Evaluation of robotic and laparoscopic partial nephrectomy for small renal tumours (T1a)

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CRD summary
The authors of this review concluded that they found no significant differences in perioperative outcomes between robotic partial nephrectomy and laparoscopic partial nephrectomy for the treatment of small renal tumours. This conclusion reflects the findings of the review, but the limited search means that relevant studies may have been missed, particularly those not in English and not published.

Authors’ objectives
To compare laparoscopic partial nephrectomy with robotic partial nephrectomy, for the treatment of small renal tumours (T1a).

Searching
MEDLINE, EMBASE and The Cochrane Library were searched for studies in English, published from 2000 up to June 2012; search terms were reported.

Study selection
Studies comparing laparoscopic with robotic approaches, in patients undergoing partial nephrectomy were eligible for inclusion. Studies had to assess intraoperative outcomes (operative time, warm ischaemia time, estimated blood loss, or length of stay) or postoperative complications.

The included studies were published between 2008 and 2011. The average age of patients by group ranged from 51 to 64 years and most patients were male. The average tumour size was between 2cm and 3.2cm.

Two reviewers independently assessed studies for inclusion.

Assessment of study quality
Studies were assessed for quality based on: patient selection, comparability of the study groups, and assessment of the outcomes. Studies that achieved five or more stars were considered high quality; the total number of stars possible was not reported.

The authors did not state how many reviewers assessed study quality.

Data extraction
Two reviewers independently extracted the intraoperative outcomes, including operative time, warm ischaemia time, estimated blood loss, length of stay, and postoperative complications. The Clavien grading system was used to evaluate postoperative complications. Odds ratios were extracted for dichotomous data, and weighted mean differences for continuous data, along with 95% confidence intervals.

Methods of synthesis
The data were pooled using a random-effects model. X² and I² were used to assess statistical heterogeneity.

Results of the review
Six studies were included in the review (256 participants; range 24 to 86); one was prospective and five were retrospective. Neither allocation nor assessment of outcomes was blinded and some studies had poorly defined outcome measures. Most studies lacked medium- to long-term follow-up and data on tumour margins. Three studies were considered high quality (five or six stars), and three scored four stars, so were not considered high quality.

There was no statistically significant difference between laparoscopic partial nephrectomy and robotic partial nephrectomy in operative time, warm ischaemia time, estimated blood loss, length of stay, and complications. The direction of effect varied between studies for each outcome, and there was considerable statistical heterogeneity for most of the outcomes assessed.
Authors' conclusions
This review found no significant difference in perioperative outcomes between robotic partial nephrectomy and laparoscopic partial nephrectomy for the treatment of small renal tumours.

CRD commentary
The review question was clear. A limited search for studies published in English was undertaken, with some attempts to identify unpublished data; some studies may have been missed. Study selection and data extraction were duplicated, reducing the potential for reviewer error and bias.

Few details of the quality assessment tool and results were provided, making it difficult for the reader to assess the quality of each study. Only half of the included studies were considered to be of high quality. The authors acknowledged the limitations of the studies, and variation between them in their inclusion criteria, treatment protocols, operative techniques, and outcome assessment. The random-effects meta-analysis and assessment of heterogeneity appear to have been appropriate.

The authors' conclusion reflects their findings, but the limited search means that relevant studies may have been missed, particularly those not in English and those not published.

Implications of the review for practice and research
Practice: The authors did not make any recommendations for practice.

Research: The authors stated that randomised controlled trials were required to objectively compare laparoscopic with robotic partial nephrectomy. Long-term data on surveillance and tumour recurrence were required to fully elucidate the role of robotics in partial nephrectomy.

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