Endoscopic staple diverticulostomy for Zenker's diverticulum: review of literature and experience in 159 consecutive cases

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CRD summary
This poorly reported review assessed surgical approaches for patients with Zenker's diverticulum using evidence from case series. The authors' concluded that out-patient endoscopic staple diverticulostomy reduces the complication rate, operating time and convalescence time compared with other types of surgery. The quality of included studies was not assessed and since surgical techniques were not directly compared, any conclusions are tentative.

Authors' objectives
The objective was to compare endoscopic and external surgical approaches for patients with Zenker's diverticulum, and to compare these results with results from the author's own series of patients treated with endoscopic staple diverticulostomy. This abstract only refers to the review.

Searching
MEDLINE was searched for articles published in English between 1990 and August 2002; the keywords were 'Zenker's diverticulum'. The reference lists in identified studies were also checked.

Study selection
Study designs of evaluations included in the review
Case reports, meta-analyses and reviews were excluded. All of the included studies appear to have been case series. Where reported, the duration of follow-up ranged from one to 228 months.

Specific interventions included in the review
Studies of surgical treatment (endoscopic or external surgical approaches) were eligible for inclusion. Studies that were not of surgical treatment were excluded. The included studies that were presented in tabular format were of external surgery or endoscopic surgery. External surgery used one or more of the following: diverticulectomy, diverticulopexy, imbrication, cricopharyngeal myotomy, diverticulum inversion, or cervical oesphagostomy in a staged procedure. Endoscopic surgery involved cautery, carbon dioxide laser, carbon dioxide scissor, or endoscopic staple diverticulostomy.

Participants included in the review
Studies of patients with Zenker's diverticulum were included in the review.

Outcomes assessed in the review
The inclusion criteria were not specified in terms of outcomes. The review assessed complication rates, mortality, hospital stay, symptom resolution, operating time and time to resumption of diet.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

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

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
Where available, the following data were tabulated for each study: the proportion of patients in whom it was not possible to perform the operation; the percentage of patients with resolution of symptoms; mean hospital stay; mean time to resumption of oral diet; the percentage of patients with significant complications; mean operating time; mortality; mean duration of follow-up; and recurrence rate.

**Methods of synthesis**

*How were the studies combined?*

The results for external and endoscopic surgery were summarised separately. Mean values and ranges were reported for complication rates, mortality and recurrence rate with external surgery, while means were reported for all types of endoscopic surgery (plus range for recurrence) and for endoscopic staple diverticulostomy alone. The mean duration of hospital stay, mean time to resumption of diet and mean operating time were reported for external surgery, all endoscopic surgery and endoscopic staple diverticulostomy alone.

*How were differences between studies investigated?*

Differences between the studies were not discussed.

**Results of the review**

Fifty-two case series (3,374 patients overall) were included in the review: 21 were of external surgical treatment (1,696 patients) and 31 (including the authors' own case series) were of endoscopic treatment (1,678 patients).

External surgery (using cervical transcutaneous route).

The mean complication rate was 11.8% (range: 0 to 38) and the mean mortality was 1.6% (range: 0 to 3.5). The mean duration of hospital stay was 7.6 days with clear fluid being given, on average, 4.5 days after surgery. Most studies reported that symptoms improved in more than 95% of the patients. The follow-up period, if any, varied. The mean operating time was 83.2 minutes, but this was only reported in 3 studies. The recurrence rate was 5.0% (range: 0 to 19) with variable follow-up periods.

All types of endoscopic surgery.

The mean complication rate was 5.5% and the mean mortality 0.2%. The mean duration of hospital stay was 2.7 days with patients usually resuming an oral diet the day after surgery. The mean operating time was 28.6 minutes. The recurrence rate was 6.6% (range: 0 to 22) with variable follow-up periods.

Endoscopic staple diverticulostomy.

The mean complication rate was 2.6% and the mean mortality was 0.3%. The mean duration of hospital stay was 1.8 days with patients resuming an oral diet the day after surgery. The mean recurrence rate was 6.0% (range: 0 to 22).

**Authors' conclusions**

Out-patient endoscopic staple diverticulostomy reduces the complication rate, operating time and convalescence time compared with other types of endoscopic surgery, or surgery using an external transcutaneous approach

**CRD commentary**

The review question was clear in terms of the study design, intervention and participants, although no inclusion criteria were explicitly stated. Limiting the included studies to those in English and listed in one database may have resulted in the omission of some relevant studies. In addition, no attempt was made to locate unpublished studies, thus raising the possibility of publication bias. The methods used to select the studies and extract the data were not described; hence, any efforts made to reduce errors and bias cannot be judged. Validity was not assessed and the limitation of evidence from case series was not highlighted.
Some relevant information on the individual studies was tabulated. However, there were no details of the patients' characteristics or the surgeons' experience; hence, the generalisability of the results cannot be assessed. The use of mean values and ranges to summarise the outcomes appears to have been a reasonable method of combining the case series, but differences between the studies were not discussed. The search was restricted to studies published since 1990 in order to minimise differences in peri-operative treatment, but the studies included patients operated on from 1944. While the results from surgery carried out in earlier and more recent periods may differ, the influence of year of surgery was not explored. The authors compared the results for the two surgical techniques using evidence from case series. However, the limitations of such indirect comparisons were not mentioned. There might have been differences in the populations or concomitant treatment of patients that would have accounted for any difference in results between the two sets of case series. Since surgical techniques were not directly compared, any conclusions are tentative.

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

Practice: The authors stated that endoscopic staple diverticulostomy is the treatment of choice for patients with Zenker's diverticulum and for recurrence.

Research: The authors did not state any implications for further research.

**Bibliographic details**

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