

Templates for physician-modified endograft treatment of non-deferrable complex abdominal aortic aneurysm repair using the Endurant platform

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ABSTRACT

Introduction and objectives

Complex abdominal aortic aneurysm (AAA) repair often requires fenestrated and branched endografts, which are affected by factors such as device availability, costs, and operator expertise. This study assesses preliminary results with physician-modified endografts (PMEG) utilizing the Medtronic Endurant platform.

Methods

Retrospective analysis of consecutive patients unsuitable for other techniques or custom-made devices, in which a PMEG Endurant was used for repair between 2021 and 2024. Bidimensional templates of the Endurant endograft were elaborated to guide precise fenestration placement, which was confirmed intraoperatively with a 3D-printed aortic template. Endpoints were technical success, mortality, reinterventions and target vessel patency.

Results

37 target vessels in 18 patients (mean age 79.4 ± 9 years, 94% male) were treated with Endurant main bodies (55.6%), abdominal tubes (22.2%) or aortic extensions (22.2%). Mean aneurysm diameter was 70.0 ± 23 mm. Mean number of fenestrations was 2.1 ± 1 (33.3% 3-FEN or 4-FEN). Most frequent bridging stents were iCover (40.5%), BeGraft (27.0%) and VBX (24.3%). Mean implantation time was 198.9 ± 90 minutes. Technical success was achieved in all but one cases (94%), with no 30-day mortality, no reinterventions and 100% target vessel patency at a mean follow-up of 10.6 ± 8 months. Three patients (16.7%) died of non aortic-related causes. One residual type IA endoleaks was adverted in CT-scan controls and was left untreated according to patient's decision.

Conclusion

PMEG using Medtronic Endurant endograft, with bidimensional templates and 3D-printed confirmation models, provided safe and effective short-term outcomes for complex, non-deferrable AAA repair. Long-term data and (ideally) a prospective study on PMEG with a standardized protocol would allow for optimal evidence to arise on this technique, and adequate comparison with custom-made and off-the-shelf devices.

Keywords

Endovascular aneurysm repair; Physician-modified endografts; Endurant; Fenestrated aortic endografts; Template