initial EVAR/TEVAR was performed by another institution in 22 cases (30%).

Thirty-day mortality was 1.7% (1/58) for EVAR conversions (one patient who presented with shock due to free rupture of an unexcluded abdominal aortic aneurysm), and 27% (4/15) for TEVAR conversions. Mortality was significantly higher in patients with retrograde ascending dissection and aorto-esophageal or aorto-bronchial fistula. Overall morbidity was 31% in the EVAR group, mainly due to acute renal failure, and 73% in the TEVAR group, mainly due to respiratory failure.

In the EVAR group, reconstructions included 53 cases of in-situ prosthetic repair (11 cases with aorto-aortic bypass and 42 cases with aorto-bifemoral bypass) and 2 cases of extra-anatomic bypass (axillo-bifemoral bypass) for stent-graft infection and aorto-duodenal fistulization. In the TEVAR group, complete endograft explantation with aortic reconstruction was performed in 7 cases, open aortic repair leaving in situ the stent-graft was performed in 3 cases, and open ascending/arch repair in 5 cases of retrograde dissection.
Conclusions:
The risk of acute or late complications requiring an open reintervention is not negligible both after EVAR and TEVAR, and a close surveillance is mandatory. Open rescue procedures are often technically challenging, with different surgical strategies according to patient’s anatomy and conditions, and results highly depend from the cause of EVAR/TEVAR failure. Mortality rates are acceptable in case of abdominal open conversion. In case of thoracic conversion, retrograde ascending aortic dissection and stent-graft infection or fistulisation represent a significant risk factor for early mortality.