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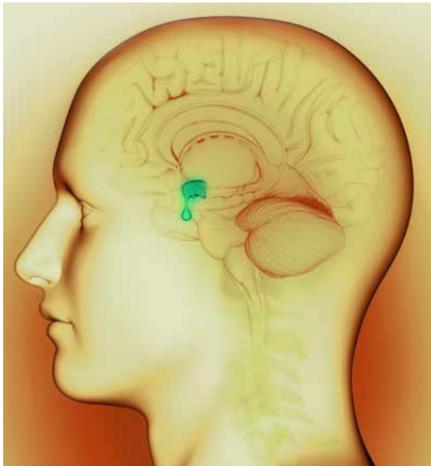
NEUROSURGEON

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Endoscopic Pituitary Surgery

About your condition

Where is the pituitary gland?



The pituitary gland sits at the base of the brain in a small bony hollow. It's normally about the size of a bean (approx 1.5cm x 1.0cm) and weighs less than 0.75g. A macro-adenoma is a tumour of 1cm or more, a micro-adenoma is a tumour smaller than 1cm.

What is the name of the operation and what does it do?

It's most commonly referred to as an *endoscopic pituitary* operation and it's designed to remove a tumour from the pituitary gland using a small camera attached to a tube – an endoscope.

The full name of the operation is **endoscopic endonasal transsphenoidal decompression**.

Endoscopic – using an endoscope as a visualising tool

Endonasal – making use of nostrils for access

Transsphenoidal – across the cavity at the back of nose

Decompression (or removal)

What is a benign tumour?

The majority of pituitary tumours (also known as pituitary adenomas) are benign, which means they're non-cancerous and won't spread to other parts of the body. They only become troublesome if they grow large enough to press on the surrounding areas such as the optic nerves, or if they start to affect your hormone levels. We do occasionally see other types of tumours in the pituitary gland but as these are so rare, they will be discussed on an individual basis.

What types of pituitary tumours are there and how are they treated?

Pituitary tumours have two categories:

1. **Non-secreting pituitary tumours** tend to press on the pituitary gland, preventing it from working effectively. If they grow large enough to press on the optic nerves (just above the pituitary gland) then they can also affect your eyesight. They do not release any hormones into the blood. An operation is usually required to relieve this pressure and we may do it urgently if your vision is badly affected.
2. **Secreting pituitary tumours** cause high hormone levels in the blood. They can also grow large enough to press on the optic nerves, but they are usually diagnosed before they get to that point.

The most common types are:

- **Prolactin secreting tumour** – these are called prolactinoma. This can usually be treated effectively with medications instead of an operation. A blood test can help identify its presence.
- **Growth hormone secreting tumour** - this causes a condition called acromegaly. An operation is usually required.
- **ACTH secreting tumour** - this causes a condition called Cushing's disease. An operation is usually required to correct this.

Pituitary tumours may secrete many of the other hormones produced by the pituitary gland but the three listed above are the most common.

The type of tumour you have will be identified by the laboratory after your operation and also by the blood test that your endocrinologist will have done.

Before your operation

Multidisciplinary (MDT)

Specialist healthcare professionals including surgeons, endocrinologists, neuropathologists, oncologists and neuroradiologists get together to agree the best course of treatment for you.

The aim of surgery

In addition to trying to remove as much of the tumour as is possible and safe, surgery also aims

to leave some of the normal pituitary gland behind. However, normal pituitary function may be affected by surgery.

Will my eyesight improve?

In patients where the tumour is already affecting their eyesight, the best results are often seen in those whose eye problems were either mild or have only recently developed, with less improvement shown in those who have had the condition for longer, or have a greater degree of deterioration. There are, however, some patients with very poor vision who have experienced significant improvement.

If your eyesight has yet to be affected by the tumour, but the doctor can see from the scan that the pituitary tumour is growing close to your optic nerves, then the operation is designed to prevent problems from developing.

MRI scans

An MRI (magnetic resonance imaging) scan shows the size and shape of a pituitary tumour in great detail. It also shows the position of the surrounding structures such as arteries and nerves, including the optic nerves. You'll usually have an MRI scan before you're seen by the neurosurgeon and again after your operation.

The team involved in your care

In addition to your neurosurgeon, there are a number of other people involved in your operative care:

Anaesthetist: It's the anaesthetist who will ensure you enjoy a deep sleep and will continually monitor you throughout the operation. You will meet the anaesthetist on the morning of your operation so that you can discuss any concerns you may have.

ENT surgeon: ENT surgeons specialise in diagnosis and treatment of disorders of the head and neck, including particularly the ears, nose, and throat. An ENT surgeon will be involved to assist accessing the pituitary gland. You may also see them after the operation to ensure the wound inside your nose is healing well.

Ward nurse: The nurse will make a record of your personal details and take your blood pressure, temperature and pulse. They will also look after your day-to-day needs and give you and your family support during your hospital stay.

