Outcomes following brachytherapy boost for intermediate- and high-risk prostate cancer: a retrospective bicentre study by the SFRO Brachytherapy Group

Radiother Oncol: doi:.org/10.1016/j.radonc.2022.109460

By Pierre Blanchard

What was your motivation for initiating this study?

The use of brachytherapy for prostate cancer is decreasing over time and more hypofractionated external beam regimens and stereotactic radiotherapy are taking over. Having performed prostate brachytherapy for over ten years, I am convinced that it is a wonderful treatment that provides high cure rates for patients with locally advanced disease. In recent years, the use of brachytherapy boost has had bad press due to the high rates of grade 3+ urinary toxicity that have been observed in the trial entitled the androgen suppression combined with elective nodal and dose-escalated radiation therapy (ASCENDE-RT trial)[1]. This was seen despite the extremely high rate of control of prostate-specific androgen (PSA) that was achieved alongside very low PSA values in this population. In our daily practice, we have found that a high dose rate (HDR) brachytherapy boost is much better tolerated than low dose rate brachytherapy and does not lead to high rates of toxicity. We have trained multiple French teams at Gustave Roussy that have later successfully implemented HDR brachytherapy boost in their practice. Therefore, as head of the prostate section of the brachytherapy group of the French Radiation Oncology Society (SFRO), I proposed that we perform a retrospective multicentre study to investigate the efficacy and toxicity of HDR brachytherapy boost in real life in French cancer centres. One of the extra goals was to promote brachytherapy in the radiation oncology community through the dissemination of details regarding patient outcomes.

What were the main challenges during the work?

Once an idea is proposed, the challenge is always to move the project forward. The group was highly motivated and one of us (Dr Manon Kissel) drafted clinical report forms to record the data and prepared the regulatory paperwork. Then Dr Kanta Ka, a resident in radiation oncology at our institution, took charge of the data collection at our institution but also at the participating centres if that was necessary. I took care of the statistical analysis. Seven centres were identified, which represented over 1200 patients. Unfortunately, follow-up was short at five of those seven institutions due to the relatively recent implementation of the technique. However, all of the institutions provided data and we hope that an updated database will enable us to include many more patients with longer follow-ups.

What are the most important findings of your study?

In total, the data for 709 patients from two centres were analysed with a median follow-up of 62 months. Of those, 277 were intermediate-risk (170 favourable and 107 unfavourable) and 432 were high-risk. The rate of biochemical control after five years was 87.5% for the overall population, and 91% and 85% for the intermediate- and high-risk cancers, respectively. At five years, biochemical and clinical relapse-free survival, metastasis-free survival, local control, and overall survival rates were 83%, 90%, 97%, and 94%, respectively. Late grade 2 or higher genitourinary or gastrointestinal toxicity was found in 36 patients (5%) and nine patients (1.3%), respectively. In summary, our study showed that HDR brachytherapy boost shows very high efficacy along with a low and acceptable toxicity profile. A major limitation of the study was the retrospective data collection, the use of which may have underestimated the incidence of adverse events.

What are the implications of this research?

There are two implications. Firstly, we hope that our results will shed light on the benefits of the use of brachytherapy boost in the treatment of prostate cancer and will revive interest in the radiation oncology community in the use of this treatment. Secondly, the positive feedback from our publication has already prompted the conduct of a follow-up study. Indeed, when I communicated these results on Twitter, there was a lot of enthusiasm and many radiation oncologists from various countries (e.g. the USA, the UK, Australia and Spain) replied that they had had similar experiences in their centres. Hence I propose to repeat this study but on an international scale. This would help us to increase the power of the study, to gain more precise estimates of the treatment outcomes, and to analyse subgroups of patients of interest, the data for whom could not be analysed in our sample due to small numbers (e.g. elderly patients or those with large glands, high Gleason scores, etc).

References:

1. Oh J, Tyldesley S, Pai H, et al. An Updated Analysis of the Survival Endpoints of ASCENDE-RT. Int J Radiat Oncol Biol Phys. 2022 Dec 15:S0360-3016(22)03518-0. doi: 10.1016/j.ijrobp.2022.11.005. Epub ahead of print. PMID: 36528488.