

INPLASY

Kidney Sparing Surgery versus Radical Nephroureterectomy in Upper Tract Urothelial Carcinoma: A Meta-analysis and Systematic Review

INPLASY202450051

doi: 10.37766/inplasy2024.5.0051

Received: 11 May 2024

Published: 11 May 2024

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Piloting of the study selection process.

Conflicts of interest - The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

INPLASY registration number: INPLASY202450051

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 May 2024 and was last updated on 11 May 2024.

INTRODUCTION

Review question / Objective Patients with upper tract urothelial carcinoma (UTUC) (P) undergoing kidney-sparing surgery (KSS) (I) or radical nephroureterectomy (RNU) (C) to compare oncological and renal function outcomes (O).

Condition being studied Radical nephroureterectomy (RNU) with bladder cuff excision is still considered the gold standard treatment for UTUC. However, RNU has a significant and enduring detrimental impact on renal function, which puts the patient at risk of chronic kidney disease (CKD) and related sequelae, particular in patients with impaired renal function. Kidney-sparing surgery (KSS) has been proposed as an alternative to RNU for the treatment of selected cases of UTUC, which

include ureteroscopy; percutaneous access; and segmental ureterectomy (SU). However, the safety and efficacy of KSS are still controversial in some literature, the aim of this study is to perform a systematic review and meta-analysis on the oncologic and renal function outcomes between KSS and RNU for patients with UTUC.

METHODS

Participant or population Patients with UTUC undergoing KSS or RNU to compare oncological and renal function outcomes.

Intervention The experimental intervention will be KSS including: 1. Segmental ureterectomy 2. Endoscopic management of UTUC using either ureteroscopic or percutaneous approach with laser technology.

Comparator Nephroureterectomy with bladder cuff excision.

Study designs to be included Randomised controlled trials, comparative prospective or retrospective studies. Non-comparative studies (for example, single arm case series) will be excluded RCT.

Eligibility criteria The inclusion criteria were: (1) Patients diagnosed with non-metastatic upper tract urothelial carcinoma; (2) The intervention group included only patients treated with ureteroscopic or percutaneous surgery, SU or distal ureterectomy; (3) The control group included only patients treated with RNU; (4) The study reported at least one of the following outcomes: overall survival (OS), cancer-specific survival (CSS), recurrence-free survival (RFS), intravesical RFS (IVRFS), metastasis-free survival (MFS) , and changes in estimated glomerular filtration rate (eGFR) related to surgery.

The exclusion criteria were: (1) Single-arm studies; (2) Metastatic UTUC; (3) Adolescents (under 18 years of age).

Information sources Pubmed, Embase and Web of Science.

Main outcome(s) Overall survival (OS), Cancer-specific survival (CSS).

Additional outcome(s) Recurrence-free survival (RFS), Metastasis-free survival (MFS).

Quality assessment / Risk of bias analysis Risk of bias RCTs will be assessed by using the recommended tool in the Cochrane Handbook for Systematic Reviews of Interventions. This includes the assessment of random sequence generation; allocation concealment; blinding of participants and personnel; blinding of outcome assessment; incomplete outcome data; selective reporting; and other sources of bias. Comparative prospective or retrospective studies were using the Newcastle-Ottawa Scale (NOS).

Strategy of data synthesis Meta-analysis will be performed if two or more studies were reporting the same outcome. Overall and cancer specific survival, and recurrence rate will be pooled using the Cochran-Mantel-Haenszel Method with the random effect model and reported as odds ratio (OR), 95% confidence interval (CI), and p-value. Study heterogeneity will be assessed utilizing the I^2 value. Considerable heterogeneity will be defined as an I^2 value between 75% and 100%.

Significance will be set at p-value <0.05 (two tails) and 95% CI.

Subgroup analysis If there are sufficient data, subgroup analysis will be conducted to explore potential heterogeneity based on age, hydronephrosis, tumor location, stage, grade, size and focality.

Sensitivity analysis Sensitivity analysis was performed using Stata 17 software.

Language restriction The research was focused on English language studies.

Country(ies) involved China.

Keywords upper tract urothelial carcinoma, kidney-sparing surgery, segmental ureterectomy, endoscopic management, survival outcomes, renal function, Meta-analysis.

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