

# Don't forget the bladder!

Bernard J. Oosterveld, PhD<sup>1</sup>, Elzbieta M. van der Steen-Banasik, MD<sup>1</sup>, Geert A. Smits, MD, PhD<sup>2</sup>

<sup>1</sup>Radiotherapiegroep, Arnhem, <sup>2</sup>Rijnstate Hospital, Department of Urology, Arnhem, Netherlands

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With a lot of interest, we have read your review paper [1] recently published in the Educational Articles section. You gave a comprehensive overview of the present clinical indications for brachytherapy. These range from the curative treatment of prostate cancer, with a lot of scientific evidence, to the palliative treatments of esophageal cancer and bile duct cancer, on which there are only a small number of papers that describe clinical results. Your work provides a valuable contribution and can be widely used for educational purposes.

However, what we regrettably missed is the subject of brachytherapy of muscle invasive bladder cancer.

This treatment, which is performed in combination with transurethral resection of bladder tumor (TURB) and external beam radiation therapy (EBRT), is curative and saves the patient's bladder. Already in the 40's of the past century, the treatment of 522 patients was reported in two American papers [2,3] and in the 1950's, the treatment was introduced in the Netherlands, Belgium, and France.

In 2009, we reported the results of a multicenter, case control study, from the East of the Netherlands, comparing brachytherapy with cystectomy in solitary bladder cancer, and demonstrated no difference in survival and less toxicity in favor of brachytherapy [4], not to mention impact on quality of life!

In 2012, a multicenter study by Koning *et al.* confirmed a 75% local control (LC) in 1,040 patients treated between 1983-2010 in twelve Dutch departments [5].

In a recent meta-analysis comparing radical cystectomy with combined modality treatment, no difference in overall survival at 5 years or progression-free survival at 10 years was found in a cohort of 9,554 patients [6]. The meta-analysis included two Dutch studies, in which EBRT was combined with a brachytherapy boost, and whereby the patients kept a functional bladder.

According to the recommendations of the Groupe Européen de Curiethérapie - European Society for Radiotherapy and Oncology (GEC-ESTRO), brachytherapy is an essential part of the treatment to be applied after EBRT to a cumulative dose of 70 Gy EQD<sub>2</sub> [7].

In Arnhem, in this way, we have currently treated 211 patients for bladder cancer. In 2009, the treatment was modified by using a Da Vinci robot to laparoscopically implant brachytherapy catheters and by applying high-dose-rate (HDR) instead of low-dose-rate brachy-

therapy [8]. The procedure was augmented by position verification of the catheters with the use of computed tomography [9].

Nowadays, the indications for the brachytherapy-based bladder sparing procedure are: T2 solitary tumor diameter < 5 cm, in patients with general condition allowing anesthesia. Bladder neck location was in the past considered as contraindication. However, this area can be implanted with the robot technique, unless there is an infiltration in ostium of prostatic urethra.

Compared to the open-surgery implantation technique and using pulsed-dose-rate, the robot assisted procedure and HDR resulted in substantially shortened hospitalization time and less perioperative toxicity.

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**Address for correspondence:** Bernard J. Oosterveld, PhD, Radiotherapiegroep, Wagnerlaan 47, 6815 AD Arnhem, Netherlands, ✉ e-mail: [b.oosterveld@radiotherapiegroep.nl](mailto:b.oosterveld@radiotherapiegroep.nl)

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