Surgical Conversion of Failed Endografts: When to Do it and How?

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There is little doubt that endovascular repair of AAA is equivalent to open repair in the short term with enthusiasm for this minimally invasive treatment driven by shorter hospital stays, decreased anesthetic risk, and a rapid postoperative convalescence. However, along with numerous positive short-term and mid-term reports of AAA endovascular repair, a growing number of studies have also revealed limitations of this evolving technology. Problems with device integrity, component separation, migration, infection, iliac limb occlusion, and aneurysm sac expansion with and without the presence of endoleak have been described. Although endovascular solutions can, at times, be provided for a failing endograft, many of the aforementioned problems require device explantation and repair of the aneurysm with an open surgical approach. All told, with tens of thousands of aortic endografts implanted annually, a conservative estimate suggests that at least several hundred secondary graft conversions are now performed each year.

Explantation of an endovascular graft has been termed a primary conversion, if device removal is performed at the time of the initial procedure, and as a secondary conversion, if removal is performed at a later date. Primary conversions have become increasingly rare events with at least two recent multi-center trials reporting 100% primary technical success rates. Several recent investigations, including a report from our center, confirm that secondary operative conversion continues to be a necessary intervention for at least a small cohort of patients treated with endografts. In this presentation, we review our experience and that reported by other centers for patients with late clinical failure in whom secondary conversion was required. In addition, the indications, operative strategies, and technical maneuvers that may facilitate endograft explantation will be detailed.

All told, current data demonstrates that a small, but finite, risk of secondary conversion is present for all graft types and, perhaps of greater significance, treatment failures requiring operative intervention may occur at any point following initial graft deployment. Specifically, a recent review of conversion-related data among clinical series reported between 1997 and 2004 reveals an average incidence of secondary conversion of 1.9% after a mean postoperative interval of 20 months. Reported perioperative mortality related to secondary conversion remains quite variable among many series but averages 23%. Likewise, the risk of major morbidity may be considerable, predominantly consisting of cardiopulmonary complications. In general, failure to successfully treat endoleak and endotension has been the primary indications for secondary conversion. Device migration necessitating operative conversion has been an infrequent event in our experience with most occurrences treatable by endovascular salvage. Currently the only absolute indication for open conversion is documented endograft infection, but even in this instance several investigators have now raised the possibility of endovascular intervention.

Unique challenges are associated with removal of aortic endografts, and preoperative planning requires careful consideration of distinct differences between endograft designs. For example, devices with barbs or hooks may be more difficult to remove with downward traction alone. Indeed, the new aortic prosthetic graft may be anastomosed directly to the proximal segment of the endograft and the surrounding tissue without complete removal of the endoprosthesis. The potential requirement for suprarenal aortic control should be considered.