

Dynamic prostate brachytherapy – a single visit treatment for prostate cancer

This leaflet aims to answer your questions about having brachytherapy to treat your prostate cancer. It explains the benefits, risks and alternatives, as well as what you can expect when you come to hospital.

If you have any further questions or want more detailed information, please speak to your nurse specialist – contact details are at the end of this leaflet.

What is radiotherapy?

Radiotherapy is the use of radiation to treat cancer. It is called deep x-ray therapy (DXT) or external beam radiotherapy (EBRT).

Radiotherapy uses high-energy x-rays to destroy cancer cells by preventing them from dividing and growing larger. Although normal cells in the treatment area are also affected by the radiation, they can repair themselves better than the cancer cells.

Treatment can be given either as external or internal radiotherapy. External beam radiotherapy is where a machine produces beams of radiation targeted at the cancerous area. These beams travel through your body to destroy the cancer cells and are stronger than those used for taking x-rays. Internal radiotherapy is where solid radioactive material (material that gives off radiation) is placed in your body to destroy the cancer cells. It is placed within or near to your cancer, as the radiation does not travel very far.

What is brachytherapy?

Prostate brachytherapy is a form of internal radiotherapy for cancer that has not spread outside of your prostate gland (known as 'localised cancer'). It involves implanting (inserting) 'seeds' or pellets of radioactive material directly into your prostate gland under a general or spinal anaesthetic. For more information about anaesthetic, please see our leaflet, **Having an anaesthetic**.

These 'seeds' are about the size of a grain of rice and, using ultrasound for guidance, are implanted with a long, thin, hollow needle. See figure 1 below.

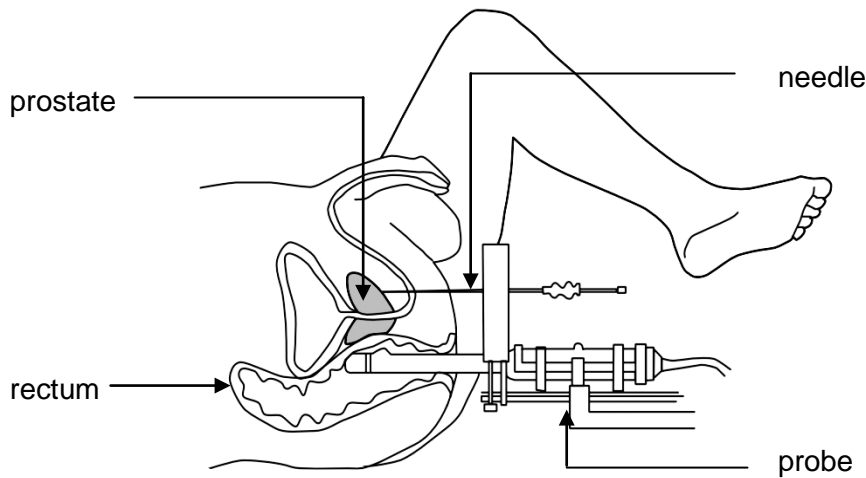


Figure 1. Inserting radioactive seeds. Image supplied by the Prostate Cancer Charity.

Brachytherapy is an established procedure for treating prostate cancer and is recognised as an alternative to traditional, external beam radiotherapy. It can be given as a single treatment or used in combination with a course of external beam radiotherapy (Brachytherapy Boost) for men with more significant cancers.

Prostate brachytherapy has been available in the UK for over 20 years and numerous centres now offer this treatment. Our prostate brachytherapy service has been running since 2003 and uses the most modern treatment approach, in which both the planning stage of the procedure and the procedure itself is done in one visit. Most other centres do these separately, needing two hospital visits and two anaesthetics.

What are the benefits of brachytherapy?

