



METROUROLOGY

PROSTATE RADIOACTIVE SEED IMPLANT

Today, there are several methods of treatment for cancer of the prostate. The following is intended to discuss the prostate radioactive seed implant, an option that can be offered to men with early stage prostate cancer. It will describe the nature of the procedure, the necessary preparations, the possible side effects, the follow-up involved and some basic precautionary measures.

INTRODUCTION – THE PROSTATE GLAND

The prostate gland is located at the base of the penis just below the bladder and in front of the rectum. It produces a fluid that transports semen during ejaculation. The size and shape of the prostate gland varies considerably, but it is usually about 2 to 3 inches in diameter.

CANCER OF THE PROSTATE

Cancer of the prostate, like other cancers, is a disease of the cells. All cells reproduce themselves by dividing, and normal cell death and repair of tissue takes place in an orderly manner. Cancer is a kind of abnormal growth in which cells grow in an “out of control” manner and may invade and destroy nearby tissues and organs and spread to other parts of the body. Cancer may rise in any part of the prostate gland, but it is most commonly found in the outer portions. It is more common in older men and its cause is unknown.

HOW DOES RADIATION TREAT CANCER?

In order to kill the cancer, your physicians place (implant) radioactive “seeds” into your prostate gland. These radioactive seeds (either iodine 125 or palladium 103) give low energy x-rays which are just right for destroying the cancer in the prostate while minimizing damage to the surrounding tissues. Iodine 125 and palladium 103 give up about 90% of their radioactivity within a short time – seven months and two months, respectively. By one year, the radioactivity can be considered gone. The radioactive seeds are about the size of a grain of rice. Generally, your physician will place about 70 to 150 of the seeds into your prostate gland. The exact number depends upon the actual size and shape of the prostate gland. Even though the cancer is only visible in a portion of your prostate gland, there may be tiny amounts of cancer throughout the gland. For this reason, the entire gland is treated.

WHY ARE THERE DIFFERENT TYPES OF RADIOACTIVE SEEDS?

Each seed (iodine 125 or palladium 103) has distinct characteristics and advantages, which depend upon their individual energy levels. Certain characteristics of the tumor and size of the prostate gland determine which type of seed is best used for that particular situation. A balance must be found between the ability of the seed to kill the cancer while minimizing the irritation to the normal, healthy adjacent tissue.

WHO SHOULD GET TREATED WITH RADIOACTIVE SEED IMPLANTS?

Currently, it is believed by most experts that for the treatment of localized prostate cancer, radioactive seed implants may be as effective as external beam radiotherapy (traditional radiation) and possibly surgery (radical retropubic prostatectomy). However, long-term data is not yet available on radioactive seed implants. Treatment time with radioactive seed implant is shorter than traditional radiotherapy and is lower risk than surgery.

PLANNING FOR THE IMPLANT

Before the implant procedure, your radiation oncologist will make a map of your prostate gland from a prostate ultrasound scan (similar to an x-ray) called a volume study. A radiation physicist and your radiation oncologist, aided by sophisticated computers, will use the volume study to determine both the number of seeds needed to treat the cancer and exactly where the seeds should be placed.

HOW ARE THE SEEDS PUT IN PLACE?

Remember, the implant procedure is not an operation requiring a surgical incision. Instead, thin needles are passed into the prostate gland through the skin between the scrotum and rectum (called the perineum). As the needles penetrate through the prostate, they are seen on the screen of the ultrasound machine and can be accurately guided to their final position. While the needles are being inserted, the ultrasound probe is in the rectum. The number of needles and seeds required varies from patient to patient depending upon the size of the prostate gland. When each needle is in its correct position in the prostate, the needle is slowly withdrawn while individual seeds are injected into the prostate gland. Both the probe and the needles are removed and the procedure is completed.

WHAT WILL THE PROCEDURE BE LIKE?

