

Prostate Cancer: A Guide to Treatment Options

- Surgery
- Radiation Treatment

Table of Contents

Surgery.....	3
• Prostate Cryoablation.....	4
• Salvage Cryotherapy.....	5
• Active Surveillance.....	5
• Radical Prostatectomy.....	7
– Radical Retropubic Prostatectomy (RRP).....	7
– Robotic-Assisted Laparoscopic Prostatectomy (RALP)	8
• The Role of Surgery When Cancer Recurs.....	9
– Salvage Radical Prostatectomy	9
– Surgery Side Effects	10
Radiation Treatment	13
• External Beam Radiation.....	13
– Intensity Modulated Radiation Therapy (IMRT).....	13
– Proton Therapy	14
– External Beam Radiation with Hormonal Therapy	15
• Prostate Implant	15
• Post-operative Radiation.....	16
Medical Treatment	16
Treatment Comparison Table.....	Appendix 1
Treatment Maps.....	Appendix 2

Surgery

Surgery is one option to treat prostate cancer. This section will help you learn more about the male reproductive system and different types of surgeries.

The urology prostate group surgeons are:

Jonathan Melquist, MD

Barrett McCormick, MD

The Prostate and Surrounding Area

The terms below will help you understand the function of the prostate and the surrounding area. See Figure 1.

Bladder - The organ in the body that stores urine.

Lymph node - A rounded mass of tissue in various areas of the body. Lymph nodes filter lymph (lymphatic fluid), and they store lymphocytes (white blood cells). Cancer can spread to lymph nodes from its original site.

Penis - An external male reproductive organ. It contains a tube called the urethra, which carries semen and urine to the outside of the body.

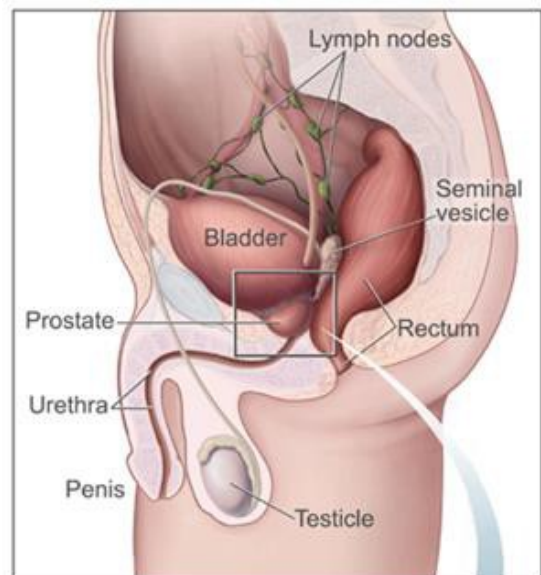
Prostate - A gland in the male reproductive system. The prostate surrounds the part of the urethra (the tube that empties the bladder) just below the bladder, and produces a fluid that forms part of the semen.

Rectum - The last several inches of the large intestine (colon). The rectum acts as a holding area for body waste (stool) until a bowel movement occurs.

Seminal vesicle - A gland that helps produce semen.

Testicle - Egg-shaped glands found inside the scrotum that produce sperm and male hormones.

Urethra - The tube through which urine flows out of the body. It empties urine from the bladder.



This shows the prostate and nearby organs.



This shows the inside of the prostate, urethra, rectum, and bladder.

Figure 1
The prostate and surrounding area

Prostate Cryoablation

Prostate cryoablation involves the controlled freezing of the prostate gland in order to destroy cancerous cells. Freezing affects both the cancer cells and the normal cells of the prostate. This process may cause scar tissue to develop. Important factors influencing freezing injury are the rate of temperature reduction after the freezing begins, the time cells remain frozen and the heating rate during thawing. This treatment is often recommended for patients whose cancer has not spread outside the prostate or who have minimal spread beyond the prostate.

Recovery

Patients are usually discharged with a catheter in place for drainage either the day of surgery or the morning after surgery. Most men are able to urinate in about 10-15 days but some may require a longer recovery period. When the patient is able to urinate and empty the bladder, the catheter is removed.

Surgery side effects may include:

- Fatigue (feeling tired) that usually lasts for 7-10 days
- Discharge from the urethra
- Swelling around the scrotum
- Numbness at the tip of the penis
- Passing flecks of tissue
- Pain or a burning sensation when urinating
- Increased urinary frequency and/or feeling an urgent need to urinate

A PSA test is usually done 3 months after the procedure. A prostate biopsy may be done 3-6 months after treatment to look for cancer cells depending on the PSA level. If the biopsy is negative, PSA levels are checked as needed for follow up.

