

# Gamma Knife

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Gamma Knife is a device used to treat brain tumors, an abnormal growth of cells within the brain, with a high dose of radiation in one day. The device was created by a Swedish Neurosurgeon, Lars Leksell, in 1967 at the Karolinska Institute.

A specialized helmet is worn by the patient to keep the head from any movement during the radiation. The device directs up to 201 Cobalt-60 generated gamma beams precisely on the infected area with about 30 curies, unit of radioactivity, each. Through the use of three dimensional computer aided planning and the helmet the treatment minimizes the amount of radiation on the healthy brain tissue. Thousands of radiation beams can be generated from the sources with an accuracy of .5 mm.

Since the Gamma Knife radio surgery is so accurate the full dose of radiation can be done in one session compared to multiple radiation visits.

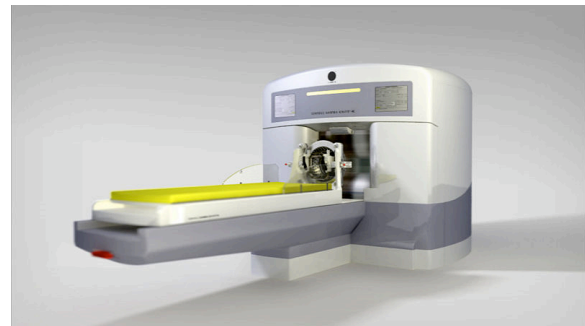
Gamma Knife Surgery is known as “stereotactic radiosurgery”. Radiosurgery is the delivery of a single, large dose of radiation to a specific target in the brain with surgical precision. The radiation will react on a molecular level with the cancer cells and stop their reproduction, which kills the cancer. Stereotactic refers to precise positioning in three-dimensional space. In Gamma Knife surgery, this means a 3-D reference frame is attached to the patient’s head during the procedure. The stereotactic frame provides a 3-D reference which can be seen on the imaging equipment to provide exact coordinates for the target.

In 1968 the first Gamma Knife was installed in Stockholm, Sweden. The first in

the U.S. was installed in 1987 in Pittsburgh. Over the years, Gamma Knife has been improved with advances in engineering radiation physics, robotic controls and computerized treatment planning.

There have been over 500,000 patients treated with Gamma Knife surgery and in the last five years, the number of patients treated per year has increased by 300%. More than 30,000 patients every year worldwide are treated with Gamma Knife surgery.

There are many advantages to the Gamma Knife surgery, as the risks are very low and the patients usually feel no discomfort and can return to daily life couple hours after surgery. Along with the procedure is often 25 to 30 percent cheaper than traditional Neurosurgery.



Work Cited:

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