- It is a simple, one day procedure compared to external beam radiotherapy, which involves over seven weeks of daily hospital visits.
- You can return to normal life much quicker than with other treatments.
- Because the radioactivity only travels a few millimetres to kill nearby cancer cells, a higher dose of radiation can be given than with external beam radiotherapy.
- As the radiation dose is targeted at the area needing treatment, the tissues surrounding the prostate, such as the bowel and bladder are less affected than with external beam radiotherapy.
- Evidence suggests it is just as effective at 8 - 10 years after treatment compared to external beam radiation and radical surgery to remove the prostate (prostatectomy).
- Brachytherapy is associated with a lower risk of erectile dysfunction, urgency (an urgent need to pass urine), and radiation proctitis (pain or inflammation of the back passage) when compared to external beam radiotherapy. Please see the risk section below for more information about this.

Who will carry out the procedure?

This procedure is carried out by Mr Popert, Mr Challacombe and Mr Elhage (Urologists), Dr Morris, Dr Guerrero-Urbano and Dr Beaney (Oncologists) who have all undergone specialist training in this procedure with experts in America and Europe.

What are the alternatives?

Brachytherapy is just one of the available options to treat localised prostate cancer. Your doctor will discuss with you any other treatments that are appropriate for your grade and extent of cancer. Please read our other leaflets for more information on these specific treatments:

- **External beam radiotherapy with a brachytherapy boost (3061)**, beams of radiation to destroy the cancer cells
- **Removing your prostate to treat your prostate cancer – a robotic-assisted laparoscopic prostatectomy (1499)**, surgery to remove your prostate using robotic instruments and several keyholes
- **Active surveillance for prostate cancer (3318)**. In some cases it may be an option not to treat your cancer. This is referred to as active surveillance or monitoring. Some cancers need to be treated more urgently than others, depending on how aggressive they are. If a very aggressive cancer is not treated, it may spread to other parts of the body. Your doctor will tell you if active surveillance is an option for you, but please do not make any decisions before speaking to your doctor or specialist nurse.

How does brachytherapy compare to other treatments?

Recently published data has suggested that brachytherapy is as successful as external beam radiotherapy and surgery in curing small, slow growing prostate cancers.

You will already have had a PSA (prostate specific antigen) blood test to help diagnose your cancer. PSA tests are also used to monitor the effectiveness of any treatment you receive. American studies have shown that 17 out of 20 men had no rise in their PSA in the 10 years following brachytherapy. These results mirror studies of patients who have surgery to remove the prostate.

As with any form of radiotherapy to the prostate, you are at risk of incontinence and impotence or sexual dysfunction. However, studies have shown that the risks of these side-effects are significantly lower for brachytherapy than for external beam radiotherapy or surgery. Also, unlike other treatments, brachytherapy does not affect your fertility or ability to ejaculate.

There are no clear long-term disadvantages to brachytherapy in comparison to external beam radiotherapy. The short term side-effects of lower urinary tract symptoms, such as urgency to urinate, frequency (the need to pass urine often) and discomfort when urinating, are more common with brachytherapy. This is due to the radiation, which is released over a period of months.

What are the risks?

Your doctor will discuss the following possible complications with you in more detail.

Urinary frequency and urgency. About one out of 50 men experience some urgency for up to three months after brachytherapy. These symptoms are mild in four out of five patients and moderately severe in one out of five patients.

The symptoms usually peak 6-12 weeks after brachytherapy and improve after this. They can be controlled by making sure you drink plenty of clear fluids and avoiding caffeine and alcohol. We can also give you medication if needed, to improve your urine flow and reduce irritation to your urethra (tube through which you pass urine). These symptoms have usually resolved within six months of your implant.

This risk is lower for brachytherapy than external beam radiotherapy where two to three out of 10 men experience urge incontinence (where you leak urine before reaching a toilet) and surgery where one or two men experience stress incontinence (when you leak urine without the urge to the toilet, for example when you sneeze or laugh).

Urinary retention (the inability to pass urine). This is unusual, but can occur particularly if your prostate is large and swells further after treatment. If we think you are at risk, we will discuss the options for managing this with you before your treatment.

