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Comparing efficacy and safety of transanal total mesorectal excision and laparoscopic total mesorectal excision for middle and low rectal cancer

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ADMINISTRATIVE INFORMATION

Support - N/A.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 May 2024 and was last updated on 23 May 2024.

INTRODUCTION

Review question / Objective The aim of this systematic review is to compare the efficacy and safety of transanal total mesorectal excision (TaTME) and laparoscopic total mesorectal excision (LaTME) in patients with middle and low rectal cancer. To this end, the proposed systematic review will address the following question: Which is the best choice to reduce positive rate of CRM, R0 resection and incidence of conversion to open surgery in patients with middle and low rectal cancer, transanal total mesorectal excision (TaTME) and laparoscopic total mesorectal excision (LaTME)?To compare the efficacy and safety of transanal total mesorectal excision (TaTME) and laparoscopic total mesorectal excision (LaTME) in patients with middle and low rectal cancer.

Condition being studied Positive rate of circumferential resection margin (CRM), R0 resection rate, completeness of mesorectal excision (ME), conversion to open surgery and postoperative complications.

METHODS

Participant or population Patients diagnosed with middle and low rectal cancer, without limits regarding age, race or country.

Intervention None.

Comparator TaTME in the experimental group and LaTME in the control group.

Study designs to be included Randomised controlled trials and retrospective studies.

Eligibility criteria A total of 22 studies (3 randomised controlled trials and 19 retrospective studies) were included in the present paper.

Information sources A comprehensive search was conducted in the PubMed, Embase and Cochrane databases.

Main outcome(s) The primary outcomes of the study were the positive rate of CRM, R0 resection rate and completeness of ME.

Additional outcome(s) Secondary outcomes included the conversion to open surgery, postoperative complications and 30-day mortality.

Data management Two literature evaluators searched the collected literature, conducted data extraction, evaluated the risk of bias according to the set criteria for inclusion and exclusion and checked the consistency of the relevant literature. In case of a disagreement, the third party with a higher professional title made the final judgment. The extracted data included basic information, study content, the number of participants and the observation indicators of the included literature. By contacting the authors via email, the missing data in the article were also obtained.

Quality assessment / Risk of bias analysis Two people separately assessed the methodological quality of the included literature using the Newcastle–Ottawa Scale (NOS) for observational studies and Cochrane's tool for randomised studies. The cohort studies were evaluated using a method comprising three main domains and eight items. These domains included the selection of study participants, comparability and the assessment of exposure/outcome. The NOS, which employs a semi-quantitative approach with a star system for evaluation, was used to assess the quality of the included studies. With the exception of the comparability domain, which could be assigned a maximum of two stars, the other items received a maximum of one star each. The total score ranged from 0 to 9 stars, with higher scores indicating a higher study quality. Cochrane's tool, which includes seven indicators (e.g. the generation of random sequences and selective publication), was used to evaluate each item individually for the included studies. In cases where disagreements persisted, a third reviewer was involved as an adjudicator to reach a consensus.

Strategy of data synthesis The RevMan 5.3 software was used to implement the meta-analysis. The basic steps were as follows: (1) a chi-square test was conducted to determine whether there was heterogeneity among the results of the included relevant literature, and if the result was positive (I2 > 50%, p 0.1), the possible sources of the heterogeneity were tentatively analysed; (2) if there was no clinical heterogeneity, the random effects model could be used to conduct the analysis; (3) if heterogeneity among the results was very small (I2 50%, p 0.1), the combined effect size was calculated using the fixed effect model; and (4) if there was significant clinical heterogeneity between the studies, a simple explanatory analysis could be conducted as a follow-up.

Subgroup analysis n/a.

Sensitivity analysis The count data were mainly described by the odds ratio (OR) and its corresponding 95% confidence interval (CI). Sensitivity analyses were performed to explore potential sources of heterogeneity and assess the reliability of the results. It was found that removing any one study did not significantly change the outcome of the combination, suggesting a stability of results. In these analyses, the authors repeated the primary analysis separately for each outcome using both random-effect and fixed-effect models. This approach allowed the present authors to examine the impact of different modelling assumptions on their findings and ensured the robustness of their conclusions. The funnel plot method was used to examine potential publication bias in terms of postoperative complications.

Country(ies) involved China.

Keywords rectal cancer; transanal; laparoscopic; total mesorectal excision; meta-analysis.

Contributions of each author

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