Systematic review of perioperative and quality-of-life outcomes following surgical management of localised renal cancer


CRD summary
This review concluded that partial nephrectomy provided significantly better preservation of renal function compared with radical nephrectomy in renal cell carcinoma. The authors' conclusions do not fully reflect the results of the review and may not be reliable due to the poor quality of the evidence and discrepancies in the reporting.

Authors' objectives
To compare perioperative and quality of life outcomes for all interventions relevant to the management of localised renal cell carcinoma.

Searching
MEDLINE and EMBASE were searched from inception to January 2012. The Cochrane Library, Web of Science with conference proceedings and meeting abstracts of the American Society of Clinical Oncology were searched. Reference lists of relevant papers were checked. There were no language restrictions.

Study selection
Randomised controlled trials (RCTs), quasi-randomised controlled trials, non-randomised studies, prospective observational studies with control groups, retrospective matched-pair studies and comparative data from well-defined registries/databases were included. Patients had to have localised renal cell carcinoma stage T1a to T2N0M0 confirmed by computed tomography or magnetic resonance imaging. Eligible interventions were robotic, laparoscopic or hand-assisted laparoscopic surgery for partial or radical nephrectomy, laparoscopic cryoablation, laparoscopic radiofrequency ablation and laparoscopic high-intensity focused ultrasound compared with any other intervention or no intervention. Complete regional (extended) lymphadenectomy, partial regional (limited) lymphadenectomy and adrenalectomy were included if they were conducted alongside nephrectomy. Outcome measures were perioperative including surgical site infection and pneumonia (full details reported in the paper) and quality of life.

Where reported average participant age ranged from 48.7 to 76.1 years. Average study follow-up ranged from 7.1 to 151 months.

Two reviewers independently selected studies. Disagreements were resolved by discussion or by consulting a third reviewer.

Assessment of study quality
Risk of bias was assessed using the Cochrane Collaboration risk of bias tool for RCTs. The tool was modified for non-randomised studies by adding items to assess confounding. The four most important potential confounders for the review outcomes were identified beforehand in consultation with experts in this area and judged to be performance status, age, comorbidity and ethnicity.

The authors did not report how many reviewers performed the assessment.

Data extraction
Data were extracted to calculate risk ratios for dichotomous outcomes and mean differences for continuous outcomes, with 95% confidence intervals.

The authors did not report how many reviewers performed the data extraction.

Methods of synthesis
Results from the RCTs were combined using fixed-effect models. Pooled results were not reported. Statistical
heterogeneity was assessed using the $X^2$ test and $I^2$ statistic. A narrative synthesis was provided where meta-analysis was not possible.

**Results of the review**

Twenty-nine studies (approximately 6,857 participants) were included. Seven were RCTs (1,335 participants). Full details of the RCT risk of bias assessment were reported in the paper. Most studies were considered to be at high risk of bias.

Laparoscopic radical nephrectomy was associated with a significantly shorter hospital stay (one RCT, two non-randomised studies), shorter convalescence time (one non-randomised study) and lower analgesic requirements (one non-randomised study) than open radical nephrectomy. There was no evidence that the retroperitoneal approach or hand-assisted, robot-assisted or single-port techniques were better than the standard three-port transperitoneal approach.

Partial nephrectomy resulted in better preservation of renal function and quality of life outcomes than radical nephrectomy. This applied regardless of the choice of technique or approach of partial nephrectomy.

The only evidence that compared minimally invasive ablative procedures with either partial or radical nephrectomy data was for laparoscopic-assisted cryoaablation but the studies had high risk of bias. Non-oncological outcomes were reported and included blood loss and recovery time.

None of the studies compared other laparoscopic-assisted ablative procedures such as radiofrequency ablation and high-intensity focused ultrasound.

**Authors’ conclusions**

Partial nephrectomy provided significantly better preservation of renal function than radical nephrectomy. For tumours where partial nephrectomy was not technically feasible, there was no evidence that alternative procedures or techniques were better than laparoscopic radical nephrectomy for perioperative or quality of life outcomes.

**CRD commentary**

This review had a clear research question and specified inclusion criteria in enough detail to enable independent researchers to repeat the review. Databases were searched without language restrictions and attempts were made to find unpublished studies, which reduced risks of language and publication biases. Studies were selected by two people independently to reduce errors/bias; no such methods were reported for data extraction and quality assessment.

The narrative synthesis and presentation of results on forest plots but without pooled values seemed appropriate given the differences between the studies.

The authors’ conclusions do not fully reflect the results of the review and may not be reliable due to the poor quality of the evidence and discrepancies in the reporting.

**Implications of the review for practice and research**

**Practice:** The authors stated that when making treatment decisions, perioperative and quality of life outcomes should be considered alongside oncological outcomes. Partial nephrectomy should be the preferred method for tumours where oncological outcomes had been shown to be equivalent among interventions.

**Research:** The authors stated that systematic and methodical approaches were needed when studying complex surgical procedures. Future studies should measure quality of life and perioperative outcomes.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.