Erectile dysfunction. About one out of five men may have a temporary reduction in the quality of their erections in the six months after brachytherapy. This is less than the six to seven out of 10 men treated with external beam radiotherapy and almost all of the men who have had a radical prostatectomy.

Erectile dysfunction can be helped by medicine if needed. Your erections normally return to pre-treatment level within a year. In the longer term (several years), there may be a further reduction in erectile function, but again this can be helped by medicines. The risk of erectile dysfunction is greater for patients who have combination treatment, with hormones or external beam radiation with brachytherapy. Compared to radical surgery and hormone radiation, erectile function is much better maintained with brachytherapy.

Fertility. Although other radical treatments will usually leave you sterile, this is not the case after brachytherapy. If your partner is of childbearing age she should be aware of this fact. Because the seeds remain radioactive for about a year after implantation, we recommend that you and your partner use contraception for a year after your treatment to avoid pregnancy.

Rectal bleeding/ proctitis (pain/inflammation of the back passage). One to two out of 50 patients may experience this after brachytherapy, compared to five to 10 out of 50 men treated with external beam radiotherapy. If you have rectal bleeding you must contact us so we can advise you what to do.

Bowel irritation. This can occur as late as two to three years after brachytherapy, but medicines can often treat this. If your GP refers you to a bowel specialist, they must be told that you have had brachytherapy. They should speak to your consultant before you have any biopsies of your bowel, as this can lead to further problems.

Seed migration (where the radioactive seeds are carried in the blood vessels to the lungs). You will not experience any specific symptoms if you have seed migration. It is generally picked up during investigations for other unrelated problems. When you first have your implant the risk is around one in 100 patients although up to 30 in 100 patients may experience some seed

migration in the long-term. However, studies that have followed up seed migration cases have not reported any long-term harmful effects.

Anaesthetic. Modern anaesthesia is very safe and serious problems are uncommon. Your anaesthetist (a specially trained doctor who gives anaesthetics) will use specialist equipment to monitor you closely throughout the procedure. However, risk cannot be removed completely and some people may have side effects or complications. Our leaflet, **Having an anaesthetic**, has more information about this. Please ask for a copy from a member of staff.

How can I prepare for the procedure?

Prostate assessment and symptom score

Before brachytherapy, the size of your prostate has to be measured to estimate the number of seeds needed for the procedure. You may hear this assessment called a trans rectal ultrasound.

Images from an ultrasound probe (rather like the one that was used during your biopsies) are taken to allow the size and volume of your prostate to be carefully measured. If your prostate biopsy was carried out at Guy's and St Thomas' Hospital a prostate assessment will have been done at this time. If not, your prostate size and symptoms will be assessed a few weeks or months before the brachytherapy.

To make sure that your risk of urinary retention is low, we will also carry out:

- a prostate symptom score (questionnaire which helps us monitor how many urinary symptoms you have and how severe you think they are); and
- a flow rate (where you pass urine into a special machine that measures how strong your urine flow is).

Many centres are unable to carry out brachytherapy on large prostates (greater than 50cc) and patients are given medicine to reduce the size of their prostate before treatment. We have found this to be unnecessary and have treated prostates up to 80cc in size. However, the risk of urinary symptoms and retention is greater if you have a large prostate. You may need to learn how to pass a small tube (catheter) into your bladder to drain off any excess urine. This will prevent you from needing to come into hospital if you can't pass urine properly at first.

If your prostate is too large, we may discuss alternative treatments with you or offer hormone therapy for three months. We may also offer an operation to core out the middle of your prostate to reduce its size. If you need this, your prostate will be reassessed before the brachytherapy treatment.

We will give you a prescription for a type of medicine called an alpha blocker (tamsulosin or alfuzosin hydrochloride), which you will need to start taking 48 hours before you come to hospital for your implant. This medicine helps to ease the flow of your urine over the coming months, while your prostate is swollen from the implants. It will also help to reduce the risk of urinary retention.

