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The Royal Liverpool and Broadgreen University Hospitals NHS Trust

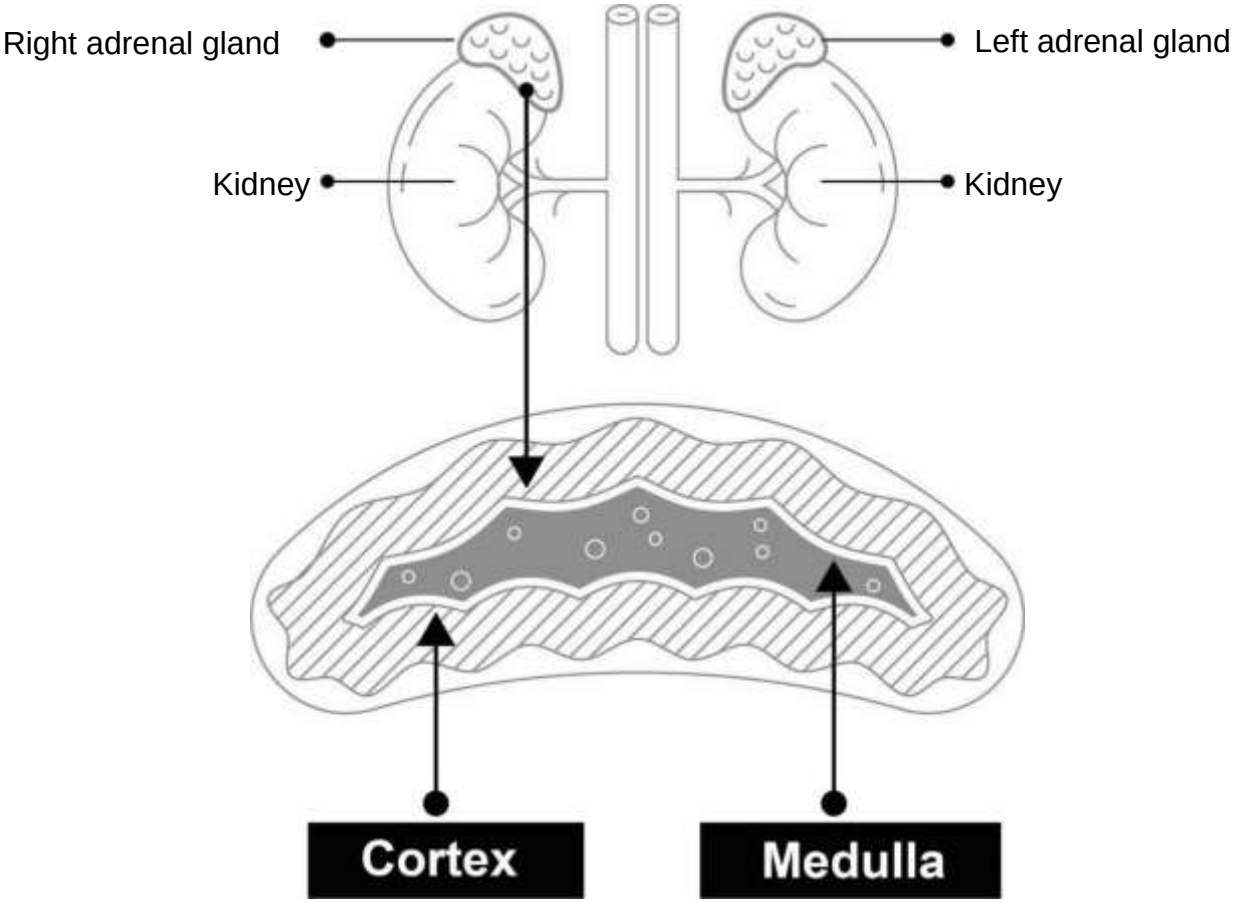
Patient information

Adrenalectomy

Endocrine Surgery

What is an adrenalectomy (ad –renal-ect-omy)?

An adrenalectomy is an operation to remove one or both adrenal glands. The adrenal glands sit above the right and left kidney as shown in the picture. They produce hormones which can affect the body in many different ways (as described in PIF 2030 Adrenal Investigations').



Why is an adrenalectomy performed?

The adrenal gland(s) may need to be removed if it has a nodule or if it is producing too much hormone. A nodule can also be described as a lesion, lump, mass or tumour. These terms can all be used to describe the same thing and do not give any indication as to the cause of the nodule. Not all nodules need to be removed.

