



PATIENT INFORMATION FOR HIGH DOSE RATE (HDR) PROSTATE BRACHYTHERAPY

Prostate Brachytherapy Assessment Clinic

Your radiation oncologist/urologist has referred you to the prostate brachytherapy clinic at St.George Hospital Cancer Care Centre for assessment of your eligibility. This is because you have expressed an interest in having your prostate cancer treated with high dose rate (HDR) brachytherapy. The procedure is known as a transperineal temporary High Dose Rate (HDR) brachytherapy implant.

Assessment of your eligibility is usually undertaken at the clinic and discussed between various professionals who include the radiation oncologist, urologist, radiation therapists and physicists. It is important to note that not all men with prostate cancer are suitable for brachytherapy. Currently we have eligibility criteria at St.George Hospital Dept of Radiation Oncology in determining those patients most suitable for this procedure. This is based on a number of clinical, pathological and technical factors.

It is not the intention of St.George Hospital Cancer Care Centre to promote HDR brachytherapy or to suggest it is the best treatment for all suitable patients. Like all treatments for prostate cancer HDR brachytherapy has advantages and disadvantages compared to other treatment approaches. If you are eligible for HDR brachytherapy you will have to decide if it is the right treatment for you. In order to make this decision you will need to be well informed of your treatment options which may be equally suitable for you. These may include watchful waiting, primary hormone therapy, conventional radiation therapy or surgery. The aim of the initial Assessment Clinic is to help you to make an informed decision.

HDR brachytherapy is a form of internal radiation therapy, which is used in combination with external beam radiotherapy. At this point in time HDR brachytherapy is always used in combination with external beam radiotherapy and is not used alone, unlike seed brachytherapy. The internal radiation (brachytherapy) is delivered through the use of some small plastic catheters, which are directly inserted into the prostate gland. These plastic catheters act as a conduit allowing a radiation source to be directly placed within the target, that is the prostate cancer and the prostate gland. A number of radiation treatments can then be delivered through these catheters. Once the radiation treatment has been delivered the catheters are easily pulled out and no radioactive material is left within the prostate gland. A computer-controlled machine called a Remote Afterloader pushes a radioactive iridium source, which is located on the end of a wire into each of the catheters. The radioactive iridium source is then positioned at a number of "dwell" positions to deliver the radiation dose within the prostate. These positions are determined with the aid of a planning computer allowing optimal dosage to the prostate. The treatment can also be tailored and the various "dwell" positions of the radioactive seed can be altered on the computer to give the best dose distribution within the prostate to minimise the dose to the urethra. As the radiation is delivered internally, very little dose is delivered to surrounding structures, in particular the rectum. The ability of dose to be modified after the plastic catheters are placed within the prostate is one of the major advantages of HDR brachytherapy.

HDR brachytherapy involves a treatment program, which usually comprises of three separate therapies. (1) Short/long term hormonal therapy, (2) high dose rate (HDR) temporary brachytherapy and (3) moderate dose external beam radiation.

This treatment approach aims at optimising cancer control within various regions. The hormonal therapy acts systemically as well as acting as a radio-sensitiser enhancing the effects of the radiation within the prostate and prostate cancer. External beam radiation is used to treat potential prostate cancer that has a spread beyond the capsule of the prostate and in the surrounding tissues and lymph glands. The HDR component of the treatment aims at maximising the dose of the radiation to where the highest likelihood of a cancer is i.e. within the prostate.

Implant Procedure

Your doctor has recommended the use of a temporary prostate implant to treat your cancer. The purpose of this treatment is to deliver a high dose of radiation to the prostate gland while limiting the effects to other parts of the body. This procedure involves the insertion of 18 plastic catheters into the prostate (these are hollow plastic needles). These are placed using an anaesthetic and under the guidance of a rectal ultrasound and X-ray imaging. After the treatment has been completed these plastic catheters are removed.

