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Background

Intracranial meningiomas are among the most common primary central nervous system tumors, and their management continues to evolve with the increasing integration of stereotactic radiosurgery (SRS). Despite widespread use, real-world outcome data from dedicated SRS programs remain essential to refining indications and optimizing therapeutic results.

Objectives

To analyze tumor control, clinical response, overall survival, prognostic associations, and treatment tolerance in patients with intracranial meningiomas treated with SRS at a single institution over an eight-year period.

Methods

A retrospective review was performed on 103 patients treated between August 2016 and August 2024. Prescribed doses ranged from 14–35 Gy in 1–5 fractions, delivered using a dedicated linear accelerator with image-guided radiotherapy (IGRT). Toxicities were classified according to CTCAE v4.0. Statistical analyses included Pearson's chi-square test and Kaplan–Meier survival estimations.

Conclusions

SRS is a safe, effective, and well-tolerated modality for the management of intracranial meningiomas, providing durable tumor control and meaningful clinical benefit. It represents an optimal treatment option for patients with unresectable lesions or high surgical morbidity risk. These data reinforce the importance of multidisciplinary decision-making and support continued expansion of SRS within modern meningioma care pathways.

Results

Median follow-up was 25 months (range 6–104). Mean age was 57 years (18–88). Fourteen patients (14%) died from disease progression, with a mean time to death of 48 months (12–67). The remaining 89 patients (86%) were alive with radiological tumor control at a mean follow-up of 55 months. Skull base meningiomas accounted for 67% of cases, and 63% of patients had undergone prior surgery. The mean treated tumor volume was 26 cc (0.6–276). Pre-SRS symptoms were present in 50% of patients, with partial or complete clinical improvement documented after treatment. SRS was well tolerated, with low rates of significant acute or late toxicity.