The radioactive seed implant procedure takes about one to two hours. It is done in the operating room and you will receive either a general or spinal anesthesia so that there is no discomfort during the procedure. You may also receive medication through an intravenous line (IV), which will make you drowsy. After the implant, you will go to the recovery room for about two hours. While in the recovery room, you will have an ice bag placed between your legs to help reduce swelling of the implant area. The urinary catheter placed during the procedure is usually removed before you leave the hospital, but occasionally it is left in place for 24 hours or so. There is surprisingly little discomfort after the implant, although some mild soreness is expected between the legs for one to two days. If you do feel discomfort, pain medication will be available for you.

WHAT PREPARATION IS REQUIRED BEFORE THE PROCEDURE?

Before the implant, you will be given specific instructions regarding some diet changes and use of enemas. The enemas will help remove stool from your lower bowel and rectum so the ultrasound pictures of your prostate will be clear. At midnight on the night before the implant, you should not eat or drink anything. Approximately a week prior to the implant, you will have blood tests done and possibly an electrocardiogram (EKG) and chest x-ray. Your doctor will determine which tests are necessary. The test results are used to inform the anesthesiologist of your ability to tolerate anesthesia. You will be asked to arrive at the day surgery center or hospital two hours prior to surgery.

If you use aspirin, ibuprofen, ketoprofen, Naprosyn or any blood thinner, for any reason, you must stop taking them altogether for at least 7 to 10 days prior to the implant in order to prevent excessive bleeding. *** IMPORTANT: CHECK WITH YOUR PRIMARY MD BEFORE STOPPING ANY MEDICATIONS.***

WHAT HAPPENS AFTERWARD?

After you have recovered from anesthesia, you may go home. You may feel a little weak and it is recommended that you do not drive for at least 12 hours. You may notice some blood in your urine, which is normal and should subside in approximately 24 to 48 hours. If it lasts for more than 48 hours or you begin to pass blood clots, you should contact the urologist. You should avoid heavy lifting or strenuous activity for the first two days once you are home. After that, you may return to your normal activity level.

Many of our patients are concerned about the potential dangers of radiation exposure to their family and friends from an implant. Both iodine 125 and palladium 103 emit very low energy radiation, which does not travel far; in fact, the vast majority of the radiation is stopped inside the prostate itself. However, very small amounts of radiation can reach other people from either a seed being passed in the urine or by a tiny amount of radiation that escapes from the prostate and travels through the air. The amount that escapes is so small it is not considered a risk for most people and there are no restrictions on a patient's travel or physical activity with other adults in general.

However, children and the unborn fetus of a pregnant woman may be more sensitive to the effects of radiation and, therefore, we recommend some additional precautions. If a child or a pregnant woman is in the same room as the patient for more than 5 to 10 minutes, they should stay six feet or more away for two months following seed implants. At this distance, the amount of radiation to the other person is negligible. Since the radiation is coming from the prostate, children should not sit on the patient's lap during the initial one to two month period.

Although it is rare, an occasional seed may be lost by urination or in the semen. If a seed is passed in this way, it almost always occurs within the first week following the implant procedure. If the seed is passed, it should be retrieved for proper disposal. Because of the possible passage of a seed, we ask the patient to strain his urine for the first week following the procedure so any seed passed is easily retrieved. As well, he should wear a condom for the first two weeks during intercourse. The seed should be picked up with tweezers and placed in the container provided. On very rare occasions, a seed may be passed beyond the one to two week mark. If a seed is noticed, it should be retrieved, if possible, and returned in the same way as described above.

Although these precautions may seem elaborate, the amount of radiation exposure to the patient and those around him are really quite minimal and do not represent any additional risk. Objects that a patient touches or uses do not become radioactive (urine and stool are not radioactive).

ARE THERE ANY SIDE EFFECTS FROM THE PROCEDURE?