If you do not get a prescription, please contact your specialist nurse to organise this. You will need to continue taking this medicine until one of the doctors looking after you tells you otherwise. To do this, you will need to get repeat prescriptions from your GP. You may need to take the medicine for up to 18 months after the implant.

We will give you a prescription for an enema. This is to clear your bowels either on the morning of your procedure or the night before if you are travelling from some distance away. Your doctor/nurse will give you instructions on when you should give this.

You will be given a prescription for an antibiotic called ciprofloxacin. You should start this after your implant (the evening of the implant). Make sure that you have this prescription before you leave the hospital.

Pre-admission clinic

You will need to attend a pre-admission clinic before you have your treatment. We will check your suitability for a spinal or general anaesthetic at this appointment. A spinal anaesthetic is where your body is numbed below the waist and a general anaesthetic is where you are put to sleep for the whole procedure. This will be discussed with you in more detail at your clinic appointment.

We will carry out a number of tests to make sure that your heart, lungs and kidneys are working properly. You may have a chest x-ray, ECG or electrocardiogram (recording of the electrical activity of your heart) and some blood taken. Your doctor will explain any further tests you need.

Medication

Please let us know if you are taking any **antiplatelet medicines** (for example, aspirin, clopidogrel) or any **medicines that thin the blood** (for example, warfarin or rivaroxaban), as these may need to be withheld temporarily before the procedure. Also tell your doctor or nurse if you have diabetes as you may need to alter the dose of your diabetes medicines, as you will need to fast before the procedure. We will give you more advice about this. Do not make any changes to your usual medicines and continue to take them unless you are told otherwise. Please remember to bring them with you to the pre-admission clinic and on the day of your procedure.

Please let us know if you are taking any regular medicines (including anything you buy yourself over the counter or any herbal or homeopathic medicines) and if you have any allergies to any medicines.

Fasting instructions

Please do not eat or drink anything (except non-fizzy water) for six hours before your appointment. This means that you cannot suck on sweets or chew gum. You are allowed to drink water up to two hours before your appointment. This will be explained to you in the pre-admission clinic. **If you do not follow these instructions, your procedure may have to be cancelled.**

Smoking

If you smoke, you may be asked to stop smoking, as this increases the risk of developing a chest infection or deep vein thrombosis or DVT (blood clot developing in a deep vein). Smoking can also delay wound healing because it reduces the amount of oxygen that reaches the tissues in your body. If you would like to give up smoking, please speak to the Trust's stop smoking service on **020 7188 0995** or call the NHS Smoking Helpline on 0800 022 4 322.

What should I expect when I come to hospital?

When you arrive at hospital, you will be seen by a nurse who will take some of your details and prepare you for theatre.

Consent - asking for your consent

We want to involve you in decisions about your care and treatment. If you decide to go ahead, you will be asked to sign a consent form. This states that you agree to have the treatment and you understand what it involves.

If you would like more information about our consent process, please speak to a member of staff caring for you. Remember, it is your decision. You can change your mind at any time, even if you have signed the consent form. Let staff know immediately if you change your mind. Your wishes will be respected at all times. If you would like to read our consent policy, please tell a member of staff. The anaesthetist will also see you to discuss your anaesthetic. If you have any further questions or concerns, your specialist nurse will be available to answer them.

The procedure

The procedure itself takes between one and a half and two hours. In the technique used here at Guy's and St Thomas', between 40 and 110 radioactive seeds are placed inside the prostate. These gradually release their radiation dose over a few months.

Once you are anaesthetised, the doctor will insert an ultrasound probe into your rectum, to help see where the needles are to be placed. When your doctor can clearly see your prostate on the ultrasound, needles are inserted into your prostate through your perineum - the area of skin beneath your scrotum. Once the needles have been positioned, the doctor will make careful measurements of your prostate and use a computer to determine the exact placing, and number of seeds. The seeds are then inserted into your prostate through these needles. Implanting the seeds will take about 45 minutes to an hour.

