Laparoscopic Nephrectomy and Nephroureterectomy Keyhole surgery to remove the kidney

Introduction
This leaflet is intended for the use of patients undergoing laparoscopic nephrectomy (keyhole surgery to remove the kidney) or nephroureterectomy (surgery to remove the kidney and ureter).

What is nephrectomy?
Nephrectomy is an operation to remove a kidney. There are 3 types of nephrectomy:

1. **Simple nephrectomy** for benign (non-cancerous) conditions, this involves removal of the kidney only
2. **Radical nephrectomy** for treatment of suspected cancer, where the whole kidney and structures around the kidney including the adrenal gland, lymph nodes and fatty tissue are removed
3. **Nephroureterectomy** for treatment of suspected cancer of the kidney drainage system, where the kidney and ureter to the level of the bladder are removed.

How is the operation performed?
The operation is performed under a general anaesthetic. The surgeon will make 3 to 4 small, 1 to 2 centimetre cuts (known as entry ports). The cuts will be made between the ribcage and pelvic bone on the side where the kidney is to be removed. A surgical balloon is inserted through a port and inflated to create a space in the back compartment of the abdomen where the kidney sits.

The balloon is then removed and carbon dioxide gas is used to fill the space. A telescopic camera is passed through one of the ports, allowing the surgeon to look at the kidney and surrounding structures. Surgical instruments, used to disconnect the kidney from its blood supply, are passed through the other ports. A slightly larger cut, depending on the kidney or tumour size (of approximately 4 to 6 centimetres) is then made at the front of the lower abdomen to remove the kidney from the body. This same cut is used to disconnect the ureter from the bladder during a nephroureterectomy operation.
Expectations/benefits

In the majority of cases where the kidney is thought to have a cancer on it, the aim of the operation is to cure your cancer. In some cases, the operation is performed to reduce the amount of cancer because the cancer may have already spread. This allows other treatments to work better. If this is the case (or is suspected to be the case), this will be discussed with you in advance.

If the surgery is being performed for a non-cancerous condition, the aim is to relieve the symptoms that you may currently have or are likely to develop in the future as a result of kidney disease.

Alternative treatments

Observation
No treatment is given and we will wait to see how your condition progresses, this option is not recommended for large tumours or in those considered fit enough for surgery and a potential cure.

Embolisation
The blood supply to your tumour is cut off, this can control bleeding from a tumour but is not likely to cure the tumour.

Partial Nephrectomy
Removing only the part of the kidney with the tumour, this is suitable for some smaller tumours and will have already been considered unsuitable if nephrectomy or nephroureterectomy has been recommended.

Open Surgery
Removal of the kidney through a single large incision, recommended for tumours larger than 8 to 10 centimetres.

Radiofrequency ablation/cryotherapy
Using heat or freezing to treat the tumour whilst leaving the kidney in the body, this is only suitable for certain smaller tumours.

Immunotherapy or tyrosine kinase inhibitor therapy
Medical treatments used to target cancer cells when the tumour has already spread outside the kidney and so removal of the kidney is not going to provide a cure.
What is the difference between laparoscopic and open surgery?

The main difference is in how the surgeon gains access to the kidney, either through a single, large open cut (open surgery) or several smaller cuts (laparoscopic surgery). Laparoscopic, or keyhole surgery, offers the same level of cancer control as open surgery, but generally the procedure is associated with a shorter hospital stay and recovery time.

Advantages of laparoscopic surgery

Advantages include:

- Reduced blood loss with a reduced chance of requiring a blood transfusion.
- Reduced pain after the operation: There is no large abdominal wound, so patients can normally return to normal activities more quickly after keyhole surgery.
- A shorter stay in hospital: Most patients normally go home after 2 to 3 nights, compared to 5 to 6 nights after open surgery.
- Smaller scars: Keyhole surgery avoids a large scar, but the small scars will still be visible.
- Quicker return to normal activity: usually 3 to 4 weeks after keyhole surgery as compared with 6 to 8 weeks after open surgery.

There are no clear disadvantages of laparoscopic surgery compared to open surgery. The risks outlined below are essentially the same for both procedures.

Risks

A laparoscopic nephrectomy is still major surgery and does carry risks associated with both the anaesthetic and the operation.

Problems related to the anaesthetic

- Chest infection
- Deep Vein Thrombosis (DVT) – blood clot on legs
- Pulmonary Embolus (PE) - blood clot on lungs
- Heart attack or stroke.
Problems related to the operation

Common (experienced by 1 in 10 people)
- Temporary shoulder tip pain
- Temporary abdominal bloating.

Occasional (between 1 in 10 and 1 in 50)
- **Bleeding** - The kidney has a very good blood supply and connects to the main artery (aorta) and vein (vena cava) in the body. Major bleeding is therefore a risk with any kidney operation, and may require a blood transfusion
- **Infection** - Any breach of the skin carries a risk of infection, but antibiotics are given to help reduce the risk of this. Any redness or swelling of the wound site after the operation may need further treatment
- **Conversion to Open Operation** - If there is a lot of bleeding, injury to other structures (for example, bowel or blood vessels) or the surgeon experiences problems, your surgeon may decide it is safer to change to an open nephrectomy to remove your kidney. The chance of this happening is between 4 to 5%
- **Delayed wound problems** - This includes pain, numbness (usually temporary), and weakness of the abdominal wall muscles which can cause a wound hernia that may require surgical repair.