Once the plastic catheters are placed you will be transferred to a CT scan where imaging of the prostate and catheters is undertaken and computer planning allowing accurate calculation of the dose to be delivered and adjustment of the radioactive source positions within the prostate will be determined. Once the plan has been completed, the radioactive iridium source, which is housed in the afterloader, is delivered to the prostate. Three separate treatments are then delivered, separated by at least 6 hours. Each of the treatments takes approximately 1-2 hours to deliver. In total you will be in hospital for 2 days. Typically the needle placement is performed in the morning. A CT scan is performed by lunchtime and the planning is undertaken in the afternoon and the first treatment of HDR is delivered late in the afternoon of the first day. The following day a treatment is delivered in the morning and again in the afternoon. Once the treatment has been delivered the catheters can be removed and patient discharged the following morning. During the 2 days you would remain in a hospital bed and would not be able to move significantly, in particular sitting up or walking would not be possible. A urinary catheter would be inserted at the initial anaesthetic and removed at the end of the brachytherapy treatment.

Approximately 2-3 weeks after the completion of the HDR brachytherapy a course of external beam radiation treatment to a moderate dose (45Gy in 25 separate treatment sessions) would be delivered over 4-5 weeks. Each session is given as an outpatient and usually only takes 20-30 minutes. A planning appointment would be arranged to plan this part of your treatment also. This will be given to you prior to your discharge from hospital. The extent of the radiation field is determined primarily by the potential risk that the surround lymph glands within the pelvis may contain cancer.

Some patients who have higher risk disease may continue on with further hormonal therapy. Typically hormone treatment is commenced 3-6 months prior to any radiation therapy and is then ceased. However in higher risk patients' hormone therapy may continue on for a prolonged period of time. This will be discussed by your radiation oncologist/urologist.

Possible Side Effects

Slight bleeding and bruising and tenderness between the legs are common. If bleeding persists beyond 24 hours after the implantation procedure you should contact your radiation oncologist/urologist. Burning on urination, urinating more frequently, pain or feeling unable to pass urine freely is sometimes side effects. This usually is a limited side effect and uncommonly a urinary catheter may need to be used to alleviate symptoms. Typically this is related to swelling of the prostate causing blockage of the normal urinary outflow.

Rectal discomfort is uncommon with respect to the HDR component of the treatment. Towards the end of the external beam radiation treatment some patients may experience temporary diarrhoea. Long-term complications from the external beam radiotherapy at such moderate doses are uncommon. Incontinence is rare.

The risk of developing impotency is thought to be approximately 30-40%. This is similar to other forms of radiation or brachytherapy, however long term results are not yet available. If impotency occurs it can usually be helped with the use of Viagra or other drugs or methods.

Activity

Avoid any heavy lifting or strenuous physical activity for the first week following your implant. After that you may return to your normal activity level. Occasionally vigorous activity can cause blood clots in the urine. If you experience this and it continues for more than a few days you should inform your radiation oncologist/urologist.

Diet

Prior to the implant procedure a special diet is recommended. This is to minimise any bowel motions during the period of implantation. Because of the limited mobility of patients who have the plastic catheters in-situ for 24-36 hours minimising any bowel motions, if any at all, would be desirable. This may help with reducing risks of infection and minimise the amount of nursing required during the procedure. You will receive a diet sheet which will explain the appropriate preparation prior to your implant.

Once you are admitted to the hospital room for your overnight stay you are allowed to roll from side to side but not sit upright as this may alter the position of the plastic catheters and hence alter the actual delivery of appropriate radiotherapy as planned. The following day after your first of three treatments an X-ray is performed just to ensure that no significant movement of the plastic needles has occurred overnight. Once treatment is completed the needles are removed. This may cause some slight bleeding which a nurse or therapist stops by applying some firm pressure to the perianal area with some gauze pads. Once you have passed urine you will be able to go home.

Radiation Safety

Unlike permanent radioactive seed brachytherapy, HDR is only a temporary implant. After the procedure has been performed and the plastic needle catheters have been removed there will be no radioactivity within your body. You will not be radioactive. Your urine or other body fluids will not be radioactive. During the course of the three treatments given over 24-36 hours there will be periods of time when visitors will not be allowed to enter your hospital room. This will probably be for 1-2 hours at a time. This will happen 3 times during your hospital admission. Visitors will be directed to leave your room at the time of each internal radiation treatment.

Figure 1: Afterloader HDR machine

