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Review

Meta-analysis of randomized trials on single-incision laparoscopic versus conventional laparoscopic appendectomy

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Single-access;
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SILS;
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Abstract

BACKGROUND: Single-incision laparoscopic appendectomy has emerged as a less invasive alternative to conventional laparoscopic surgery. High-quality relevant evidence is limited.

METHODS: A systematic review of electronic information sources was undertaken, with the objective of identifying randomized trials that compared single-incision with conventional laparoscopic appendectomy. Outcome measures included 30-day morbidity, abdominal abscess, wound infection, open conversion, reoperation, operative time, length of hospital stay, and postoperative pain. Fixed-effects and random-effects models were used to calculate combined overall effect sizes of pooled data. Data are presented as odds ratios or weighted mean differences with 95% confidence intervals (CIs).

RESULTS: Five randomized trials were identified, with a total of 746 patients. Thirty-day morbidity (9.6% vs 8.6%; odds ratio, 1.14; 95% CI, .69 to 1.89) and wound infection rates were similar between single-incision and conventional laparoscopy (4.0% vs 4.8%; odds ratio, .83; 95% CI, .41 to 1.68), whereas the duration of surgery was longer in the single-incision group (46.3 vs 40.7 minutes; weighted mean difference, 6.01; 95% CI, 2.26 to 9.76). Available data were not adequately robust to reach conclusions regarding the remaining outcome measures.

CONCLUSIONS: Similar postoperative morbidity and wound infection rates for single-incision and conventional laparoscopic appendectomy are supported by the current literature, but single-incision surgery requires longer operative time.

Laparoscopic surgery through a single incision has evolved with the objectives of minimizing surgical trauma, reducing postoperative pain, shortening convalescence, and providing improved cosmesis. Recent meta-analyses of

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single-incision laparoscopic cholecystectomy have demonstrated similar complication rates to conventional laparoscopy, but they have failed to provide uniform results regarding pain.[1,2] Emerging evidence suggests that the appealing idea of minimizing surgical trauma must be weighed against associated direct and indirect risks.[3] A systematic review of single-incision laparoscopic cholecystectomy has demonstrated increased risk for common bile duct injuries compared with historic complication rates of conventional cholecystectomy.[4]

Evidence demonstrates clear superiority of laparoscopic appendectomy over open surgery in terms of wound-related complications, although conflicting data suggest longer operative time for the laparoscopic approach.[5,6] Similar operative morbidity for open and laparoscopic appendectomy has rendered the latter an acceptable alternative. Insufficient high-quality data on single-incision laparoscopic appendectomy exist; nevertheless, many institutions have used the single-incision method outside a frame of randomization.[7] A meta-analysis by the Cochrane Collaboration in 2011 could not identify any randomized studies comparing single-incision with conventional laparoscopic appendectomy.[8]

The aim of the present meta-analysis was to compare outcomes of single-incision laparoscopic appendectomy with those of conventional laparoscopic appendectomy, as expressed by the incidence of postoperative complications, the need for conversion to open surgery, duration of surgery, reoperation rate, overall cost, postoperative pain, and time to resume to normal diet.

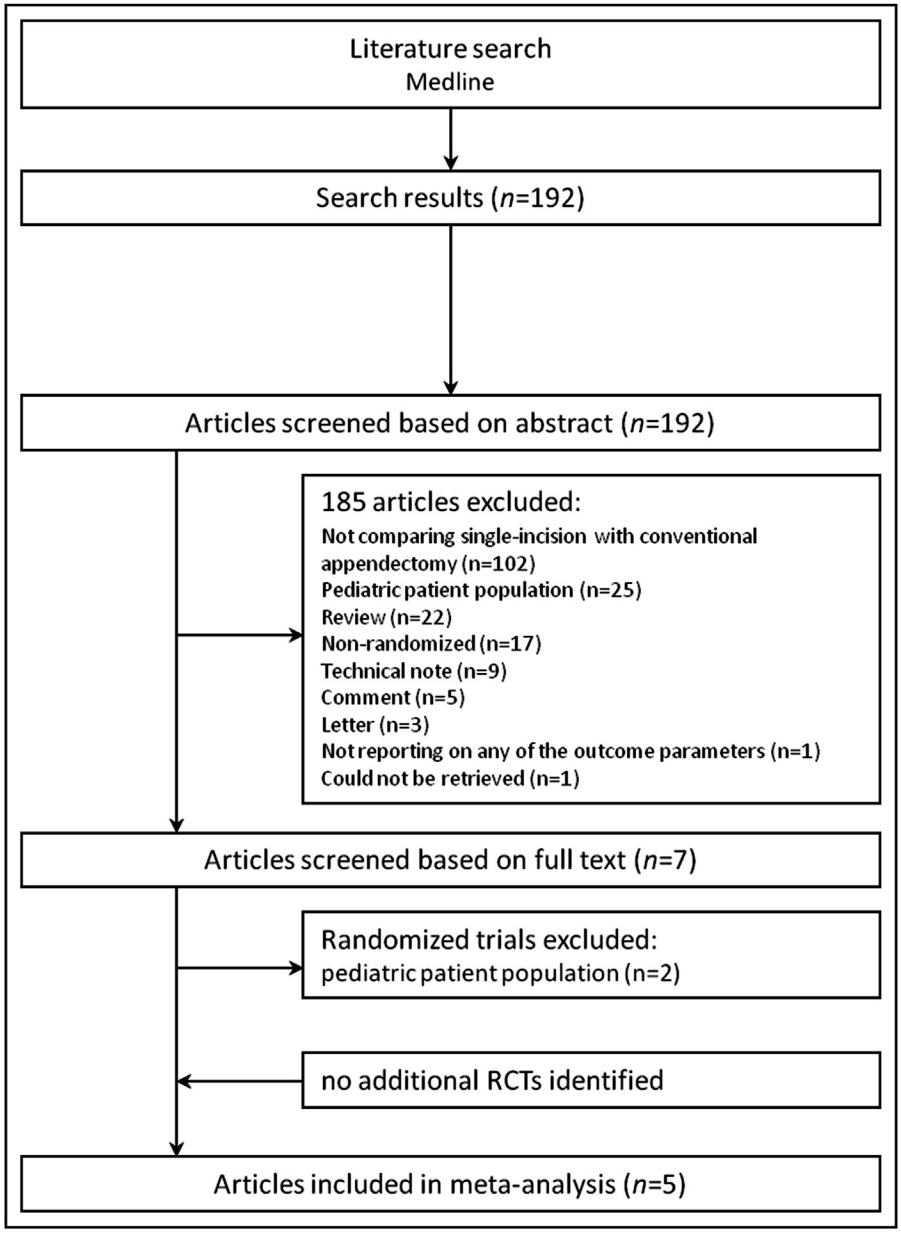

Figure 1 Flow diagram of search history. RCT = randomized controlled trial.