



A Revolution in Neurosurgery

THE GAMMA KNIFE CENTER

FACTS

Gamma Knife: A better approach to radiosurgery

Yale-New Haven Hospital Gamma Knife Center is the only stereotactic radiosurgical facility in Connecticut dedicated to treating head and skull base disorders with external radiation.

Gamma Knife is a radiosurgery device that delivers 201 precisely-focused gamma rays to the head using a three-dimensional targeting system.

Gamma Knife is a noninvasive, bloodless neurosurgical procedure that is highly successful in treating conditions such as:

- benign and metastatic brain tumors
- head and skull base tumors
- vascular malformations of the brain
- trigeminal neuralgia

Why is Gamma Knife superior to other methods of treatment?

Because Gamma Knife does not usually require general anesthesia or opening the head surgically, it is an excellent option for patients who cannot tolerate medications or are poor candidates for open surgery such the elderly or patients with co-existent medical conditions.

Computerized treatment preplanning allows accurate targeting of lesions of different sizes, shapes and depth, with no damage to surrounding healthy tissues.

Recovery is rapid – most patients return home the same day after a brief observation period and can return to their regular activities without any precautions.

If necessary, the procedure can be repeated safely after an interval of several weeks to months.

How is Gamma Knife radiosurgery performed?

The procedure begins with the patient's head being fitted with a stereotactic frame which provides three-dimensional coordinates of the treatment site. During this phase of treatment, imaging studies are used to determine the exact location, size and depth of the tissue to be treated. Studies may include the use of CT scans, MRI or angiography.

Results of the imaging studies are used to develop an individualized treatment plan, a procedure which may take up to two hours. Once

the treatment plan is completed and all coordinates are reviewed, the stereotactic frame is attached to the Gamma Knife unit and the patient is positioned so that the target area is directly in the center of 201 converging gamma rays. Treatment time varies from 30 minutes to over three hours. The patient is conscious and able to communicate with the treatment team at all times by video cameras and an intercom.

What is the expected outcome with Gamma Knife radiosurgery?

Results achieved with some of the conditions that respond to Gamma Knife therapy:

Meningiomas – Compared to resection, which can result in 20 to 40 percent recurrence rate at 10-year follow-up, radiosurgery has been able to achieve tumor control in more than 90 percent of cases at 10-year follow-up.

Acoustic neuromas – Surgical resection often results in significant risk of facial paralysis. With Gamma Knife, facial function is nearly always preserved and tumor control is achieved in 98 percent of patients at 10-year follow-up.

Metastatic brain tumors – Gamma Knife is extremely effective at controlling metastatic lesions. Control rates vary depending on primary tumor pathology but are on average achieve 90 percent at 1-year follow-up and 80 percent at 2-year follow-up. These rates are comparable to surgical resection. Radiosurgery, however, has the advantage of being able to treat surgically inaccessible lesions and multiple lesions at one

sitting, and can be used multiple times, as necessary. Unlike other forms of external radiation, it is compatible with ongoing chemotherapy.

Trigeminal neuralgia – Approximately two-thirds of patients become pain free and an additional 20 percent achieve significant pain relief at 1-year follow-up. Fifty percent of patients continue to have pain relief at five years.

What are the advantages of referring patients to Yale-New Haven Hospital Gamma Knife Center?

- **Longstanding experience** – The Yale-New Haven Hospital Gamma Knife Center’s operating experience is the longest of any radiosurgery facility in Connecticut.
- **Professional expertise** – The center’s medical staff has several decades of cumulative experience in the use of Gamma Knife technology and significant experience allowing for predictable outcomes with a high degree of accuracy.
- **Medical achievements** – The center has developed preliminary experience in treating malignant primary brain tumors such as glioblastoma and ependymomas.

Who should I contact for a consultation about my patient?

Patients are accepted for treatment at the Yale-New Haven Hospital Gamma Knife Center only after their medical records and previous imaging studies are carefully evaluated by a physician or team of physicians specializing in their particular disorder. Depending on the severity of the case, a referral for treatment can take place within days.

For a referral to the appropriate specialist for your patient or for more information:

(203) 688-4040

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