



# Time to Recurrence of Skull Base vs Intracranial Atypical and Anaplastic Meningiomas in Patients treated with Radiation Therapy

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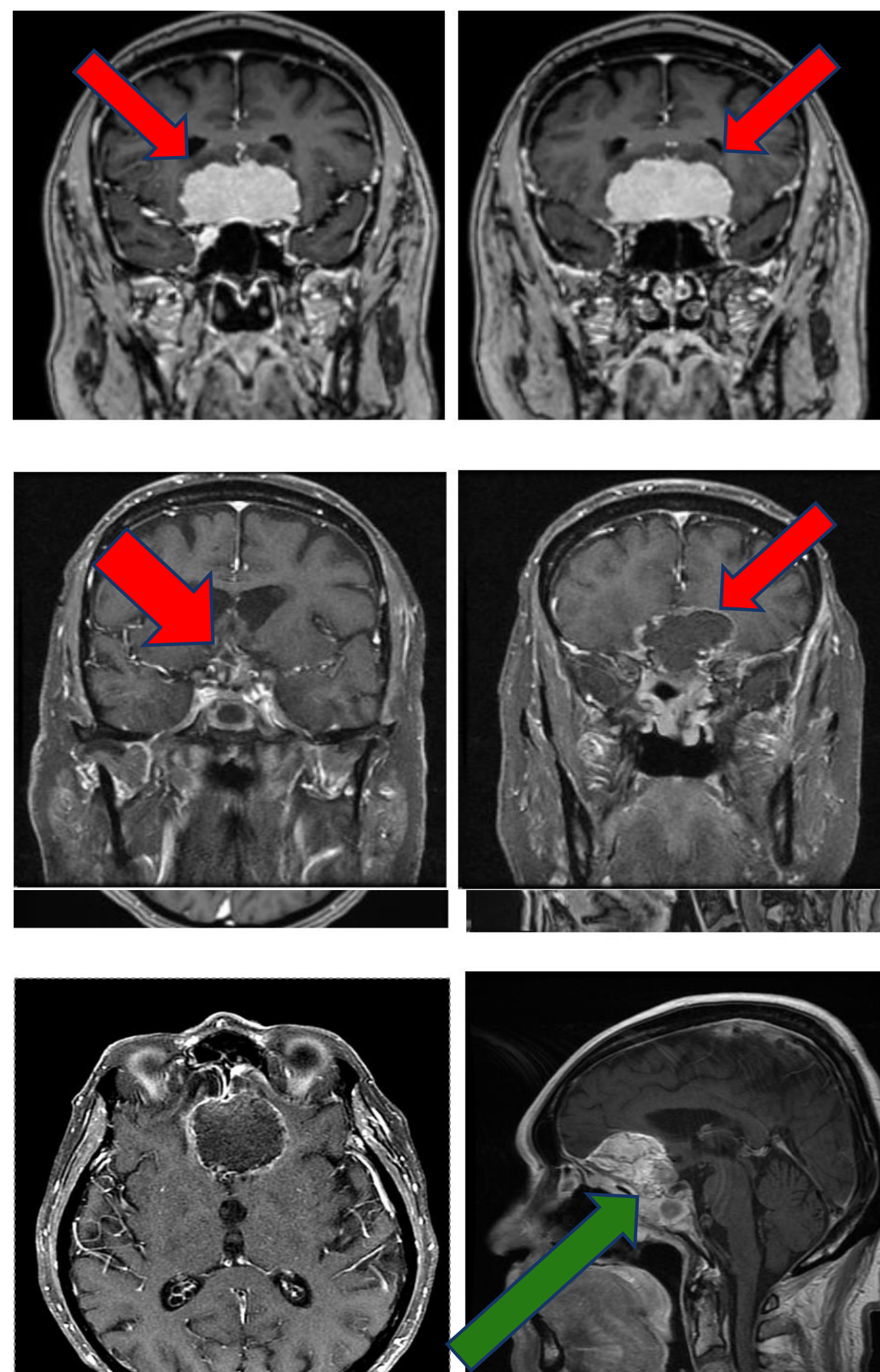


## Introduction/Purpose

- Meningiomas account for 35% of all intracranial tumors.
- Grade II and III meningiomas account for 25-30% of all meningiomas. They recur more frequently and are more aggressive.
- The role of radiation therapy (RT) for WHO grade II meningiomas remains unclear. Previous studies have demonstrated some improvement in progression free survival (PFS) and overall survival (OS).
- This study aims to further explore various factors that may affect the role of RT in treatment of meningiomas.

