What Can Be Treated By Gamma Knife?

1. **Brain Tumours**
   Both benign and malignant brain tumours, especially tumours originating elsewhere in the body that have metastasized to the brain.
2. **Arteriovenous Malformations (AVMs)**
   AVMs are an abnormal collection of blood vessels. When located in the brain, these abnormalities can cause bleeding, headaches or seizures.
3. **Acoustic Neuromas/ Vestibular Schwannomas**
   These non-cancerous tumours develop on the nerve that affects balance and hearing, often causing gradual hearing loss, tinnitus and dizziness.
4. **Trigeminal Neuralgia**
   This nerve disorder affects the trigeminal nerve causes sudden disabling facial pain that feels like an electric shock-like or stabbing pain.
5. **Pituitary Tumours**
   Pituitary tumours are abnormal growths that develop in the pituitary gland. These tumours can cause a variety of problems because the pituitary controls the thyroid, adrenal and reproductive glands.
6. **Meningioma**
   Meningioma is a tumour that arises from the meninges. This tumour can press on the brain and spinal cord, causing complications such as vision loss or paralysis.

Will I See Immediate Effects After Treatment And Do I Need Follow-up Treatment?

The effects of the Gamma Knife treatment will not be immediate but will be seen over a period of time. Radiation treatments are designed to stop the growth of tumours or lesions, which means the progress will only be seen over a period of weeks or months. Your doctor will stay in contact with you during this period; you may have to undergo follow-up MRI, CT or angiography examinations to monitor your progress.

Are There Any Side-effects Immediately After The Treatment?

Generally most patients experience no immediate side-effects from the treatment, though some may experience some mild side-effects such as nausea/vomiting, headache and scalp numbness.

MRI Images Of A Patient Before And After Gamma Knife Treatment

Before Gamma Knife Treatment

1.5 years after Gamma Knife Treatment

How Can I Obtain Further Information?

For more information, please contact:

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ParkwayHealth Day Surgery & Medical Centre
363 Balestier Road
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ParkwayHealth Patient Assistance Centre (PPAC) provides a seamless one-stop 24-hour service to our patients, connecting them to a comprehensive choice of medical services and doctors across ParkwayHealth's hospitals.

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ParkwayHealth™

Information is correct at time of printing (November 2009) and subject to revision without notice.

Gamma Knife Treatment

FOR BRAIN DISORDERS

ParkwayHealth™

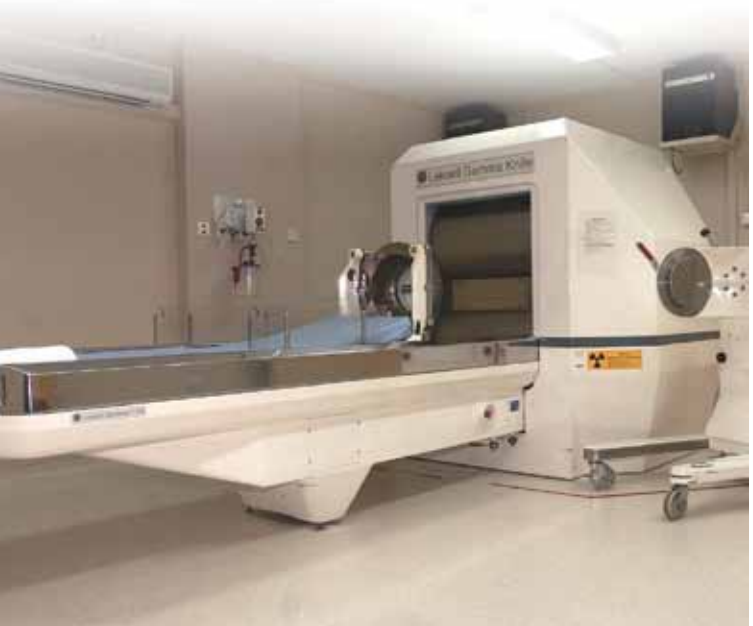
Our Gamma Knife Centre

The Gamma Knife is recognised internationally as one of the most advanced radiosurgical treatment modalities for deep-seated brain tumours and other lesions that cannot be removed safely using conventional brain surgery.

Combining the best medical expertise, we aim to provide our patients with personalised quality service and good treatment results.

What Is Gamma Knife?

The Gamma Knife is a form of stereotactic radiosurgery used to treat some brain disorders (such as brain tumours and vascular malformations), without the need for open surgery. Although it was named Gamma Knife, it uses gamma rays instead of a surgical knife. Computer-planned finely collimated gamma-rays are precisely focused at the target in the brain without affecting the surrounding healthy tissues. It is performed as an outpatient surgery procedure and the patient can return home the same day after treatment.



Benefits Of Gamma Knife Treatment

1. It is a non-invasive surgery. The gamma-rays are focused at the abnormal lesion without affecting the normal adjacent tissues.

2. The treatment gives very good results comparable or superior to conventional open surgery with no risk of bleeding or infection. It also has a much lower risk of morbidity and mortality compared to open surgery.

3. Treatment is usually done as a day surgery procedure. Hospital stay, if any, would be overnight at the most. By comparison, conventional surgery would require 1-2 days of intensive care stay, with 7-14 days of hospitalisation (depending on the case).

4. Patients undergoing Gamma Knife treatment can return to their pre-operative lifestyle almost immediately, compared to 4-6 weeks of convalescence required for those who undergo conventional surgery.

TREATMENT PROCEDURE

1

STAGE 1 - FRAME FIXATION

A stereotatic frame will be fixed to the patient's head in the preparatory room. This will cause some discomfort but local anaesthesia will be applied to ease the discomfort.

2

STAGE 2 - DIAGNOSTIC IMAGING

Patient will then undergo a Magnetic Resonance Imaging (MRI) scan to localise the target tissue. An additional Cerebral Angiogram is also required for AVM patients.

3

STAGE 3 - COMPUTERISED TREATMENT PLANNING

After the scan, patient will take a rest at the recovery area. From the MRI images, the neurosurgeon uses computerised treatment planning to decide on the dose and positioning of the rays. The treatment planning ensures that the dose delivered is accurate and just sufficient to neutralise the tumour target.

4

STAGE 4 – GAMMA KNIFE TREATMENT

Upon completion of the treatment planning, the patient undergoes the treatment in the Gamma Knife suite. The whole process takes about 1-3 hours (depending on the size and configuration of the lesion) and does not involve any surgical incision.

After the treatment procedure is completed, the frame will be removed and patient will have a few minutes of rest in the recovery area. Patient can return home the same day or the next morning, depending on the advice of the neurosurgeon.

Photos courtesy of Elekta