An adrenalectomy may be performed if:

- The nodule/adrenal gland is large in size or growing.
- The cause of the nodule is uncertain on scan.
- The nodule could be malignant (cancerous).
- The nodule is found to make excess hormones e.g.
    - A **phaeochromocytoma** is a tumour that releases too much stress hormone (adrenaline and noradrenaline).
    - **Cushing syndrome** when there are high levels of cortisol caused by the adrenal gland.
    - **Conns syndrome** when there are high levels of aldosterone caused by the adrenal gland.

Adrenalectomy

In our unit adrenalectomy is usually performed in one of three ways. Your surgeon will discuss with you which options are best for you and your adrenal gland. Any keyhole operation has a small risk of being converted to an open operation if required to safely remove the adrenal gland.

- **Laparoscopic (keyhole) adrenalectomy** involves three or four smaller cuts in the abdomen, approximately 15mm (less than half an inch) in size, although one may need to be made bigger to remove the gland through it, depending on the size of the nodule.
- **Retroperitoneal (keyhole) adrenalectomy** is performed through the back, through three cuts of approximately 5-10mm. Not all adrenals are suitable for removal this way.
- **Open adrenalectomy** with a larger surgical cut, this may be across the upper abdomen or an ‘L’ shaped cut from the middle of the abdomen to the side of the adrenal being removed.

An adrenalectomy is performed under a general anaesthetic and usually takes between two to five hours to do the operation although this can vary depending on the individual case.

The adrenal gland will be sent for further assessment using a microscope in the laboratory to give more information about what has caused the adrenal lesion. These results will usually be ready about two weeks after the operation in time for your follow up appointment.

What are the risks of the operation?

An adrenalectomy is a major operation, and while every care is taken to make it as safe as possible, there are some risks which include:

- **Scar(s)**: This will depend on which operation you are having and the scars have been described above. Some people are more prone to an overgrowth of the scar which can result in a more prominent scar (keloid/hypertrophic scar).

- **Bleeding:** There is a small risk of bleeding during or after the operation which can sometimes require a blood transfusion or a return to theatre.

- **Infection:** Infection is possible with any operation but is not common after adrenal surgery. This can occur in the scar or at the operation site which may need antibiotics or sometimes a drain. There is a risk of a chest infection, however you can help to reduce this by performing breathing exercises which will be explained to you after the operation.

- **Drain (small tube to your operation site):** Sometimes a drain is inserted during the operation. This will depend on the type of operation and the side of your operation.

  If you have a tube into your bladder (catheter) this can also be a possible site of infection and therefore we will try and remove this as quickly as possible.

- **Damage to nearby organs (Rare):** Which organs can be affected depends on whether your surgery is on the right (bowel, kidney, liver) or left (bowel/ pancreas/spleen/ kidney) side. However the chance of this happening is **rare** but may result in the removal of these organs (your surgeon will discuss if this is more likely in your case).

  If the pancreas gets injured this can result in a leak of pancreatic fluid (pancreatic leak) which will need treatment. In a left sided procedure a drain will be placed which will be tested the next morning for pancreatic fluid. If the pancreatic fluid continues to drain this can become a pancreatic fistula.

  Sometimes pancreatitis (inflammation of the pancreas) can develop after the operation, this can occur due to moving the pancreas to access the adrenal gland. This is usually mild (unlike other forms of pancreatitis) and does not significantly change your post-operative length of stay.

- **Hernia:** This can present as a lump around your scar and if you notice this please inform the team as soon as possible.

- **Blood clots:** either in the legs (Deep Vein Thrombosis) or lungs (Pulmonary Embolism). This is a risk with any surgery. The risk can be reduced with surgical stockings (worn for six weeks) and injections of blood thinning medication (heparin) while you are an inpatient. You will also be encouraged to get out of bed and mobilise as soon as possible after your operation.

- **Need for steroid replacement (temporary or lifelong):** Your remaining adrenal gland will be tested after the operation to ensure it is producing enough steroid. There is a small risk you may need steroids after the operation. If however you have Cushing's syndrome you will be placed straight onto steroids. Steroid secretion usually recovers so the need for tablets should be temporary but can in a few cases be required for the rest of your life. If you need steroids you will be given further advice and leaflets on this.

- **Poor wound healing:** This can happen in any wound especially after infection. However it is more common if you are having the operation for Cushing's syndrome and if you have diabetes.

- **Recurrence:** In some adrenal tumours these can reoccur, your surgeon will discuss this with you.

- **Heart attack/stroke:** there is a small risk of heart problems such as a heart attack (myocardial infarction) or stroke with all major operations, but this risk is slightly higher if your adrenalectomy is for a phaeochromocytoma, due to the changes in blood pressure which occur. To help reduce this, you will receive medication to control these changes in blood pressure for a week before the operation.