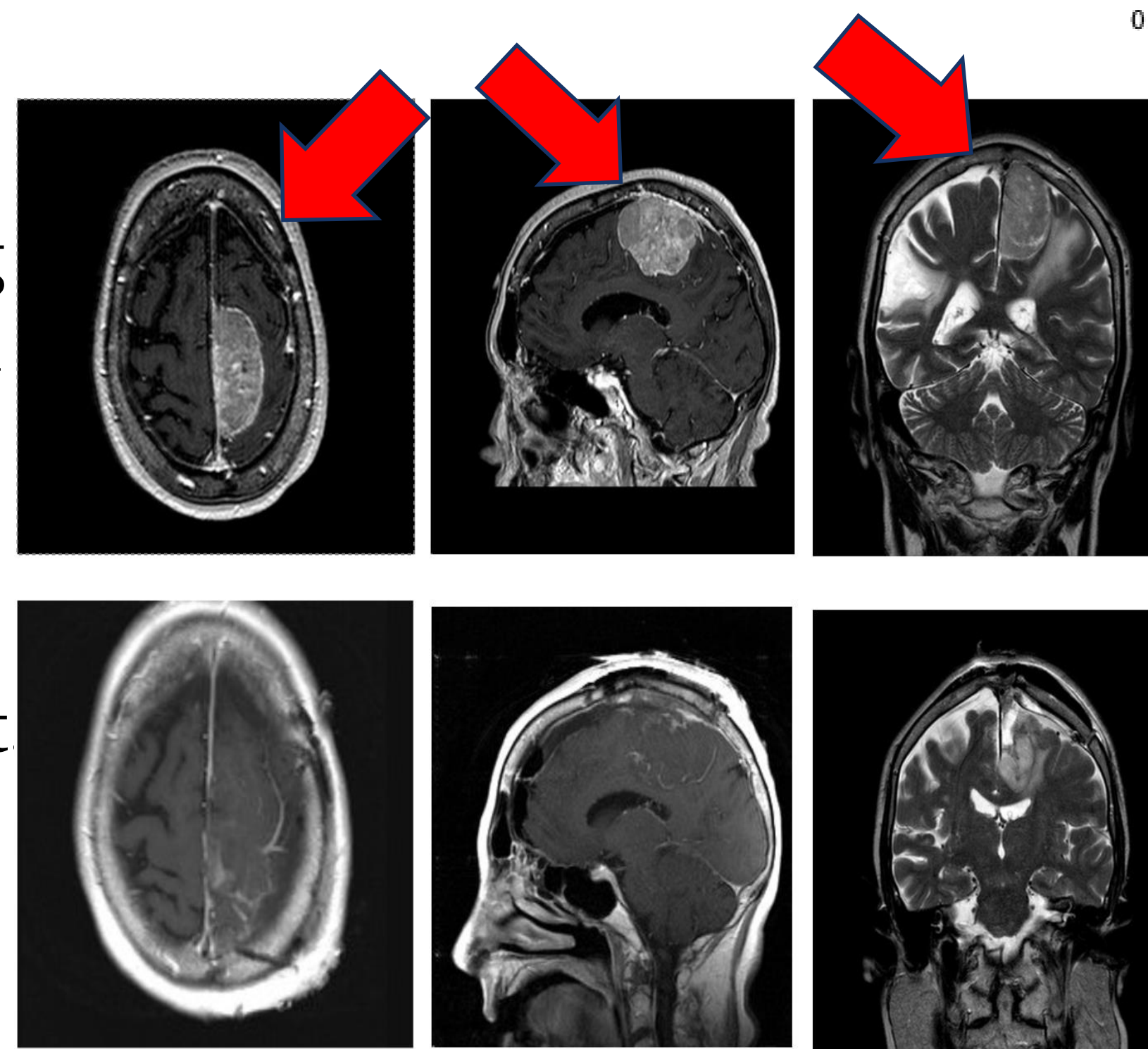
## Methods

- We conducted a retroactive study to extract data on meningioma size, location, type/amount of radiation, sex, age, WHO grade pathology, date of death, and date of recurrence.
- Inclusion criteria was patients between the age of 18 and 100 who underwent surgical resection of pathologically diagnosed meningioma.
- PFS and OS was then calculated using KaplanMeier statistical analysis and a value of .05 was set for statistical significance.
- Outcomes were compared between patients who received radiation vs not
- Also, outcomes were compared between patients with Skull base (SB) meningiomas vs intracranial.



