

## **GOOD FUNCTIONAL OUTCOMES AFTER BLADDER PRESERVING ROBOTIC SURGERY, WITH OR WITHOUT PARTIAL CYSTECTOMY, AND BRACHYTHERAPY FOR MUSCLE-INVASIVE UROTHELIAL CELL CARCINOMA OF THE BLADDER.**

### Hypothesis / aims of study

Bladder preserving surgery, in combination with external beam radiotherapy and interstitial radiotherapy (=brachytherapy), results in good oncological outcomes: in our series 5-yr local control rate of 82%, in selected patients with muscle invasive urothelial cell carcinoma of the bladder (MIBC). Inclusion criteria for brachytherapy are a solitary tumour, <5cm, N0 and no CIS. Radiotherapy on the bladder is associated with an increase of LUTS and potential loss of bladder function. Bladder preserving therapy is only profitable over cystectomy if bladder function remains satisfactory for the patient.

In this study we evaluate the influence of robot-assisted minimal invasive surgery plus brachytherapy on bladder symptoms and bladder function compared to the situation before brachytherapy treatment.

### Study design, materials and methods

From 2009-2017 all patients undergoing bladder preserving brachytherapy for MIBC were included in the study. Data on functional outcomes (degree of nocturia, use of anticholinergics postoperatively and functional bladder outcome during follow-up cystoscopy) were collected. The treatment regimen consisted of external beam radiotherapy (20x2Gy) on the bladder and regional lymph nodes, followed within 1 week by a robot-assisted, laparoscopic or converted (N=2) brachytherapy catheter placement under simultaneous cystoscopic control with or without partial cystectomy. Afterloading with radiotherapy started immediately after surgery in a clinical setting with in general 10x2.5Gy over 3 days.

### Results

Ninety-five patients were treated in the studied period. In 60/95 (63.2%) patients degree of nocturia was described (mean 1.67 (0-4) before and 1.51 (0-6) after brachytherapy). In 43/60 (71.7%) patients frequency of nocturia was less or similar compared to the degree of nocturia before brachytherapy. Worsening of the nocturia was seen in 17/60 patients (28,3%), of which only 5 patients described a worsening of >1 time of nocturia compared to before brachytherapy. Use of anticholinergics was seen in only five patients (5.3%), of which one had a permanent indwelling catheter and two patients were treated with BCG instillation therapy due to the occurrence of CIS or recurrent non-MIBC after brachytherapy treatment. Functional bladder capacity measured during follow-up cystoscopy was considered good (mean 362.2ml (200-450ml) with a mean follow-up of 20.5 months (3-48 months)). During follow-up visits the bladder capacity showed a stable situation, with no decline of capacity in the first months after brachytherapy treatment. Only three patients had symptomatic ulcers due to the radiotherapy treated conservatively (3.2%), of which only one showed an actual worsening of nocturia.

Subgroup analysis of patients treated with brachytherapy combined with partial cystectomy showed no significant difference in degree of nocturia, and functional bladder capacity postoperatively compared to the group treated with brachytherapy solely ( $p > 0.05$ , unpaired t-test).

### Interpretation of results

In the majority of patients studied, functional bladder capacity after robotic minimal invasive surgery plus brachytherapy (with or without partial cystectomy) appeared to be very good. Furthermore, most patients showed an improvement or comparable degree of nocturia pre- and postoperatively. Only a few patients requested anticholinergic therapy because of worsening of bladder symptoms after brachytherapy.

### Concluding message

This is the first study showing the positive functional outcomes of Robot-assisted brachytherapy for MIBC in a large study population. More studies on the functional outcomes of brachytherapy are required to support the current positive findings. Ideally, functional outcomes should also be monitored using questionnaires on LUTS and quality of life before and after treatment to evaluate patient satisfaction. Furthermore, long term results are desirable to investigate preservation of bladder function even years after brachytherapy since radiation therapy effects can sometimes be seen many years after initial treatment.

Nevertheless, functional outcomes in our study proved to be that satisfactory that robot-assisted minimal invasive surgery plus brachytherapy has to be considered a real alternative for cystectomy in oncologically justified selected patients.

### Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics not Req'd:** There was no need for by Dutch law ("niet WMO-plichtig") and GCP; it was checked for by our LHC and the Medical Ethics Committee **Helsinki:** Yes **Informed Consent:** No