Pouch Roux-en-Y vs no pouch Roux-en-Y following total gastrectomy: a meta-analysis based on 12 studies

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CRD summary
The authors stated a need for Roux-en-Y oesophagojejunostomy with a pouch as a gastric substitute after total gastrectomy by comparison with Roux-en-Y oesophagojejunostomy without a pouch; conclusions were limited by small sample sizes and potential study differences. The authors’ conclusion reflects the evidence presented, but their reliability is uncertain due to weaknesses in the review process.

Authors’ objectives
To derive a more precise estimation of effects of Roux-en-Y oesophagojejunostomy with a pouch compared with Roux-en-Y oesophagojejunostomy without a pouch following total resection of the stomach.

Searching
PubMed and EMBASE were searched up to October 2010. Search terms were reported. Bibliographies of relevant articles and reviews were handsearched. Only articles published in full text were included.

Study selection
Clinical trials that compared reconstruction techniques with and without a pouch were eligible for inclusion. Only trials that contained sufficient data to calculate estimates of effects (odds ratios) were considered. Where the same population was included in multiple publications, data from the most recent or complete study was used. Outcome measures were: postoperative complications, anastomotic leakage, mortality, five-year survival, reflux symptoms, dumping syndrome, reflux oesophagitis, eating capacity, serum albumin, quality of life index, operation time, blood loss and hospital stay.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Study quality was assessed using the Cochrane risk of bias tool; no further details were reported.

Data extraction
Two reviewers independently extracted data to enable calculation of odds ratios (ORs) and mean differences and their 95% confidence intervals (CIs).

Methods of synthesis
Pooled odds ratios, weighted mean differences (WMDs) and corresponding 95% confidence intervals were calculated using a Mantel-Haenszel fixed-effect meta-analysis (no evidence of heterogeneity) or a DerSimonian and Laird random-effects model (evidence of heterogeneity). Heterogeneity was assessed using $X^2$ and $I^2$. Sensitivity analysis was performed to assess effects of dimensions of inclusion criteria on results. Publication bias was assessed using a funnel plot and by Egger’s test.

Results of the review
Twelve randomised controlled trials (RCTs) (1,018 participants, range 20 to 271) were included. Results in the text and figures differed and here results from figures are reported.

There were no significant differences between pouch Roux-en-Y reconstruction and simple Roux-en-Y construction for total postoperative complications, anastomotic leakage, incidence of reflux symptoms or oesophagitis, eating capacity, serum albumin content, blood loss, mortality and five-year survival.

Pouch Roux-en-Y reconstruction, compared to simple Roux-en-Y reconstruction, was associated with significant
improvement in quality of life (WMD 8.37, 95% CI 6.73 to 11.17, $I^2=40.9\%$; two RCTs), shorter length of hospital stay (WMD -3.01 days, 95% CI -3.41 to -2.62, $I^2=0\%$; two RCTs) and lower risk of dumping syndrome (OR 0.32, 95% CI 0.11 to 0.87, $I^2=0\%$; four RCTs).

Simple Roux-en-Y reconstruction was associated with significantly less operative time compared to pouch Roux-en-Y reconstruction (WMD 27.75 minutes, 95% CI 23.81 to 31.70, $I^2=49.9\%$; five RCTs).

Funnel plots suggested evidence of publication bias.

**Authors' conclusions**
The results indicated the need for Roux-en-Y oesophagojejunostomy with a pouch as a gastric substitute after total gastrectomy by comparison with Roux-en-Y oesophagojejunostomy without a pouch. Precise conclusions were limited by small sample sizes and potential study heterogeneity.

**CRD commentary**
The review question was clearly stated. Only two databases were searched and no efforts were made to search the grey literature, so some relevant papers may have been missed. Data extraction was undertaken by two reviewers, which minimised potential reviewer error and bias; it was unclear whether similar processes were used in study selection and quality assessment, so the possibility of error and bias could not be excluded.

Study quality was assessed using appropriate criteria and the authors stated that the studies included in the meta-analyses were of low risk of bias, but no results were not reported. Study details were incompletely reported. The appropriateness of the meta-analyses could not be confirmed due to the lack of complete study details. The significance of a number of estimates of effects were interpreted incorrectly. For example, eating capacity was reported to be significantly improved yet the results showed no significant differences between groups. Reported results for some outcomes differed between text and figures.

The authors' conclusions reflect the evidence, but their reliability is uncertain given a number of weaknesses in the review process.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that further RCTs with larger numbers of patients were required to obtain statistically significant results.

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