Fat graft in place of resected tumor

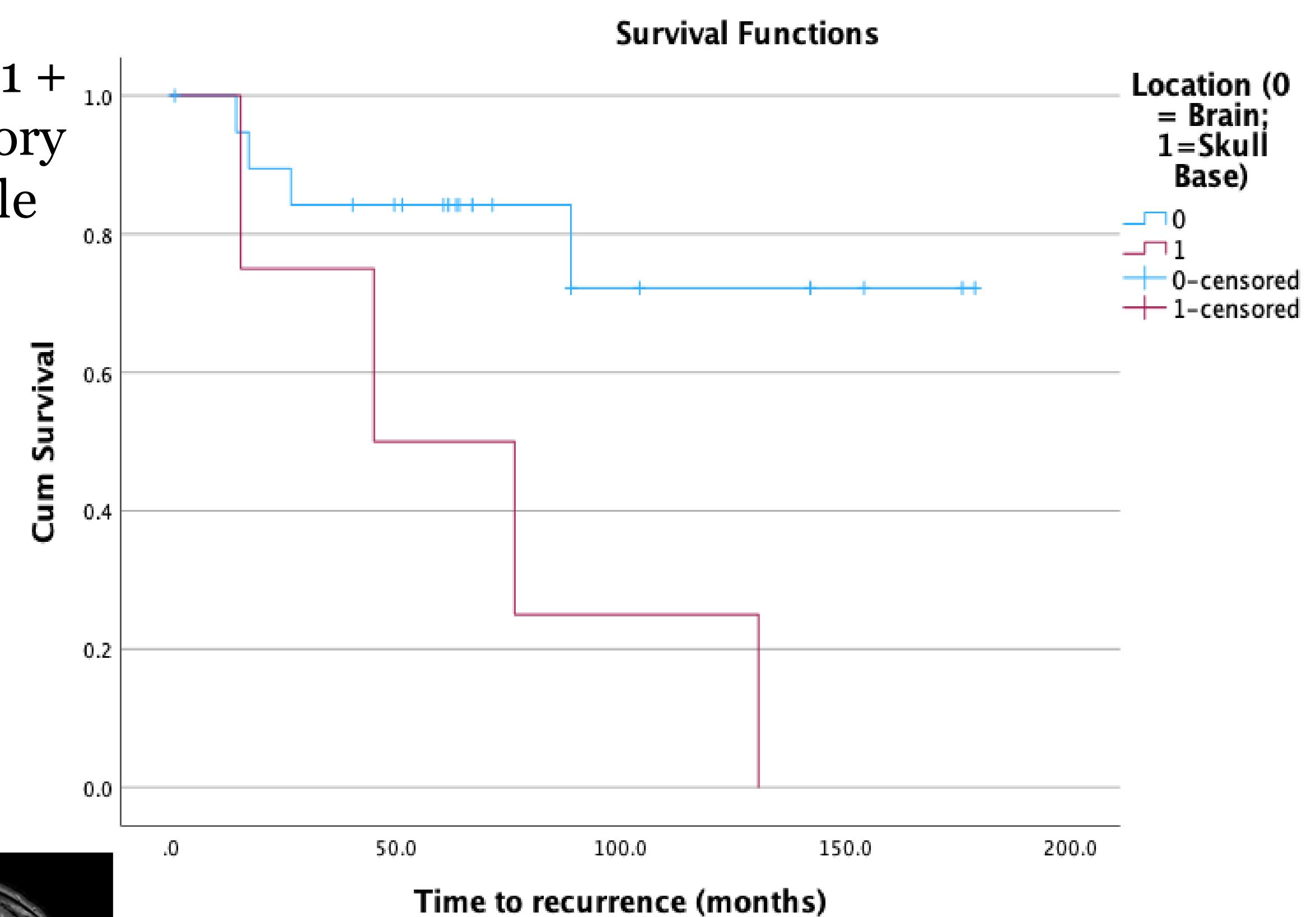
**Figure 2.** Pre and post op T1 + contrast images of an olfactory groove, planum sphenoidale meningioma (SB).