Complications

Cryoablation complications have improved. However, some risks still exist. Patients commonly have problems with erections after the procedure.

Uncommon complications:

- Urinary leakage
- Inability to urinate - repaired with a minor surgical procedure to open the urethra (the tube that carries urine out of the body).
- Development of a passageway between the rectum and the urethra that can cause leakage of urine or stool.
- Irritation of the testicles.

Rare complications:

- Permanent, severe incontinence in about 1% of patients
- Infection in the prostate
- Permanent numbness in the penis

Outcomes

A recent research study reported that the 5-year rate for treatment success for patients with early and intermediate cancers ranged between 60-76%; for patients with larger or more aggressive cancers, it was 41%. These results are encouraging and suggest that cryoablation may be a treatment option for certain patients.

Salvage Cryotherapy

Salvage cryotherapy can be used when a biopsy proves that there is cancer in the prostate after radiation. The cancer must be local, meaning it has not spread outside the prostate. The indications for salvage radical prostatectomy and salvage cryotherapy are almost the same.

Technique

Salvage cryotherapy is performed under a general anesthetic and is virtually identical to that described in the “Prostate Cryoablation” section on Pages 4-5.

Recovery

Salvage cryotherapy can be performed in either an outpatient setting or with an overnight hospital stay. After the procedure a Foley catheter is left in the bladder for approximately 2 weeks to drain urine from the bladder while the prostate swelling subsides.

Short Term Side Effects

- Approximately 10% of patients will have significant swelling of the scrotum and penis in the first few days or week following the procedure. This swelling usually resolves on its own after 2-3 weeks.
- There is a 10-15% risk of long term urinary leakage following salvage cryotherapy that can be managed by delayed placement of an artificial urinary sphincter approximately 1 year later if severe. For more information, see “Artificial Urinary Sphincter” on Page 11.
- In general, most patients that undergo salvage cryotherapy will experience erectile dysfunction which can be managed with a variety of erectile dysfunction therapies. These are discussed in “Erectile Dysfunction” on Page 11.

Outcomes

The chance of being cancer free 5 years after salvage cryotherapy based on PSA testing is between 55-60%. Thus, salvage cryotherapy can be a curative treatment in some patients. However, based on the results of a recent study that compared the two salvage treatments, we believe that salvage radical prostatectomy has the best chance for cure.

Active Surveillance vs. Watchful Waiting

Watchful waiting is monitoring of PSA values over time. It is the treatment of choice for men who are older or have other serious medical issues. Your doctors will discuss the differences between active surveillance and watchful waiting. Because prostate cancer often grows very slowly, some men may never need treatment for their prostate cancer.

Active surveillance involves closely monitoring the cancer without active treatment such as surgery or radiation therapy.

At Baptist MD Anderson, active surveillance is considered a treatment option for:

- Patients with localized, low-grade prostate cancer or
- Patients with other serious illnesses for whom surgery, radiation or other treatments are not good options.

A patient with early stage prostate cancer must meet the following guidelines for his doctor to consider active surveillance therapy:

- A prostate biopsy shows a small amount of cancer.
- The cancer is low grade and not aggressive.

Active surveillance can also be used in patients who prefer to monitor their cancer rather than to have surgery or other therapy immediately. It is important that these patients understand there is no test to reliably detect the growth or spread of prostate cancer very early. All patients who choose active surveillance must be willing to:

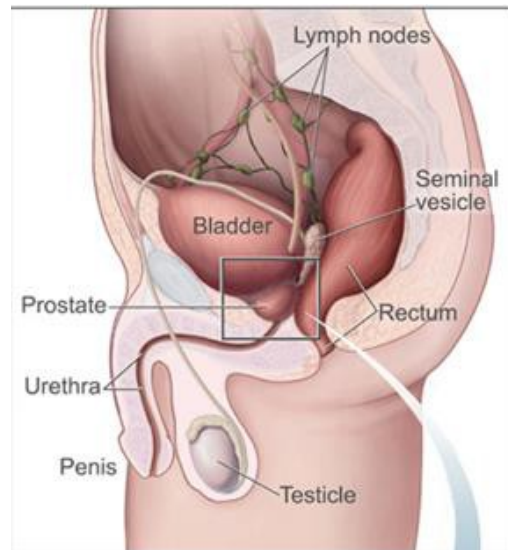
- Have a surgical biopsy when beginning active surveillance between 6 months and 1 year after the first biopsy.
- Have PSA tests every 6 months
- Consider MRI of the prostate to check for prostate cancer

Active surveillance is challenging for patients and their doctors because:

- There is no test that will help predict the growth of all cancers to avoid treatment delays.
- There is no test that will always identify the likelihood that cancer will spread to other parts of the body.

