

Introduction

- Cavernous Sinus Meningiomas can cause compression of critical neurovascular structures (CNIII, CNIV, CNV₁, CNV₂, CNVI, internal carotid artery), causing neurological and visual symptoms
- Fractionated stereotactic radiotherapy (FSRT) 50-54 Gy over 25-30 fractions (1.8-2 Gy/fraction) has historically been used to balance local control and neurological morbidity
- Hypofractionated stereotactic radiosurgery (FSRS) has been a recently established option to potentially improve long-term local control while reducing neurological morbidity, specifically optic neuropathy

Objective

- Report institutional long-term outcomes with treating low-grade cavernous sinus meningiomas with FSRT and FSRS regimens

Methods

- Existing radiation oncology databases were searched to retrieve all patients with benign cavernous sinus meningiomas who were treated with 50-54 Gy over 25-30 fractions (1.8-2 Gy/fx) or the hypofractionated RS regimen of 25 Gy over 5 fractions at Thomas Jefferson University Hospital (TJU) between 2006-2017
- Patients were excluded if they had grade 2 or 3 disease, less than 12-month follow-up, prior cranial RT, or missing post-treatment MRI
- All tumors were either histologically confirmed as WHO grade I or were considered benign from radiological appearances
- Local control was assessed with PFS using Kaplan-Meier
- Neurological symptom control after FSRT was categorized as worsening, stable, or improved based on clinic notes from radiation oncology and/or neurosurgery
 - Assessed in intervals of <36 months, 36-60 months, 61-120 months, 121-180 months, 181+ months
 - Each interval assessment was compared to symptoms at presentation prior to FSRT initiation
- Follow-up time was assessed using months between last date of RT and most recent head imaging (CT or MRI)
- Dosimetric data for volumes and OARs were collected

Results

- With median follow-up of 122.2 months, the 1-year, 3-year, 5-year, and 10-year local control rates for FSRT were 100%, 95.12%, 89.75%, and 89.75% respectively.
- With median follow-up of 26.1 months, local control rates for FSRS were 100% at 1 and 3 years.
- No statistically significant difference in local control between both radiation modalities (chi-square=0.782, p=0.384)

Neurological Symptom Control Post-FSRT

	Improvement	Stable	Worsening
<36 months (n=40)	67.5% (n=27)	25% (n=10)	7.5% (n=3)
36-60 months (n=30)	56.7% (n=17)	36.7% (n=11)	6.7% (n=2)
61-120 months (n=25)	68% (n=17)	28% (n=7)	4% (n=1)
121-180 months (n=13)	69.2% (n=9)	23.1% (n=3)	7.6% (n=1)
181+ months (n=3)	66.7% (n=2)	33.3% (n=1)	n/a

