

Stereotactic Radiosurgery for Residual, Recurrent, and Metastatic Hemangiopericytomas: A single-Institution experience

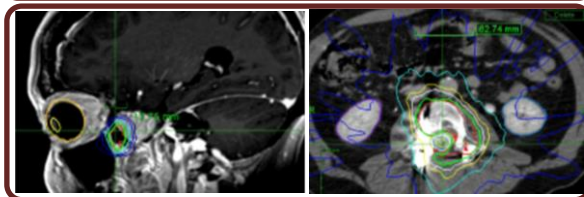
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Introduction

- **Hemangiopericytomas (HPC)** arise from the Zimmermann pericytes that line the walls of small blood vessels.
- Due to their tendency to invade the dural sinuses, high vascularity, and their anatomical inaccessibility, radical resection may be unsafe with substantial **risk of recurrence**.
- **Stereotactic radiosurgery (SRS)** has been proposed as a postoperative adjuvant therapy.
- This study aims to evaluate **the efficacy and safety of CyberKnife SRS** in treatment of residual, recurrent, and metastatic HPC based on a retrospective analysis of patient data at Stanford University Medical Center.

Study Design



- From 1998 to 2023, 27 patients with 101 tumors underwent CyberKnife SRS.
- **Median marginal dose** for each fractionation scheme: 20 Gy in 1 fraction, 20 Gy in 2 fractions, 24 Gy in 3 fractions, and 30 Gy in 5 fractions.
- **Median isodose line:** 76% (range: 64-89).

Results

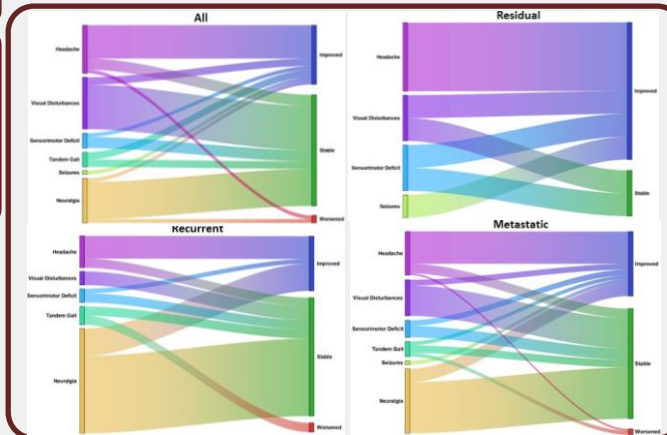
Table 1. Radiological and clinical outcomes

Variables	Entire Series	Residual	Recurrent	Metastatic	Statistical Significance (p Value)
LTC					
10 yrs, %	74.3	75	62.4	87.1	0.05
OS					
10 yrs, %	80.8	100	81.8	60	0.24
mean, mo	183.1	118	183	199	
PFS					
10 yrs, %	67	71.4	71.7	50	0.46
mean, mo	207.9	130	219	215	
SI, %	35.8	75	34	30	< 0.001
SW, %	3.2	0	2.1	5	< 0.001
NS, %	7.9	0	11.8	5	< 0.001

LTC, local tumor control; OS, overall survival; PFS, progression-free survival; SI, symptomatic improvement; SW, symptomatic worsening; NS, new symptoms; FU, follow-up; yrs, years; mo, months

- Of the 101 treated HPC, **24 lesions progressed**, with a **median time to recurrence of 30 months**.
- At 10 years, the rates of LTC, OS, and PFS were 74.3%, 80.8%, and 67%, respectively.
- There was a statistically **significant increase** in the 10-year LTC rate among patients with **metastatic HPC**.

- There was a statistically **significant enhancement of symptomatic relief** among patients with **residual HPC**.
- **Radiation-induced edema** was observed in **7.9% of HPC in 14.8% of patients**; 5.9% recurrent and 2% metastasis HPC.
- **New symptoms** was found to be significantly associated with **recurrent HPC (7.9%)**.
- **No cases of radiation necrosis** were detected.



Conclusion

This is the **largest single-institutional retrospective series** with the **longest follow-up** of HPC treated with SRS up to date.

SRS leads to **excellent LTC, PFS and OS at 10 years**, while also managing symptoms safely with negligible risk for radiation necrosis. SRS is an **effective and safe adjuvant treatment modality** for residual, recurrent, and metastatic HPC.