Men who choose active surveillance should discuss with their doctor what their treatment options will be as they grow older. Careful PSA testing and regular prostate biopsies are part of active surveillance for all men. In most cases, treatment options are likely to remain the same unless an unexpected event related to the cancer or general health occurs.

The risks of active surveillance will become lower as the ability to predict prostate cancer behavior improves. Men who choose the approach and participate in research studies help contribute information about prostate cancer and lower the risk for others.



This shows the prostate and nearby organs.



This shows the inside of the prostate, urethra, rectum, and bladder.

Figure 2
The prostate and surrounding area

Radical Prostatectomy

A radical prostatectomy is the term used to describe the surgical removal of the prostate. The prostate can be removed either by open surgery or by laparoscopic surgery through small incisions. You have options when choosing a radical prostatectomy.

Radical Retropubic Prostatectomy (RRP)

Technique

In open surgery, a surgeon makes a 4-6-inch cut (incision) below the belly button. The surgeon removes the prostate and seminal vesicles (glands behind the prostate) by cutting them away from their blood supply, the bladder and the urethra. Many times the cavernous nerves, which are needed for men to get erections, can be carefully saved during the surgery. The pelvic lymph nodes are also sometimes removed to find out if the cancer has spread **outside** the prostate. The surgery is complete when the surgeon re-connects the bladder to the urethra. A tube (called a Foley catheter) will then be placed into the bladder through the penis to allow the area to heal.

Most patients leave the hospital 24-48 hours following surgery with the Foley catheter in place. The Foley catheter is usually removed 7-14 days after surgery. Depending on the type of work, patients usually return to their job 2-6 weeks after surgery.

Outcomes

For patients with low to medium risk cancer that did not spread outside the prostate, 9 out of 10 men will not have cancer return within 5 years of surgery. This number is less if the cancer has spread outside the prostate, involves the seminal vesicles or is found in the lymph nodes at the time of surgery. Additional treatment may be needed if the cancer is likely to have spread. For more information, see the “Radiation Treatment” and “Clinical Trials” sections.

Side Effects

Men who had good control of their urine (no accidents) before surgery may experience stress- related leakage of urine. This happens after surgery and gets better over time. This can happen during coughing, heavy lifting and physical straining after surgery. If this happens, a urinary pad can help. Regaining urinary control is expected in over 90% of men by one year after surgery.

Although erectile function, the ability to have an erection, may return in up to 80% of patients after surgery, this number is affected by several factors. These include:

- The patient’s age
- The quality of erectile function before surgery
- The experience of the surgeon
- Whether or not one or both cavernous nerves are saved during surgery

Recovery of erections can take up to 2 years after surgery and may require the use of aids. See “Erectile Dysfunction” on Page 11.

Robotic-Assisted Laparoscopic Prostatectomy (RALP)

Open RRP was the standard surgery to remove the prostate and treat prostate cancer for many years. With recent medical advances, a less invasive surgery is now routinely used. Robotic Assisted Laparoscopic Radical Prostatectomy (RALP) allows removal of the prostate with smaller incisions compared to standard surgery.

Patients in the following situations **may** not be good candidates for robotic surgery:

- Prior surgery in the abdomen may lengthen the procedure but it can usually be done.
- The cancer is near the bladder or may involve the seminal vesicles.

Advantages of Robotic-Assisted Surgery:

- Smaller incisions
- Less blood loss and need for transfusion
- Decreased pain, discomfort and recovery time

Technique

During the surgery, 5 one-fourth inch to three-fourth inch incisions are made in the abdomen. A thin tube with a camera on the end is placed into one of the incisions to help the surgeon see inside the body. Long thin instruments are placed in the other incisions to help the surgeon manipulate organs and perform the surgery. See Figure 3.

