Rectal washout and local recurrence in rectal resection for cancer: a meta-analysis

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CRD summary
The authors concluded that rectal washout was associated with reduced local recurrence and should be routine during anterior resection for rectal cancer. The authors’ conclusions reflect the evidence presented but potential that relevant studies were missed during the search process and limited detail of study characteristics provided make the reliability of these conclusions unclear.

Authors’ objectives
To compare the effectiveness of rectal washout versus no washout for the prevention of local recurrence following anterior rectal resection for rectal cancer.

Searching
Six databases (including MEDLINE, EMBASE and Cochrane Database of Systematic Reviews) were searched from January 1960 to December 2010. There were no language restrictions. Search terms were reported.

Study selection
Eligible studies were randomised and non-randomised studies that compared rectal washout versus no washout in patients who underwent anterior rectal resection for rectal cancer. Studies had to report local recurrence rates and document rectal cancer surgery (specified as anterior resection or sphincter-sparing surgery) performed using laparoscopic or open access.

The included studies were published between 1989 and 2010. Where reported, solutions used for irrigation included formalin (1%), sodium chloride (0.9%), cetrimide (1%) and povidone-iodine (5%). Reporting of pathological- and surgery-related characteristics varied across the studies.

Two reviewers independently selected studies for inclusion; any disagreements were resolved through discussion and involvement of a third reviewer where necessary.

Assessment of study quality
Study quality was assessed by two reviewers who used a modified version of the Newcastle-Ottawa Scale for selection, comparability and outcome assessment (maximum score of 10). In this assessment scores of 4 or less indicated poor quality and scores of 5 or more indicated high quality.

Data extraction
Data (number of events) for local recurrence were extracted to calculate odds ratios and 95% confidence intervals. Authors were contacted for raw data where this was not reported in the study paper.

Data were extracted by one reviewer and checked by a second reviewer; any disagreements were resolved through discussion and involvement of a third reviewer where necessary.

Methods of synthesis
Effect estimates and 95% confidence intervals were pooled using the Mantel-Haenszel method. Both fixed-effect and random-effects models were used: where their results did not differ the fixed-effect model was presented and otherwise the random-effects model was shown. Statistical heterogeneity was assessed using the $\chi^2$ and $I^2$ statistics. Publication bias was assessed using funnel plots. Sensitivity analyses were performed in relation to study quality. Subgroup analyses were performed according to surgical characteristics (reported in paper).

Results of the review
Five non-randomised studies were included in the review (5,012 patients, range 40 to 4,600): three prospective studies (271 patients) and two retrospective studies (4,741 patients). Follow-up was reported in the text as ranging from 17 to 60 months (median 33). One trial was assessed as being poor quality (score 4). Four trials were assessed as high quality.
(two scored 5 and two scored 7). All of the pooled results reported were calculated using the random-effects model.

Rectal washout significantly reduced the risk of local recurrence compared with no rectal washout (OR 0.57, 95% CI 0.43 to 0.74; five trials; \( I^2 = 1\% \)). Similar results were found when the analysis was restricted to patients treated with a radical resection (OR 0.54, 95% CI 0.39 to 0.76; five trials; \( I^2 = 0\% \)) and patients treated by curative resection (OR 0.55, 95% CI 0.42 to 0.72; four trials; \( I^2 = 0\% \)). One trial demonstrated a similar result among patients treated by pre-operative radiotherapy but this result was of borderline statistical significance (OR 0.62, 95% CI 0.39 to 0.98).

Sensitivity analyses that included only studies with a quality score of 5 or more revealed similar findings for risks of local recurrence overall (four studies; \( I^2 = 11\% \)) and among patients treated with local radical resection (four trials; \( I^2 = 0\% \)) and curative resection (three trials; \( I^2 = 0\% \)). Results were reported fully in the paper.

No evidence of publication bias was found.

**Authors' conclusions**
Rectal washout was associated with reduced local recurrence and should be routine during anterior resection for rectal cancer.

**CRD commentary**
The review question was clear and supported by well defined inclusion criteria. Relevant electronic databases were searched but no attempts were made to locate grey literature or unpublished studies. No publication bias was shown by a funnel plot but there were fewer than 10 studies so the meaningfulness of this was limited. No language restrictions were imposed so language bias was unlikely. Efforts were made throughout the review process to minimise any reviewer error or bias. A suitable validated quality assessment tool was used and areas of methodological weakness were reported. Most of the included studies scored 5 or more out of a maximum 10 and were judged to be of high quality. Study characteristics were presented and revealed a lot of clinical diversity in relation to the irrigation method. Baseline characteristics for study populations, surgery technique and cancer pathology were not reported fully and this made it difficult to ascertain further levels of clinical and/or methodological diversity. Nevertheless, the methods of synthesis employed seemed appropriate. There was very little statistical heterogeneity but only a small number of studies could be included in the review.

The authors' conclusions reflect the evidence presented. However, potential for missed relevant studies during the search process and the limited detail of study characteristics provided make the reliability of these conclusions unclear.

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

**Practice**: The authors stated that rectal washout was easy and quick to perform with no complications and should be routine during anterior resection for rectal cancer.

**Research**: The authors stated that a randomised trial would be impractical for investigating the true effectiveness of rectal washout because it would require a sample of at least 1,400 patients with a minimum follow-up of five years.

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