CRD summary
This review evaluated use of defunctioning ileostomy or colostomy after low anterior resection in patients with rectal cancer. The authors found benefits in terms of reduced leakage and reoperation rates. The reliability of the review was potentially limited by methodological flaws and the quality of included trials was uncertain. The conclusion and recommendation for practice should be interpreted cautiously.

Authors' objectives
To evaluate the benefits of a defunctioning ileostomy/colostomy after low anterior resection in patients with rectal cancer.

Searching
PubMed, Cochrane Central Register of Controlled Trials (CENTRAL) and National Center for Biotechnology Information were searched from 1966 to 2007. Search terms were reported. Internet searches, authors' libraries, bibliographies and reference lists of retrieved articles were used to search for additional studies. There were no language restrictions.

Study selection
Retrospective studies were eligible for inclusion in the wider systematic review. For the meta-analysis, randomised controlled trials (RCTs) that compared a defunctioning stoma with no stoma following standard, low or ultra low anterior resection in patients with rectal cancer were eligible for inclusion. Eligible outcomes were morbidity and mortality (particularly, number of clinically relevant anastomotic leakages and number of reoperations due to anastomotic insufficiencies).

It appeared that three reviewers selected potentially relevant articles for initial inclusion. It is unclear how many reviewers applied the inclusion criteria for final selection.

Assessment of study quality
Trial quality was assessed on the basis of randomisation, allocation concealment, definition of outcome parameters and complications, follow-up and statistical analyses.

The authors did not state how many reviewers carried out quality assessment.

Data extraction
Data for the meta-analysis were extracted to enable calculation of odds ratios (OR) and 95% confidence intervals (CI).

The authors did not state how many reviewers carried out data extraction.

Methods of synthesis
Odds ratios and 95% CIs were pooled in a random-effects meta-analysis (DerSimonian and Laird). Statistical heterogeneity was assessed using the $I^2$ statistic. Sensitivity analysis excluded the largest trial.

Results of the review
Four RCTs (n=358) were included in the meta-analysis (one published as an abstract only). The results of the quality assessment were not reported. Twenty-six (27 reported in the abstract) retrospective studies (sample size range 70 to 2,729) were included in the wider review.
Pooled analysis showed a statistically significant reduction in anastomotic leakage when using a defunctioning stoma (OR 0.32, 95% CI 0.17 to 0.59, I² = 0%; four RCTs). There were significantly fewer reoperations associated with leakage following use of a defunctioning stoma (OR 0.27, 95% CI 0.14 to 0.51, I² = 0%; four RCTs). Perioperative mortality rates were similar between the groups (three RCTs).

When the largest trial (n=234) was removed from the analysis, a trend remained in favour of a defunctioning stoma for leakage rates and a significant difference remained for reoperation rates (p=0.01). Results from the retrospective studies were inconsistent (reported in the paper).

Authors' conclusions
There was a clear benefit in terms of lower leakage and reoperation rates in constructing a defunctioning stoma after low anterior resection in patients with rectal cancer.

CRD commentary
The review question was clear and supported by detailed inclusion criteria for studies eligible for the meta-analysis. The search strategy appeared to include some relevant data sources and measures were taken to minimise language bias. The extent to which steps were taken to minimise publication bias was unclear. The authors stated that they assessed study quality of included trials, but did not report the results. Study selection appeared to be conducted with some rigour; the number of reviewers involved in data extraction and study quality assessment was not reported. Study details were sparsely presented for the studies included in the meta-analysis. Patient characteristics were not reported. There was very little expanded description of the intervention.

Methodological concerns point to a cautious interpretation of the reliability of this review and its conclusion. The authors' recommendation for practice was not rigorously supported in the evidence presented.

Implications of the review for practice and research
Practice: The authors stated that constructing a defunctioning stoma was recommended in surgery for low rectal cancer.

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

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Record Status
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.