Radiation therapy

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Radiation therapy, also known as radiotherapy, is often used to treat all stages of prostate cancer. It is also often used after surgery if the surgery was not successful at curing the cancer. Radiotherapy uses ionizing radiation to kill prostate cancer cells. When absorbed in tissue, Ionizing radiation such as gamma and x-rays damage the DNA in cancer cells, which increases the probability of apoptosis (cell death). Normal cells are able to repair radiation damage, while cancer cells are not. Radiation therapy exploits this fact to treat cancer. Two different kinds of radiation therapy are used in prostate cancer treatment:

- **External beam radiation therapy**: External beam radiation therapy uses a linear accelerator to produce high-energy x-rays that are directed in a beam towards the prostate. A technique called Intensity Modulated Radiation Therapy (IMRT) may be used to adjust the radiation beam to conform with the shape of the tumor, allowing higher doses to be given to the prostate and seminal vesicles with less damage to the bladder and rectum.
- **Brachytherapy**: Permanent implant brachytherapy is a popular treatment choice for patients with low to intermediate risk features, can be performed on an outpatient basis, and is associated with good 10-year outcomes with relatively low morbidity[21] It involves the placement of about 100 small "seeds" containing radioactive material (such as iodine-125 or palladium-103) with a needle through the skin of the perineum directly into the tumor while under spinal or general anesthetic. These seeds emit lower-energy X-rays which are only able to travel a short distance. Although the seeds eventually become inert, they remain in the prostate permanently. The risk of exposure to others from men with implanted seeds is generally accepted to be insignificant.

Source: ncbi-nih1 & ncbi-nih2

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