

The Gamma Knife

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The Gamma Knife is most commonly used to treat:

- [Pituitary Tumors](#)
- [Acoustic Neuromas](#)
- [Meningiomas](#)
- [Metastatic Brain Tumors](#)
- [Astrocytomas](#)
- [Glioblastomas](#)
- [Trigeminal Neuralgia](#)
- [AV Malformations](#)
- [Obsessive Compulsive Disorder](#)

Usually the region of treatment includes the brain and close surrounding areas. However, the development of larger stereotactics (the aiming devices for the gamma rays) have made it possible to treat sites a little farther than the brain as would be necessary in the treatment of something like a Trigeminal Neuralgia.

Although the name may imply that the Gamma Knife is a blade of some sort, this could not be farther from the truth. The Gamma Knife is actually a 6.44 million dollar machine that focuses 201 gamma rays on one specific location in order to destroy the problem tissue leaving the surrounding areas totally unharmed.

One of the main and undisputable reasons that this device is attractive for brain problem treatment is that it needs no incision. This means that the surgery site is never exposed to open air, eliminating the possibility for infection or other complications. Another reason this machine may be attractive to surgeons is that the patients receiving the procedure are outpatients. No elongated hospital stay is needed and

Contrary to conventional open brain surgery there are no expensive post surgery medications, or rehabilitation.

The development of the Gamma Knife actually began in the 60's in Stockholm, Sweden under Dr. Lars Leksell. It began as research on using proton beams (from a linear accelerator) along with stereotactic devices (the guides for the beams), but the costly nature forced Leksell in a new direction. Eventually the same idea was used only this time gamma rays were used to implement the "knife" using Cobalt-60 as its energy source.

There are currently over 140 gamma knife units being used worldwide with over 60 of them being in North America (1 in Rhode Island Hospital).

Depending on the volume of surgeries performed at a particular location a Gamma Knife procedure can cost anywhere from \$4500 up to \$11000.

The Gamma Knife's precision makes it able to operate on tumors or growths that are only 2mm in diameter and might even be in direct contact with vital parts of the brain, making some "inoperable" growths able to be eliminated.

http://www.sdgkc.com/about_gn/about_gn.htm

www.aetmis.gouv.qc.ca/fr/publications/scientifiques/aetmis_x/2002_03_res_en.pdf

<http://www.healthsystem.virginia.edu/internet/neurosurgery/gamma-knife-new.cfm>

<http://www.neurosurgery.pitt.edu/imageguided/gammaknife/developed.html>