After the implant, you may experience some slight bleeding or burning beneath the scrotum or blood in the urine. These side effects are caused by the needles used to place the seeds. Usually 20-25 needles are used. The seeds themselves, the catheter and other instruments used in the procedure can also contribute to these side effects. If you experience severe pain or severe bleeding, you should call your urologist. A catheter is placed in the bladder during surgery and is usually removed several hours later. In some instances, it is kept in longer.

It is normal to have some blood in the urine, which will drain from the catheter. This bleeding may continue for several days, so do not be alarmed. If the bleeding persists or is associated with large blood clots, call your urologist. Drinking plenty of water helps prevent blood clots and flushes the bladder.

After the catheter is removed, it is normal to experience some burning with irritation. Some patients, especially those who have some trouble with voiding before the procedure, have enough swelling so they require a catheter after the procedure (for a few days to, rarely, a couple of weeks). If you cannot pass your urine within six hours after removal of the catheter, you will need to contact your urologist or go to the emergency room for care. This is particularly true if you are feeling a fullness and discomfort in the bladder area.

Longer-term side effects after the implant are generally due to the radiation from the seeds in the prostate. Initially, it is very common to experience frequent urination, burning with urination and a sense of urgency or decrease in the force of the urinary stream. These symptoms will gradually decrease as the seeds lose their strength, but may be present to some degree for six to twelve months after the implant. Drinking plenty of fluids and avoiding caffeine-containing beverages may help relieve these symptoms. If they are bothersome, medications will be prescribed. If you are experiencing a very weak stream and feel you are not emptying your bladder, you need to notify your urologist as soon as possible. As with all medical procedures, there is a small chance there will be longer-term recovery or permanent side effects. Impotence, as with all other treatments for cancer of the prostate, may rarely occur. The chance of permanent leakage of urine after prostate seed implant (if there has been no prior prostate surgery) is almost zero.

You can usually resume most activities, such as exercise and work, within three days after the implant. You should use a condom for about two weeks after the implant.

WHAT ABOUT FOLLOW UP?

After the implant, you will be asked to return for a brief visit and CT scan. The CT scan will enable the physician to determine the exact position of each seed in the prostate. This is necessary in order to determine that your prostate gland is receiving the proper amount of radiation throughout the entire gland. On rare occasions, it has been necessary to give an additional amount of radiation with either external radiation or another implant. Follow up with your urologist and radiation oncologist will be done on a regular basis. A schedule will be given to you at the time of your implant. It will take several months, and may be a year or more, of watching PSA test results to see how well the seed implant works. Physical examination, blood tests and rectal ultrasound tests may be done at certain intervals as part of your follow up visits to help determine the success of the implant.

GENERAL PATIENT INFORMATION

The seeds that are necessary for treatment of your prostate cancer are custom-ordered before the surgery and cannot be returned. The seeds are expensive. If surgery is cancelled within 7 days of the surgery date, you will be charged for the cost of the seeds.



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PROSTATE RADIOACTIVE SEED IMPLANT PREOPERATIVE INSTRUCTIONS

Your surgery is scheduled for _____.

It will be done on an outpatient basis.

Special instructions in addition to General Pre-op Instructions:

1. ***Starting the day before surgery – a clear liquid diet:*** In general, this includes all fluids you can “see through” when held up to a light in a clear glass. ***Milk and milk products should be excluded.***

Groups that are included:

- Fruit juices – apple, cranberry, grape, lemonade, orange juice (without pulp)
 - Desserts – gelatin, Popsicles
 - Beverages – coffee, tea, powdered drinks, carbonated beverages
 - Soups – broth, bouillon, consommé
 - Others – sugar, salt, hard sugar candy
2. Around 4:00 p.m. on the day before your surgery, drink one bottle (10 ounces) of magnesium citrate (available over-the-counter at any pharmacy).
 3. Nothing to eat or drink after midnight.
 4. On the day of your surgery, use a Fleets enema one (1) hour before you leave for the hospital.

If you have any questions, please call your urologist at 651-999-6800 or your radiation oncologist at _____.