



INVITED COMMENTARY

Open or Endovascular Repair of Secondary Aortoenteric Fistulae?

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Submitted 11 January 2011; accepted 11 January 2011
Available online 9 February 2011

Secondary aortoenteric fistula (AEF) complicate 0.3–2.5% of all open aortic surgical procedures, with the incidence being lower following endovascular aortic aneurysm repair.^{1,2} It is, however, one of the most dangerous complications for a patient to encounter, with the highest mortality rates being observed in patients presenting with massive haemorrhage.

In the past, patients with secondary AEF have usually been treated with total graft excision and either oversewing of the aortic stump and extra anatomic revascularisation or *in-situ* replacement with a rifampicin bonded prosthesis or (less commonly) deep venous conduits. Because of the considerable morbidity and mortality associated with these difficult and prolonged redo open procedures; the emergence of an endovascular solution has been actively welcomed.

There are considerable theoretical attractions associated with the endovascular treatment of secondary AEF, most notably; reduced physiological stresses to the patient, shorter operating times, less trauma and reduced transfusion requirements, all of which translate into lower mortality and morbidity.³ However, following the publication of several small case series from around the world, there are now concerns that while the endovascular treatment of AEF may confer better short term outcomes, this may come with a heavy price in the long term. In effect; the endovascular treatment of secondary AEF may

not be a long term solution to this devastating condition.⁴ This seems to be the conclusion of the paper by Kakkos et al, who report early and long term outcomes following either open or endovascular repair of secondary AEF from six vascular institutions in Greece over a twelve year period.⁵

Theirs is now the largest study published to date and provides further insight into the best way to manage these difficult patients. Out of the 25 patients, eight were treated via an endovascular approach, while 17 underwent open repair. Whilst the authors claim that these groups were comparable, the treatments they underwent were not standardised. In the endovascular group, treatments ranged from the insertion of extension cuffs to cover the defect, relining the entire graft or aorto-uniliac stent graft deployment plus femoro–femoral cross over. Unfortunately, there is no mention of the devices used in the Greek series, nor whether suprarenal fixation was utilised. The issue of suprarenal fixation is important as it will make any subsequent open operation even more difficult to complete safely. In the open group, treatment varied from simple suture of the anastomotic defect, to complete removal of the graft and there were varying strategies for dealing with the bowel defect (primary closure, resection etc).

So does the Greek series provide the reader with better insight as to how secondary AEF should be treated? From this study, and those others published within the last two years, there is no doubt that patients treated via the endovascular approach have much better outcomes in the short term (lower mortality and morbidity) as compared to open repair.^{4,6} However, the Achilles' heel remains secondary

DOI of original article: 10.1016/j.ejvs.2010.12.026.

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reinfection and rebleeding. It would, of course, have been naïve to have expected otherwise, as the endovascular stent/cuff now lies in close proximity to the bowel defect rather than the original aortic anastomosis and is highly likely to become infected despite antibiotic therapy.

As a consequence, the concept of endovascular repair becoming a 'bridging' procedure has made it the first choice therapy for many.⁶ If nothing else, it does allow a critically ill patient (who would otherwise likely have died) to enjoy an extension to life, albeit sometimes a short one. But when does the endovascular approach become a 'bridge to nowhere', rather than a precursor to a definitive elective intervention designed to prolong life with the minimum risk of reinfection?

The authors of the Greek series have concluded that further trials are required to look at the precise role of endovascular repair as a 'bridging treatment'. The unfortunate reality, however, is that thoughts about these trials are simply utopian and idealistic, as they are never likely to take place. Because of the declining number of patients undergoing open aneurysm repair, vascular units will encounter fewer and fewer patients with secondary AEF. As a consequence, even if a large number of vascular institutions were to collaborate in a prospective audit, it is extremely unlikely that sufficient patient numbers would accrue to determine optimal practice.

So what new information or guidance have I obtained from this paper. Firstly; the Greek series has corroborated our own anecdotal series here in Leicester. Patients with secondary AEF do much better with endovascular treatment, but all eventually succumb to recurrent infection and/or rebleeding. Like our Greek colleagues, we have never been able to define when we should take the 'bridging' concept to its natural conclusion. In reality, it is very difficult to recommend to a now fit and healthy patient that he/she should undergo a complex and ultimately dangerous reintervention when he/she feels back to normal. Sadly, it then usually becomes too late to safely remove an endovascular device and the original aortic graft when reinfection and bleeding strikes again and the patient is at his/her physiological weakest. The latter treatment

strategy was suggested by the Greek surgeons in their paper as one solution to the 'bridging' dilemma, but it is salutary to observe that every patient treated in this way died.

Accordingly, it seems likely that endovascular repair will become the first line treatment in most patients with secondary AEF. However, it is incumbent on surgeons and interventionists to formally discuss with their patients (after they have made a full recovery) as to whether they wish to accept the almost inevitable consequences of late reinfection (should no further intervention be undertaken electively) or whether they wish to be considered for a definitive secondary open surgical intervention when they are at their physiological fittest. Unless new evidence emerges to the contrary, avoiding such a discussion and simply deferring redo open surgery until the patient presents with another massive haemorrhage is almost certainly going to end in the patient's death.

References

- 1 Kuestner LM, Reilly LM, Jicha DL, Ehrenfeld WK, Goldstone J, Stoney RJ. Secondary aortoenteric fistula: contemporary outcome with use of extraanatomic bypass and infected graft excision. *J Vasc Surg* 1995;21(2):184–96.
- 2 Sharif MA, Lee B, Ellis PK, Collins AJ, Blair PH, Soong CV. Prosthetic stent graft infection after endovascular aortic aneurysm repair. *J Vasc Surg* 2007;46(3):442–8.
- 3 Burks JA, Faries PL, Gravereaux EC, Hollier LH, Marin ML. Endovascular repair of bleeding aortoenteric fistulas: a 5 year experience. *J Vasc Surg* 2001;34(6):1055–9.
- 4 Antoniou GA, Koutsias S, Antoniou SA, Georgiakakis A, Lazarides MK, Giannoukas AD. Outcome after endovascular stent graft repair of aortoenteric fistula: a systematic review. *J Vasc Surg* 2009;49(3):782–9.
- 5 Kakkos SK, Antoniadis PN, Klonaris CN, Papazoglou KO, Giannoukas AD, Matsagkas MI, et al. Open or endovascular repair of aortoenteric fistulas? A multicentre comparative study. *Eur J Vasc Endovasc Surg* 2011;41:625–34.
- 6 Baril DT, Carocccio A, Ellozy SH, Palchik E, Sachdev U, Jacobs TS, et al. Evolving strategies for the treatment of aortoenteric fistulas. *J Vasc Surg* 2006;44(2):250–7.