Comparison of stapled and hand-sewn esophagogastric anastomoses
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Authors' objectives
To review published data to determine if stapling was better than hand-sewing esophagogastric anastomoses.

Searching
Published English language medical literature was searched manually and by MEDLINE. Further details (years searched, search terms) are not given.

Study selection
Study designs of evaluations included in the review
Four randomised and seven non-randomised controlled trials. Only papers reporting a minimum of 20 patients in each anastomotic group were included.

Specific interventions included in the review
Stapled versus hand-sewn esophagogastric anastomoses.

Participants included in the review
Patients with esophagogastric anastomoses. Patients with esophagocolonic or esophagojejunal anastomoses were excluded, where possible.

Outcomes assessed in the review
Data on anastomotic leaks, strictures, and operative mortality were obtained whenever possible.

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

Assessment of study quality
The authors do not state that they assessed validity, although they did report whether a trial was randomised or not.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. Data on the number of participants and outcome measures (leak, stricture and operative mortality) were presented for hand sewn and stapled groups.

Methods of synthesis
How were the studies combined?
For each anastomotic outcome measure (leak, stricture, and mortality) data were pooled and subjected to statistical analysis (Statsoft, Tulsa, Oklahoma). Pooled study data were presented as percentages, but raw numbers were also presented in parentheses to show the size of patient group being compared.

How were differences between studies investigated?
Data from randomised studies were considered separately from non-randomised study data. A chi-square test was used to assess differences in leak, stricture, and mortality for the two anastomotic techniques. A p<0.05 was considered significant. Within non-randomised studies a sensitivity analysis was undertaken using only prospective studies.
Results of the review
Four RCTs (426 participants) and 7 non-randomised controlled trials (2,380 participants) were included.

Anastomotic leak rate:
9% (20/216 patients) for stapled anastomoses and 8% (17/210 patients) of hand-sewn anastomoses p<0.67 for pooled data from RCTs. Non-randomised studies, stapled anastomoses had a lower leak rate (6%, 56/962 patients) than hand-sewn anastomoses (11%, 126/1149, p<0.0001). Three of seven nonrandomized studies featuring prospective data collection showed no significant difference in anastomotic leak rate for the two techniques (stapled 4%, 29/676; hand-sewn 6%, 44/795, p<0.28).

Strictures:
Occurred in 27% (40/149 patients) of stapled and 16% (26/167 patients) of hand-sewn anastomoses p<0.02 for pooled data from RCTs. Non-randomised studies, stapled anastomoses had a higher incidence (31%, 152/488 patients) than hand-sewn anastomoses (16%, 63/388, p<0.0001). One non-randomised study with prospective data collection showed a higher incidence in stapled anastomoses (stapled 29%, 57/195; hand-sewn 10%, 18/172; p<0.0001).

Thirty-day operative mortality:
10% (19/189 patients) for stapled anastomoses and 3% (6/185 patients) of hand-sewn anastomoses p<0.008 for pooled data from RCTs. Only 3 of 7 non-randomised studies reported operative mortality data: stapled 17%, 64/375; hand-sewn 8% 35/421; p<0.002 (one of these studies had a 39% operative mortality for the hand-sewn group). One non-randomised study with prospective data collection showed 30-day mortality was 5% in both groups (stapled 13/262; hand-sewn 11/221) p<0.99.

Authors' conclusions
Stapled and hand-sewn esophagogastric anastomotic techniques have equivalent anastomotic leak rates. Strictures are more common in stapled anastomoses. Irrespective of which technique is used, surgical experience and meticulous attention to detail are required to prevent anastomotic complications. Anastomotic technical modifications alone are unlikely to eliminate the problem of leaks, since they do not address the problem of gastric fundal ischemia.

CRD commentary
The authors address a clearly focused question. They provide a clear distinction between randomised and non-randomised evidence in their results and conclusions.

However, the authors limited their search for relevant studies to the published English literature, therefore the results of this review may be subject to language bias and relevant data may have been missed. Authors did not assess the validity of included studies nor did they describe how data were abstracted from included studies. Therefore the results of this review should be interpreted with extreme caution. Only the first two sentences of the authors' conclusions follow from results presented.

Implications of the review for practice and research
Practice: The authors state that both techniques are safe. They also stress that irrespective of which technique is used; surgical experience and meticulous attention to detail are required to prevent anastomotic complications.

Bibliographic details

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.