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INPLASY

Meta-analysis of the incidence and risk factors of postoperative urinary retention in patients with rectal cancer

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ADMINISTRATIVE INFORMATION

Support - No support.

Review stage at the time of initial registration - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY2026110013

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 5 November 2026 and was last updated on 5 November 2026.

INTRODUCTION

Review question / Objective Using the PICOS framework. Participants: adult patients aged ≥18 years with pathologically-confirmed rectal cancer undergoing radical rectal cancer surgery. Exposure: postoperative status after radical rectal cancer surgery. Comparator: patients without postoperative urinary retention. Outcomes: pooled incidence of postoperative urinary retention (POUR) and relevant risk factors reported by odds ratio (OR) and 95% confidence interval(95%CI). Study design: observational studies including cohort studies and case-control studies. This review aims to synthesize the pooled incidence of POUR and identify its risk factors, so as to provide evidence-based references for peri-operative nursing for rectal cancer patients.

Rationale Rectal cancer is one of the most common malignant tumors of digestive tract. Postoperative urinary retention (POUR) is a frequent complication after radical rectal cancer surgery, which may increase patients' suffering, urinary tract infection risk and prolong hospital stay. Reported incidence of POUR varied greatly across existing studies, and conclusions on risk factors remain inconsistent. Previous meta-analyses mixed colon and rectal cancer patients. Given the anatomical differences between colon and rectum, their postoperative bladder dysfunction cannot be generalized. This review only focuses on rectal cancer patients, which can generate more homogeneous evidence to support targeted nursing interventions for POUR prevention.

Condition being studied Rectal cancer is a digestive malignant tumor treated mainly by radical surgery. Postoperative urinary retention (POUR) refers to inability to spontaneous micturition or significantly elevated post-void residual urine volume after rectal cancer operation, which may require re-catheterization or intermittent catheterization. It is closely associated with pelvic

autonomic nerve injury, surgical approaches, patient-related characteristics and peri-operative management.

METHODS

Search strategy English search terms: rectal cancer, rectal carcinoma, laparoscopic rectal resection, low rectal cancer, postoperative urinary retention, POUR, dysuria, voiding dysfunction, incidence, prevalence, risk factor, associated factor, predictive factor.
PubMed search strategy:#1 (Rectal Neoplasms[MeSH Terms]) OR (rectal cancer) OR (rectal carcinoma) OR (laparoscopic rectal resection) OR (laparoscopic radical rectectomy) OR (low rectal cancer)
#2 (Urinary Retention[MeSH Terms]) OR (postoperative urinary retention) OR (POUR) OR (dysuria) OR (voiding dysfunction) OR (catheter removal urinary retention)
Chinese search terms：直肠癌、直肠肿瘤、直肠恶性肿瘤，尿潴留、术后尿潴留、排尿困难、排尿障碍，发生率、患病率、危险因素、影响因素、相关因素。.

Participant or population Adult patients aged ≥18 years with pathologically confirmed rectal cancer who underwent radical rectal cancer surgery.

Intervention Exposure: status after radical rectal cancer surgery, focusing on the occurrence of postoperative urinary retention.

Comparator Comparator: patients without postoperative urinary retention after rectal cancer surgery.

Study designs to be included Observational studies, including prospective cohort studies, retrospective cohort studies and case-control studies. Only Chinese and English studies are included.

Eligibility criteria Inclusion criteria: (1) Participants: adult patients ≥18 years old with pathologically confirmed rectal cancer undergoing radical rectal cancer surgery. (2) Outcomes: reporting the incidence of postoperative urinary retention or providing multivariate analysis results (OR and 95%CI) of risk factors. (3) Study design: cohort or case-control studies. (4) Language: Chinese or English.
Exclusion criteria: (1) Duplicate publications. (2) Reviews, case reports and conference abstracts. (3) Unclear definition of postoperative urinary retention. (4) Unable to obtain full text or valid extractable data.

Information sources Electronic databases: PubMed, Cochrane Library, Embase, Scopus,Web of Science, CNKI, Wanfang, VIP and CBM. The retrieval time is from database establishment to September2026.

Main outcome(s) Pooled incidence of postoperative urinary retention (POUR) after radical rectal cancer surgery. Subgroup analysis will be conducted according to sample size, region and diagnostic criteria ofPOUR.

Additional outcome(s) Secondary outcome: risk factors associated with POUR, expressed by odds ratio (OR) and 95% confidenceinterval.

Data management Two independent reviewers screened literature and extracted data. Disagreements were resolved by discussion or consultation with a third reviewer. Data were recorded in Excelspreadsheet.

Quality assessment / Risk of bias analysis The Newcastle-Ottawa Scale (NOS) was used to evaluate the quality of included observational studies. The total score ranges from 0 to 9. Studies with ≥7 points were regarded as high quality, 4–6 points as moderate quality, and ≤3 points as low quality.

Strategy of data synthesis Pooled incidence and adjusted OR were calculated. Heterogeneity was assessed by I^2 statistic. Fixed-effects model was used when $I^2 < 50\%$, otherwise random-effects model. Sensitivity analysis and subgroup analysis were performed. Publication bias was assessed by funnel plot and Egger's test if ≥10 studies included. Analyses were performed by RevMan 5.4 and Rsoftware.

Subgroup analysis Subgroup analyses were conducted by sample size, study region and diagnostic criteria of postoperative urinaryretention.

Sensitivity analysis Sensitivity analysis was performed by omitting one study at a time to test the stability of pooled results.

Language restriction Chinese and English only.

Country(ies) involved China.

Other relevant information None

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Keywords rectal cancer; postoperative urinary retention; incidence; risk factors; meta-analysis.

Dissemination plans The results will be submitted to a peer-reviewed journal for publication.

Contributions of each author

Author 1 - Yu Huan - Drafted the manuscript, designed the review, screened literature, extracted data.
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Author 3 - Li Yaqian - Performed statistical analysis, interpreted the results.
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