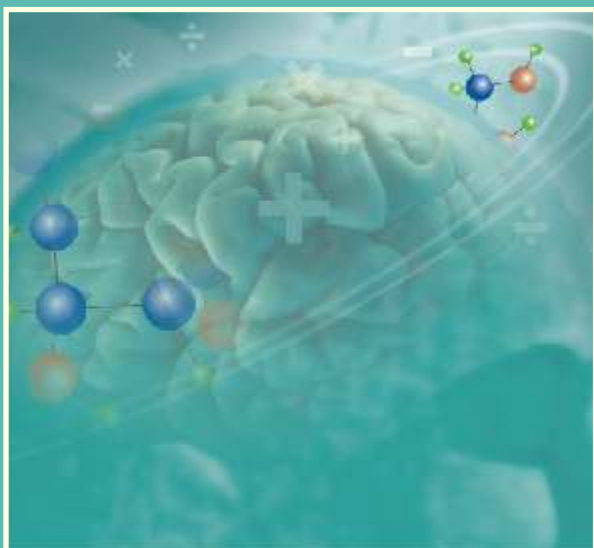


Pituitary Adenoma and Surgery



Max Institute of
Neuro Sciences
Caring for you...for life

Pituitary Adenoma and Surgery

Pituitary Gland

The pituitary gland is also called the master gland. It controls many body functions, including growth, metabolism, thyroid function, reproduction and the body's response to stress. Pea-sized and reddish-gray, the pituitary gland is located in the center of the brain, just above the back of the nose. It is made up of three lobes, each of which produces different hormones. It is attached to the hypothalamus (a part of the brain that affects the pituitary) by nerve fibers.

It controls hormones that directly or indirectly affect most basic bodily activities. (The word hormone comes from Greek meaning to set in motion. A hormone is a chemical messenger from one cell or collection of cells to another.)

Pituitary Adenomas

The pituitary gland is a small oval gland at the base of the brain. It controls most of our hormones. These control thyroid activity, the menstruation cycle in women, sex drive, growth in children, adrenal gland activity, urine output, the start of childbirth and milk-production after pregnancy.

Doctors describe these tumours in several ways. One is as:

- **Secreting**, which releases hormones. These can trigger symptoms such as impotence, stopping of a woman's menstrual periods, galactorrhea, abnormal body growth, Cushing's syndrome or hyperthyroidism.
- **Non-secreting**, which are usually larger when found and treated with surgery and radiation therapy.

Another is by size:

- **Microadenomas**, which are smaller than one centimeter
- **Macroadenomas**, which are larger than one centimeter. These can be quite large if not found until they affect nearby brain tissues. The optic nerves are particularly vulnerable. Early on, the vision at the edges of the field of sight can be affected. Pituitary tumours can spread into the area of the head that contains the carotid artery and cranial nerves. When this occurs, the tumours may be particularly difficult to completely remove.

Symptoms

Symptoms vary based on the tumour's size, where it is located and whether it secretes or not. They may include:

- **Overproduction of hormones:** Functional tumours, which secrete hormones, can produce too much hormones. Almost 20% secrete prolactin, a hormone that causes milk production in women. Very high levels can cause milk production in men and women who are not pregnant. Menstrual irregularities may also occur.
- **Underproduction of hormones:** Some 75% of pituitary tumours don't produce hormones. These can grow and damage normal gland tissue. This cuts hormone production. Often the first hormones affected are those that relate to sex. This can cause irregularity or loss of menstruation in women and sterility with loss of sex drive in men and women.
- **Growth disorders:** These cause excessive growth (gigantism) in children. In adults, they cause acromegaly, or abnormal growth of the face bones, enlarged hands and feet, excessive sweating and heart disease.
- **Disturbances in vision** will occur if the tumour presses on the optic nerves.

Diagnosis of Pituitary Adenoma

A. MRI of Pituitary gland: The ability to create images of the pituitary gland, which is located deep inside the skull, has led to tremendous advances in diagnosing and treating pituitary disorders.

B. Hormone testing: An Endocrinologist may order other tests that are useful in diagnosing pituitary disorders including:

- **Routine and specialized blood tests**
- **Urinalysis.** This involves collecting a sample of urine for chemical analysis. Because hormone levels naturally go up and down during the day and night, it may be necessary to do a 24-hour urine collection.
- **Provocative/Suppressive lab tests:** These are tests that are designed to cause or prevent hormones from being secreted to help identify the cause of a pituitary disorder. These include glucose tolerance tests to help diagnose acromegaly, arginine infusion tests to help detect growth hormone deficiency and dexamethasone suppression tests and inferior petrosal sinus sampling to help diagnose Cushing's disease.



