Transanal endorectal pull-through versus transabdominal approach for Hirschsprung's disease: a systematic review and meta-analysis
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CRD summary
This review compared two approaches to surgery for children with Hirschsprung's disease. The authors concluded that transanal endorectal pull-through was superior to a transabdominal approach for operative time, hospital stay and postoperative incontinence and constipation. High risk of bias in the included studies means that the conclusions may not be reliable.

Authors' objectives
To compare the clinical outcomes of transanal endorectal pull-through (TERPT) with the traditional transabdominal approach for the surgical treatment of Hirschsprung's disease.

Searching
The authors searched MEDLINE, EMBASE and The Cochrane Library to March 2012. Search terms were reported. No language restrictions were imposed. Reference lists of relevant articles were searched to identify additional studies. Conference abstracts were excluded.

Study selection
Randomised controlled trials (RCTs) and observational studies that compared TERPT with traditional transabdominal approaches in children with Hirschsprung's disease were eligible. Studies had to evaluate functional outcomes of surgery. Two studies that reported outcomes as functional scores rather than incidence of complications were excluded.

Included studies compared various different traditional transabdominal approaches (Swenson, Soave and Duhamel) and TERPT techniques. Mean age at operation ranged from 2.2 to 104 months and tended to be older in the traditional transabdominal approach groups.

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

Assessment of study quality
The authors did not report that they assessed study quality.

Data extraction
Odds ratios (OR) and associated 95% confidence intervals (CI) were extracted or calculated for dichotomous outcomes and mean differences (MD) for continuous outcomes.

Data were extracted by up to three reviewers independently; any disagreements were resolved by consensus.

Methods of synthesis
Pooled odds ratios were calculated using the Mantel-Haenszel method. Pooled mean differences were calculated by inverse variance meta-analysis. Statistical heterogeneity was assessed using I². The authors stated that a fixed-effect model was used where I² was less than 50% and otherwise a random-effects model was used. A subgroup analysis compared TERPT with the Soave traditional transabdominal approach technique.

Results of the review
One RCT (42 participants) and 11 observational studies (751 participants) were included: 444 patients underwent TERPT and 348 underwent traditional transabdominal approaches (authors' figures). Follow-up, where reported, ranged from 12 to 135.6 months.

In meta-analyses, TERPT was associated with shorter operative time (MD -57.8 minutes, 95% CI -83.1 to -32.6; I²=85%; six studies) and hospital stay (MD -7.1 days, 95% CI -10.9 to -3.2, I²=94%; five studies). Postoperative
incontinence (OR 0.58, 95% CI 0.37 to 0.90; I²=0%; 10 studies) and postoperative constipation (OR 0.49, 95% CI 0.30 to 0.81; I²=0%; 10 studies) were significantly lower in the TERPT group.

Subgroup analysis of TERPT versus the Soave traditional transabdominal approach showed no significant difference for constipation. Postoperative enterocolitis did not differ significantly between groups (OR 0.77, 95% CI 0.52 to 1.14; I²=38%; 10 studies).

Authors' conclusions
TERPT was superior to traditional transabdominal approach for operative time, hospital stay and postoperative incontinence and constipation but more RCTs were needed to confirm the benefits of TERPT.

CRD commentary
The review question and inclusion criteria were generally clear. The search covered a range of relevant sources but there was no attempt to locate unpublished studies and conference abstracts were specifically excluded. Publication bias was not assessed and could potentially be an issue with this type of review. Methods used in study selection were not reported. Data extraction was by multiple reviewers and this minimised risk of errors or bias. Study quality was not assessed but most included studies were observational and hence at high risk of bias.

Standard methods of meta-analysis were used. Two studies were omitted because of the way they reported outcomes; the potential impact of this on the review findings was unclear. Statistical heterogeneity was assessed and was high for operative time and hospital stay. Differences between studies were investigated by a subgroup analysis; differences in outcome definitions were reported.

As noted by the authors, the included observational studies were mostly small and retrospective and at high risk of selection bias (systematic differences between groups in factors other than surgical technique). TERPT procedures tended to be undertaken more recently than traditional transabdominal approach procedures which meant that other changes in care may have been partly responsible for the observed differences between groups. These factors mean that although the authors’ conclusions reflect the evidence presented, they may not be reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors did not state any implications for research beyond the need for more RCTs and longer follow-up.

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