Gamma Knife Surgery IMAGE-GUIDED RADIATION TREATMENT SERVICES

Gamma Knife Surgery

Gamma Knife® surgery is a well-established treatment method used to treat selected targets in the brain.

The Leksell Gamma Knife® is not a knife in the normal sense of the word. The physician makes no



incisions in your head. Instead, very precisely focused beams of radiation are directed to the treatment area in the brain.

Gamma Knife surgery offers effective treatment of benign and malignant tumors, as well as functional neurological

disorders such as pain and seizures.

The treatment procedure, led by Penn State Milton S. Hershey Medical Center neurosurgeons and radiation oncologists, is simple, painless, and straightforward.

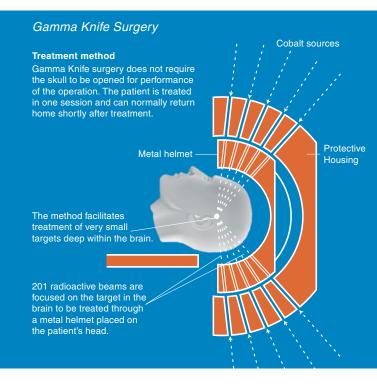




What is Gamma Knife Surgery?

Gamma Knife surgery is a unique method that delivers extremely focused radiation beams to targets in the brain. More than 200 individual beams converge to one focal point.

The radiation source used is called cobalt, which is positioned in a hemisphere so that all the beams meet at a single point. The shape and dose of the radiation is optimized to hit only the target, without damaging surrounding healthy tissue.



Before the Surgery

Before treatment, your physician will inform you about the entire procedure.

Most patients can expect to return home the same day. Gamma Knife surgery does not require cutting or shaving of your hair.

Treatment Consists of Four Steps:

- 1. Attaching the Head Frame
- 2. Imaging
- 3. Treatment Planning
- 4. Treatment

1. Attaching the Head Frame

A key component in Gamma Knife surgery is the stereotactic head frame.

The frame allows the physician to accurately pinpoint the target to be treated in your brain. This lightweight



frame, which is attached to your head with four screws, ensures that the radiation beams can be directed with precision to the target.

The frame also prevents your head from moving during imaging and treatment procedures. Local anaesthetic is applied where the screws are to be attached.

2. Imaging

After the head frame is in place, it is time for imaging to be done. Imaging may include magnetic resonance imaging (MRI), computed tomography (CT) or angiography.



Imaging is required to determine the exact size, shape, and position of the target in the brain.

During imaging, a coordinate box is placed on the head frame to provide reference points on the images for the treatment plan.

After imaging, the coordinate box is removed.

3. Treatment Planning

Once images have been taken, you can rest while your physician develops a very precise and accurate treatment plan.

No two treatment plans are alike; every patient's plan is individually designed to address the specific medical condition

The physician, very often a neurosurgeon or radiation oncologist working together with other specialists, makes the plan in a specially designed computer and calculates how treatment should be performed.

This usually takes a couple of hours.



4. The Treatment

Once your treatment plan is completed, the actual treatment can start. You will lay down on the treatment couch and the head frame will be attached to the helmet. You are awake during the procedure and will be able to communicate with your physician or nurse through an audio and video connection. When the treatment begins, the couch will move into the dome section of the unit.



The treatment is silent and totally painless. Often you will be able to listen to music during the treatment.

The team will be monitoring the procedure at all times. The treatment will last a few minutes to more than an hour, depending on the size and shape of the target.

After the Treatment

When your treatment is complete, the head frame will be removed. If you had an angiogram, you might have to lay quietly for several more hours.

Some patients experience a mild headache or minor swelling where the head frame was attached, but most report no problems. Your physician will tell you whether or not he wants you to stay overnight for observation or if you can go home immediately. Either way, you should be able to return to your normal routines in another day or so.

Follow-up

The effects of your treatment will occur over time. Radiation treatments are designed to stop the growth of

tumors or lesions, which means that the effect will be seen over a period of weeks or months.

Your physician will stay in contact with you to assess your progress, which may include follow-up MRI, CT, or angiography images.



Where can I find more information?

Always consult your physician at Penn State Hershey Medical Center if you have any questions at all. You will be given additional instructions after treatment,



as well as appointment information and telephone numbers to contact regarding follow-up care.