C. **Neuro-ophthalmological evaluation**, including a visual field exam. This involves looking at a screen with flashing lights and pressing a button when you see one of the lights. The pattern of which flashing lights you can or can't see maps areas of your vision affected by the tumour

State-of-the-art Pituitary Surgery

Advances in technology such as the endoscope, surgical microscope and image guidance systems have led to major advances in pituitary surgery. Minimally invasive pituitary surgery that allows for precise removal of tumours in or around the pituitary gland also leads to faster recoveries, little or no scarring and fewer complications.

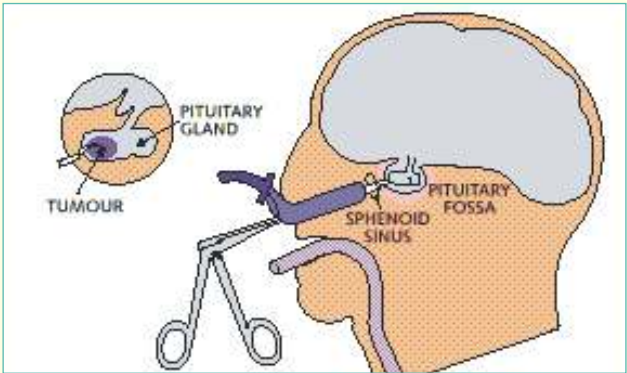


Tumours vary in size and activity. If surgery is recommended, it may be for one of the three reasons:

- To remove hormone-producing tissue (typically in Acromegaly or Cushing's disease)
- To reduce the volume of a tumour that is compressing the optic chiasm or other structures
- To reduce the volume of, or excise, non hormone-producing tissue that is likely to threaten surrounding structures in the future; for example, in a relatively young patient, in whom continued growth of the tumour is suspected or has been proven by sequential scans.

Transsphenoidal surgery is the most usual method but sometimes transcranial surgery is required in some tumours with major intracranial extension. The transsphenoidal approach allows the surgeon a clear, direct view of the tumour (through an operating microscope) and avoids a craniotomy (making a hole in the skull) with its associated risks of damage to the brain and epilepsy.

Recently an endoscopic approach has been introduced in some centres. Fine tubes (endoscopes) are pushed through the back of the nose.



MRI and/or CT scans will give the surgeon information on the size and position of the tumour.

Successful outcome of this surgery is very dependent on the experience of the surgeon.

Patient management

Follow-up

The patient will be referred to an endocrinologist for post-operative pituitary function assessment at about 5–8 weeks and back to the surgeon in about 12 weeks (for MRI and visual field assessment). In some cases additional replacement pituitary hormones will be needed. These appointments should, ideally, be combined to cause minimal inconvenience to the patient.

Diabetes Insipidus

If the patient suffers from new onset polyuria and nocturia after surgery, it is likely that they have developed a degree of diabetes insipidus (DI). This is unusual after transsphenoidal surgery, but in all cases is highly amenable to treatment. In most cases, DI is temporary and disappears within a few months, but in 1–2% of patients, especially after removal of Prolactinoma and Cushing's tumours, it may be permanent and remain treatable.



Cerebrospinal fluid leak

It is possible to develop a CSF leak from the nose in the post-operative period (this is rare). This is associated with a risk of meningitis, and is an inconvenience for the patient. Any flu-like symptoms or discharge of water-like fluid from the nose should be treated with a view to this possibility. Patients need to be referred back to the surgeon for treatment, urgently.

Sinusitis

This is not uncommon after this operation, particularly for patients with acromegaly. Symptoms usually clear in a given time, but occasionally need further treatment or an ENT referral.

Stitches

Depending on the surgical technique, stitches are inserted in the upper gum or in the nostril. They are usually soluble. The wound itself will be completely healed in 3 weeks. Complete absorption of stitches can take 3 months and loose ends may need to be removed/snipped away. There may be some numbness around the front teeth; this may occasionally be permanent.

Weight gain

A major problem for many patients is weight gain. These patients are likely to need some encouragement to follow a suitable diet and take regular exercise. This may be particularly difficult after a period of illness and hospitalisation. However, including more exercise into their lifestyle should also improve the patient's general feeling of well-being.

Emotional impact

Surgical treatment which involves the head has a strong emotional impact for some patients.



Frequently asked questions?

Why do I need an operation?

A Benign tumour of the Pituitary gland may be compressing the optic nerve (which lies just above it) and affect sight or you may have a tumour which is producing excessive amounts of hormone which could cause problems.



Is it cancer?

No, the vast majority of tumours are benign.

How long will I be in hospital?

This varies between treatment centres, but 3-9 days is a fair estimate.

When will I be able to go back to work?

Depending on the job and circumstances, it is usually wise to plan for about 4-6 weeks off and reassess after that time. Some patients may take longer to recover

Have I inherited this, will my children get it?

In some very exceptional circumstances, there is a hereditary link.

*Note: This brochure is not a substitute of medical advice.
For details, schedule an appointment with your Doctor.*

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