Fenestrated and branched endografts for the treatment of thoracoabdominal aortic aneurysms: a systematic review


CRD summary
The review concluded that endovascular treatment with fenestrated and/or branched stent-grafts had encouraging results for patients with thoracoabdominal aortic aneurysms considered unfit for conventional open surgery. Further research was needed. Some methodological problems with the review and concerns about the study data limit the reliability of the authors’ results. However, the conclusions were suitably cautious and appear appropriate.

Authors' objectives
To review the use of fenestrated and branched stent-grafts in patients with thoracoabdominal aortic aneurysms (TAAA).

Searching
PubMed was searched from January 2000 to September 2009 for articles published in English. Search terms were reported. Reference lists of relevant reviews and studies were searched.

Study selection
Studies of fenestrated and/or branched endografts in high-risk patients with a diagnosis of TAAA were eligible for inclusion. Studies had to include more than three patients and provide data on patient demographics, follow-up length, technical success and 30-day mortality. Studies on juxtarenal aneurysm repair and studies that specialised in conventional open surgery or less invasive techniques were excluded.

The included studies were mostly conducted in patients with aneurysms classified as Crawford type IV and had aneurysm sizes of between 6.5cm and 7.6cm. Types of intervention were custom-designed branched and/or fenestrated endovascular devices based on the Zenith endograft. Mean patient age was 71 to 76 years. The proportion of male patients was approximately 65%. Many of the patients had comorbidities such as coronary artery disease, hypertension, diabetes, COPD, renal failure and previous surgery.

Three reviewers independently undertook study selection. Disagreements were resolved by discussion.

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

Data extraction
Data was extracted on technical success, mortality, complications and endoleaks. The authors did not state how many reviewers performed data extraction.

Methods of synthesis
A narrative synthesis was presented, grouped by type of outcome.

Results of the review
Seven case series were included in the review (n=155 patients). Study sample sizes ranged from four to 73 patients. Mean length of follow-up was 11.8 months.

Across the seven studies, mean technical success was 94% (range 75% to 100%), 30-day mortality rate was 7% (0% to 25%) and one-year survival rate was 83% (73% to 100%). The rate of primary endoleaks was 18.4%. Risk of renal failure was 6%. The rate of paraplegia was 2.6% and rate of paraparesis was 7.1%. Other outcomes were reported.
Authors' conclusions
Endovascular treatment with fenestrated and/or branched stent-grafts had encouraging results for patients considered unfit for conventional open surgery. Further research was needed.

CRD commentary
Inclusion criteria for the review were clearly defined. One relevant database was searched. There was potential for language bias, as only English-language studies were included. Publication bias was not assessed and could not be ruled out. Attempts were made to reduce reviewer error and bias during study selection; it was unclear whether this was the case for data extraction. Quality assessment was not reported; as all the included studies were case-series with small sample sizes, the risk of biases within the studies was high. Studies were narratively synthesised, which appeared appropriate for this type of data.

Some methodological problems with the review and concerns about the study data limit the reliability of the authors’ results. However, the conclusions were suitably cautious and appear appropriate.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that further research on fenestrated and/or branched stent-grafts or hybrid procedures with longer-follow up periods was needed.

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