Stent-graft repair of aortobronchial fistula: a review
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CRD summary
Emergency stent-graft repair appeared to be a reasonable solution for patients with acute aortic rupture into airways. However, due to the risks of longer term recurrence and mortality, it should be considered as a bridge to subsequent elective repair. The authors acknowledged the possibility of publication bias and the lower quality of included studies, consequently their conclusions seem reasonable.

Authors' objectives
To assess the use of aortic stent-graft implantation in the management of aortobronchial fistula.

Searching
MEDLINE, EMBASE and the Cochrane Library were searched from 1996 to 2008. Search terms were reported. Only studies published in English were eligible. Reference lists of retrieved studies and reviews were checked.

Study selection
Studies that reported on endovascular repair of aortobronchial/aortopulmonary fistula using stent-graft, where haemoptysis (aortic into the airways) had been present, were eligible for inclusion. Cases reported by the same authors, in different series, were excluded.

The outcomes of interest were periprocedural mortality (30 days or less), complications (local or systemic), recurrence of haemoptysis, need for re-intervention, and long-term endograft-related mortality or complications.

Included studies were case reports or case series on acute aortic aneurysms, that included any reported case of stent-grafting for aortobronchial fistula. Men, women and children were included; ages ranged from 11 to 88 years (where given). Aortobronchial fistulas were either post-surgery (aneurysm, aortic sarcoma, aortic valve, coarctation, dissection, ductus repair or trauma) or primary (aneurysm, Aspergillus abscess, dissection, penetrating aortic ulcer or tuberculosis); some disease states were described as stable and others caused patient shock. Stent-grafts used were custom designed or commercial (AneuRx, Cook, Ivancev, Endofit, Stentor, TAG, Talent, Valiant or Vanguard). Some studies reported antibiotic prophylaxis, but there was no standardised protocol for this. Where specified, prophylactic antibiotics included broad spectrum antifungal drugs, cefazolin, cefuroxim, cephalosporin, ciprofloxacin, teicoplanin or vancomycin.

One reviewer selected studies for inclusion.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Where outcome data were not available authors were contacted for more information.

The authors did not state how the data were extracted.

Methods of synthesis
Results were described in tables and combined in a narrative synthesis; the overall numbers and percentages of events were calculated. Differences between studies were described in tables. Studies were grouped according to study design (case reports, and cases reported in larger case series).

Results of the review
Forty-four studies were included in the review included 30 case reports (57 patients), and 14 case series (25 patients...
with aortic stent-grafts). For the case reports, follow-up ranged from two to 77 months; most reported at a maximum of 24 months or less. For the case series, mean follow-up was generally reported for the entire series, rather than giving details on the aortobronchial fistula cases, where the mean follow-up ranged from 7.9 to 63 months (where given); one person with aortobronchial fistula was followed up for nine years.

Most studies reported no perioperative deaths. Four deaths (4.9%) occurred, three in the oldest studies using custom devices and related to immediate recurrent haemoptysis; the fourth was from fatal sepsis.

There were no reports of periprocedural paraplegia or stroke.

Complications were mainly graft related and local. The most common being left arm ischaemia (four cases) and iliac rupture (three cases).

Recurrence of haemorrhage/aortobronchial fistula was reported at follow-up in 11 patients (14%); four of these died of haemoptysis. Of the 11 patients with recurring haemorrhage/aortobronchial fistula, nine patients were from the case series, representing 38% of aortobronchial fistula cases in these studies. Events occurred from two weeks to nine years postoperatively.

Endoleak was common, periprocedural or later (10 studies).

Less common complications included migration and aortic strut perforation.

Follow-up information related to antibiotic use was limited and disparate, but there was no apparent evidence of a relationship between outcome and use of antibiotics.

**Authors’ conclusions**

In acute aortic rupture into airways, emergency stent-graft repair appeared to be a reasonable solution. However, due to the risks of longer term recurrence and mortality, it should be considered as a bridge to subsequent elective repair.

**CRD commentary**

The aims of the review were clearly stated in terms of participants and intervention. The search was limited to English language, so language bias or publication bias may have affected the results. Study selection was undertaken by one reviewer, so the reviewer error or bias was a possibility. No details were given about the methods of data extraction.

The quality of included studies did not appear to have been assessed, but all of the included studies were case series, and the authors acknowledged that they were likely to be of lower quality. Given the available data, a narrative synthesis was appropriate. Heterogeneity between studies was partly investigated by looking at results according to study design. However, as aortobronchial fistula is an infrequent and life threatening condition, the authors acknowledged that there were no level-1 (randomised controlled trials) on this topic. They also acknowledged that the results may have been affected by publication bias, as unsuccessful cases (those that resulted in perioperative mortality or procedural-related complications) were less likely to have been reported.

Taking the authors' comments into account, their conclusions appear reasonable.

**Implications of the review for practice and research**

**Practice:** The authors stated that, where possible, stent-graft should be considered a bridge to later elective repair, unless there are other contraindications to surgery. Frequent lifelong follow-up is essential after stent-graft repair.

**Research:** The authors stated that there is a need for high quality studies and long-term results to improve outcomes for patients with aortobronchial fistula.

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