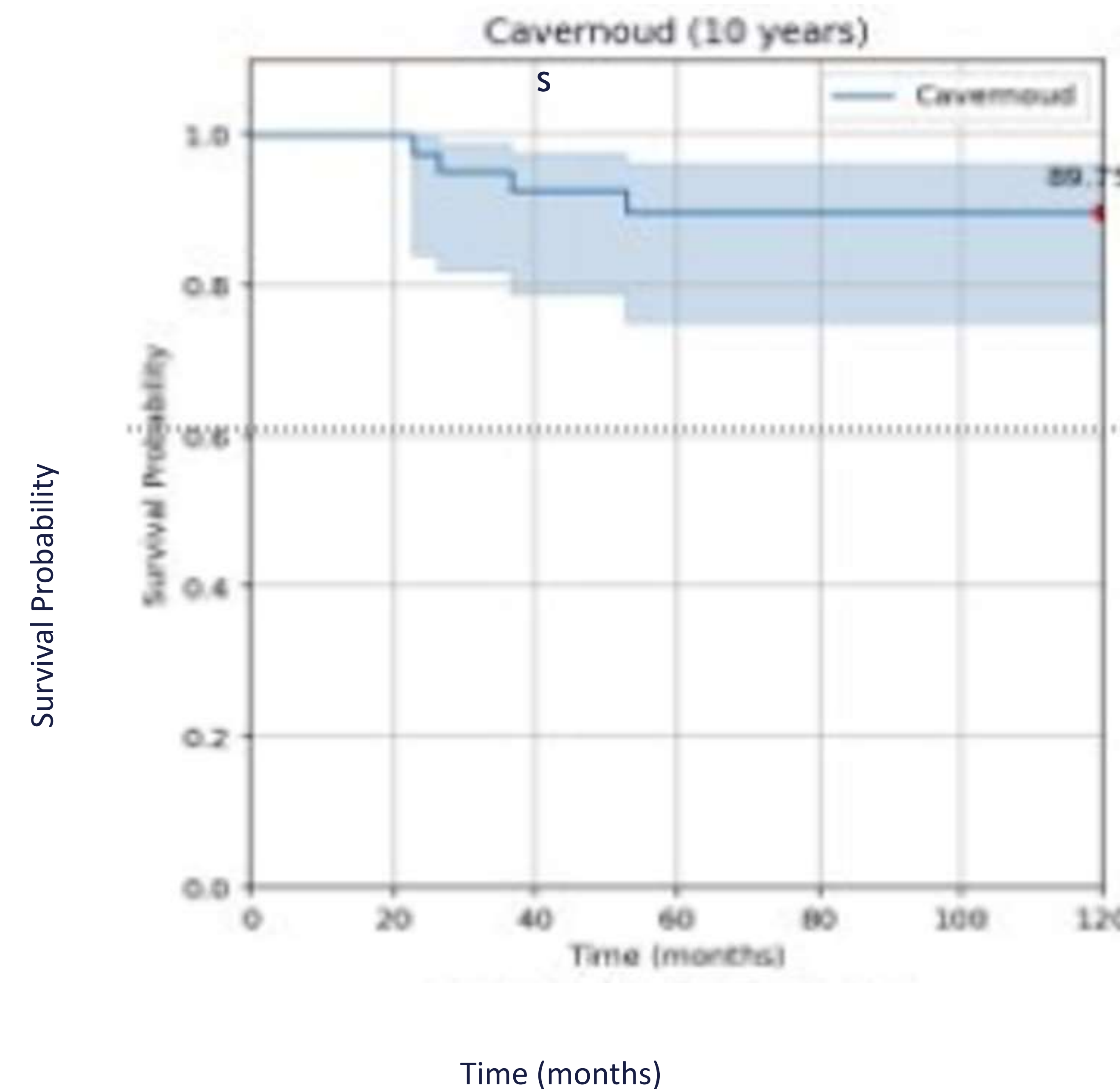


Figure 1 Kaplan-Meier curve, LC with FSRS regimen was 100%, 95.12%, 89.75%, and 89.75% at 1,3, 5, and 10 years

Sample FSRT to Cavernous Sinus Meningioma

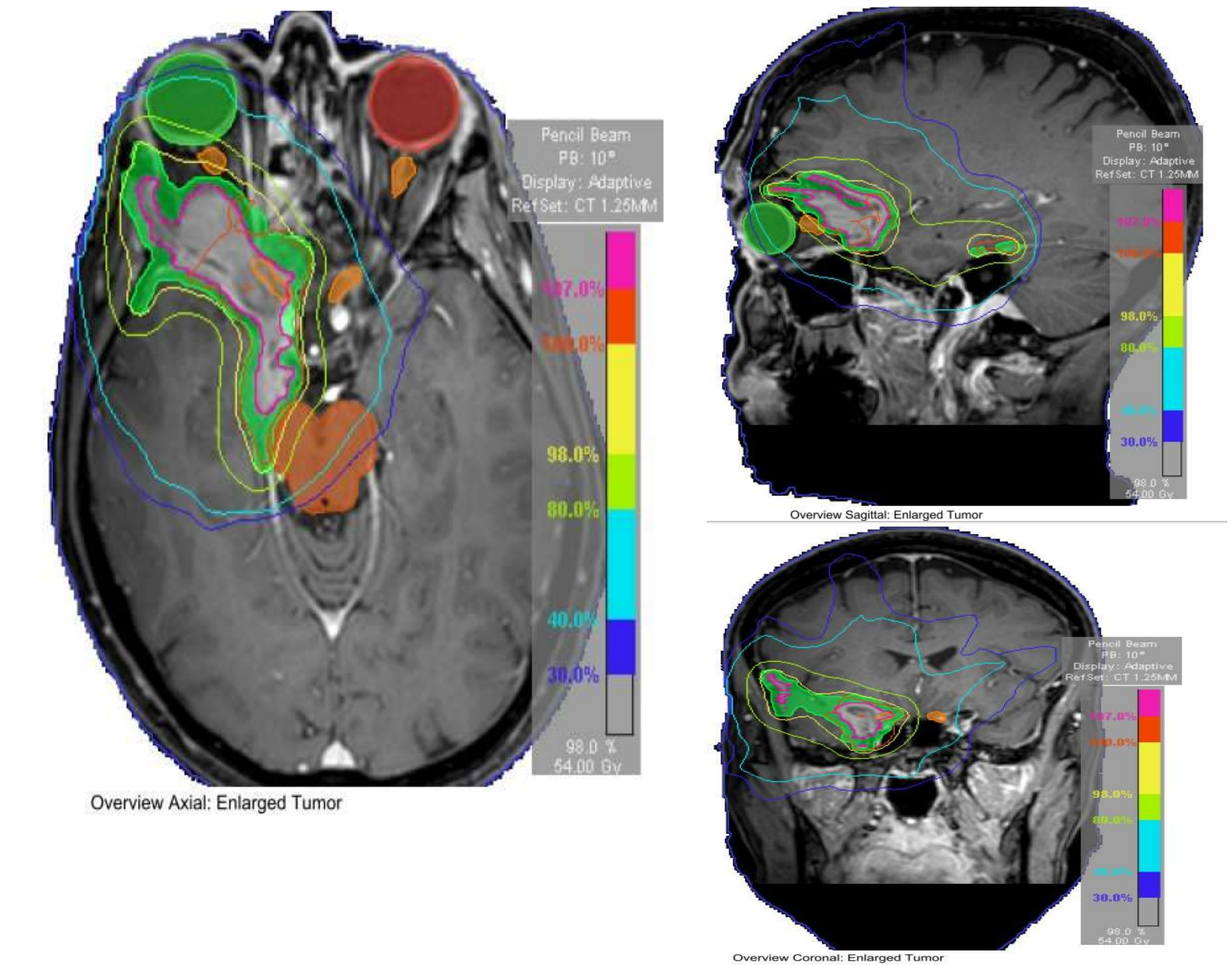


Figure 2 Sample FSRT Plan (a)axial (b)sagittal and (c)coronal views of plan for patient presenting with G1 cavernous sinus meningioma treated 54 Gy in 28 fractions

Discussion/Conclusion

- FSRT demonstrated effective long-term local and neurological symptom control for patients with cavernous sinus meningiomas
- FSRS shows early signs of durable local control, but need more long-term data
- Failures in LC w/FSRT occurred within 5 years post-treatment

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