



Review

Is laparoscopic appendectomy feasible for complicated appendicitis? A systematic review and meta-analysis



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HIGHLIGHTS

- LA has been proved to be a safe alternative to OA in uncomplicated appendicitis.
- The feasibility of LA for complicated appendicitis has not been conclusively determined.
- This reviews aims to assess the feasibility and safety of laparoscopic appendectomy for complicated appendicitis.
- LA is feasible and safe for complicated appendicitis.

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ABSTRACT

Background: laparoscopic appendectomy(LA) has proved to be a safe alternative to open appendectomy(OA) in uncomplicated appendicitis; however, the feasibility of LA for complicated appendicitis(CA) has not been conclusively determined.

Objectives: To assess the feasibility and safety of LA for CA through a systematic review and meta-analysis.

Methods: A literature search in PubMed, Embase, Cochrane Library, and web of Science was performed for eligible studies published from the inception of the databases to January 2016. All studies comparing LA and OA for CA were reviewed. After literature selection, data extraction and quality assessment were performed by two reviewers independently, and meta-analysis was conducted using Revman software, version 5.2.

Results: Two randomized controlled trials (RCTs) and 14 retrospective cohort studies(RCSs) were finally identified. Our meta-analysis showed that LA for CA could reduce the rate of surgical site infections (SSIs) (OR = 0.28; 95% CI: 0.25 to 0.31, $P < 0.00001$), but LA did not increase the rate of postoperative intra-abdominal abscess(IAA) (OR = 0.79; 95% CI: 0.45 to 1.34, $P = 0.40$). The results showed that the operating time in the LA groups was much longer than that in the OA groups (WMD = 13.78, 95% CI: 8.99 to 18.57, $P < 0.00001$). However, the length of hospital stays in the LA groups were significantly shorter than those in the OA groups (WMD = -2.47, 95%CI: -3.75 to -1.19, $P < 0.0002$), and the time until oral intake(TTOI) was much earlier in the LA groups than in the OA groups (WMD = -0.88, 95% CI: -1.20 to -0.55, $P < 0.00001$). No significant difference was observed in the times of postoperative analgesia between the two groups($P > 0.05$).

Conclusion: LA was feasible and safe for complicated appendicitis, and it not only could shorten the hospital stays and the time until oral intake, but it could also reduce the risk of surgical site infection.

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1. Introduction

Acute appendicitis, which is one of the common causes of acute abdominal pain, is an indication for emergency surgical procedures, with an annual incidence of 250,000 patients in the US and 50,000 patients in the UK [1]. Although the ideas that appendicitis can be resolved without surgery has attracted much support [2–4],

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appendectomy has remained the standard approach for the treatment of most types of appendicitis [5,6]; however, the question of the best operative approach has attracted consistent controversy. Since 1983, after the initial description by Semm [7], laparoscopic appendectomy(LA) has been shown to offer superior benefits to open appendectomy(OA), and it has been used for various types of appendicitis. Faster recovery, reduced the rates of surgical site infections (SSIs), a quicker return to work, etc., have been the main advantages demonstrated by some studies [8–10].

However, the controversy between LA and OA for CA has persisted [11,12], although a systematic review based on randomized controlled trials (RCTs) showed that LA was a safe alternative to OA in uncomplicated appendicitis [13]. Fukami et al. [14–16] concluded that LA for perforated appendicitis was a safe procedure and had significant clinical advantages over conventional surgery, but the rates of postoperative intra-abdominal abscess(IAA) formation seemed higher in the LA groups [17]. Several trials have

been conducted to prove the efficacy of LA for CA, yet the sample sizes and types of studies have not been sufficient to produce reliable evidence, and Marjides' study was based only on retrospective reviews [18]. Because the feasibility of LA compared to OA for CA has not been conclusively determined, we conducted an up-to-date systematic review to provide the current best evidence on this topic.

