PROCEDURE

Radical prostatectomy

Radical prostatectomy is surgery to remove the prostate gland and nearby tissue to treat prostate cancer.

PURPOSE
Remove the prostate and cancer confined near it

PROCEDURE TYPE
Therapeutic surgery, open or minimally invasive

WHERE IT IS DONE
Operating theatre

ANAESTHESIA
General anaesthesia

HOW LONG IT TAKES
About 2-4 hours

PREPARATION
Fasting and medication review; bowel preparation only if instructed

RECOVERY
Usually overnight; no driving until your surgical team clears you

MAIN RISKS
Urine leakage, erection problems, bleeding, infection

RESULTS
Pathology within two weeks; PSA checked several weeks later

Overview

A radical prostatectomy is an operation to remove the entire prostate gland, the seminal vesicles and some nearby tissue. The seminal vesicles are glands behind the prostate that make part of semen.

The prostate sits below the bladder and surrounds the tube that carries urine out of the body, called the urethra. After removing the prostate, the surgeon reconnects the bladder to the urethra.

"Radical" describes the extent of the surgery. It does not mean that the cancer is unusually aggressive.

The operation may be performed through one larger incision or several small incisions.

Minimally invasive surgery is usually laparoscopic, often with robotic assistance. The robot does not operate by itself; the surgeon controls its instruments.

Why the procedure is performed

The aim is to remove prostate cancer while it is still confined to the prostate or has only limited growth into nearby tissue.

Surgery also provides detailed information about the cancer. A laboratory examines the removed prostate and any lymph nodes to determine the cancer's grade, extent and whether it reaches the cut edges of the tissue.

Radical prostatectomy is intended as a treatment with curative potential. It is not used to diagnose an unexplained prostate problem.

Who should and should not have it

Radical prostatectomy may be an option if tests suggest that prostate cancer is confined to the prostate or nearby area. Your general health, expected lifespan, cancer risk, urinary function and personal priorities all matter.

It may not be the right choice if a low-risk cancer can be monitored safely. It is also less likely to help when cancer has spread widely, because removing the prostate does not remove cancer elsewhere in the body.

Surgery may be avoided when serious heart, lung or other health problems make general anaesthesia or recovery too risky. Age alone does not decide this.

The operation may need to be delayed because of an active infection, an unstable medical condition or a blood-clotting problem. Medicines that affect clotting may require a planned adjustment.

Surgery after prostate radiotherapy is possible in selected cases, but it is technically harder and has a higher risk of urinary and sexual complications. It should be assessed by a team experienced in this type of surgery.

How to prepare

Follow the treating facility's own instructions, as they take priority over general information.

You will usually have a preoperative assessment. This may include blood tests, an

electrocardiogram to check your heart, and a review of your medicines and allergies.

Tell the team about all prescription medicines, over-the-counter products and supplements you take. Blood thinners and some diabetes medicines may need adjustment. Do not stop them unless the team responsible for your procedure tells you to.

You will be told when to stop eating and drinking before anaesthesia. Use a bowel preparation only if your facility specifically instructs you to do so.

Discuss fertility before surgery if having biological children may matter to you. The operation stops semen from leaving the body, so sperm banking must be arranged beforehand.

Your team may teach you pelvic floor exercises. These strengthen the muscles involved in bladder control and can be useful during recovery.

Arrange transport home and help with meals, shopping or other tasks during the first part of recovery.

What happens during the procedure

You will be given general anaesthesia, so you will be unconscious and will not feel the operation.

The surgeon reaches the prostate through a lower abdominal incision or several smaller incisions. The prostate, seminal vesicles and part of each vas deferens-the tubes that carry sperm-are removed.

Nearby lymph nodes may also be removed if there is a meaningful chance that cancer has reached them. This is called a pelvic lymph node dissection.

When it is considered safe, the surgeon may preserve the nerves beside the prostate that help produce erections. Nerve-sparing surgery is not always possible if cancer is close to these nerves.

The bladder is then joined to the urethra. A urinary catheter is passed through the penis into the bladder to protect this connection while it heals. A temporary drain may also be placed near the surgical area.

Recovery and what to expect afterward

Pain is usually strongest around the incisions during the first few days. Catheter irritation and bladder spasms can also cause discomfort. Your team will provide a pain-control plan.

You can usually begin drinking and then eating as your stomach recovers from the anaesthetic.

Constipation is common after surgery, particularly with opioid pain medicines. Fluids, movement and any recommended laxative can help.

Walking soon after surgery lowers the risk of blood clots. Avoid heavy lifting, strenuous exercise and cycling until your surgeon says the internal connection has healed. The catheter commonly remains in place for about one to two weeks.

Do not drive home. Do not drive while taking medicines that make you drowsy, while the catheter interferes with safe movement, or until you can brake suddenly without pain. Follow the specific clearance given by your surgical team.

