

INPLASY PROTOCOL

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None declared.

Low ligation plus high dissection versus high ligation of the inferior mesenteric artery in sigmoid colon and rectal cancer surgery: A meta-analysis

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Review question / Objective: P: Surgery for rectal and sigmoid colon cancers; I: Low ligation plus high dissection of the inferior mesenteric artery; C: High ligation of the inferior mesenteric artery; O: Postoperative morbidity, intraoperative indices, postoperative recovery, and oncologic outcomes.

Condition being studied: Whether high or low ligation of the inferior mesenteric artery (IMA) is optimal for rectal and sigmoid colon cancers is controversial. Several meta-analyses have compared low and high ligations for superiority in reducing surgical complications and noninferiority in oncologic outcomes. However, the studies have been heterogeneous and the level of lymph node clearance has been poorly defined. Because D3 lymph node dissection has been nonuniform in the included studies, perioperative and oncological outcomes could not be precisely accessed through meta-analysis.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 September 2021 and was last updated on 10 September 2021 (registration number INPLASY202190029).

INTRODUCTION

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METHODS

Participant or population: Participants with comparison of high and low ligation of the IMA during curative resection of sigmoid colon or rectal cancer, regardless of the surgical approach (open, laparoscopic, or robotic surgery).

Intervention: Low ligation plus high dissection of the inferior mesenteric artery.

Comparator: High ligation of the inferior mesenteric artery.

Study designs to be included: RCT and nonrandomized clinical studies.

Eligibility criteria: The inclusion criteria of our study were as follows: (1) human participants with comparison of high and low ligation of the IMA during curative resection of sigmoid colon or rectal cancer, regardless of the surgical approach (open, laparoscopic, or robotic surgery); and (2) reported at least one of the outcome measures mentioned below. In cases of duplicate articles, only the latest published version was included. The exclusion criteria of this study were as follows: (1) studies without a control group; and (2) surgical procedures involving only low ligation of the IMA without D3 lymph node dissection (high dissection).

Information sources: PubMed, MEDLINE, and EMBASE databases.

Main outcome(s): Postoperative morbidity outcomes especially anastomotic leakage (AL).

Additional outcome(s): Postoperative morbidity outcomes included anastomotic stenosis, postoperative ileus, postoperative urinary dysfunction, surgical site infection (SSI), and overall complications. Intraoperative indices included intraoperative blood loss, operative time, and conversion rate. Postoperative recovery outcomes included time required for bowel function recovery and length of hospital stay (LOS). Survival and recurrence outcomes included 5-year overall survival (OS) rate, 5-year disease-free survival (DFS) rate for patients at all stages, as well as for stage III patients only. Furthermore, systemic and local recurrence rates were included in this category.

Quality assessment / Risk of bias analysis: The Newcastle–Ottawa Scale (NOS) was used to assess the quality of nonrandomized clinical studies.⁽¹²⁾ Studies were judged based on patient selection, exposure ascertainment, group comparability, and patient outcomes. The Jadad scoring system was used to assess the bias risk of RCTs.⁽¹³⁾ This scoring system is based on three specific items: randomization, blinding, and withdrawals or dropouts.

Strategy of data synthesis: Statistical analysis was performed using the statistical software Review Manager (RevMan) Version 5.4. (The Cochrane Collaboration, The Nordic Cochrane Centre, Copenhagen, 2020).

Subgroup analysis: RCT and nonrandomized clinical studies.

Sensitivity analysis: The studies with low quality are recalculated the pooled OR for the primary end point (AL) in the remaining studies.

Country(ies) involved: Taiwan.

Keywords: high ligation, low ligation with high dissection, inferior mesenteric artery, sigmoid colon and rectal cancers.

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