Prostate Cancer Brachytherapy (Internal Radiation) Permanent Seed Implant
Patient Fact Sheet

What is a brachytherapy?

Brachytherapy refers to internal radiation that can be given by implanting permanent radioactive seeds directly into the prostate. Typically, 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. Rarely will Cesium 131 be used as the radiation source even though FDA approved for use.

How do the radioactive seeds work on the cancer?

Permanent radioactive seeds are placed directly into the prostate gland giving off concentrated amounts of radiation to the prostate, while potentially sparing damage to close structures, such as the rectum, bladder, or urine tube (urethra). Radiation therapy works by destroying the cells in the area being treated, damaging their DNA or genetic (original) make-up. Normal or healthy cells can usually recover and reproduce, but cancer cells are not able to reproduce and are destroyed. The goal of radiation therapy is to damage as many cancer cells as possible, but limit potential harm to nearby healthy tissue.

How do you know where to place the seeds and how many to use for the implant?

Before the procedure day, you will have a transrectal ultrasound (TRUS) to measure the size or volume of your prostate. This procedure is called a volume study and will take about 10 to 15 minutes. The TRUS will detail the size and shape of your prostate gland. 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 associated critical structures, such as the rectum, to create a seed implant plan for the day of your procedure. Occasionally, the location of the cancer can be visualized, which allows for additional targeting of that area. The implant plan will show the number and location of needle placement required for the seeds to be implanted, as well as measurements for placement of the radioactive seeds within the prostate. You can drive yourself for the volume study procedure. Although not presently common, some centers may use a Magnetic Resonance Imaging (MRI) scanner for pre-planning in place of the transrectal ultrasound (TRUS) volume study.

How is the procedure done?

Permanent radioactive seeds will be implanted into your prostate, usually under general or spinal anesthesia, in the operating room, or in an out-patient surgical suite. The radioactive seeds are tiny, silvery color, and rice-like in size. Multiple seeds can be inserted through a single needle in different locations within your prostate to provide radiation coverage for the entire prostate area.

Once you are given anesthesia, your legs will be placed in stirrups or leg holders to position you for the procedure. A urine catheter (tube inserted into the bladder to drain urine out) usually will be inserted. The rectal ultrasound probe (same equipment used for your volume study) will be inserted into your rectum. This will produce a picture of your prostate on the ultrasound screen so the physician will know exactly where to insert the needles. The rectal probe will be attached to a stand and a grid with holes in it placed against your perineum (the skin behind the scrotal area and above the rectum). The grid has letters of the alphabet on the top and numbers down the side. Once the rectal probe is placed, the ultrasound screen will have a grid matching the template against your perineum to guide the needle placement into your prostate. Your seed implant plan developed from the volume study will tell the physician where to place the needles directly into your prostate. The physician will first place the hollow needles through the perineum into the prostate gland and then insert a very thin instrument through the needles placing the radioactive seeds into your prostate. Once all the seeds are placed, the needles are removed, and pressure will be applied to your skin. You will not have a dressing to this area or stitches, since no incisions are made. A urinary catheter typically remains in place after the procedure; however, the length of time the catheter is left in place may vary by physician. After the procedure, you will be in the recovery room until you are awake, or if spinal anesthesia was used, until you can move your legs. After the seed implant, a CT scan is typically done to check seed placement; however, the time-frame when it is scheduled may vary by physician practice.

For more information, contact:

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How long will the seeds be radioactive?

It will depend on the type of radioactive seed used. Please discuss this with the radiation oncologist or nurse before the procedure.

How long will the seeds remain in the prostate?

Once the seeds are placed in your prostate, they will remain in the prostate gland forever, although they are no longer radioactive. They are tissue compatible and should not cause any future health risk.

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.
- Possible blood tinged urine and may have tiny clots.
- Frequency of night-time urination can double for at least a 2-3 month period.
- Possible urine flow changes; hesitancy or decreased stream.
- Possible inability to pass urine, although not common.
- Bruising and tenderness to the perineum area.

Are there radiation precautions after the seed implant?

Yes. The physicist or radiation oncologist will review these with you before or after the seed implant. Some centers provide a copy of the radiation precautions for you to take home. Speak to your radiation oncologist or nurse before the implant to review these precautions before the procedure.

What is the health maintenance and follow up after the seed implant?

Immediate care:

- Antibiotic therapy is usually given for a short period so you do not develop an infection.
- Typically, rest for 48 hours and then return to normal activity, keeping in mind that sitting on something hard for long periods may be uncomfortable for a few weeks.
- Sometimes special medicine is given to help with your urine flow or burning.
- Sometimes a pain medication is prescribed for when you go home, but if not, Tylenol® will usually take away discomfort.
- Usually, any over-the-counter medicine that can thin your blood, such as vitamins with E, aspirin, or ibuprofen (Advil®, Motrin®, and Aleve®), should be avoided initially when you go home. Check with your physician or nurse.
- If you take prescription blood thinners, follow the direction of your medical physician or cardiologist for directions on when to re-start this medication
- Eat your normal diet (keep in mind caffeinated beverages and or alcohol may increase your urination).
- Sometimes the perineal area may be bruised and sore.
- You may or may not have a urine catheter when you go home, depending upon the physician practice.
- Drink water daily (about 8 glasses) unless the amount you can drink daily is limited for medical reasons.

Keep in mind these side effects will usually improve over a period of weeks as the radioactivity of the seeds decreases. Contact your physician or nurse if you have any questions or concerns.

Health maintenance and follow up care:

The prostate specific antigen (PSA) blood test is still the best way to monitor how well the treatment has worked. Call your physician's office to make an appointment for regular PSA blood tests and examinations.

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