Review: bowel preparation before elective colorectal surgery increases anastomotic leakage more than no preparation


How does mechanical bowel preparation (preparation and cleansing of the bowel before colorectal surgery) compare with no preparation before elective colorectal surgery?

METHODS

Data sources: Medline, Pascal Biomed, Scisearch, EMBASE/Excerpts Medica, Ulsac, Medical Editors’ Trials Amnesty, and Centre for Reviews and Dissemination database (all from inception through March 2003); Cochrane Library (Issue 3, 2003); major surgical journals; conference proceedings; contact with experts; and bibliographies of relevant articles.

Study selection and assessment: randomised controlled trials in any language that compared mechanical bowel preparation with no preparation before elective colorectal surgery. Studies were assessed for randomisation method, double blinding, and withdrawals or dropouts.

Outcomes: anastomotic leakage, wound infection, extra-abdominal septic complications, and non-septic complications.

MAIN RESULTS

7 studies (n = 1454; 720 patients had mechanical bowel preparation, and 734 had no preparation) met the selection criteria. 5 studies had follow up ranging from 7–60 days. Patients who had mechanical bowel preparation had a higher rate of anastomotic leakage than those who had no preparation (table). Mechanical bowel preparation and no bowel preparation did not differ for rates of wound infection (7 trials, 7% v 6%, p = 0.18), extra-abdominal septic complications (3 trials, 11% v 10%, p = 0.63), or non-septic complications (4 trials, 12% v 10%, p = 0.35).

CONCLUSION

Mechanical bowel preparation before elective colorectal surgery increases the rate of anastomotic leakage more than no preparation.

Mechanical bowel preparation continues to be routinely used before colorectal surgery. The procedure generally involves use of an oral purgative, which leads to copious diarrhoea. In the review by Slim et al, the solution of choice was predominantly polyethylene glycol (PEG). Preparation with PEG is not a patient friendly procedure. The requirement to drink 4 litres of PEG challenges patients’ tolerance and their willingness to comply. Use of PEG leads to frequent complaints of abdominal pain, nausea, and bloating. For these reasons, use of phospho-soda, which requires drinking only 90 ml of fluid, has become more favourable.

Nursing management to ensure ingestion of PEG can be intensive. Insertion of a nasogastric tube is sometimes required, and electrolyte imbalances must be monitored. Admitting patients 1 day early for bowel preparation represents a negative fiscal cost to the health service and interferes with the ability of patients to undertake their socially prescribed roles. Given the fiscal, social, and nursing time costs, the issue of bowel preparation is worthy of investigation.

Although mannitol, pico prep, and PEG were the solutions assessed in studies included in the review by Slim et al, 516 of the 720 patients who received bowel preparation received PEG. Because of the small numbers of patients who received mannitol (n = 102) or pico prep (n = 82), the sample sizes may be too limited to draw conclusions about their effectiveness as bowel cleansing agents.

Anastomotic leaks in colorectal surgery have catastrophic patient outcomes. The highest incidence of leaks occurs after low anterior resection. The important result of the review by Slim et al was the higher anastomotic leak rate with the use of PEG; however, specific details about the surgical procedures were not reported. 2 of the studies reviewed were first published in the 1970s, and none of the review trials assessed the use of phospho-soda, which is a commonly used bowel cleansing agent.

Mechanical bowel preparation can be safely omitted and state that extrapolation from this review into best practice would be unwise. Additional larger studies that compare the effects of different types of bowel preparation and compare bowel preparation with a genuine, no preparation condition are needed before nurses and patients can safely escape use of bowel preparation before colorectal surgery.

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Mechanical bowel preparation v no preparation before elective colorectal surgery*

<table>
<thead>
<tr>
<th>Outcomes at 7–60 days</th>
<th>Mechanical bowel preparation</th>
<th>No preparation</th>
<th>RRI (95% CI)</th>
<th>NNH (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anastomotic leakage</td>
<td>5.6%</td>
<td>3.2%</td>
<td>71% (5 to 173)</td>
<td>44 (18 to 638)</td>
</tr>
</tbody>
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*Abbreviations defined in glossary; RRI, NNH, and CI calculated from odds ratio reported in article (fixed effects model).