**Figure 3.** Pre and post op T2 images of a Convexity meningioma (Intracranial)

## Results

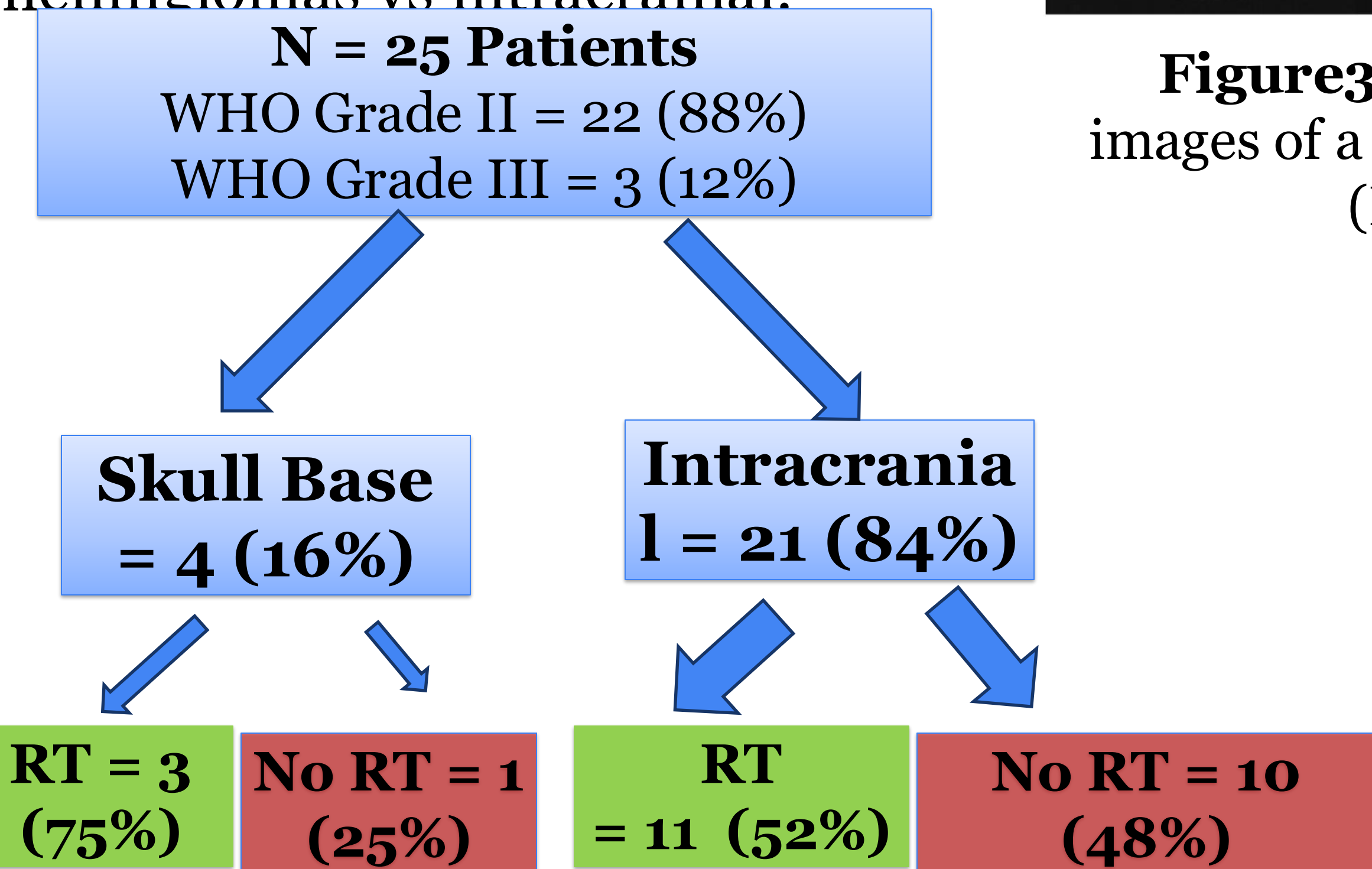
- KaplanMeier statistical analysis revealed near statistical significance when comparing PFS for patients with SB meningiomas to intracranial ( $p = .13$ , Log Rank).
- Mean and median PFS for SB was 66.9 and 24.6 months, respectively.
- Mean and median PFS for intracranial was 142.8 and 15.8 months.
- OS was not significantly different when comparing SB vs intracranial.
- There was no significant difference for PFS or OS found between RT and no RT.
- There was no significant difference for PFS or OS between WHO grade II and grade III meningiomas.



**Figure 4.** KaplanMeier PFS curve for patients with SB meningiomas compared to intracranial. Log Rank analysis revealed a **p value of 0.13**. Mean and median PFS for SB was 66.9 and 24.6 months, respectively, compared to 142.8 and 15.8 months, respectively for intracranial. Both groups were outside of each other's confidence interval for both mean and median

## Conclusion/Discussion

- SB Meningiomas with WHO grade II or III were quicker to recur than intracranial, however, OS was statistically similar.
- Clinically, it may be useful to follow up with SB patients more frequently immediately following surgical resection of grade II and III meningiomas, compared to intracranial.
- More data is being obtained to see if RT improves PFS and OS.
- Additional variables like tumor size, amount of radiation, type of radiation will be explored to see if RT efficacy is correlated.
- Lack of literature about recurrence rates for SB vs intracranial meningiomas for each WHO grade category.



**Figure 1.** Patient characteristics of the dataset. The total number of patients in the study was 25, 22 of which had WHO grade II meningiomas. 4 of these patients had SB lesions, while 21 had intracranial. Of the skull base patients, 3 (75%) received radiation therapy. Of the intracranial patients, 11 (52%) received radiation therapy.