- **Risk to your life:** adrenalectomy is classed as a major operation, and does carry a small risk to your life.

Most people will not experience any serious complications after surgery.

What will happen before the operation?

You will attend a pre-operative appointment to check you are as fit as possible before undergoing surgery. You will have some bloods tests, a heart tracing (ECG), and be seen by a member of the surgical team who will conduct a physical examination and routine health questions so that if any further investigations or treatment are required they can be arranged.

You will see a member of the Endocrine Surgery team who will discuss the details of your particular operation and the risks of surgery, so that you can sign a consent form to say that you understand what the procedure involves and agree to go ahead with surgery. You will be able to discuss any worries or questions you have.

You will be given a carbohydrate drink to take the evening before the operation and the morning of the operation (unless you have diabetes) to aid with post-operative recovery, and you will be told which of your regular medications you can take before the operation.

Occasionally you may need to be admitted to hospital before your operation, this will discussed with you at the pre-operative appointment.

What is the recovery like after surgery?

The length of time you stay in hospital depends on the operation you have had, but would usually be:

- Laparoscopic adrenalectomy - three to five nights.
- Retroperitoneal adrenalectomy - two nights.
- Open adrenalectomy - five to seven nights.

After any operation there will be some discomfort but your pain should be well controlled with pain relief. Please don't hesitate to ask your nurse for more pain relief if you need it.

We will monitor your blood pressure, temperature and heart rate regularly and for some patients this will involve staying in the Post-Operative Care Unit initially with closer monitoring.

You may have a catheter (tube in the bladder) placed at the start of the operation, and this will be removed as soon as possible, either at the end of the operation, or if it is needed to monitor how much urine your kidneys are making, it will be removed when you are well enough to walk to the toilet.

If you have a surgical drain (a small tube into the operation site to drain excess fluid away after the operation), it will be removed before you go home, and your surgeon will decide when it can come out.

You may experience some constipation, bloating (ileus) or nausea following the operation as the bowel can become sluggish due to handling during the operation or due to pain killers. This often settles with time and constipation can be eased by stool softeners/laxatives, and anti-sickness medication.

We encourage you to get up and about as soon as possible to aid recovery, usually on the first day after the operation, but your surgical team will guide you as to how much to do and when you will be well enough to return to your normal levels of activity.

We will check that your remaining adrenal gland is working well enough (producing enough steroid hormone) before you are discharged, by performing a short synacthen test. If this is normal, you will not require steroid supplements.

If both adrenal glands have been removed then you will need to be on lifelong steroid treatment (hydrocortisone).

Following discharge we will arrange an Outpatient Appointment about two weeks after your operation to discuss the findings from the pathology.

You can return to work when you are feeling well enough, and this may be up to six weeks, but will vary depending on the type of operation and reason for the operation. You can ask for a fitness for work note before you leave the ward.

It is normal to feel more tired than usual for several weeks. However please discuss with the team if you are very tired especially if you have been started on steroids.

If you drive, you will be advised to drive only when you feel well enough and comfortable enough to perform emergency manoeuvres such as an emergency stop **without** pain, and to consult the DVLA if you are in any doubt.

What will be the result following the operation?

The outcome of your operation will depend on the reason it was performed.

If it is being performed due to **Cushing's syndrome**, over the first few months your symptoms such as thin skin, easy bruising, and central weight gain should begin to resolve.

If you have had high blood pressure, blood sugar levels and/or reduced bone density (osteoporosis), these should also improve. Your other adrenal gland will take time to recover its function, sometimes up to 18 months, and during this time you will need steroids.
If it is for **Conn's Syndrome**, around two thirds of people with high blood pressure will no longer need medication for blood pressure after the operation. The remaining third would be expected to need less medication for their blood pressure.

If you have a **Phaeochromocytoma** it is expected that your blood pressure, and sometimes blood sugar levels, and symptoms related to these such as palpitations, headaches, and severe anxiety episodes, should improve after the operation.
These tumours can sometimes recur and you will be kept under follow up for a longer time. You will have an annual blood test to look at your adrenaline/noradrenaline levels.

The tumour removed will be assessed by a pathologist for any signs that it may be cancerous (malignant). If it is, you may need further treatment.

If it was benign (harmless) you will not require any further treatment.

What is the alternative to adrenalectomy?

If you have a nodule that is producing too much hormone, you may be able to have medication to help control the symptoms and effects. If you have an indeterminate nodule, there may be an option to monitor the size and growth of the nodule with scans.

You will be able to discuss the risks and benefits of these options with your surgeon.

Feedback

Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

Further Information:

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