Endoscopic surgery for pituitary tumour

Turnberg Building
Neurosurgery Department
0161 206 4340
You have been referred for an operation for an abnormality within or near the pituitary gland. We find that most patients have similar concerns and this patient information booklet is intended to explain some of the surgical aspects of your treatment and hopefully to put your mind at ease.

There are also useful contact details for further information and advice in this leaflet.

Your surgical and endocrine teams will be happy to explain any further queries and unfamiliar terminology.

Manchester Pituitary team:

The Pituitary surgical service in Manchester is one of the busiest in the country, serving a population of approximately 3.5 million adults and 5 million children.

Pituitary surgery is undertaken on adults at the Salford Royal NHS Foundation Trust (SRFT) and in children at the Royal Manchester Children’s Hospitals (RMCH).

We also accept and treat patients referred from outside of the Manchester region, including overseas patients. New patient referrals from within the UK require a referral letter from the patient’s General Practitioner.

Pituitary surgery in Manchester is undertaken by the Neurosurgeons:

Mr Kanna Gnanalingham and Mrs Konstantina Karabatsou.

As part of a multi-disciplinary team (MDT), the pituitary surgeons work closely with the endocrinologists across the Greater Manchester region.

Other key members of the team include the Neuroradiologists, Oncologists, Neuro-opthalmologists and the Specialist nurses.

All surgical patients are discussed on a regular basis at the Manchester Pituitary MDT meeting, in accordance with NICE guidelines.
What is a Pituitary Tumour?

The pituitary gland is the key hormone producing organ, which is situated at the base of the brain, approximately 5cm behind the tip of the nose (Figure 1a).

The pituitary gland produces 8 different hormones that control a number of functions throughout the body including general well being, ability to cope with stresses of life such as infection, body growth, sexual function, thirst, metabolism as well as energy levels.

Pituitary tumours (Figure 1b) are relatively common. Indeed, studies suggest that between 10-20% of the general population may possess a pituitary abnormality.

However, most of these remain very small and do not cause any problems and only a small proportion cause symptoms requiring medical treatment.

Pituitary adenomas account for approximately 90% of all pituitary tumours. The vast majority (99% or more) of pituitary tumours are benign and not cancers. They are slow growing and the patients do well with treatment, including surgery, medical and radiation therapy.

Most pituitary tumours are adenomas (Figure 1b), although a variety of other lesions can be encountered around the pituitary gland, requiring surgical intervention.

You may therefore undergo surgery for the following conditions found around the pituitary gland also, including:

- Craniopharyngiomas (Figure 2b; developmental abnormalities)
- Pituitary apoplexy (i.e. bleed into pituitary adenoma)
- Cystic lesions (e.g. Rathke’s cyst)
- Inflammatory disease of Pituitary (e.g. Lymphocytic hypophysitis)
- Meningiomas of anterior skull base (Figure 2a)
- Bony tumours (e.g. Chordomas, Figure 2c and fibrous dysplasia)
- Infection of Pituitary (e.g. Tuberculosis)
- Tumour spread from elsewhere in the body (i.e. Metastasis)
- Meningoencephaloceles (developmental abnormalities)
- CSF leaks of anterior skull base
What symptoms do pituitary tumours cause?

Pituitary tumours are either non-secreting (no excess hormone produced) or secreting (excess hormone is produced).

Non-secreting tumours

These are more common and in general these tumours do not cause symptoms unless they grow to a size greater than 1cm.

At this point the tumour may cause pressure on important nerves that surround the pituitary gland. Nerves that control your vision are most likely to be affected. Generally people complain of blurring or loss of peripheral vision although double-vision and progressive blindness can also occur. With large tumours, the pituitary gland itself can be compressed and fail to function normally.

Signs of this include general tiredness, weakness and loss of energy.