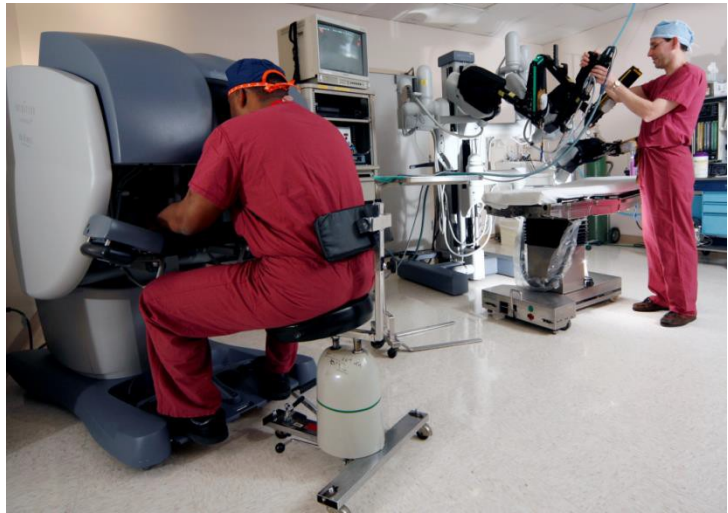


Figure 3
Surgeons preparing the robot for a RALP procedure

Outcomes

Many patients are discharged from the hospital the day after surgery. Like open surgery, a Foley catheter will be in place which is usually removed 7-10 days after surgery. Depending on their occupation, patients usually return to work about 2 weeks after surgery. Patients can resume their full activities such as exercise, travel and work 6 weeks after the procedure.

Success rates are similar to an open surgery in these areas:

- Removes all of the cancerous cells so you are considered “prostate cancer free”
- Freedom from the cancer returning 5 years after surgery
- Urinary control and sexual function (Some reports indicate that the ability to have erections may return several months earlier with RALP.)

The Role of Surgery When Cancer Recurs

Salvage radical prostatectomy and salvage cryotherapy are procedures that can possibly cure patients when their prostate cancer returns (recurs) after receiving initial radiation therapy.

Salvage Radical Prostatectomy

Many patients are told by their local doctor that it is not possible to surgically remove the prostate if cancer recurs after having radiation therapy. This is because radiation causes scar tissue around the prostate. Many surgeons are uncomfortable operating in this case because of the change in tissue and the risk of serious side effects. However, our surgeons are experienced in removing the prostate if the cancer recurs after radiation therapy. This procedure is called a salvage radical prostatectomy. It can be performed as an open or robotic assisted procedure.

Recovery

Most patients who have a salvage radical prostatectomy are in the hospital 2-3 days and recover from surgery (with the exception of incontinence, see page 10) within 4-6 weeks. Patients with more extensive disease who need removal of the prostate and bladder with a reconstruction option, will be in the hospital about 6-8 days with a 6-8 week recovery. Your doctor will give you more information about the type of salvage radical prostatectomy that is recommended for you.

Complications

Most patients who have a salvage prostatectomy will have erectile dysfunction after surgery. A possible complication of a radical prostatectomy in patients with prior radiation is urinary incontinence (the accidental leakage of urine). This possibility is much higher in patients undergoing salvage radical prostatectomy following radiation therapy than the chance of incontinence in patients who have surgery as their initial treatment. For more information, see “Incontinence” on page 10. Patients are also at higher risk for injury to the rectum due to scar tissue formation between the prostate and rectum.

Outcomes

For patients who have local recurrence of cancer (the cancer has not spread outside the prostate) following radiation therapy, salvage radical prostatectomy is the treatment with the best chance of cure. Approximately 60% of patients who have this surgery will be cancer free 5 years after the surgery. (This figure is based on regular PSA testing after surgery.)

An alternative treatment option is salvage cryotherapy which is much less invasive. See Page 5 for more information.

Surgery Side Effects

Incontinence

Temporary urinary incontinence, or the loss of the ability to control urination, is common in men who have prostate cancer surgery. If you have surgery, you should prepare for this possibility and learn how incontinence can be treated.

There are different types of urinary incontinence and differing degrees of severity. Some men dribble urine, whereas others will have total leakage. Loss of urine with a cough, sneeze or laugh is called stress incontinence and is the most common type of urine leakage men have after prostate surgery. On the other hand, the need to frequently urinate with episodes of leakage is called urge incontinence.

How Prostate Cancer Treatment Causes Urinary Incontinence

When urine flows into the bladder from the kidneys, it is stored inside the bladder. Urine is held here by valves that stay closed until messages from the brain “tell” the valves to open and urinate. The prostate gland, which surrounds the urethra, also helps hold back urine until it is released.

Removing the prostate through surgery disrupts the way the bladder holds urine and can result in urine leakage. Sometimes, surgery can damage the muscle valves that hold the urine in.

If urinary leakage continues longer than 1 year, some men may require treatment for their incontinence. The degree of leakage can range from a few drops per day to total loss of urinary control. A thorough exam can determine the cause and extent of incontinence after trying conservative treatments, such as pelvic floor exercises. This exam includes:

- Questionnaire – A survey that asks when your leakage occurs and how this may affect you.
- A cystoscopy – A procedure that allows a doctor to view the bladder and urethra by inserting a tube with a tiny camera up the urethra and into the bladder.
- A urodynamic study – A test that can determine whether the bladder and urethra are functioning normally.
- A 24-hour pad test – A test to check the exact amount of leakage occurring within a 24-hour period.

