Laparoscopic peritoneal lavage for perforated colonic diverticulitis: a systematic review
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CRD summary
This review concluded that there were no publications of high methodological quality on laparoscopic peritoneal lavage for patients with perforated colonic diverticulitis. The published papers showed promising results with high efficacy, low mortality, low morbidity and a minimal need for a colostomy. These conclusions are appropriately cautious considering the lack of high-quality evidence available to the review.

Authors' objectives
To investigate the efficacy, morbidity and mortality of laparoscopic peritoneal lavage for patients presenting with perforated colonic diverticulitis.

Searching
PubMed, EMBASE, Web of Science, The Cochrane Library, CINAHL databases and the publisher websites ScienceDirect, LWW-journals@OVID, HighWire, SpringerLink and Wiley/Blackwell were searched for published studies in any language. Google Scholar was searched. Search terms were reported. Bibliographies of retrieved articles were examined for additional relevant studies.

Study selection
Studies of any design that used laparoscopic peritoneal lavage for patients with perforated diverticulitis were eligible for inclusion. Outcomes of interest were conversion, failure of lavage, mortality, morbidity, number of colostomies and secondary resections.

Most of the included patients were male (ratio 1.7:1). Seventy-seven per cent of patients had purulent peritonitis and approximately half were classified as American Society of Anaesthesiologists grade 2. Almost one quarter of the patients in six studies had a previous history of colonic diverticular disease. Most patients in eight studies had generalised peritonitis. Abdominal computed tomography was used in some studies. The laparoscopic procedure involved two to five trocars. Irrigant volume ranged from 3L to 25L. In some studies adhesions were left intact, in others adhesions were divided and the perforation was sought then glued or sutured. Mean operating time was 70 minutes (range 40 to 150 minutes). All patients received antibiotics. Mean hospital stay was 8.5 days (range four to 35) where reported.

Two reviewers independently screened studies for inclusion.

Assessment of study quality
Methodological quality was not assessed systematically. Studies were categorised by study design and the method of confirmation of diverticular colonic disease and length of follow-up were assessed.

Data extraction
Numbers of events were extracted for the outcomes of interest.

Two reviewers independently extracted data. Disagreements were resolved by discussion.

Methods of synthesis
The percentage of the total number of patients was calculated for each outcome.

Results of the review
Thirteen studies were included in the review (231 participants): two prospective cohort studies (n=116), nine case series (n=113) and two case reports (n=2). Mean follow-up was 48 months (four studies).
Abdominal and systemic sepsis was controlled in 95.7% of the patients. There were low rates of mortality (1.7%), morbidity (10.4%) and incidence stoma formation (1.7%).

Ten (4.3%) patients had an acute inflammatory episode. Four of five patients with pelvic abscess formation inadequately treated by laparoscopic peritoneal lavage underwent radiological drainage and one had a Hartmann’s resection. Another patient had an early recurrence that required surgery three weeks later.

Two patients died of multiorgan failure: one due to pulmonary embolism and one due to cardiogenic shock.

**Authors’ conclusions**

There were no publications of high methodological quality on laparoscopic peritoneal lavage for patients with perforated colonic diverticulitis. Published papers showed promising results, with high efficacy, low mortality, low morbidity and a minimal need for a colostomy.

**CRD commentary**

The research question was supported by inclusion criteria for participants, intervention and study design. Studies of any language were eligible for inclusion, which reduced the possibility of language bias. Only published studies were included, so publication bias was possible. No systematic assessment of study quality was performed. The included study designs were at high risk of bias. Two reviewers were involved in data extraction and study selection, which minimised risks of reviewer error and bias. The authors acknowledged that heterogeneous data had been pooled; this may have led to bias in the results.

The conclusions are supported by data presented in the review and are appropriately cautious considering the lack of high-quality evidence available to the review.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that laparoscopic peritoneal lavage as a treatment for patients with peritonitis caused by perforated diverticulitis needed to be investigated in randomised controlled trials (one such trial started in 2009).

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