The seeds will be permanently left in your prostate, although they will have released 95% of their radiation a year after being implanted. Your doctor will carefully work out the dose of radiation you are given so that the size and shape of your prostate is covered by the radiation, as well as a small area of surrounding tissue. We will reduce unnecessary radiation to the bladder and bowel and reduce the dose to your urethra as much as possible.

After the implant

After the seeds have been implanted you will be taken to the recovery room. You will stay here until you awake from the anaesthetic, which usually takes about an hour. After this, you will be taken back to your ward or day surgery unit.

When you wake up you will have a drip (a bag of fluid connected to a small tube in a vein in your arm) to keep you well hydrated until you are able to drink fluids. Passing urine may be a little uncomfortable at first. If you have problems with this you may need a catheter inserted, although most patients do not need this.

If you are coming in as a day surgery patient you will need a relative or friend to help you home afterwards. If you are staying on the ward and your friends and family members come to visit you in hospital, they can wait in the ward day room and visit you afterwards. You will stay on the main ward with other patients, which shows just how safe the radiation levels are.

Important special precautions

There are a few special precautions to follow because of the radiation.

- Please **do not allow any young children to sit on your lap and do not cuddle them or anyone who is pregnant** for a prolonged period of time (more than five minutes). This is because young children and foetuses (babies before they are born) are more vulnerable to even low levels of radiation and it could impact on their development.
- We recommend that you **avoid prolonged close contact** (no closer than 0.5 metre) with young children and pregnant women for the first two months after the implant.
- You must **wear a condom** during sexual intercourse due to the very small risk of passing a seed during ejaculation, again only for the first two months after the implant.

Please speak to your nurse specialist if you have any questions or concerns regarding these precautions.

Your doctor or a member of their team will come and see you after you have returned to the ward and your nurse has settled you in. There is not usually much pain from this procedure; although you may be a little sore. We can give you painkillers if you need them, so please let us know if you are in pain. We will usually give you oral painkillers such as paracetamol or ibuprofen, which you can take as soon as you are able to eat and drink. This is usually within hours of returning to the ward.

When can I go home?

You should be able to leave hospital within 12 hours of the procedure. Before leaving the hospital you will be given a Radionuclide Instruction card, which is about the size of a credit card completed with your personal details. The back of the card has details of who to contact in an emergency and information on the special radiation precautions you should follow after your implant. You should keep the card with you at all times, especially if you are travelling abroad as the implants can set off security alarms in airports in much the same way as hip/knee replacements and pacemakers can.

You will be given one week course of antibiotics to start the evening of your implant. You must complete the course as it will reduce the risk of urinary infection.

Your nurses will also give you a set of reminder instructions when you leave the hospital. If you have any questions between your implant and follow-up appointment please contact one of the prostate cancer nurses – contact details are at the end of this leaflet.

When you go home, please drink plenty of clear fluids each day. We recommend two to three litres of water, and limit any caffeine (tea or coffee), fizzy drinks and alcohol. You should be able to return to normal activities within about three days. Please take things gently at first and build up your activities slowly. You should be able to go back to work about five days after the implant.

What side-effects can I expect after getting home?

You may experience the following symptoms in the first two to three days:

- discomfort around your bottom when you sit down
- blood-stained urine
- bruising under your scrotum
- difficulty passing urine – needing to pass urine frequently and having to rush to the toilet to pass urine.

Please let us know if you have problems passing urine, as you may need additional treatment for a few days such as a catheter to drain your urine. One in 10 patients will need catheterisation after having brachytherapy. These symptoms should get better with time.

Four to eight weeks after your implant you might have:

- pain when you ejaculate, less forceful ejaculation or a reduced amount of ejaculate. This is related to the medication (tamsulosin) and the effect of the radiotherapy
- urinary frequency (going many times to pass small amounts of urine)
- pain on passing urine (this is the most common time to experience this)
- complete loss of erections – this is rare, but if it does happen, there is a variety of treatments to help, which we can discuss with you.

