Meta-analysis of the value of somatostatin and its analogues in reducing complications associated with pancreatic surgery
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CRD summary
This review found that somatostatin and its analogues can reduce complication rates following pancreatic resectional surgery, but that they have no effect on mortality. The conclusions are likely to be reliable based on the evidence presented.

Authors' objectives
To determine the effect of somatostatin and its analogues in reducing complication rates and mortality after pancreatic resectional surgery.

Searching
MEDLINE and ISI Proceedings were searched for publications in any language; the search terms were provided. The reference lists of published papers and review articles were also checked for relevant studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for inclusion. Trials with fewer than 50 participants were excluded. The included studies were both single-centre and multi-centre.

Specific interventions included in the review
Studies of somatostatin or its analogues (octreotide, vapreotide, lanreotide) compared with placebo or controls (not defined) were eligible for inclusion. None of the included studies evaluated lanreotide. Dosages varied from 100 or 250 microg three times daily to 6 mg/day. Treatment duration was 7 or 10 days.

Participants included in the review
Studies of patients who had pancreatic resection surgery were eligible for inclusion. Participants who had pancreatic transplantation were excluded.

Outcomes assessed in the review
The primary outcomes of interest were complication rates and mortality. Total complications were the number of patients with at least one complication. Total pancreas-specific complications were defined as those suggestive of anastomotic disruption (pancreatic fistula, proven anastomotic leak, intra-abdominal collection, intra-abdominal abscess).

How were decisions on the relevance of primary studies made?
The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Two reviewers assessed study quality using the Consolidated Standards of Reporting Trials (CONSORT) criteria. For each criteria met, a point was given up to 22 points. Any disagreements were resolved through discussion.

Data extraction
Two reviewers independently extracted the data. Any disagreements were resolved through discussion. Data were extracted as 2x2 tables.

Methods of synthesis
How were the studies combined?
Pooled odds ratios (ORs) and 95% confidence intervals (CIs) were calculated using both fixed-effect (Mantel-Haenszel)
and random-effects models. Results for both were tabulated. The results obtained using a random-effects model were reported in the text and are reported in this abstract.

How were differences between studies investigated?
Statistical heterogeneity was assessed using the Q statistic. The authors conducted subgroup analyses on the type of pancreatic surgery performed, surgery for tumours, and by definition of pancreatic complication (biochemical fistula, clinical anastomotic disruption).

Results of the review
Ten RCTs (n=1,918) were included.

The studies received quality scores of between 17 and 21. Seven studies were double-blinded and placebo-controlled.

There was no significant difference in mortality rates following pancreatic surgery in patients treated with somatostatin and its analogues compared with those who received placebo or a control treatment (not defined) (OR 1.17, 95% CI: 0.70, 1.94). Somatostatin and its analogues significantly reduced the incidence of overall complications (OR 0.62, 95% CI: 0.46, 0.85) and the total number of pancreas-related complications (OR 0.56, 95% CI: 0.39, 0.81) compared with placebo or controls (not defined).

Subgroup analyses.

Somatostatin and its analogues did not significantly reduce pancreas-related complications following pancreaticoduodenectomy (OR 0.81, 95% CI: 0.52, 1.26; based on 7 studies) or distal pancreatectomy (OR 0.65, 95% CI: 0.18, 2.37; based on 3 studies), but did significantly reduce pancreatic-related complications after resection for tumours (OR 0.45, 95% CI: 0.30, 0.68; based on 4 studies). The rate of biochemical fistula after pancreatic surgery was also reduced (OR 0.45, 95% CI: 0.33, 0.62; based on 7 studies), but the rate of clinical anastomotic disruption was not (OR 0.80, 95% CI: 0.44, 1.45; based on 7 studies).

Authors' conclusions
The use of somatostatin and its analogues reduces the overall rate of post-operative complications after pancreatic resection.

CRD commentary
The inclusion criteria were well-defined in terms of the intervention, participants, outcome and study design. The authors did not restrict their search to English language papers, thus reducing the risk of language bias. While they did not restrict their search to published articles, there were no attempts to locate unpublished studies and this might have introduced publication bias. Two reviewers independently extracted the data, thereby minimising reviewer bias. The authors used standard published criteria to assess the quality of the included studies, but details of the individual criteria were not reported.

Details of the primary studies were presented, although information on participant characteristics was lacking. The results for statistical heterogeneity were not reported, although a visual overview of the forest plots suggests studies were relatively homogeneous with overlapping CIs. The authors discussed some clinical heterogeneity; however, they did not clearly describe the control groups, making it difficult to see what was being compared. Overall, the authors' conclusions seem reliable based on the evidence presented.

Implications of the review for practice and research
Practice: The authors stated that the routine use of somatostatin analogues in elective pancreatic surgery is effective.

Research: The authors did not state any implications for further research.

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