

## LINAC Based SRS - Does Timing of MRI Impact Outcome?

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## Abstract

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**Abstract**

**Objective:** Patients with metastatic brain tumors may be treated with stereotactic radiosurgery (SRS) using a Gamma Knife (GK) platform or a linear accelerator (LINAC)-based platform. While our usual practice is to acquire an MRI on the day of GK treatment, there is greater heterogeneity in the timing of MRI for patients receiving LINAC-based treatment. Our objective was to review whether the interval between MRI and SRS treatment on the LINAC affected LINAC affected local tumor control.

**Methods:** We reviewed our institutional database to identify all patients with brain metastases treated after 2016 using a LINAC platform for SRS. We recorded the date of MRI used for treatment planning and the date of SRS delivery. Clinical records and imaging were reviewed by a dedicated CNS radiation oncologist to assess local control. If whole brain radiation therapy was used as salvage treatment, the patient was censored at the date of that treatment. SPSS was utilized for statistical analysis.

**Results:** 45 patients with 59 brain metastases were identified that were treated using LINAC SRS. Median f/u was 13.2 months. Local control at 12 months was 81.9%. Median interval in days between MRI and SRS was 24 (range 9 days - 39 days). Local control was improved if the interval between MRI and SRS was <24 days (12 month LC 90.1% vs 71.3%, p=0.049).

**Conclusion:** Shorter intervals between brain MRI and SRS may be associated with improvement in local control. Our data support a planning workflow in which the MRI is performed as close as possible to simulation and treatment using LINAC SRS for patients with brain metastases.