

INPLASY PROTOCOL

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None declared.

Enhanced recovery after surgery pathways for patients undergoing laparoscopic appendectomy- a systematic review and meta-analysis

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Review question / Objective: Does implementing enhanced recovery after surgery pathways improve outcomes in adult patients undergoing laparoscopic appendectomy when compared to conventional pathways?

Condition being studied: Adult patients (more than 18 years) with acute appendicitis undergoing laparoscopic appendectomy.

Information sources: We will search all electronic databases. In published articles where outcome details appear incomplete, the corresponding author will be contacted; the details will be sought. If not available, that outcome will be excluded from analysis.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 01 August 2022 and was last updated on 01 August 2022 (registration number INPLASY202280005).

INTRODUCTION

Review question / Objective: Does implementing enhanced recovery after surgery pathways improve outcomes in adult patients undergoing laparoscopic appendectomy when compared to conventional pathways?

Rationale: Enhanced recovery after surgery (ERAS) pathways have been utilized in several surgeries including laparoscopic appendectomy (LA). Several studies have concluded that using ERAS pathways for LA leads to lesser length of stay, early discharge, lesser readmission rates, early commencement of orals postoperatively, and better patient satisfaction. This

systematic review and meta-analysis intends to compare the efficacy and advantages of implementing ERAS pathways versus conventional pathways in adult patients undergoing LA.

Condition being studied: Adult patients (more than 18 years) with acute appendicitis undergoing laparoscopic appendectomy.

METHODS

Search strategy: Embase, PubMed/Medline, Cochrane Library.

Participant or population: Adult patients (more than 18 years), with acute appendicitis, who underwent laparoscopic appendectomy.

Intervention: Implementation of various pathways of Enhanced Recovery After Surgery (ERAS).

Comparator: Adult patients with acute appendicitis, who underwent laparoscopic appendectomy with conventional pathways.

Study designs to be included: Randomized-controlled trials, Analytical retrospective studies.

Eligibility criteria: Adult patients (more than 18 years), with acute appendicitis, who underwent laparoscopic appendectomy.

Information sources: We will search all electronic databases. In published articles where outcome details appear incomplete, the corresponding author will be contacted and the details will be sought. If not available, that outcome will be excluded from analysis.

Main outcome(s): The main outcomes will be: Operative time, the timing of oral feeds, length of stay (LOS), readmission, and surgical site infection (SSI).

Additional outcome(s): The analysis of intraoperative and postoperative ERAS pathways.

Data management: The outcome details will be entered in a Microsoft Excel spreadsheet prior to analysis.

Quality assessment / Risk of bias analysis: The risk of bias within the trials will be done according to ROB 2.

Strategy of data synthesis: We will use the Mantel-Haenszel method to analyze dichotomous variables and the risk ratio with the corresponding 95% confidence interval (CI) for the effect. For continuous variables, the Inverse Variance method will be used and the mean difference (MD) with the corresponding 95% CI will be calculated for units-unified continuous outcomes. All the data will be analyzed with a random effect model. We will evaluate the heterogeneity between studies via the I² statistic which was defined as: low (25%-49%), moderate (50%-74%), and high (> 75%) levels. All statistical analyses will be performed using Review Manager version 5.4.1 (Cochrane Collaboration, Software Update, Oxford, UK), and a P value of < 0.05 was considered statistically significant.

Subgroup analysis: In case of a need for subgroup analysis, we will use the Mantel-Haenszel method to analyze dichotomous variables and the risk ratio with the corresponding 95% confidence interval (CI) for the effect. For continuous variables, the Inverse Variance method will be used and the mean difference (MD) with the corresponding 95% CI will be calculated for units-unified continuous outcomes.

Sensitivity analysis: The results will be compared by the random effects model and fixed effects model, and the reliability of the combined results will eventually be analyzed according to the consistency degree of the results. When $P > 0.01$ and $I^2 < 50\%$, the fixed effects model will be used and when $P \leq 50\%$, the random effects model will be used for meta-analysis. A funnel plot will be constructed to determine if there was a publication bias in the studies that fulfilled the inclusion criteria for a quantitative review.

Language restriction: The language will be restricted to English.

Country(ies) involved: Oman.

Keywords: Enhanced Recovery After Surgery, Fast-track Surgery, Laparoscopic Appendectomy, Laparoscopic Appendectomy, Perioperative Period.

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