These combined test results will help determine your best treatment option.

Treatment Options

Absorbent products (pads): Absorbent pads are the least invasive and least expensive treatment. A wound, ostomy and continence nurse (WOCN) in the urology department can give you suggestions and advice.

Penile Clamp: Penile clamps are external devices made of soft foam or other materials that wrap around the penis, putting pressure on the urethra and stopping the flow of urine, but not blood flow. They’re removed to empty the bladder. Penile clamps are available from medical supply companies and require a prescription.

Catheters: Catheter drainage is a convenient way to manage severe urinary leakage and comes in two forms – internal and external. Either type of catheter can be attached to a leg drainage bag or nighttime drainage bag depending on the case. Internal catheters (also called indwelling catheters), are generally placed and changed by a medical professional on a monthly basis. The external catheters, called “Texas” or condom, can be changed by the patient or caregiver on a more frequent basis.

Medicines: There are no medicines available to treat incontinence related to physical activity, coughing or sneezing – called stress incontinence. Many medicines are available to treat overactive bladder or urge incontinence such as Ditropan®, Detrol®, Vesicare® and Enablex®. All of these medicines are proven to reduce urinary frequency, urgency and nocturia (getting up at night to urinate). These medicines will not help if you have problems related to the urinary sphincter, a muscle that helps hold back urine. Patients who have stress and urge incontinence may need to use medicines combined with another therapy.

Injection Therapy: During urination, nerve signals cause the muscles in the walls of the bladder to contract, forcing urine out of the bladder and into the urethra. The urethra is the tube that carries urine from the bladder to the outside of the body. At the same time the bladder contracts, nerve signals cause the sphincter muscles surrounding the urethra to relax, allowing urine to pass through and out of the body. Prostate surgery can interfere with this process.

To help the urethra close in this area, an injection of different materials into the walls of the urethra may help the sphincter to close. The most commonly used material is composed of bovine collagen. Bovine collagen is made of sterile, purified collagen from cow skin. Injection therapy is a treatment for men with mild stress incontinence who use 1 or less pads per day.

Male Slings: Male slings have been patterned after similar procedures for female incontinence. A sling is a device used to suspend the urethra. It is made from synthetic material or from the patient’s own tissue and is used to create the urethral compression necessary to achieve bladder control. Generally, slings are used to treat men with mild to moderate stress incontinence who use 1-4 pads per day.

Artificial Urinary Sphincter: This patient-controlled device is made of silicone rubber and is composed of 3 parts: a pump, a balloon reservoir and a cuff that encircles the urethra and prevents urine from leaking. The use of the artificial sphincter has a high success rate and is the best treatment for men with moderate to very severe incontinence who use more than 4 pads per day.

Erectile Dysfunction

A man has erection problems if he cannot get or keep an erection that is firm enough for him to have intercourse. Erection problems are also called erectile dysfunction (ED) or impotence. All men, to some extent, will experience ED after prostate cancer treatment. The good news is that ED can be successfully managed through new advances in drug therapies and medical technology.

ED is mainly caused by nerve damage during prostate surgery. Baptist MD Anderson doctors have helped develop and use surgical techniques to save or restore erectile nerves during surgery. Also a group of new treatments called “penile rehabilitation” can help stimulate early recovery of erectile

function and help to maintain penile size. Baptist MD Anderson is recognized worldwide as a leader in this approach. Treatments include:

- Medicines taken by mouth
- Medicines delivered into the penis that help produce erections
- Vacuum erectile devices

These therapies can also help men who have been treated with radiation and cryoablation.

ED can be managed; however no single treatment is effective for every patient. Our staff work with patients and their partners to provide individualized therapy after prostate cancer treatment.

Penile Rehabilitation Options

Oral medicines: Viagra®, Levitra® and Cialis® increase blood flow to the penis and are effective one-third to one-half of the time.

Vacuum erection devices (VED): The VED consists of a cylinder with an external pump that attaches directly to the end of the penis. The cylinder and pump are used to create a vacuum to help the penis become erect. While patient satisfaction with a VED varies, this is a safe, cost-effective and non-surgical treatment for ED.

Penile injection therapy: Medicine given through injections cause blood vessels to expand, increasing blood flow throughout the body. By increasing blood flow to the penis, the medicine helps cause an erection. Injections can induce erections strong enough for intercourse in more than two-thirds of men after prostate cancer treatment. Medicine is also available in suppository form. When given as a suppository, the medicine is placed into the urethra through the opening at the tip of the penis. This treatment is sometimes preferred by patients because no needle is used; however it is less effective than penile injection.