Secreting tumours

These cause symptoms related to excessive circulating hormone levels. The body reacts differently to different hormones. For example excessive growth hormone (i.e. Acromegaly) or cortisol levels (i.e Cushing's disease) result in changes to your body and may result in serious medical conditions affecting the heart and body if left untreated. Secreting tumours can also produce visual symptoms if large enough.

A small proportion of pituitary tumours (approx 1-2%) may expand rapidly due to a sudden bleed or cell death. These patients typically describe sudden headaches and visual deterioration. The condition is called pituitary apoplexy and is a medical emergency.

Increasingly pituitary tumours are also discovered by chance on an MR scan undertaken for investigation for other symptoms (e.g. general headaches, dizziness, deafness etc).

What are the treatment options?

Treatment options for pituitary tumours include surgery, medications and/or radiotherapy.

The choice of treatment will be dependant on a number factors including your tumour type, tumour size, severity of symptoms, your age, general well being and your preferences.

As most pituitary tumours are benign and slow growing, there is also the option of waiting (i.e. conservative approach), with regular clinical review and MR scans to check for any increase in size of the lesion.

Your surgical and endocrine teams will discuss the advantages and disadvantages of each option and help to decide the best treatment option in your case.
What are the benefits of surgery?

The aim of surgery is to remove as much of the tumour as safely as possible. There are different benefits for secreting and non-secreting tumours.

Surgery for non-secreting tumours is primarily to preserve eye sight by reducing or avoiding pressure on the nerves to the eyes. Surgery is approximately 90% effective at improving your vision and most patients note visual improvement within days or weeks of surgery.

The visual improvement can also continue slowly for several years. But, if your vision is severely affected then you are less likely to recover all of your vision in that eye.

Surgery for secreting tumours is primarily to remove partly or fully the tumour that is producing an excess of pituitary hormone.

What happens before surgery?

You will be seen by your surgical team at Salford Royal NHS Foundation Trust (SRFT), who will go through the nature of surgery in detail. Your surgeon will also usually arrange a special image guidance scan to take place at SRFT that helps your surgeon plan and undertake the operation safely.

At the end of your neurosurgical clinic visit, you will also need to attend a pre-operative clinic, in which you will be assessed from a general health point of view. On occasions, further anaesthetic or medical reviews will also be requested prior to surgery.

Your pituitary hormone blood tests will also be checked before surgery and sometimes hormone treatment, or additional tests, may be needed prior to your operation. This will be overseen by your endocrine team.

Once deemed fit to proceed with surgery, you will usually be admitted on the day of surgery to the Surgical Admission Lounge (SAL) at Salford Royal.

Your surgical team will write to you with further details about this. For any queries about date of admission, please liaise with your surgeon’s secretary (see contact details at end).

What should I do about my medications?

You should continue your normal medication unless you are told otherwise in the pre-operative clinic.

Blood thinning medications such as warfarin, clopidogrel or aspirin, will need to be discontinued 5-10 days before surgery to minimise the risk of bleeding during surgery.

Follow your surgeon’s advice about stopping these medications before the operation.
Which surgical approach?
There are a number of different ways in which your surgeon can reach the pituitary tumour. Your surgeon will discuss the advantages and disadvantages of each approach in your case.
Operations through the skull (ie craniotomy) are far less common these days and are only used when the simpler approaches through the nose are unsuitable. Most operations on the pituitary gland are now carried out through the nose. This is called **trans-sphenoidal surgery**. ‘Trans’ means across and ‘sphenoid sinus’ is the air cavity behind which the pituitary gland sits.
Traditionally trans-sphenoidal surgery has been undertaken using a microscope and a nasal speculum to widen the nasal passage (Figure 3a). This can be painful and this technique has been mostly replaced by the endoscopic technique which allows a more ‘keyhole’ and less disruptive access to the pituitary tumour (Figure 3b).

Endoscopic approach is the technique used in Manchester.

