

What is a Brachytherapy?

Brachytherapy refers to internal radiation delivered by implanting permanent radioactive seeds directly into the prostate. Brachytherapy is also called seed implantation or interstitial radiation. The permanent radioactive seeds are iodine 125 or palladium 103, which can be used alone, combined with external radiation, and/or combined with hormone therapy. Cesium 131 is FDA approved but rarely used as the radiation source.

How Do Radioactive Seeds Work?

The goal of radiation therapy is to damage as many cancer cells as possible, but limit potential harm to nearby healthy tissue. Radioactive seeds are permanently placed into the prostate gland to deliver concentrated amounts of radiation to the prostate, while potentially avoiding damage to close structures, such as the rectum, bladder, or urethra. Radiation therapy works by killing the cells in the area being treated, damaging their DNA or genetic make-up, and avoiding injury to normal or healthy cells in other parts of the body. Brachytherapy can be given as low dose (permanent) or temporary high dose which uses radioactive iridium 192 or cesium 137 seeds.

Planning for the Procedure

The day before the procedure, you will have a transrectal ultrasound (TRUS) to measure the size or volume and shape of your prostate. Since ultrasound images are produced by sound waves bouncing off the structure to create the image, you will usually be asked to use some type of laxative and/or enema prior to this study to clean out your rectum. These pictures or images will be placed into a computer program to map the prostate and structures, such as the rectum, to create a treatment plan.

How is the Procedure Done?

Permanent radioactive seeds will be implanted into your prostate under anesthesia in the operating room, or in an outpatient surgical suite. The radioactive seeds are silver colored and the size of a grain of rice. Multiple seeds (40-100) are inserted through a single needle into different areas inside the prostate to provide radiation coverage for the entire prostate gland.

A urinary catheter is usually inserted into the bladder during the procedure. The ultrasound probe will be inserted into your rectum. This will produce a picture of your prostate to help guide the physician on where to insert the needles. The physician will use a grid and template to insert the radioactive seeds into the prostate. After the radioactive seeds are implanted, the needles are removed and pressure is applied to the perineum. No dressings or stitches are placed to the area. After the procedure, you will be in the recovery room until you are awake and anesthesia has worn off.

How Long Will the Seeds be Radioactive?

It will depend on the type of radioactive seed used. The seeds will emit low doses of radiation up to a few months after the procedure.

If I Have an Iodine Allergy, Can I Receive Iodine Seeds?

Yes. The outside casing of the iodine 125 seed is titanium, so you do not come in contact with the iodine.

What are Possible Immediate Side Effects?

- Pain and burning with urination.
- Blood tinged urine and blood clots.
- Frequency of nighttime urination can worsen over a 2- to 3-month period.
- Worsening urine flow, such as hesitancy, slow and decreased stream, urgency with or without leakage
- Inability to pass urine.
- Bruising and tenderness to the perineum area.

- Bruising or swelling of the scrotum.
- Rectal pain, blood in the stool, inflammation in the colon.
- Erection problems have been reported.

Are There Radiation Precautions after the Seed Implant?

Yes. The physicist, radiation oncologist, or urologist will review these with you before or after the seed implant.

- Children and pregnant women should not sit on your lap for 3 months due to radiation emission from the seeds.
- Pregnant women should avoid prolonged, close contact (less than 3 feet) for the first 2 weeks.
- There is a small risk of seed movement. You should strain your urine the first week and return any retrieved seeds if passed.
- You should wear a condom during sexual activity during the first week. Your semen may initially be dark red or brown. This is normal and will clear over time.

What is the Health Maintenance and Followup after the Seed Implant? Immediate Care:

- Antibiotic therapy is given for a short period to prevent an infection.
- You may return to normal activities after a 48-hour rest period. Avoid any strenuous activities until cleared by your healthcare provider.
- Sitting on hard surfaces may be uncomfortable for a few weeks.
- Avoid biking for 2 months.
- Medicine may be given to help with urine flow or burning.
- Pain medication may be prescribed upon discharge home for severe pain. Acetaminophen (Tylenol®) can be taken for mild discomfort.
- If you take prescription blood thinners, follow the direction of your medical physician or cardiologist for directions on when to restart this medication.
- You may eat your normal diet but caffeinated beverages and/or alcohol may increase or worsen urination.

- You may be discharged home with a urinary catheter and provided instructions on when to return to have it removed.
- Drink eight glasses of water daily unless limited for medical reasons.
- Avoid tub baths for 1 week.

These side effects will usually improve over a period of weeks as the radioactivity of the seeds decreases. Contact your health care provider if you have any questions or concerns.

Health Maintenance and Followup Care

The prostate specific antigen (PSA) blood test is the best way to monitor how well the treatment has worked.

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