Comparison of surgical vs chemical sphincterotomy using botulinum toxin for the treatment of chronic anal fissure: a meta-analysis
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CRD summary
This review found that surgical sphincterotomy was associated with higher healing rates and less recurrence of chronic anal fissure than chemical sphincterotomy using botulinum toxin, with no differences in complications between the procedures. The reliance on four small low quality trials with inconsistent results means that the reliability of the authors' conclusions is unclear and should be interpreted with caution.

Authors' objectives
To evaluate the effectiveness of chemical sphincterotomy using botulinum toxin compared with surgical sphincterotomy for the treatment of chronic anal fissure.

Searching
PubMed, EMBASE, CINAHL and the Cochrane Library were searched, between January 1980 and December 2006, for relevant English language studies; search terms were reported. Reference lists of retrieved articles were also searched. The "related article" function was used to identify additional studies.

Study selection
Randomised controlled trials that compared surgical sphincterotomy with chemical sphincterotomy in patients for the management of chronic anal fissure were eligible for inclusion.

The outcomes assessed in the review were healing of chronic anal fissure, total side effects, headache, recurrence rates and complications. Complications were defined as conditions that developed due to either the application of botulinum toxin or those caused by surgery, which were responsible for treatment discontinuation, poor compliance or requirement for further treatment.

Participants were diagnosed using clinical tests in all included trials, although one trial also used anal manometry to diagnose chronic anal fissure. Botulinum toxin was given as local injections of doses ranging from 20 to 30 units, usually as one dose; in one trial a repeat injection was given if required.

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

Assessment of study quality
Methodological quality was assessed using inclusion criteria, randomisation, allocation concealament, blinding, stating of cross-overs, use of primary and secondary endpoints, and the use of intention-to-treat analyses. The results of the quality assessment were tabulated.

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

Data extraction
Two reviewers independently extracted data to calculate risk ratios (RRs) and corresponding 95% confidence intervals (CI) for the outcomes of interest. Any disagreements between the authors were resolved by mutual agreement.

Methods of synthesis
The pooled risk ratios and 95% confidence intervals were calculated using a fixed-effect model. The Cochran's Q-statistic was used to evaluate statistical heterogeneity across the trials. In the event of significant heterogeneity, a random-effects model was used.
Results of the review
Four trials were included in the review (n=279 patients). Sample size ranged from 38 to 111. The methodological quality of the included trials was considered to be inadequate, with unclear reporting of allocation concealment and blinding.

**Healing rate:** Anal fissure healing rates were observed to be significantly higher after surgical sphincterotomy compared with chemical sphincterotomy (RR 1.63, 95% CI 1.34 to 1.91), although there was significant heterogeneity (p<0.001).

**Recurrence rate:** Recurrence rates were also lower for surgical sphincterotomy (RR 0.35, 95% CI 0.33 to 0.38), with statistical heterogeneity (p<0.001). The authors stated "though there was significant heterogeneity among the trials, the confidence interval had a very narrow range, indicating surgical sphincterotomy was superior".

**Complications and faecal incontinence:** Treatment with surgical sphincterotomy was associated with higher rates of complications (RR 14.54, 95% CI -9.84 to -38.9; three trials; n=241 patients) and faecal incontinence (RR 6.39, 95% CI -2.37 to -15.1; four trials) compared with chemical sphincterotomy. Significant statistical heterogeneity (p<0.00001) for both complications and faecal incontinence was observed. The authors stated that "there was significant heterogeneity among trials, as indicated by a wide confidence interval range; thus, there was no significant difference" between treatments for both these outcomes.

Authors' conclusions
The use of surgical sphincterotomy was associated with higher healing rates and fewer incidences of recurrence of chronic anal fissure than chemical sphincterotomy using botulinum toxin. There were no differences in complications between the procedures.

CRD commentary
The review question was clear. Appropriate databases were searched for studies, but there were no attempts to identify unpublished studies, which meant there was a risk of publication bias. The restriction of the review to English language trials meant that there was also a risk of language bias. Steps were taken to minimise errors and bias for data extraction, but the methods applied to study selection or the assessment of methodological quality were not reported.

There was substantial heterogeneity across the results of the included trials which meant that the pooled estimates were not a reliable summary of treatment effects. The reviewers outlined causes of both methodological and clinical heterogeneity; they acknowledged the limitations of the review in terms of the inclusion of only four small trials of inadequate methodological quality.

The extensive clinical and statistical heterogeneity across the results of four small low quality trials means that the reliability of the authors' conclusions is unclear and should be interpreted with a significant degree of caution.

Implications of the review for practice and research
**Practice:** The authors stated that as long as patients are willing to accept a negligible risk of faecal incontinence, surgical sphincterotomy should be the first-line treatment for chronic anal fissure.

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

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Not stated.

Bibliographic details
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.