What does the operation involve?
Surgery is performed under a general anaesthetic. Depending on the nature, size and shape of your tumour, the operation can take between 30 mins to 4 hours. Your surgeon will be able to advise further.
No skin cuts will be required for your operation. Your surgeon will use a small camera, called an **endoscope** to look through to the back of your nose (Figure 3b).
At the back of the nose are sinuses (air filled cavities in the bone) through which the endoscope passes. The pituitary tumour is removed with specially designed surgical tools.
At the end of the operation the space left by tumour is filled with special ‘**surgical sponge**’ and generally no nasal packs are required.
Occasionally your surgeon may also use **fat graft** from the abdomen or thigh for this purpose.

These materials are naturally broken down and absorbed at the back of the nose over the subsequent weeks.
In some cases your surgeon will also place a temporary tube in your spine, called a **lumbar drain** to help operate on very large tumours and also to help repair the surgical defect made at the back of the nose.
Pituitary surgery is safe and most patients recover relatively quickly from surgery and go home a few days later.

We will do our best to ensure that your operation is undertaken as safely as possible. However, complications can happen and some of these can be serious. The likely risks of complications are obtained from large studies carried out in both our unit in Manchester and elsewhere in the world. Your surgeon will be able to tell you if the risks in your case are higher or lower.

In most patients with pituitary tumours, endoscopic trans-sphenoidal surgery carries less than 1 in 1000 risk of very rare but major complications such as death, injury to major blood vessels and blindness.

The risks of less severe complications are around 15-20%, but this will vary between patients. These complications include infection, meningitis, bleeding, stroke (from damage to brain and nerves), leak of brain fluid (also known as cerebrospinal fluid, CSF) and the need for surgical repair of this.

Following surgery the normal pituitary gland may also fail to function normally with a small risk of infertility. In many cases, this is temporary, although in some cases this might be permanent, requiring the need for life long replacement of one or more hormones.

There are also risks related to the general anaesthetic and other general medical complications such as chest infections, heart disease and deep venous clots. The anaesthetist and the pre-operative clinic team will be able to advise further with regard to this.

There is also a possibility of some tumour being left behind, which may require further surgical, medical and/or radiotherapy treatments. Your surgeon will be able to explain the likelihood of this in your case.

What is my recovery likely to be?

Recovery in hospital

After the operation you will be transferred to the recovery area and then to the neurosurgical ward (usually Ward H7). The nurses and your physiotherapist will help you to start walking as soon as possible.

Soon after surgery, you may experience some headaches, nausea and discharge of blood stained fluid from your nose. The nasal discharge is usually due to the trauma of the nasal passages and should gradually settle over a 3-6 week period. You will be given a nasal salt spray (Sterimar, 2 puffs per nostril four times a day) to help with this and you should continue to use it at home, until the spray bottle is empty. Most patients experience altered or no sense of smell and taste during this period.

If you develop a persistent clear fluid discharge through the nose, it is important that you alert the staff, as this may indicate a CSF leak. If the CSF continues to leak, bacteria can creep up into the brain which can lead to infection of the brain (ie meningitis). Thus, once confirmed CSF leak may require insertion of a small fine tube (a spinal drain) in your back for a few days to control the leak. Failing this you may require further surgical intervention to repair the leak.

If possible you should avoid sneezing, coughing or straining in the first 1-2 weeks after surgery to minimise disruption to the surgical repair at the back of the nose. If you cannot avoid this then sneeze or cough with the mouth and nose uncovered. You should also request for laxatives if you are constipated.
A small number of patients can develop delayed problems with salt/water balance at 1-2 weeks after surgery, with a tendency to retain fluid. This condition is called Syndrome of Inappropriate Antidiuretic Hormone (SIADH) and the patient feels tired, headachy and nauseous. Once confirmed by blood and urine tests the condition usually gradually resolves by restricting the patient's daily fluid intake. You will also need to have a repeat visual assessment and a MR scan usually at 6 months post-operatively. The endocrine team will confirm when and at which hospital you will have these tests. This MR scan will clarify if there is any residual tumour and whether you will need further surgery and/or radiotherapy.

