



Cochrane
Library

Cochrane Database of Systematic Reviews

Abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis (Review)

Li Z, Zhao L, Cheng Y, Cheng N, Deng Y

Li Z, Zhao L, Cheng Y, Cheng N, Deng Y.

Abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis.

Cochrane Database of Systematic Reviews 2018, Issue 5. Art. No.: CD010168.

DOI: [10.1002/14651858.CD010168.pub3](https://doi.org/10.1002/14651858.CD010168.pub3).

www.cochranelibrary.com

Abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis (Review)

Copyright © 2018 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

WILEY

[Intervention Review]

Abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis

Zhe Li¹, Longshuan Zhao¹, Yao Cheng², Nansheng Cheng³, Yilei Deng¹

¹Department of Hepatopancreatobiliary Surgery, The First Affiliated Hospital of Zhengzhou University, Zhengzhou, China. ²Department of Hepatobiliary Surgery, The Second Affiliated Hospital, Chongqing Medical University, Chongqing, China. ³Department of Bile Duct Surgery, West China Hospital, Sichuan University, Chengdu, China

Contact address: Yilei Deng, Department of Hepatopancreatobiliary Surgery, The First Affiliated Hospital of Zhengzhou University, No. 1, Jianshe East Road, Zhengzhou, Henan Province, 450000, China. dengyilei_2017@sina.com.

Editorial group: Cochrane Colorectal Cancer Group.

Publication status and date: New search for studies and content updated (no change to conclusions), published in Issue 5, 2018.

Citation: Li Z, Zhao L, Cheng Y, Cheng N, Deng Y. Abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis. *Cochrane Database of Systematic Reviews* 2018, Issue 5. Art. No.: CD010168. DOI: [10.1002/14651858.CD010168.pub3](https://doi.org/10.1002/14651858.CD010168.pub3).

Copyright © 2018 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Appendectomy, the surgical removal of the appendix, is performed primarily for acute appendicitis. Patients who undergo appendectomy for complicated appendicitis, defined as gangrenous or perforated appendicitis, are more likely to suffer from postoperative complications. The routine use of abdominal drainage to reduce postoperative complications after appendectomy for complicated appendicitis is controversial.

This is an update of the review first published in 2015.

Objectives

To assess the safety and efficacy of abdominal drainage to prevent intra-peritoneal abscess after open appendectomy for complicated appendicitis.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) (the Cochrane Library, 2017, Issue 6), Ovid MEDLINE (1946 to 30 June 2017), Ovid Embase (1974 to 30 June 2017), Science Citation Index Expanded (1900 to 30 June 2017), World Health Organization International Clinical Trials Registry Platform (30 June 2017), ClinicalTrials.gov (30 June 2017) and Chinese Biomedical Literature Database (CBM) (1978 to 30 June 2017).

Selection criteria

We included all randomised controlled trials (RCTs) that compared abdominal drainage and no drainage in people undergoing emergency open appendectomy for complicated appendicitis.

Data collection and analysis

Two review authors identified the trials for inclusion, collected the data, and assessed the risk of bias independently. We performed the meta-analyses using Review Manager 5. We calculated the risk ratio (RR) for dichotomous outcomes (or a Peto odds ratio for very rare outcomes), and the mean difference (MD) for continuous outcomes with 95% confidence intervals (CI). We used GRADE to rate the quality of evidence.

Main results

We included six RCTs (521 participants), comparing abdominal drainage and no drainage in patients undergoing emergency open appendectomy for complicated appendicitis. The studies were conducted in North America, Asia and Africa. The majority of the participants had perforated appendicitis with local or general peritonitis. All participants received antibiotic regimens after open appendectomy. None of the trials was at low risk of bias.

There was insufficient evidence to determine the effects of abdominal drainage and no drainage on intra-peritoneal abscess at 14 days (RR 1.23, 95% CI 0.47 to 3.21; 5 RCTs; 453 participants; very low-quality evidence) or for wound infection at 14 days (RR 2.01, 95% CI 0.88 to 4.56; 5 RCTs; 478 participants; very low-quality evidence). The increased risk of 30-day overall complication rate (morbidity) in the drainage group was rated as very low-quality evidence (RR 6.67, 95% CI 2.13 to 20.87; 1 RCT; 90 participants). There were seven deaths in the drainage group (N = 183) compared to one in the no drainage group (N = 180), equating to an increase in the risk of 30-day mortality from 0.6% to 2.7% (Peto odds ratio (OR) 4.88, 95% CI 1.18 to 20.09; 4 RCTs; 363 participants; moderate-quality evidence). There is 'very low-quality' evidence that drainage increases hospital stay compared to the no drainage group by 2.17 days (95% CI 1.76 to 2.58; 3 RCTs; 298 participants).

Other outlined outcomes, hospital costs, pain, and quality of life, were not reported in any of the included studies.

Authors' conclusions

The quality of the current evidence is very low. The effect of abdominal drainage on the prevention of intra-peritoneal abscess or wound infection after open appendectomy is uncertain for patients with complicated appendicitis. The increased rates for overall complication rate and hospital stay for the drainage group compared to no drainage group is also subject to great uncertainty. Thus, there is no evidence for any clinical improvement by using abdominal drainage in patients undergoing open appendectomy for complicated appendicitis. The increased risk of mortality with drainage comes from eight deaths observed in just under 400 people recruited to the studies. Larger studies are needed to determine the effects of drainage on morbidity and mortality outcomes more reliably.

PLAIN LANGUAGE SUMMARY

Drain use after an open appendectomy for complicated appendicitis

We asked

Is drainage able to reduce the incidence of intra-peritoneal abscess (a localised collection of pus in the abdomen or pelvis) after an open appendectomy (removal of the appendix through a large incision in the lower abdomen, known as laparotomy) for complicated appendicitis?

Background

Appendicitis refers to inflammation of the appendix. Appendectomy, the surgical removal of the appendix, is performed primarily in individuals who have acute appendicitis. Individuals undergoing an appendectomy for complicated appendicitis, which is defined as gangrenous (soft-tissue death) or perforated (burst) appendicitis, are more likely to suffer from postoperative complications. The routine placement of a surgical drain to prevent intra-peritoneal abscess after an appendectomy for complicated appendicitis is controversial and has been questioned.

Study characteristics

We searched for all relevant studies up to 30 June 2017.

We identified six clinical studies involving a total of 521 participants. All six studies compared drain use versus no drain use in individuals having an emergency open appendectomy for complicated appendicitis. Studies were conducted in the USA, India, Kenya, Pakistan, and Turkey. The age of the individuals in the trials ranged from 0 years to 82 years.

Key results

The analyses were unable to show a difference in the number of individuals with intra-peritoneal abscess or wound infection when comparing drain use with no drain use. The death rate was higher in the drainage group than in the no drainage group. The hospital stay was longer (about two days - an 43.5% increase on an 'average' stay) in the drain group than in the no drain group. None of the studies reported the costs, pain, and quality of life. Overall, there is no evidence for any clinical improvement by using abdominal drainage in individuals undergoing open appendectomy for complicated appendicitis.

Quality of the evidence

All of the included studies had shortcomings in terms of methodological quality or reporting of outcomes. Overall, the quality of the current evidence is judged to be very low.