Penile implant: A penile implant is used when there is a clear medical cause for ED and when the problem is unlikely to improve naturally or with other medical treatments. In these cases, using implants can regain erectile function with a satisfaction rate of more than 90%. An inflatable penile implant (a penile prosthesis) provides a permanent cure with the highest success rate for curing ED.

For patients with complex medical conditions, the best treatment may involve combining 2 or more rehabilitation therapies.

Some couples may also benefit from speaking with a counselor regarding intimacy issues. Specialists are available in the behavioral science department.

For specific questions, please speak with your surgeon or a member of your health care team.

Radiation Treatment

This section explains radiation treatment and the different types of radiation. Radiation treatment is the use of high-energy beams to kill cancer cells and shrink tumors. Although radiation therapy is similar to an x-ray, the energy and dose of radiation in cancer treatment is much higher and is given over a longer period of time.

Several forms of radiation are available. Your radiation doctor, called a radiation oncologist, will recommend the best therapy based on the type, stage, location and amount of cancer you have. The radiation oncologists in the radiation oncology prostate group are:

Cynthia Anderson, MD
Mark Augspurger, MD
Julie Greenwalt, MD
Michael Olson, MD
Omar Mahmoud, MD

External Beam Radiation

External beam radiation is a common type of therapy for prostate cancer. Patients whose cancer is still in the local area around the prostate can usually be treated in this manner. Patients who have had radiation previously to the pelvic area or those who have inflammatory bowel type conditions may not be able to have this treatment. Therapy is usually given on an outpatient basis, using a machine called a linear accelerator. See Figure 4.



Figure 4
A linear accelerator

Usually, the total dose of radiation needed to be effective cannot be given all at once. Because of this, the dose of radiation is divided into smaller doses called fractions. A series of daily treatments, which take approximately 20 minutes each, are given 5 days a week (Monday through Friday) for 7 ½-8 ½ weeks, totaling 38-42 treatments.

Intensity Modulated Radiation Therapy (IMRT)

IMRT is a type of external beam radiation that uses x-ray beams to target the prostate cancer (tumor) from 5-8 different angles. See Page 14, Figure 5. During the treatment planning process a computerized tomography (CT) scan is taken of the area surrounding the prostate. The result of this scan will show the location of the bladder and rectum in relation to the prostate. This information will help focus the radiation on the prostate and avoid treating healthy tissue. See Page 14, Figure 6. Before each treatment, the position of the prostate is located by ultrasound or x-ray to ensure that the radiation beam is accurately directed to the tumor.

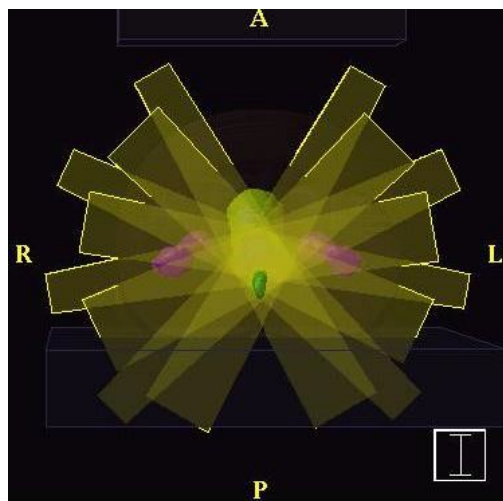


Figure 5

An example of IMRT with multiple beams.

Computer Plan Dose distribution

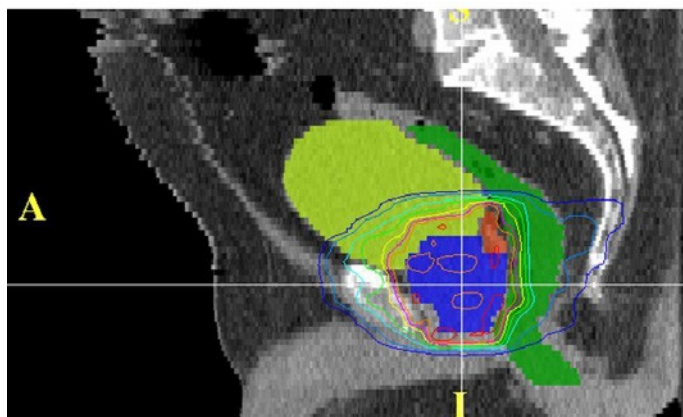


Figure 6

A prostate CT scan using computerized targeting.

Proton Therapy

Proton therapy is another type of external beam radiation that uses streams of protons (small positively charged particles). The protons come from a large machine. Computerized treatment planning is done for this therapy also and the number of treatments is similar to IMRT. See Figure 7.