Recovery after going home

We advise that you have somebody at home in the first 1-2 weeks when you are discharged as you may be tired and may need extra help with household chores.

If you develop worsening symptoms such as headaches, vomiting, visual blurring and/or worsening nasal discharge it is important that you contact the ward or your surgeon (see contact details at end). These symptoms may need further assessment (eg blood tests and brain scans) and treatment.

On discharge all patients are reviewed in the endocrine clinic or Medical Investigational Unit (MIU), usually at 1-2 weeks after surgery. The endocrine nurse specialists will give you more information about the location and timing of these endocrine tests. You will have blood tests that check for adequate pituitary function, including your body’s salt and water control.

DI is not the same as Diabetes mellitus, which is related to high blood sugars.

Most patients are able to go home after 1-2 days, without any complications. Some patients may have to stay a little longer (4-5 days) primarily for further hormonal blood tests.

You will be discharged home on hydrocortisone tablets in addition to your other medications.

The medical team will also want to know all about how much fluid you are taking in and passing out in your urine and therefore you will be on a strict fluid balance chart.

Very occasionally the part of the pituitary gland, which helps control the volume of urine can be disturbed and you may start to produce a lot of urine and be very thirsty. This is called diabetes insipidus (DI) and is usually temporary and treated by increasing your fluid intake.

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You should continue to take your medications including the hydrocortisone tablets until advised otherwise by your endocrine team. You may also need to get a repeat prescription from your GP.

You will also be reviewed by your surgeon in the neurosurgical clinic usually at 2-3 months after your operation. If there are no ongoing surgical issues, you are likely to be discharged by the neurosurgical team at this stage.

Your long-term care will be under your endocrine team, who will also arrange your scans and blood tests as required.

Returning to normal activities

Most patients make a relatively speedy recovery following endoscopic trans-sphenoidal pituitary surgery. However, it is common for most patients to feel tired and ‘run down’ especially in the first few weeks after surgery.

It is best therefore not to attempt any strenuous activity over this time. It is also best to avoid long distance travel, including travel by air for 6 weeks following surgery.

If you did have visual disturbance before surgery, then you should not drive, until instructed to do so by the Driver and Vehicle Licensing Agency (DVLA).

If you did not have any visual disturbance before and after surgery, then you may be able to restart driving 2-4 weeks post-operatively, after checking with your doctors and your car insurance company.

With respect to return to work and other activities, a gradual return is advisable at 2-6 weeks following surgery. The speed of return to normal life partly depends on the nature of your employment and whether you suffered any complications after your operation.

Your surgical and endocrine teams will be able to advise further.

What can I do to help make the operation a success?

If you smoke, try to stop smoking now. Stopping smoking several weeks or more before an operation may reduce your chance of getting complications and will improve your long-term health. For help and advice on stopping smoking you can liaise with your GP or the pre-operative clinic team.

For information on how exercise can help you can liaise with your GP or the pre-op clinic team.

www.gosmokefree.co.uk

www.eidoactive.co.uk

www.eatwell.gov.uk

Regular exercise can reduce the risk of heart disease, improve how your lungs work and help you to control your weight. Exercise is also likely to help with your recovery and improve your long-term health.

For information on how exercise can help you can liaise with your GP or the pre-op clinic team.
Things NOT to do after discharge from hospital:
- No flying for at least 6 weeks
- No driving of vehicles until instructed to do so by the DVLA or your doctors
- No strenuous household activities for 4-6 weeks (e.g., cleaning, gardening, etc)
- No strenuous exercise for 4-6 weeks
- Stay away from anyone with a cold/cough/chest infection for 6 weeks
- Avoid pets that tend to lick for 6 weeks
- Do not stop hydrocortisone until instructed to do so

Symptoms you should alert us to:
- Worsening headaches or a sudden severe headache
- Any persistent clear fluid dripping from the nose
- High temperature, neck stiffness and intolerance of bright lights
- Deterioration in vision
- Feeling nauseous and being generally unwell

On discharge after surgery best way to contact us:
- Telephone the Neurosurgical ward you were discharged from
- Telephone the Neurosurgical Consultant’s secretary
- Telephone your endocrine team

Summary
Pituitary tumours are relatively common benign tumours of the brain which can cause hormonal changes and visual symptoms.