On the days prior to your operation

Arriving and getting booked in

On the day before your surgery you will need to go to reception and you will be guided to the surgery ward. The nurse will take you to your bed and complete all the necessary checks, including any blood tests. Please ensure that you do not eat or drink after midnight the day prior to your operation.

Allergies

If you are allergic to any medications (such as penicillin or iodine) or to any materials or substances (like latex or metal), you must tell the nurse and surgeon before the operation so we can take adequate precautions.

Medications

It's important you let the anaesthetist, surgeon and nurse know if you are taking any regular medications so that they can make adequate preparations for your operation. Some medications (including aspirin, warfarin or clopidogrel) may make your blood thin and result in you experiencing excessive bleeding during the operation. We may ask you to stop taking these medications a few days prior to your operation to allow their effects to wear off. You will be able to take your blood pressure tablets on the day of surgery, but please discuss it with your surgeon or any member of staff first.

Consent

Your surgeon or a member of their team will discuss your operation with you including all the potential risks involved. Any alternatives to surgical treatment and expected benefits of the operation will also be discussed. It's important that you understand the benefits and risks involved in the operation before you sign your consent. If you have any questions or concerns, please ask the surgeon before your operation.

How long will the operation take?

The operation usually takes about two hours from when you're anaesthetised to when you wake up. You will *usually* be in recovery for about an hour while you wake up and will stay with us in the wards for around three to four days.

Potential risks

As with any operation there are potential risks. For this surgery the most significant risks are:

- **Infection:** Your sinuses will be opened during an endoscopic surgery and so sinus infection is a possibility. For this reason antibiotics are given at the beginning of the operation.
- **Bleeding:** The amount of blood loss expected during surgery is minimal and is often not an issue for adults. It is essential you let us know if you're taking any other medications as these may affect the blood.
- **Panhypopituitarism:** The pituitary gland is usually compressed by the adenoma and there is a risk that gland may get damaged during surgery resulting in pituitary failure. In that case, an endocrinologist will replace all the required hormones. This can be a lifelong requirement.
- **Diabetes insipidus:** If there is any disturbance to the back section of the pituitary gland or the connecting 'stalk' between the pituitary gland and the brain, diabetes insipidus can occur. This will make you feel very thirsty so you'll drink excessive amounts of water and pass excessive amounts of urine, but this can be controlled with medication called desmopressin. The condition may only be temporary and will be carefully monitored by your doctors. However, it is important to note that you may just be feeling thirsty as a result of needing to breathe through your mouth for a short time after the operation, while your nose is packed.
- **Cerebrospinal fluid (CSF) leak:** There is a very thin layer of the brain's lining which lies over the pituitary gland. If a tear occurs in this membrane during surgery then CSF can leak into the nose. The surgeon can usually identify the break and repair it with fat and or tissue taken from your stomach, thigh or earlobe. If you notice that your nose is constantly leaking clear fluid after your operation, it is vital you report this to your doctor or nurse so that the appropriate treatment can be given immediately. A repeat operation may be required.
- **Meningitis:** Occasionally a CSF leak (see above) can result in meningitis. If you develop some or all of the symptoms described below contact your GP or the hospital immediately: Severe headaches, High temperature, Stiff neck, Vomiting, A dislike of bright lights, Drowsiness. When diagnosed early, meningitis can usually be treated effectively with antibiotics. It is extremely rare to develop meningitis after you leave the hospital.
- **Vascular injury and stroke:** There is a less than 1% risk that the carotid artery (the major blood vessel on either side of the pituitary gland) may get damaged. This will result in severe bleeding and the carotid artery may need to be blocked to control the bleeding. In severe cases this could result in a stroke that may carry a risk of death.
- **Visual deterioration:** In rare instances the optic nerves that tend to run over the tumour may be injured during the operation and this can result in deterioration in vision. In some instances the movement of the eyes may be affected due to injury to nerves that control eye-ball movements.

After your operation

Waking up after the operation

Immediately after the operation you will be taken to the recovery room where you will be monitored carefully as you wake up. You will be made comfortable, given painkillers, and allowed a little time to wake up from the anaesthetic.

Expect to be asked to move your arms and legs and answer questions such as “what day is it?” or “where are you?”.

This may all seem strange or frustrating but it’s an important part of assessing how well you are recovering from your operation. You will usually stay in recovery for about an hour, until you are awake.

Nasal packs

We use packs in your nose and a nasal dressing to reduce bleeding after the operation so you may feel as if your ears and nose are blocked, and your mouth may feel a little dry whilst you’re breathing through it. It won’t be for long though as we remove the packs the day after the operation.

Intravenous infusion

You will have an intravenous infusion (a drip), to replace the fluids you are unable to drink whilst you’re nil by mouth. Once you are drinking normally, this will be removed.