2. Methods

2.1. Eligibility criteria and study selection

The studies comparing LA and OA for CA were performed without restrictions regarding and publication type. Only peer-reviewed articles with full text available were included. CA included perforated appendicitis and gangrenous appendicitis with or without intraabdominal abscess. Studies comparing LA and OA

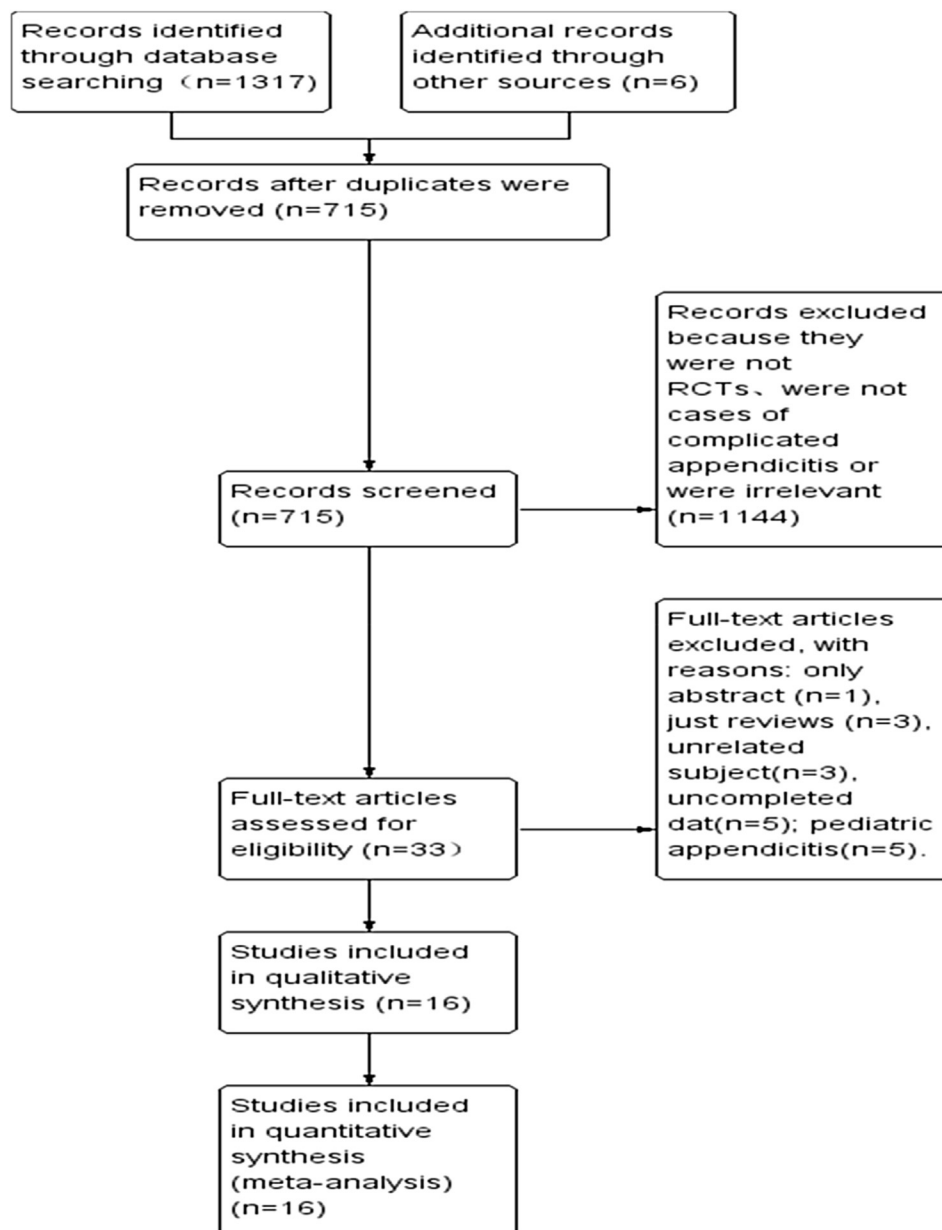


Fig. 1. Study flow diagram, inclusions and exclusions following the PRISMA statement.

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