All patients with pituitary disease are assessed and treated by a multi-disciplinary team.

The endoscopic approach to the pituitary gland is a keyhole technique with relatively rapid recovery after surgery.

Surgery is usually safe and effective. Patients with pituitary tumours generally do well with treatment and lead near normal lives.
Useful contact details:

For any queries please contact the relevant consultants or your designated endocrine nurse specialists at the numbers below.

Mr Kanna Gnanalingham
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Greater Manchester Neuroscience Centre
Salford Royal NHS Foundation Trust,
Stott Lane, Salford M6 8HD, UK
Secretary: Kate Roszkowska
@ kate.roszkowska@srft.nhs.uk
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Drs Tara Kearney & Annice Mukherjee
Consultant in Endocrinology
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Secretray to Dr Kearney:
Lorenza Ashburner
@ lorena.ashburner@srft.nhs.uk
0161 206 5693

Endocrine Specialist Nurses, Salford Royal
Sisters Shashana Shalet (Pituitary key worker) & Kathryn Kinsella
Department of Endocrinology
Salford Royal NHS Foundation Trust,
Stott Lane, Salford M6 8HD, UK
0161 206 7036/7038/4625
Fax: 0161 206 5989

Endocrine Specialist Nurse, MRI
Sister Chris Gibson (Pituitary key worker) & Nicci Komlosy
Department of Endocrinology
Manchester Royal Infirmary (MRI)
0161 276 8610
Fax: 0161 276 4977

Endocrine Specialist Nurses, The Christie Hospital
Department of Endocrinology
The Christie Hospital
0161 436 3772

Endocrine Specialist Nurse, The Pennine Acute Trust
Department of Endocrinology
The Pennine Acute Trust
0161 778 5462

Other contact numbers at Salford Royal NHS Foundation Trust

Ward H7 0161 206 4610 / 5679
Ward B7 0161 206 4571 / 4572
Ward B8 0161 206 1290 / 1297
NHDU 0161 206 5055
(Medico High Dependency Unit)
MIU 0161 206 4884 / 5688
(Medical Investigational Unit)
CT scanner 0161 206 2115
MR scanner 0161 206 2091
Ophthalmology services at SRFT 0161 212 4018

Useful web links:

Pituitary Foundation
(UK based website)
www.pituitary.org.uk
0845 450 0375

(Please note that charges will apply for telephone calls)
For further information on this leaflet, it’s references and sources used, please contact 0161 206 4340.

Copies of this information are available in other languages and formats upon request.

In accordance with the Equality Act we will make ‘reasonable adjustments’ to enable individuals with disabilities, to access this treatment / service.

Salford Royal operates a smoke-free policy.
For advice on stopping smoking contact the Hospital Specialist Stop Smoking Service on 0161 206 1779

Salford Royal NHS Foundation Trust
Stott Lane, Salford, Manchester,
M6 8HD
Telephone 0161 789 7373
www.srft.nhs.uk

If you need this interpreting please telephone
Polish
Jeżeli potrzebne jest Państwu to tłumaczenie, прошу звонить по номеру.
Urdu
اگر آپ کوئی ترجمہ کی ضرورت ہے تو ترجمہ کریں۔
Arabic
إذا كنت بحاجة إلى تفسير أو ترجمة هذا الرجاء الاتصال
Chinese
如果需要翻译，请拨打电话
Farsi
اگر به ترجمه این نیاز دارید، لطفا تلفن کنید
0161 206 0224
Email: InterpretationandTrans@srft.nhs.uk

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