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Subclavian access in transcatheter aortic valve implantation - a case series

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Introduction: Transfemoral transcatheter aortic valve implantation (TAVI) is the current standard for treating patients with aortic stenosis who are not eligible for surgical aortic valve replacement. However, 10-15% of TAVI patients have prohibitive peripheral anatomy - lumen diameters <5.0 - 5.5 mm, severe calcification, tortuosity or kinking, aortic aneurysms or dissections, previous iliofemoral grafts. In this patient population, subclavian access provides a favorable alternative access option, along with transcarotid or transcaval access. Subclavian access can be achieved via the surgical or percutaneous route. Subclavian access also allows smaller distance to the aortic valve avoids peripheral tortuosity, therefore facilitating accurate prosthesis control and deployment, which may result in less PVL and pacemaker implants.[1-3] In this case series we will present 17 cases of TAVI using left subclavian access performed from 2022 to 2026.

Case series: We report a single-center retrospective case series of 17 consecutive patients undergoing TAVI via the subclavian route. All cases were performed using the left subclavian access, in general anesthesia and in collaboration with cardiac anesthesiology and cardiac surgery. The patients were 53% male and 47% female; average age was 77 years. Average left ventricular ejection fraction was 48% and average aortic valve area 0.81 cm^2. The average EuroSCORE II (European System for Cardiac Operative Risk Evaluation) in this high-risk cohort was 5.96%. Most implanted valves were self-expanding platforms - 72% Medtronic Evolut and 6% Abbott Navitor. Balloon-expandable platforms were implanted in 22% of patients (1 MyVal, 3 Sapien valves). Procedural success was achieved in all patients and no in-hospital deaths were recorded. One patient experienced cardiac arrest after valve implantation but recovered completely. One patient (6%) suffered a stroke, 3 patients (18%) had major vascular complications, and one patient (6%) had a minor subclavian hematoma. A permanent pacemaker was implanted in 18% of patients; one patient had an acute kidney injury and there were no valve-related bailout surgeries or nerve injuries.

Conclusion: Our results are consistent with published data regarding complications after subclavian access. Vascular complications and permanent pacemaker implantation were the most common complications. Considering the clinical profile of the high risk and complex chronic patients in our cohort, we conclude that subclavian access for TAVI is a safe, feasible, and effective alternative access in patients with prohibitive peripheral anatomy. Careful pre-procedural computed tomography imaging and collaboration with cardiac surgery are critical to optimizing clinical outcomes.

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LITERATURE

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