Fluid restriction

Occasionally, after your operation, the pituitary gland may fail to control how much urine you pass and you may develop a condition called diabetes insipidus. So that we can keep an eye on this we need to keep a strict record of how much fluid you’re drinking and passing for the first few days after your operation. We do this by restricting the amount you drink.

Urinary catheter

You will have a catheter inserted while anaesthetised to allow for accurate evaluation of urine passed during and after the operation. This is normally kept in for about 3 days.

Stitches/ sutures

One of the benefits of endoscopic surgery is that we shouldn’t have to place stitches in and around the nose. If we have to obtain fat and or tissue from the thigh or stomach to repair a CSF leak, you will have stitches or skin clips placed in these areas and these can be removed after a week.

Eyesight test

We may check your eyesight before you are discharged, to enable your doctors to compare your eyesight before and after the operation. It may be wise to keep your current prescription for a few weeks after the operation, as you may find your eyesight continues to improve over the next few

weeks, which will therefore change your prescription. Your optician will be able to give you advice on this.

Smell and taste

You may experience a dulling of your sense of smell and taste, but this will usually return to normal over time.

Hormones

Immediately after surgery we might give you a hormone to stop you passing too much water. All other hormones are assessed about 6-12 weeks after your operation by your endocrinologist. We can replace any hormones you're not producing but it can take time to get the levels right.

Headaches and sinusitis

You may suffer from mild headaches for a few weeks after the operation. Take some painkillers and allow yourself plenty of rest. Severe headaches or worsening headaches rarely occur but should be reported to your GP straight away. It's also not unusual for your sinuses to feel blocked after the operation. Sinusitis can also cause headaches and pain around the forehead and eyes, which is often worst first thing in the morning. You may also get a nasal discharge.

Prescriptions

You will be given one month's supply of hydrocortisone when you are discharged from hospital, plus a supply of any other medications you are prescribed. At the follow-up with your endocrinologist your prescription may be altered.

Hydrocortisone

You must continue to take your hydrocortisone tablets as prescribed until you see your endocrinologist. Take your morning dose first thing and your last dose around 5pm – taking it later may disrupt your sleep. When you see the endocrinologist they may change either the dose or the time you take your hydrocortisone to suit your individual needs. They'll also advise you whether to continue to take hydrocortisone or not.

- Do not stop taking hydrocortisone without discussing it with your endocrinologist first because you may become very unwell.
- Make sure you don't run out of your medication.
- If you can't take the tablets (if you have a bout of diarrhoea and vomiting for example), you should inform your GP immediately as you may need to be given hydrocortisone by injection.
- If you develop a serious illness such as a fever, pneumonia, or an injury such as a broken bone, you will need to take extra hydrocortisone. This should be brought to the attention of your doctor immediately.
- If you're planning to travel, you will need to consider taking your own injection kit, a letter from your GP, medic alert bracelet and extra tablets in case of illness. Advice can be sought from your endocrinologist.
- Do not pack your medication in checked-in baggage.

Post-surgery complications

It is important that you read the potential risks section of this booklet to familiarise yourself with the symptoms to look out for while you're recovering from your operation. This is because these may indicate serious post-operative complications such as diabetes insipidus, cerebrospinal fluid leak and meningitis.

Follow-up appointments

You will need to attend a couple of follow-up appointments after surgery:

- **Endocrinologist** – four to six weeks after the operation. The endocrinologist will carry out a postoperative assessment of your pituitary hormones. Only they can tell you whether you need to adjust or stop taking your hydrocortisone. If your pituitary gland does not wake up after the operation the endocrinologist will replace all necessary hormones.
- **Neurosurgeon** – usually three to six months after surgery will want to see you. The surgeon will follow up with a postoperative MRI scan. At this consultation, the biopsy report, your scan findings will be discussed with you.
- **ENT surgeon** – if your nasal symptoms do not settle down in six to eight weeks, or if you needed extensive repair during your operation, you will be required to see the ENT surgeon. They will inspect and then clean inside your nose (if required), taking care not to disturb the repair undertaken during your operation.
- **Ophthalmologist** – if you have any ongoing visual problems after the operation, a consultation with an eye surgeon may be required.
- **Oncologist** – almost all pituitary tumours are benign but if your tumour is aggressive, or you are left with residual tumour in an area where we can't operate, the team might recommend additional treatment for you such as radiotherapy and or chemotherapy. Your doctor will explain all of this to you in the follow-up clinic.
- **MRI scans** – if some of the tumour is left behind during your operation, it tends to grow back with time so you will be given periodic MRI scans for a period of time after your initial operation.

Other useful information

Alcohol

Alcohol is not harmful to people taking hydrocortisone however other medications including some painkillers do not mix well with alcohol, so it's wise to check with your GP or pharmacist if you are unsure.

Driving

Consult your ophthalmologist on your vision and the requirements to inform the traffic authorities and you insurance company prior to driving.

Reference: Information from NHS – University Hospital Southampton, National institute for Clinical Excellence (NICE)