Does simultaneous transurethral resection of bladder tumor and prostate affect the recurrence of bladder tumor? A meta-analysis

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CRD summary
This review concluded simultaneous resection of bladder tumour and prostate for non-muscle invasive bladder cancer and benign prostatic hyperplasia significantly reduced total recurrence rates compared with bladder tumour resection alone; there was no significant difference for bladder neck/prostatic fossa recurrence rates. The reliability of the authors' conclusions is unclear given potential limitations in the review process and study quality uncertainty.

Authors' objectives
To evaluate the efficacy and safety of simultaneous resection of bladder tumour and prostate for non-muscle invasive bladder cancer and benign prostatic hyperplasia.

Searching
MEDLINE, Web of Science, Cochrane Central Register of Controlled Trials (CENTRAL), SpringerLink, EBSCO and Elsevier databases were searched to December 2009; search terms were reported. The MEDLINE search was limited to publications in English. Bibliographies of each retrieved article were handsearched.

Study selection
Controlled clinical trials and controlled observational cohort studies that compared simultaneous transurethral resection of bladder tumour plus transurethral resection of the prostate versus transurethral resection of bladder tumour alone for non-muscle invasive bladder cancer/benign prostatic hyperplasia were eligible for inclusion. To be included, studies had to report regimens, follow-up duration, mean age of patients, and status of tumour.

The primary outcomes were total recurrence, recurrence in the prostatic urethra/bladder neck in both groups, and recurrence time; the former two outcomes had to be reported for a study to be eligible for inclusion.

Adjuvant therapy was given to both groups in one included trial. Mean patient age ranged from 56 to 71 years across groups. For included patients, the percentage with single/multiple tumours was 72/28%, cancer stage category T<sub>a</sub>-T<sub>1</sub> was 27/73%, cancer grade 1/2/3 was 33/44/23%, and primary/secondary tumour was 86%:14% (where reported).

The authors did not state how many reviewers performed the selection.

Assessment of study quality
A formal validity assessment was not performed.

Data extraction
The numbers of events for each outcome were extracted to calculate odds ratios (OR) and 95% confidence intervals (CIs). Authors were contacted for additional data.

Two independent reviewers performed the extraction.

Methods of synthesis
Odds ratios were pooled using a fixed-effect model. The model was a modification by Yusuf et al of the Mantel-Haenszel method, where an odds ratio of greater than one indicated a greater occurrence in the simultaneous resection group than in the control group (bladder cancer resection alone).

Between study heterogeneity was determined using the Cochrane Q and I<sup>2</sup>. If heterogeneity was significant (p<0.05), efforts were made to identify the source of the heterogeneity by performing subgroup analyses. Sensitivity analyses were also performed.
The authors used weighted scores based on six variables (number of tumours, tumour diameter, previous recurrence rate, stage category, concomitant carcinoma in situ, and World Health Organisation grade) to calculate recurrence and progression scores, as recommended by The European Association of Urology.

Results of the review
Six clinical trials were identified (n=983 patients, range 48 to 287), including one prospective randomised controlled trial (RCT, n=48 patients) and five retrospective observational cohort studies with concurrent groups. Mean follow-up ranged from 27.4 to 96 months in different groups, with no significant difference between follow-up in the two groups.

Overall recurrence rate was significantly lower in the simultaneous resection group compared with the control (resection of bladder cancer alone) group (OR 0.67, 95% CI 0.52 to 0.88; $I^2=0\%$). For individual studies, only two found a significant difference in recurrence rate. There was no statistically significant difference in recurrence rate in the bladder neck/prostatic fossa between the two groups (OR 0.92, 95% CI 0.57 to 1.49; $I^2=0\%$). Three studies reported the elapsed time to recurrence, the difference between groups was not significant for any study. One study reported 60 month recurrence free data which was significantly longer for simultaneous resection of bladder cancer and prostate (52.0%) versus resection of bladder cancer alone (43.4%) (p=0.02).

Stratified meta-analysis and exact non-parametric statistical tests showed that there were no significant confounding effects when stratified by mean patient age, mean follow-up duration, multiplicity of tumour, and year of publication. Previous recurrence, tumour size, and postoperative intravesical therapy were not summarised due to lack of data.

Authors' conclusions
There was at least evidence that simultaneous transurethral resection of bladder tumour plus transurethral resection of the prostate did not increase the overall cancer recurrence rate and cancer recurrence rate in bladder neck/prostatic fossa. Simultaneous resection might be preferable for patients with non-muscle invasive bladder cancer and benign prostatic hyperplasia.

CRD commentary
The review addressed a well-defined question for interventions, study design and relevant outcomes, but relevant participants were not clearly defined. Relevant databases were searched, but it appeared that only publications in English were considered and a limited search was performed for unpublished studies, so some relevant studies may have been missed. Although data extraction was carried out with efforts to reduce error and bias, it was not clear whether this process applied to other aspects of the review process.

A formal quality assessment was not made and little relevant information was reported, which made it difficult to assess study quality. Some relevant study details were reported. The reporting lacked clarity and made the article difficult to comprehend in some places. Statistical heterogeneity was assessed. The statistical method used for the meta-analysis seemed appropriate. Detailed results of the sensitivity analyses were not reported.

In view of some potential limitations arising from the review process and uncertainty about the quality of the included studies, the extent to which the authors' conclusions are reliable is unclear.

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

Research: The authors identified a need for multicentre prospective randomised controlled trials to identify the influence of simultaneous transurethral resection of bladder cancer plus transurethral resection of the prostate on tumour recurrence and progression, to estimate complications, and to establish the criteria for patient selection for simultaneous resection.

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