Total vs partial fundoplication in the treatment of gastroesophageal reflux disease: a meta-analysis

Varin O, Velstra B, De Sutler S, Ceelen W

CRD summary
The authors concluded partial fundoplication was a safe and effective surgical alternative to total fundoplication for gastro-oesophageal reflux disease, with significantly fewer reoperations and better functional outcomes. The authors’ conclusion represented the evidence available, but limited reporting of review methods and trial details, and the poor quality of most included trials, mean the reliability of the authors’ conclusions is unclear.

Authors’ objectives
To compare the efficacy and safety of partial fundoplication with total fundoplication (Nissen fundoplication) for the treatment of gastro-oesophageal reflux disease (GERD).

Searching
PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and Web of Science were searched from 1975 to June 2007. Search terms were reported.

Study selection
Randomised controlled trials (RCTs) that compared total fundoplication with partial fundoplication for the treatment of gastro-oesophageal reflux disease were eligible for inclusion in the review. Trials that compared fundoplication with Hill gastropexy were excluded.

Outcomes of interest included: postoperative morbidity, incidence of symptomatic adverse events (dysphagia, bloating, flatulence, oesophagitis, heartburn, acid reflux), reoperation rate, recurrence rate, and Visick score.

In approximately two thirds of included trials, partial fundoplication and total fundoplication were performed laparoscopically; the remaining trials used open surgery. The circumferential degrees of the partial wrap in the included trials were 90, 180, 180 to 200, 200, 270, and 300 degrees.

The authors did not state how many reviewers performed study selection.

Assessment of study quality
Trial quality was assessed using the Jadad scale (randomisation, double blinding, withdrawals and drop-outs), with a maximum possible score of 5.

The authors did not state how many reviewers performed trial quality assessment.

Data extraction
Data were extracted in order to calculate odds ratios (ORs) and 95% confidence intervals (CIs).

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
Odds ratios were combined in meta-analysis using a fixed-effect model. Heterogeneity was assessed using the $X^2$ and assumed to be present when $p<0.1$.

Results of the review
Eleven RCTs were included in the meta-analysis ($n=991$ patients, sample sizes ranged from 31 to 200). Follow-up ranged from four to 138 months. Most of the trials were of low quality, with seven trials scoring 3 or less on the Jadad
Compared with partial fundoplication, total fundoplication was associated with a statistically significant greater incidence of dysphagia (OR 2.67, 95% CI 1.82 to 3.93; 11 RCTs), bloating (OR 1.65, 95% CI 1.07 to 2.56; 6 RCTs), flatulence (OR 2.56, 95% CI 1.66 to 3.96; four RCTs), and reoperation rate (OR 2.11, 95% CI 1.13 to 3.95; nine RCTs). The only statistically significant heterogeneity was for reoperation rate (p<0.08).

There were no statistically significant differences between total plication and partial fundoplication for postoperative morbidity, oesophagitis, heartburn, acid reflux, the proportion of patients experiencing a good or excellent long-term outcome, or Visick I or II score. The only statistically significant heterogeneity was for acid reflux (p<0.05).

**Authors’ conclusions**
Partial fundoplication was a safe and effective alternative to total fundoplication for gastro-oesophageal reflux disease, which resulted in significantly fewer reoperations and a better functional outcome. The poor quality of the included trials should be taken into account when interpreting of the results of this meta-analysis.

**CRD commentary**
The review addressed a clear research question. The inclusion criteria were adequate. The search was adequate, but there were no attempts to locate unpublished material, so relevant studies may have been missed. It was unclear if any language restrictions were applied, so the review may be subject to language bias. The authors did not report using methods designed to reduce reviewer bias and error at any stage of the review process.

Trial quality was assessed using an appropriate tool. Brief details of the included trials were provided. As there was no information on patient characteristics, and follow-up periods varied greatly, it was unclear if it was appropriate to pool the trials together in a meta-analysis.

The authors’ conclusion represented the evidence available. However, limited reporting of review methods and trial details, and the generally poor quality of the included trials, mean the reliability of the authors' conclusions is unclear.

**Implications of the review for practice and research**
*Practice:* The authors stated that decisions about surgical treatment for gastro-oesophageal reflux disease should take into account the evidence, surgeon’s experience and patient characteristics.

*Research:* The authors stated that large scale multicentre randomised trials, including objective outcome assessment, will be required to definitely establish the value of partial versus total fundoplication.

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