



Editorial

Stent grafts to treat access-related vascular injury during transcatheter aortic valve implantation are safe, effective and durable



Stefan Toggweiler

Heart Center Lucerne, Luzerner Kantonsspital, Lucerne, Switzerland

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Owing to careful pre-procedural planning, availability of second generation transcatheter valves and operator experience, the safety and efficacy of transcatheter aortic valve implantation (TAVI) has increased [1]. In parallel, the rate of non-transfemoral access has dropped to 5% or less in many centers. At the Heart Center Lucerne, for instance, the rate of non-transfemoral TAVI was 3.7% in 2018. Indeed, many patients that were considered unsuitable for transfemoral access are now treated via transfemoral route. Such patients may have narrower, more calcified or tortuous arteries resulting in an increased risk for vascular and bleeding complications. This may explain why the rate of major vascular complications has failed to decline and still ranges between 5 and 10% in most of the recently published trials and registries, and also at the Heart Center Lucerne [1–3].

In case of closure device failure and access site bleeding, hemostasis may be achieved with prolonged manual compression or temporary balloon inflation. Ongoing bleeding may be treated with surgical repair, but this has been associated with increased morbidity, mortality, prolonged time to ambulation, prolonged time to hospital discharge, and the risk of wound infections [4–6]. Self-expanding covered stent grafts offer the possibility to percutaneously control hemorrhage and avoid surgery in many of these cases. However, the common femoral artery is located distal to the inguinal ligament in front of the hip joint and may thus be subject to substantial flexion, lengthening, shortening and external compression. Indeed, early reports have raised concerns that stents implanted in this region may be prone to fractures, kinking, or restenosis [7]. One may argue that elderly TAVI patients may be less active, but this is certainly not true for all patients, and even less in the era when TAVI is performed in younger, lower-risk patients.

In this issue of the International Journal of Cardiology, Sedaghat and colleagues retrospectively evaluated long-term patency after implantation of two self-expanding stent-grafts (Fluency, Bard Inc., Murray Hill, NJ, USA and Viabahn, Gore Inc., Flagstaff, AZ, USA) for the treatment of vascular injury of the common femoral artery [8]. Stents were oversized in relation to the diameter of the common femoral artery by about 30%. Approximately half of the stent grafts were postdilated to achieve sufficient expansion and sealing. After a median follow-up of 3.9 years (range 2–7.4 years), the authors found a 100% patency rate of the stent-grafts and no evidence of stent fracture. A stenosis was detected in 6% of patients, and another 6% presented with an endoleak or a pseudo-aneurysm (the authors state that these patients were treated with an undersized stent graft). They concluded that stent grafts are a durable treatment option for TAVI-related vascular complications.

These findings are of particular interest for TAVI operators and complement previous studies that have shown similar results with a shorter duration of follow-up [6,9,10]. All these studies are retrospective and have some limitations. However, they all show very high patency rates across different centers and across different operators. Summarizing this evidence, we can state that stent graft implantation is a safe, effective and durable procedure that should be preferred over surgical repair, if feasible. Such a strategy may decrease the occurrence of in-hospital complications such as wound infections, femoral neuropathy, lymphatic fistula formation, increase patient comfort, and reduce the time to ambulation and hospital discharge and possibly costs [6]. Nevertheless, a few words of caution remain. First, in case of rupture and bleeding that cannot be controlled by manual compression (e.g. retroperitoneal bleeding), it is of utmost importance to achieve hemostasis as quickly as possible. Otherwise, the patient will need blood transfusions, and may react with a systemic inflammatory response syndrome that will prolong recovery by days or even weeks. To achieve fast hemostasis, an occlusion balloon should be readily available. Many centers also place a “safety” wire before removing the large sheath. Second, surgery may still be required if the bleeding is in immediate vicinity to the femoral bifurcation, or (rarely, in case of heavily calcified arteries) if one or multiple stent grafts fail to achieve hemostasis despite adequate postdilatation.

Conflict of interest statement

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