

Gamma knife stereotactic radiosurgery for a pituitary tumour

This leaflet is for people who are considering gamma knife radiosurgery for a pituitary tumour. It explains the procedure, its advantages and risks, and aims to answer the main questions you're likely to have. There is a separate general guide to gamma knife radiosurgery which explains the procedure in more detail. For a copy of this, or if you have any additional questions, please speak to your doctor or another member of the gamma knife team.

What is a pituitary tumour?

The pituitary gland, a small gland near the base of the skull, is the master gland which controls the hormones within your body. It regulates the hormones produced by the thyroid and adrenal glands as well as those released from the sex organs. Tumours that grow in the pituitary gland may affect the hormonal balance within your body.

What is gamma knife radiosurgery?

Gamma knife radiosurgery uses a beam of radiation to treat conditions affecting the brain, head and neck. It does not use a knife but is a non-invasive treatment that does not need any skin incision.

The benefits of gamma knife radiosurgery

The accuracy of the gamma knife radiosurgery system enables a high dose of radiation to be focused on a very precise area. This means one treatment is generally all that is needed.

One of the major benefits of gamma knife radiosurgery is that it is non-invasive. Other benefits include the following:

- There is no incision. This means you won't need to shave your head and you'll have no scars to heal. It also avoids the risks that can be associated with open surgery, such as bleeding and infection.
- You're unlikely to have hair loss or nausea.
- The procedure is relatively painless and in most cases a general anaesthetic isn't needed.
- We find that most people get back to their normal activities in a day or two (compared to two to six weeks of recovery time with conventional brain surgery).

Gamma knife radiosurgery usually has minimum complications. Indirect comparisons suggest it produces fewer complications than other treatment techniques.

What are the alternatives to gamma knife surgery?

Conventional brain surgery is an alternative, depending on the location of the tumour, and radiotherapy or chemotherapy may be used for small tumours or tumours not suitable for surgery. It may be necessary to combine conventional brain surgery with radiosurgery or radiotherapy to prevent the tumour's recurrence. Your doctor will discuss the relative benefits of each approach with you.

About the gamma knife procedure

There are several steps to the procedure but these will all be done in one day. Generally you will be admitted to the hospital the night before or on the morning of your gamma knife radiosurgery. You will be asked not to eat or drink anything for four hours before your procedure (unless you have diabetes). You will also be asked to wash your hair. You may be given medicine to help you to relax.

Before the surgery can take place, you'll have a lightweight head frame fitted. This is used to pinpoint the area to be treated by the gamma knife. A local anaesthetic will be injected in four places into your scalp where the frame will be fixed with screws. These injections may be painful but will only last for a few seconds. The frame will stay attached to your head for the whole procedure.

To find the exact position of the area that needs to be treated, you will need to have a magnetic resonance imaging (MRI) scan. A neuro-radiologist (a doctor who specialises in using imaging methods on the brain), physicist and your doctor will plan the optimal dose of radiation and the most precise way of targeting it to the relevant area.

You will return to the gamma knife unit where you'll be carefully positioned on the couch so that your head remains completely still. The length of time that the procedure takes depends on the size and location of your tumour. You will be able to talk to our staff through a microphone in the gamma knife machine throughout the procedure.

Recovering from gamma knife radiosurgery

Once the procedure is finished, you will have the head frame removed and you can go back to rest in your room. When the frame is taken off you may have slight bleeding from the points where it was held in place. You may also feel sick or have a headache but this shouldn't last for more than a few hours. Most people stay overnight in the hospital after gamma knife radiosurgery. Depending on your general health, you should be able to get back to your normal activities the day after treatment.

Follow-up

The aim of gamma knife treatment for a pituitary tumour is to stop further growth of the tumour. If your tumour produces too much of any of the pituitary hormones your hormone levels will be monitored. You will know if the treatment has worked when the hormone levels return to normal, which can take up to two years. Your doctor will give you details but it is usual to have follow-up appointments, with an MRI scan and blood tests, every six months. Depending on your circumstances you may need to have hormone and visual field checks more frequently than this. These will generally be done by your endocrinologist and ophthalmologist.

If you have a tumour that doesn't produce hormones then you will be monitored by MRI scans after one, two, three, five, seven and ten years. You will know the treatment has been effective if, after several years, the tumour has remained the same size or shrunk.

What are the risks?

As with every procedure, there are some risks associated with gamma knife radiosurgery. In order to make an informed decision and give your consent, you need to be aware of the possible side effects of this procedure.

As the tumour is close to your optic system, there is a very small risk you will have some disturbance to your vision after treatment.

The dose of radiation that your pituitary gland will receive during gamma knife surgery may affect your hormone levels. You may have a hormonal deficiency even several years after the radiosurgery and you may require hormone replacement treatment.

Any exposure to radiation (as in gamma knife surgery) carries the small risk of a malignant tumour developing in the future. However the risk is considerably lower than for a serious complication occurring following conventional surgery.

Your doctor will talk to you about the potential risks and side effects of gamma knife radiosurgery for your individual circumstances. If your doctor recommends that your tumour is treated with the gamma knife, this will be based on the judgement that it carries lower risks than conventional surgery.

Contact

If you have any questions or need further information, please contact your doctor, or the gamma knife centre Monday to Friday, between 9.00am to 5.30pm.

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e: gamma.knife@cromwellhospital.com

w: bupacromwellhospital.com/services-and-specialties/gamma-knife-centre

Further information

The Pituitary Foundation is a national UK charity which provides information and support for those living with pituitary disorders.

w: www.pituitary.org.uk

t: +44 (0)117 370 1320

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