Gamma Knife radiosurgery treats brain tumors and metastases, providing an alternative option to conventional neurosurgery and traditional radiation therapy.

Gamma Knife is a safer, cognition-sparing treatment that improves medical outcomes and quality of life.

What Sets Us Apart

- **Latest technology.** RPCI’s Leksell Gamma Knife® Icon™ is the sixth generation and most precise radiosurgery tool available — and the first one installed for use in an American cancer center.
- **Exclusive provider in WNY.** We are the only center in the region to offer cranial radiosurgery with Gamma Knife.
- **High-volume experience** from treating more than 5,000 patients. RPCI now treats more than 400 patients annually with Gamma Knife.
- **Option for frameless fixation,** which makes it feasible to provide this treatment in multiple fractions, increasing safety and improving quality of life.
- **Ability to treat large numbers of metastases** by fractioning treatment over several days, minimizing amount of brain irradiated, and reducing long-term side effects.
Conditions we treat with Gamma Knife

- Metastatic brain tumors and lesions arising from primary tumors of the breast, kidney, colon, uterus, skin (melanoma) or other organs
- Brain tumors, malignant and benign, <3.5 cm. in diameter, including:
  - Meningiomas
  - Gliomas (glioblastoma, astrocytoma, oligodendroglioma)
  - Craniopharyngiomas
  - Hemangioblastomas
- Pituitary adenoma
- Trigeminal neuralgia/tic douloureux
- Arteriovenous malformation
- Acoustic neuroma (vestibular schwannoma)
- Essential tremor and other movement disorders

How it works

Gamma Knife radiosurgery targets tumors with 192 intersecting gamma ray beams, providing a sharp, micro-precision “cutting” edge while sparing healthy brain tissue.

Radiosurgery achieves effective tumor control by destroying the malignant tissue or rendering it incapable of further growth, resulting in stable imaging. Depending on the condition treated, results are realized over a period of weeks or even years.

“The ability to break down a major treatment dose—as in the case of a patient with 15 to 20 brain metastases—into a multiday, precision-targeted therapy spares a significant portion of healthy brain tissue from radiation, and can save the patient from cognition-related side effects for years to come.”

—Dheerendra Prasad, MD, MCh, FACRO
**Benefits of Gamma Knife radiosurgery**

- No general anesthesia required. Virtually eliminates risks associated with conventional neurosurgery, such as bleeding and infection.
- Ability to treat deep-seated tumors not accessible with conventional neurosurgery.
- May be used in conjunction with traditional neurosurgery for tumors that cannot be completely excised to enhance the long term outcomes of patients.
- Repeat treatment can be given for patients with metastatic tumors who subsequently develop additional tumors.
- Minimal side effects.
- Generally does not delay or interrupt systemic treatment.
- Outpatient procedure. Patients usually return to normal activities within 24 hours.

**A comparison of Gamma Knife vs. whole brain radiation therapy (WBRT)**

These T2 weighted images of the brain show the difference between a patient who received whole-brain radiotherapy and one who received Gamma Knife over time. Images A and D depict initial presentation. Images at one year (B) and two years (C) after whole-brain radiotherapy are dramatically different than those taken one year (E) and two years (F) after three Gamma Knife treatments. The lighter appearance of the brain in B and C indicates degeneration of white matter connections – which manifest in impaired cognitive function. These changes are clearly missing in E and F despite multiple Gamma Knife treatments.

“In Gamma Knife radiosurgery, less than 0.5% of the brain receives radiation, compared to 20-30% with LINAC or Cyber Knife-based treatment or 100% with whole brain radiotherapy. That’s a huge savings in terms of neurocognition, and holds the promise of a much better quality of life.”

—Dheerendra Prasad, MD, MCh, FACRO
Meet the Team

Dr. Prasad has treated more than 9,000 patients with Gamma Knife, and serves as an onsite advisor to institutions around the world as they begin to use Gamma Knife radiosurgery.

Dheerendra Prasad, MD, MCh, FACRO
Professor of Neurosurgery and Radiation Oncology
Director, Gamma Knife Center

Robert Fenstermaker, MD
Professor of Neurosurgery and Oncology
Chair, Department of Neurosurgery
Director, Neuro-Oncology Program

Robert Plunkett, MD
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Refer a Patient

Call us today to discuss a case, confirm a diagnosis or refer a patient.
Phone: 716-845-RPMD (716-845-7763).
For rapid physician-to-physician contact, 716-845-3173 (and press 1)