

Laparoscopic Kidney Surgery / Robotic Nephrectomy

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Who is suitable for a radical nephrectomy (Laparoscopic Kidney Surgery)?

Radical [nephrectomy](#) may be performed in order to treat kidney cancer, remove a benign (noncancerous) tumour of the kidney, or to remove a diseased or very damaged/non-functioning kidney.

The vast majority of radical nephrectomies are now performed using a laparoscopic or robotic-assisted laparoscopic approach. In some cases, when there is a very large or very complex tumour that cannot safely be accessed and removed via laparoscopic techniques, an open procedure may be recommended.

Your surgeon will be able to advise which surgical approach is most appropriate for your individual condition, since there are various considerations that sometimes make one approach more suitable than another.

What are the advantages of laparoscopic and robotic-assisted radical nephrectomy?

A laparoscopic kidney surgery technique is minimally invasive approach that offers a number of benefits to patients:

- Smaller incisions
- Reduced bleeding
- Shorter hospital stay
- Shorter recovery time.

When the laparoscopic radical nephrectomy is performed using the

specialised robotic device (da Vinci), the patient receives the benefits of the laparoscopic technique and the surgeon also benefits from:

- Exceptional high definition vision (3D with robotic platform) inside the patient's body
- The use of small instruments that allow a greater range of movement than the human hand
- Overall enhanced dexterity and vision, enabling very precise and accurate movements and control of the surgical instruments during the procedure

What are the benefits of open radical nephrectomy?

Open radical nephrectomy may be necessary in cases where a [laparoscopic](#) approach is not deemed safe or appropriate. In rare cases where the tumour has extended into the veins that drain the kidney, an open radical nephrectomy may be required to adequately remove all cancerous tissue. Similarly, in cases when a patient has a very large (greater than 10cm) tumour or has had multiple previous abdominal procedures, an open procedure may be required to provide the surgeon with adequate working space.

How is a radical nephrectomy performed?

The patient is placed under general anaesthetic for the duration of the procedure. The steps that follow will depend on the approach chosen by the surgeon. Radical nephrectomy typically takes between 1-4 hours to complete, depending on the complexity of the procedure.

Laparoscopic and robotic-assisted laparoscopic radical nephrectomy:

- A few small incisions are made on the abdomen
- Surgical instruments and camera are inserted into the patient's abdomen
- In robotic-assisted procedures, robotic surgical tools are inserted through the incisions and are always under total control of the surgeon
- A larger (around 10cm) incision is required at the end of the procedure to remove the kidney. The position of this incision is

placed lower in abdomen which causes less pain and is less noticeable than the traditional open approach

- Surgical tools or robotic devices are removed and the incisions are meticulously closed to minimize scarring and risk of hernia

Open radical nephrectomy:

- An incision about 15-20cm long is typically made along the side of the abdomen (flank area), however the surgeon may elect to make the incision elsewhere depending on patient factors
- The entire kidney, part of the ureter and the fatty tissues around it are removed
- In some cases, the adrenal gland and adjacent lymph nodes are also removed
- The wound is sutured closed

What to expect after a radical nephrectomy?

- You may remain in hospital for 3-7 nights following the procedure (shorter with [laparoscopic kidney surgery](#) and robotic keyhole approach)
- You will be encouraged to get up and move around following your procedure, which will assist with opening up your lungs to minimize chance of pneumonia, and help your circulation to prevent blood clots (deep vein thrombosis)
- A urinary catheter will be in place. This is a thin tube that runs from your bladder, allowing the urine to drain into a bag on the outside of your body. This will be removed a day or so after surgery
- It is normal to experience some pain or discomfort; this will be managed with medication
- You will be encouraged to perform light, everyday activities as soon as you feel able, however you will need to avoid strenuous activity and heavy lifting for 4-6 weeks

Procedure outcomes

Most people are able to continue to function normally with only one remaining kidney, following a radical nephrectomy. In order to protect the function of the remaining kidney, you should avoid smoking and exercise regularly and eat a healthy diet to maintain good blood pressure and

prevent diabetes. You will be required to have periodic check-ups with your GP to monitor blood pressure and kidney function. You will also often have a physician or nephrologist involved in your care.

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Crocerossa, C., Carbonara, U., Cantiello, F., Marcioni, M., Ditunno, P., Mir, M. C., Porpiglia, F., Derweesh, I., Hampton, L. W., Damiano, r., Autorino, R., (2020), robot-assisted radical nephrectomy: A systematic review and meta-analysis of comparative studies, European Urology, 17(20), [<https://pubmed.ncbi.nlm.nih.gov/33218826/>], accessed 27/02/21.

European Association of Urology, (2021), Radical Nephrectomy, [<https://patients.uroweb.org/treatments/radical-nephrectomy/>], accessed 28/02/21.