

Cerebellar metastases radiosurgery

- Patterns of Recurrence After Postoperative Stereotactic Radiotherapy for Brain Metastases
- Cerebellar re-irradiation after whole brain radiotherapy significant symptom relief with minimal toxicity in metastatic brain patients
- Association between tumor location and toxicity outcomes after stereotactic radiosurgery for brain metastases
- Experience of Gamma Knife radiosurgery for treatment of brain metastases in pregnancy with literature review
- Audit of Presentation, Primary Site, and Pattern of Treatment in 778 Indian Patients with Brain Metastasis in 15 Years (2007-2022)
- Clinical and molecular characteristics of patients with brain metastasis secondary to pancreatic ductal adenocarcinoma
- Is two-staged gamma knife surgery a reasonable management option for very large cerebellar metastases? A case series of three patients
- Twenty-Month Regression Following Concurrent Conventional Whole-Brain Irradiation and Chemoimmunotherapy for 3.8 cm Cerebellar Metastasis From Small Cell Lung Cancer

□ Clinical Context

- Cerebellar metastases represent **20-30%** of all brain metastases.
- Frequent primaries:
 - Lung
 - Breast
 - Melanoma
 - Renal cell carcinoma
- Critical concerns:
 - Brainstem compression
 - Fourth ventricle involvement
 - Risk of obstructive hydrocephalus or herniation

□ Indications for Radiosurgery

- Lesion size **<3-4 cm** or volume **<10-15 cc**
- **Oligometastatic disease** (≤ 4 lesions)
- Good functional status (**KPS ≥ 70**)
- Controlled systemic disease
- Life expectancy **>3-6 months**

□ Advantages

- Minimally invasive
- High local control (**85-95%** at 6-12 months)
- Outpatient or short-stay procedure
- Defers or avoids WBRT

- Preserves neurocognition
- Often avoids surgical resection

⚙ Technical Considerations

- Technologies:
 - Gamma Knife (GKRS)
 - CyberKnife
 - LINAC-based SRS
 - Hypofractionated SRS (hfSRS)
- Dose example:
 - **18-24 Gy** in 1 fraction (adapted to size/location)
- Frameless or frame-based delivery

📋 Risks and Follow-Up

- Complications:
 - Radiation necrosis (5-15%)
 - Cerebellar edema → treat with corticosteroids
- Lesions near brainstem → consider hypofractionation
- Surveillance:
 - MRI brain with contrast:
 - 1st control at 2-3 months
 - Then every 2-3 months

📋 Evidence Summary

- Retrospective studies show:
 - High local control
 - Comparable to surgery for small, asymptomatic lesions
- Preferred approach for large/symptomatic lesions:
 - Surgical resection + adjuvant SRS to cavity

Upfront Frameless Hypofractionated Gamma Knife Radiosurgery

[Upfront Frameless Hypofractionated Gamma Knife Radiosurgery](#)

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