If you continue to have problems around eight weeks after your implant, you may need further treatment from your specialist.

When will I have a follow-up appointment?

You will be closely followed-up after the implant. You will have a CT scan of your prostate four to six weeks after having your implant at the Cancer Centre at Guy's, to check the positioning of the seeds, particularly if you have needed a Transurethral resection of the prostate (TURP) before the brachytherapy treatment. This is part of a quality control assessment, to check the implant quality and compare this to the assessment made at the time of the procedure. It is not used to see whether the cancer has gone.

Testing your PSA

You will have your first PSA test two to four months after the implant and again at six to eight months after implantation. We expect your PSA to fall in the months following the implant and most patients will have a PSA of less than 0.5 three to five years after brachytherapy. However, you should be aware that for some patients, their PSA rises 12–18 months after the implant and then starts to fall again. This is called "PSA bounce". It is not a sign of treatment failure, but occurs more commonly in patients under 70 and those with larger prostates. PSA bounce occurs in up to 30 out of 100 of patients, but this has not been shown to have any negative impact on the treatment outcome.

Contact us

If you have any questions or concerns, please contact **Jonah Rusere** (prostate cancer advanced nurse practitioner) or **Sharon Clovis** (prostate nurse specialist) on **020 7188 7339** Monday to Friday, 8am to 5pm.

Alternatively call the hospital switchboard on **020 7188 188** and ask for the bleep desk. Ask the operator to bleep **2393** or **1005** respectively and wait for a response.

Guy's and St Thomas' hospitals offer a range of cancer-related information leaflets for patients and carers, available at www.guysandstthomas.nhs.uk/cancer-leaflets. For information leaflets on other conditions, procedures, treatments and services offered at our hospitals, please visit www.guysandstthomas.nhs.uk/leaflets



Dimbleby Cancer Care provides cancer support services for Guy's and St Thomas'. We have a drop-in information area staffed by specialist nurses and offer complementary therapies, psychological support and benefits advice for patients and carers.

Dimbleby Cancer Care is located in the Welcome Village of the Cancer Centre at Guy's. **t:** 020 7188 5918 **e:** DimblebyCancerCare@gstt.nhs.uk

Pharmacy Medicines Helpline

If you have any questions or concerns about your medicines, please speak to the clinical nurse specialist or other member of staff caring for you or call our helpline.

t: 020 7188 8748 9am to 5pm, Monday to Friday

Your comments and concerns

For advice, support or to raise a concern, contact our Patient Advice and Liaison Service (PALS). To make a complaint, contact the complaints department.

t: 020 7188 8801 (PALS) **e:** pals@gstt.nhs.uk

t: 020 7188 3514 (complaints) **e:** complaints2@gstt.nhs.uk

Language and Accessible Support Services

If you need an interpreter or information about your care in a different language or format, please get in touch:

t: 020 7188 8815 **e:** languagesupport@gstt.nhs.uk

NHS 111

Offers medical help and advice from fully trained advisers supported by experienced nurses and paramedics. Available over the phone 24 hours a day.

t: 111

NHS Choices

Provides online information and guidance on all aspects of health and healthcare, to help you make choices about your health.

w: www.nhs.uk

Get involved and have your say: become a member of the Trust

Members of Guy's and St Thomas' NHS Foundation Trust contribute to the organisation on a voluntary basis. We count on them for feedback, local knowledge and support. Membership is free and it is up to you how much you get involved. To find out more, and to become a member:

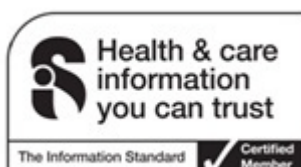
t: 0800 731 0319 **e:** members@gstt.nhs.uk **w:** www.guysandstthomas.nhs.uk/membership

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