Some patients with locally advanced tumors (when the cancer has spread outside of the prostate) are not able to be treated with proton therapy because of the shape of the seminal vesicles and the position of the rectum.

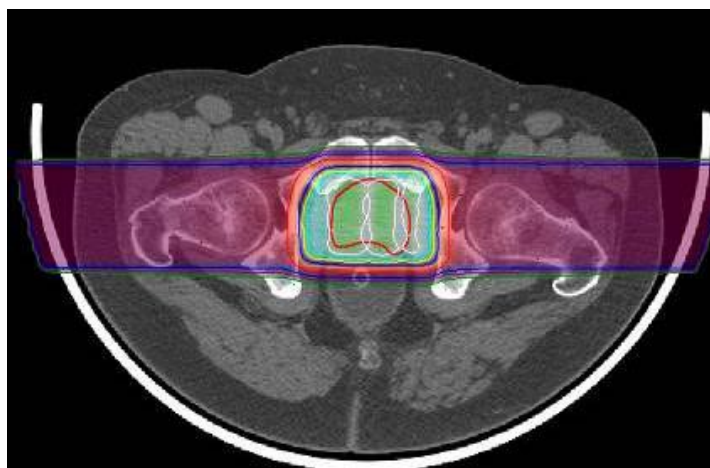


Figure 7

This image shows how the prostate is treated with proton therapy.

Side Effects and Complications of External Beam Radiation

Side effects to the bladder, rectum and the urethra (the tube that carries urine out of the body) are usually mild to moderate. These may include:

- Frequency of urination, a stronger urge to urinate, waking up at night to urinate, burning when urinating and a weak urine stream.
- Soreness in the rectal area, more frequent bowel movements and occasional minor bleeding, similar to hemorrhoids.

Other side effects are:

- Fatigue – feeling tired during the course of treatment
- Impotence – not being able to have or sustain an erection – can occur 1 year or more after radiation is complete.

Some or none of these side effects may happen. When side effects happen, they are usually mild to moderate and are rarely severe. Most patients usually feel better a few months after treatment. Occasionally, the side effects may last longer. It is unusual for a patient to become incontinent (loss of urine control) after radiation.

External Beam Radiation with Hormonal Therapy

Patients with larger tumors or those who have an aggressive cancer often receive hormone therapy in addition to radiation. The length of hormone therapy can range from 6-24 months and is determined by the characteristics of the prostate tumor. For more information about hormone therapy, see the “Medical Treatment” section.

Prostate Implant

Internal radiation therapy (also called brachytherapy) uses a radiation source that is placed very close to or inside the tumor. A prostate implant involves placing 80-100 tiny radioactive seeds, each smaller than a grain of rice, directly into the prostate. See Figure 8. The seeds kill the cancer cells by gradually emitting radiation over a period of several months. The procedure is performed under anesthesia and takes about 2 hours.

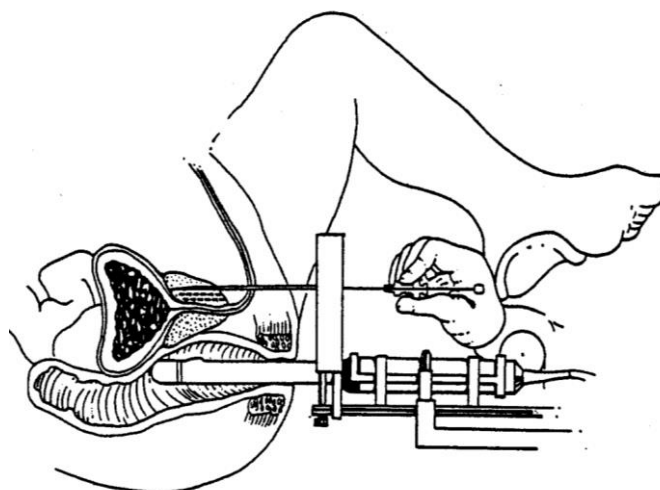


Figure 8
Prostate implant procedure

Patients with early stage prostate cancer who have good urinary function and whose prostate is small to moderate in size are candidates for this treatment.

- An over-night hospital stay is usually not needed.
- It is a 1-time procedure.
- Patients usually return to most of their normal activities within a few days.

This treatment does not work well for men who have large prostates that extend behind the pubic bone.

Side Effects and Complications of Implant

The side effects of a prostate implant are similar to external beam radiation and include:

- Urinary frequency and irritation
- Rectal soreness and occasional bleeding
- Mild fatigue

- Rarely, the prostate swells more than usual immediately after the procedure, closing off the urethra (urine tube). If swelling occurs, a catheter will be inserted and left in place for several days.

Side effects are mild in most patients and usually go away after treatment ends. Late complications are unusual.

