A systematic review of spleen and pancreas preservation in extended lymphadenectomy for gastric cancer

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CRD summary
There was no compelling evidence that splenectomy and/or distal pancreatectomy during curative intent surgery for gastric cancer benefited patients in the long-term. Given the limited quality of the studies included in this review, the conclusions appear appropriate and are likely to be reliable.

Authors' objectives
To evaluate the effectiveness of preservation of the spleen and pancreas in extended lymphadenectomy during surgical therapy for gastric cancer.

Searching
MEDLINE, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from 1998 to 2009 for studies in English. Search terms were reported. Reference lists from relevant articles were also consulted. No attempt was made to identify unpublished studies.

Study selection
Studies that evaluated splenectomy and/or pancreaticosplenectomy with lymphadenectomy in patients with a new diagnosis of gastric adenocarcinoma (confirmed by histopathology) were eligible for inclusion. Complication rates or survival data following surgery had to be reported. Studies with less than 30 patients were excluded.

Three randomised controlled trials (RCTs) compared standard D2 lymphadenectomy versus spleen preserving D2 lymphadenectomy, and one RCT compared standard D2 lymphadenectomy versus pancreas-preserving D2 lymphadenectomy. All other studies evaluated lymphadenectomy with and without preservation of the spleen and/or pancreas.

Studies were selected independently by at least two reviewers, with disagreements resolved by discussion.

Assessment of study quality
The quality of the RCTs was assessed using the Jadad scale.

It appeared that data on quality were extracted by one reviewer and checked by a second.

Data extraction
Surgical outcomes were extracted and presented as descriptive statistics, relative risks and p-values. Odds ratios were also calculated from RCTs. Surgical outcomes included the number of lymph nodes examined, presence or absence of residual tumour (R0 status), operative time, need for reoperation, length of hospital stay, postoperative complications, operative or hospital mortality and survival data.

Outcomes data were extracted by one reviewer and checked by a second. No attempt was made to contact authors for additional data.

Methods of synthesis
Dichotomous data from RCTs were pooled in a meta-analysis (random effects) to calculate odds ratios with 95% confidence intervals (where possible). Statistical heterogeneity was assessed using $I^2$ and $X^2$.

Otherwise, individual study results were reported in a narrative summary and in tables.

Results of the review
Forty articles (6,354 patients) were included in the review. They included four RCTs, six prospective non-randomised trials, and 32 retrospective studies. Jadad quality scores of the RCTs ranged from 1 to 3 out of 5.
No statistically significant difference between gastrectomy with spleen resection or preservation was found in operative mortality (meta-analysis of two RCTs; 394 patients) and survival at five years (three RCTs; 439 patients). There was no evidence of significant heterogeneity.

No significant differences in overall complications, pancreatic fistula, anastomotic leak, perioperative mortality or overall survival at five and ten years were found in the individual RCT results.

In the six prospective lymphadenectomy trials, preservation of the spleen and pancreas was associated with fewer overall complications in two studies and fewer operative deaths in one study. Improved survival was found in patients undergoing spleen preservation in two prospective lymphadenectomy trials and with pancreas preservation in one prospective lymphadenectomy trial. Differences were non-significant or not reported in the other prospective trials.

Further results from prospective trials and retrospective studies were reported.

**Authors' conclusions**
There was no compelling evidence that splenectomy and/or distal pancreatectomy during curative intent surgery for gastric cancer benefited patients in the long-term.

**CRD commentary**
The review question and selection criteria were clearly stated. The literature searches were restricted by date, language and publication status, so some studies may have been missed. It appeared that attempts were made to limit the risk of reviewer error and bias throughout the review.

The quality of the RCTs was assessed. Although detailed results were not reported, it appeared that all had methodological limitations. The authors acknowledged the multiple limitations in the evidence, as most studies were retrospective case series. The methods used to synthesise the data appeared broadly appropriate.

Given the limited quality of the included studies, conclusions about the lack of evidence (rather than evidence of no effect) appear appropriate and are likely to be reliable.

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

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

**Research:** The authors stated that future studies (including a large ongoing RCT) may refine a set of selection criteria for patient subgroups who may benefit from splenectomy and/or distal pancreatectomy.

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