People with desk-based work may return after several weeks. Jobs involving lifting or strenuous activity usually require longer. Recovery time is influenced by the surgical approach, your health and whether complications occur.

Urine leakage is common at first after the catheter is removed. It often improves over time, but pads may be needed during recovery. Erections may take months or longer to recover, even after nerve-sparing surgery.

Risks and possible complications

All major surgery carries risks from bleeding, infection, blood clots and anaesthesia. Some people need further treatment for a complication.

Risks specific to radical prostatectomy include:

After surgery, orgasm is usually still possible, but no semen comes out. This is called a dry orgasm. Natural conception is no longer possible. Some people notice changes in orgasm, urine leakage during sexual activity or a reduction in penis length.

Your surgeon can explain how your cancer location, existing bladder control and sexual function affect your individual risks.

- Urine leakage, which may persist in some people
- Difficulty getting or maintaining an erection
- Narrowing where the bladder was reconnected to the urethra
- A collection of lymph fluid if lymph nodes were removed
- Injury to nearby structures, such as the rectum
- Groin or incision-site hernia

Results and follow up

A pathologist examines the prostate and any removed lymph nodes. The report describes the cancer grade, how far it extends and whether cancer cells are present at the surgical margin-the cut edge of the removed tissue.

Results are often available within one or two weeks. Your surgical team will explain what they mean and whether any additional treatment should be considered.

A prostate-specific antigen, or PSA, blood test is usually performed several weeks after surgery and then at regular follow-up visits. PSA is expected to fall to a very low or undetectable level because the prostate has been removed.

A detectable or rising PSA does not by itself explain where cancer is located. Your team may recommend repeat testing, imaging, radiotherapy, hormone treatment or observation based on the full picture.

Routine follow-up also covers catheter recovery, bladder control, erections, wound healing and emotional wellbeing.

Alternatives

The reasonable alternatives are influenced by the cancer's grade and stage, your health and what trade-offs matter most to you.

- Active surveillance: Regular PSA tests, examinations, scans and sometimes repeat biopsies. This avoids immediate treatment side effects but may require treatment later if the cancer changes.
- Watchful waiting: Less intensive monitoring, with treatment aimed at symptoms if they develop. It avoids burdensome treatment but is not intended to cure the cancer.
- External-beam radiotherapy: Treats the prostate without removing it. It avoids surgery but requires radiation visits and can cause urinary, bowel and sexual side effects.
- Brachytherapy: Places radioactive material in or near the prostate. Treatment is focused, but it is not suitable for every prostate size or cancer pattern.
- Focal treatment: Treats only part of the prostate using heat, cold or ultrasound. It may reduce some side effects, but long-term evidence is less established and continued monitoring is essential.

- Hormone or systemic treatment: Often used when cancer has spread or alongside radiotherapy. On its own, it is generally not a curative substitute for surgery in localized cancer.

When to call your healthcare team

For routine concerns, contact your team during normal hours about wound care, catheter supplies, persistent constipation, rehabilitation or questions about returning to work.

Seek urgent advice if:

Call emergency services for severe shortness of breath, chest pain, fainting, uncontrolled bleeding or signs of a stroke such as sudden weakness or difficulty speaking.

- The catheter stops draining, especially with increasing lower abdominal pain
- You develop a fever at or above the threshold your team provided
- A wound becomes increasingly red, swollen, painful or begins draining pus
- Urine contains large clots or bleeding is increasing
- One leg becomes newly painful or swollen
- Pain, vomiting or constipation is worsening despite the recommended treatment

Common questions

Will I be asleep?

Yes. Radical prostatectomy is performed under general anaesthesia, so you will be unconscious during the operation.

Can I drive home?

No. Someone must take you home. Resume driving only when your team clears you and you can move and brake safely without sedating pain medicine.

How painful is it?

Incision soreness, catheter discomfort and bladder spasms are common early on. Pain should become more manageable as you recover. Tell your team if it is worsening rather than improving.

When will I know the results?

The surgeon may discuss the operation soon afterward. The complete pathology report

usually takes about one or two weeks. PSA is checked later, after it has had time to fall.

Will I need a catheter?

Yes. The catheter protects the new connection between the bladder and urethra. It commonly stays in for about one to two weeks and is removed by the healthcare team.

Will bladder control and erections return?

Many people improve over time, but recovery is not guaranteed. Pelvic floor rehabilitation, tablets, devices and specialist sexual rehabilitation may help, depending on your needs.

Sources

- National Cancer Institute. Prostate Cancer Treatment (PDQ®)-Patient Version
- American Urological Association and American Society for Radiation Oncology. Clinically Localized Prostate Cancer Guideline, 2022
- National Institute for Health and Care Excellence. Prostate cancer: diagnosis and management, NICE guideline NG131
- American Cancer Society. Surgery for Prostate Cancer
- NHS. Prostate cancer treatment