Post-operative Radiation

If the prostate is removed (called a prostatectomy), but the doctor feels that some cancer cells remain, he or she may suggest radiation treatment after the patient recovers from surgery. Most patients receive 33-35 treatments using the IMRT technique. Side effects are similar to those listed above for external beam radiation.

Outcomes for Radiation Options

For early stage prostate cancer, both external beam radiation and implant provide excellent long-term results. Nearly 90% of patients will be free of prostate cancer 10 years or more after their treatment. Patients with more advanced prostate cancer which is not the most aggressive type will have a 75-80% chance to be free of cancer. Oftentimes, these patients also receive a short course of hormone therapy along with radiation. More advanced, aggressive cancers require longer hormone therapy or are treated with new drugs in addition to radiation on clinical trials.

Patient Education

Comparison of Treatment Options

Type of Treatment	Description	Advantages	Limitations
Prostatectomy	Surgical removal of the prostate gland by either an ‘open’ method or with the help of a robot system. For more advanced stage cancers, lymph nodes are also removed.	<ul style="list-style-type: none"> • One time procedure. • Gives the best information about the extent of the cancer because the prostate is completely removed. 	<ul style="list-style-type: none"> • A catheter is left in place for seven to 14 days after surgery. • Takes several weeks to recover and resume normal activity level. • Although minimal, there are risks associated with surgery and anesthesia. • Can cause problems with urine control and regaining erections after surgery.
External Beam Radiation – X-ray or Proton	<ul style="list-style-type: none"> • Kills the prostate cancer cells by treating the prostate with high energy beams. • Daily treatments for seven to eight weeks. 	<ul style="list-style-type: none"> • No operation or anesthesia. • No over-night stay in hospital. • Most patients can have this treatment even when they cannot have surgery or anesthesia because of other medical problems 	<ul style="list-style-type: none"> • Daily trips to radiation treatment center for several weeks in a row. • Can cause rectal soreness, bleeding and problems with passing urine. • Can cause erection problems; minimal at first and then a gradual decrease in function.
Prostate Implant (Brachytherapy/ Internal Radiation)	Involves placing tiny radioactive seeds directly into the prostate. The seeds kill the cancer cells by	<ul style="list-style-type: none"> • A one-time procedure rather than several weeks of treatment. 	<ul style="list-style-type: none"> • Although minimal, there are risks associated with the procedure and anesthesia.

Type of Treatment	Description	Advantages	Limitations
Prostate Implant (Brachytherapy/Internal Radiation)	Gradually emitting radiation over a period of several months.	<ul style="list-style-type: none"> • Does not usually require an over-night stay in hospital. 	<ul style="list-style-type: none"> • In rare cases, a catheter maybe placed if patient is unable to pass urine after procedure. • Can cause rectal soreness, bleeding and problems with passing urine.
Cryotherapy	Freezing the prostate	<ul style="list-style-type: none"> • May need one night stay in hospital. • Treatment can be repeated if needed. 	<ul style="list-style-type: none"> • Patient must wear catheter for two weeks after procedure. • Although minimal, risks are associated with surgery and anesthesia. • High rate of erectile dysfunction. • Can cause problems with urine control.
Active Surveillance	A no treatment approach that involves monitoring the cancer growth. Monitoring involves scheduled PSA tests and prostate biopsies to check progress.	<ul style="list-style-type: none"> • No surgical procedure or daily treatments. • No over-night stay in hospital. • No side effects from treatment. 	<ul style="list-style-type: none"> • Patient must be comfortable with the risk that the cancer may spread. • Routine biopsies may be done yearly or every three years.

Treatment Map for External Beam Radiation Therapy IMRT & Proton



**If you need hormone therapy, it will begin approximately 7-8 weeks before you simulation date.*

Treatment Map for Prostatectomy: Open or Robotic Assisted

Initial Visit or Follow-up Call to Baptist MD Anderson Cancer Center

At this visit, the surgery is scheduled



Preoperative Visit

This visit takes place 1 to 30 days before surgery. It includes labwork, an appointment with the surgeon and the anesthesia staff, a surgical consent and postoperative instructions



Surgery in Operating Room

Patients stay 1 to 3 nights in the hospital



Initial Follow-up

4-14 days after surgery: the bladder catheter is removed 6 weeks after surgery: visit includes a physical exam, PSA, review of final pathology and information on sexual rehabilitation program



Long Term Follow-Up

Check PSA levels at 3-6 months intervals for 2 years. Follow-up visit every 6-12 months with local doctor or Baptist MD Anderson surgeon. *Thereafter, PSA checks and follow-up visits are determined by a your doctor

**Based on the disease stage after surgery*