Endoscopic clips for closing esophageal perforations: case report and pooled analysis

CRD summary
This review examined the effectiveness of endoscopic clips in patients with oesophageal perforation. It concluded that endoclips appear effective for treating acute perforations caused by therapeutic endoscopy. Limited evidence was found and the authors' conclusions should be interpreted with caution.

Authors' objectives
To describe a case of a chronic oesophageal fistula successfully closed by endoscopic clips after several failed re-operations and stent placement, and to perform a pooled analysis of the reports describing such closures. This abstract details only the parts of the paper relevant to the pooled analysis.

Searching
MEDLINE was searched for reports published in English from 1966 to January 2007; the search terms were reported. Bibliographies of important articles were handsearched.

Study selection
Studies of patients with oesophageal perforation/fistulae closed by endoscopic clips were eligible for inclusion. It appeared that only case reports were eligible for inclusion.

The age of the patients in included reports ranged from 45 to 86 years (median 67). Around 60 per cent were male. The most common location of perforation was the distal region. The most common cause was therapeutic interventions. Perforations were acute or chronic (with a median chronicity of 2 days). All patients with chronic perforations (>10 days old) had at least one unsuccessful attempt at closure before endoclip application. Perforation size ranged from 3mm to 25mm. Most studies also used supportive therapy (for example jejunal feeding).

Two investigators independently selected studies for inclusion, resolving any differences of opinion by consensus.

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

Data extraction
Relevant outcome data were extracted, with the duration of perforation before endoclip application being log-transformed.

Two investigators extracted data independently, resolving any differences by consensus.

Methods of synthesis
Descriptive statistics were calculated, including medians and interquartile ranges for continuous variables and frequencies for categorical variables. Spearman correlation coefficients with 95% confidence intervals (CI) were used to assess age, size and duration of perforation as predictors of closure time. The Wilcoxon rank sum test was used to study the association of sex and closure time. A linear regression analysis was used to assess the magnitude of association between the duration of perforation and closure time.

Results of the review
Twelve reports (n=17) were included in the review. The median time to closure of a perforation after clip application was 18 days, but most of the acute perforations from therapeutic endoscopy closed by five days. Duration of perforation was the only significant factor that predicted closure of a perforation, spearman correlation coefficient 0.59 (95% CI: 0.12, 1.00, p=0.003); for every 10-day increase in duration healing time increased by seven days (95% CI: 3.12, p=0.003). By adjusting for the size of a perforation the multivariable linear regression analysis (n=12) showed that
for every 10-day increase in duration of perforation, the healing time increased by 8 days; estimate of 7.99 (95% CI: 1.83, 14.14, p=0.02).

**Authors’ conclusions**
Endoscopic clips appear to be effective for closing acute oesophageal perforations caused by therapeutic endoscopy in the absence of significant contamination. The duration of the perforation is a significant factor for predicting closure time.

**CRD commentary**
The review addressed a clear question – although not all the inclusion criteria were clear – but it appears the authors searched only for case reports and so may have excluded studies containing useful evidence. The authors searched just one database (and references) and only for papers published in English, so it is possible that relevant papers were missed in the search; no search was made for unpublished data. Suitable methods were used to minimise the risks of reviewer error and bias for the study selection and data extraction processes. Sufficient report details were provided and appropriate analyses were conducted, although data in tables and text did not always concur. The restrictive search strategy used, coupled with the small sample size of this study, means the authors’ conclusions are based on limited evidence and should be interpreted with caution.

**Implications of the review for practice and research**
Practice: The authors stated that endoscopic clips can be useful adjuncts for closing both acute and chronic oesophageal perforations.

Research: The authors stated that the efficacy of endoclips for oesophageal perforation closure needs to be further determined by large prospective trials.

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