Rare (less than 1 in 50)
- **Injury to Other Structures** - Other organs, especially those near to the kidney, are at risk of injury during the kidney’s removal. The structures more likely to be damaged include the bowel, spleen, liver, pancreas, diaphragm and the nerves of the abdominal wall muscles. The risk of injuring the bowel is lower when the surgeon accesses the kidney through the back (retroperitoneal approach), rather than through the abdomen (transperitoneal approach)
- **Damage to lung cavity** - Requiring the temporary insertion of a chest drainage tube
- **Tumour may be benign** - In 1 to 2% of cases, the suspected tumour or complex cyst for which your kidney was removed may turn out not to be a cancer when examined under the microscope
Before the Operation

You will receive an appointment to attend the preadmission clinic where we will assess your suitability and fitness for surgery and anaesthetic. It is important for you to provide information on your previous and on-going health problems during the consultation, and it is also useful to bring a list of your current medication. We may arrange for you to have further tests such as a chest x-ray, blood tests and/or an electrocardiogram (ECG) trace of the heart.

You may be asked to sign a consent form for the operation during this consultation. If you have any further questions at this stage, please feel free to ask, but you will also have the chance to talk to your surgeon on the day of the operation.

Medications

You will be given specific advice if you take any medication that thins your blood such as warfarin, clopidogrel or aspirin as you may need to stop taking these prior to your operation. Do not make any changes to your regular medications without consulting your doctor first.

Fasting

You will be given instructions on diet during your preadmission clinic. You will not be able to eat or drink anything for 6 hours prior to your operation so that we can safely give you an anaesthetic. We will give you clear instructions on fasting and it is important to follow these.

Anaesthetic

An anaesthetist will see you before your operation and assess you for your anaesthetic. This operation requires a general anaesthetic, so you will be asleep throughout the procedure.

After the operation

You will wake up from the anaesthetic in the recovery room with a registered nurse, and will remain there until you come around from the anaesthetic. This can take 1 to 2 hours. You will then be moved back to the ward where your family can visit you.
You will wake up with:

- **A catheter** – a hollow tube that drains urine from the bladder
- **Dressings** – Surgical clips or sutures will be used to close the cuts and these will be covered with waterproof dressings
- **A Drip** – Delivers fluid into the veins to prevent dehydration
- **Oxygen mask or nasal prongs** – to give you extra oxygen as required.

**Eating, drinking and washing**
You will be able to drink fluids when you wake up, and can start eating a light diet within a few hours of your operation. You will be able to shower within 24 hours of your surgery.

**DVT prevention**
You will be given a daily blood thinning injection of enoxaparin or fragmin™. This, along with the stockings, reduces the risk of you developing a DVT (blood clot in the legs). The injections will need to be given for 28 days in total after your operation. You or a family member/friend will be taught how to give the injections before you leave the hospital.

**Will I have any pain after the operation?**
Yes, but you will be given pain relief into the vein and local anaesthetic into the port sites (cuts) at the end of your operation and you may also have PCA (patient controlled analgesia) for the first 24 hours after the operation. Most patients find that they need very little pain relief after the operation, but please let the nurse looking after you know if you are in pain, and we can give you pain medication as needed.

Early mobilisation and deep breathing exercises are encouraged from the first day after your surgery and this will help in your discharge and in making a speedy recovery. Your catheter will be removed once you are mobile enough to make it to the toilet unless your surgeon has specified otherwise.

**Leaving hospital**
You will be discharged when:
1. You have passed urine
2. You can move around comfortably and freely
3. Your pain is well controlled by pain relief taken by mouth
4. You have an adult with you at home for the first 24 hours after discharge.

You will receive a copy of your discharge summary to explain your operation when you leave, and a copy will also be sent to your GP.

What to do when you get home?

It is important to remember that you have had major surgery and that you need to rest. It may take up to 12 weeks to fully recover from your operation, but most people can return to normal activities by 4 weeks. During this recovery time you should not perform any heavy lifting or strenuous activities (such as shopping, vacuuming, mowing the lawn) as this may slow your recovery time and delay wound healing. However, you are encouraged to remain active to reduce the risk of DVT.

What should I look out for?

If you develop a temperature, increasing redness on or around the wound, or pain or drainage from the site of the operation, then you should seek medical advice from your GP or contact the Urology Team on the numbers at the end of this leaflet.

Driving

It is your responsibility to ensure you are fit prior to driving. We recommend that you avoid driving for 3 weeks after your operation, and should not return to driving until you can perform an emergency stop without feeling hesitant. You do not normally need to inform the DVLA unless you have a medical condition that will last for longer than 3 months after your surgery and may affect your ability to drive.

Returning to Work

We suggest that you take 2 to 4 weeks off work, but if your job involves heavy lifting or strenuous activity please talk to your surgeon or GP.

Contact information

If you have any further questions or problems before, during or after your operation, help or advice can be obtained from:
Nurse Practitioners for Urology
Tel: 0300 422 5193
Tel: 0300 422 3640
Tel: 0300 422 2222 and ask for bleep 2120 or 1675

Uro-oncolgy Cancer Nurse Specialists
Tel: 0300 422 6672
Tel: 0300 422 4334
Tel: 0300 422 6913

Your consultant
Tel: 0300 422 2222 and ask for your consultant’s secretary.

Bibury Ward
Tel: 0300 422 4108

Snowshill Ward
Tel: 0300 422 4109

Your GP

Further information
Macmillan Cancer Support
Website:
www.macmillan.org.uk/Cancerinformation/Cancertypes/Kidney

Cancer Research UK
Website:
www.cancerresearchuk.org/about-cancer/type/kidney-cancer/

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