

Developing a High-Dose-Rate Prostate Brachytherapy Program

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This article provides oncology nurses with an overview of high-dose-rate brachytherapy for the treatment of prostate cancer. Many treatment options are available for men diagnosed with prostate cancer. Oncology nurses must know about this potential treatment option so they can provide appropriate education, support, and self-care management advice. Program requirements, patient eligibility, and essential planning recommendations are discussed.

About 192,280 men in the United States were diagnosed with prostate cancer in 2009 (Jemal et al., 2009). As treatment options and outcomes are studied, numerous treatment combinations for prostate cancer have become standard depending on disease stage, Gleason score, patient age, and comorbidities. Surgery (open and laproscopic), androgen deprivation, cryotherapy, and radiotherapy (external beam and brachytherapy) are standard treatment options available. After considering the options, a patient and his family can choose from active surveillance, interstitial prostate brachytherapy, external beam radiation therapy, and radical prostatectomy, with treatment generally commencing two to three months after diagnosis. High-dose-rate (HDR) brachytherapy offers precise delivery of radiation and improved treatment outcomes for selected patients. This article will discuss the development of an HDR brachytherapy suite for the treatment of prostate cancer.

The technologic advances of radiation therapy (RT) are ever evolving, and the next generation of technology is emerging as each treatment plan, machine, and idea are perfected. The authors' institution currently offers low-dose-rate (LDR) gynecologic and prostate brachytherapy treatment options, as well as a high-dose-rate (HDR) gynecologic brachytherapy program. The institution is developing a plan for HDR prostate brachytherapy, which will expand the HDR brachytherapy program.

Men with prostate cancer are referred for brachytherapy according to a combination of their clinical and pathologic diagnoses. Many patients come to the consultation appointment requesting brachytherapy after they have done extensive Internet searches; they believe that brachytherapy is the quickest and easiest way to obtain treatment for prostate cancer. Brachytherapy has a more favorable toxicity profile for bowel and sexual function (Tsui, Gillan, Pond, Catton, & Crook, 2005) than surgery or external beam therapy. The favorable toxicity and short treatment cycle are reasons men mainly prefer brachytherapy.

At a Glance

- ◆ High-dose-rate brachytherapy is a viable treatment option for men diagnosed with prostate cancer.
- ◆ Brachytherapy has a more favorable toxicity profile in some cases.
- ◆ A multidisciplinary approach to program planning is essential to success and optimal patient outcomes.

Brachytherapy is the temporary or permanent placement of radioactive sources within or near a tumor. It also is known as internal RT or implant therapy and offers the advantage of delivering a high dose of radiation to a specific tumor volume, with a rapid falloff in dose to adjacent normal tissues. Brachytherapy has been used since the early 1900s, following the discovery of radium by Marie and Pierre Curie (Dunne-Daly, 1997). The first reported prostate brachytherapy was in 1910 and used a radium source inserted through a urethral catheter. Radiation safety issues associated with handling the isotope and complications observed with the crude implantation technique soon caused the procedure to fall out of favor (Zelefsky, Valicenti, Goodman, & Perez, 2004). In the early 1960s, seeds were placed directly into the prostate with the retropubic, “free-handed” approach.

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Digital Object Identifier:10.1188/10.CJON.199-205