

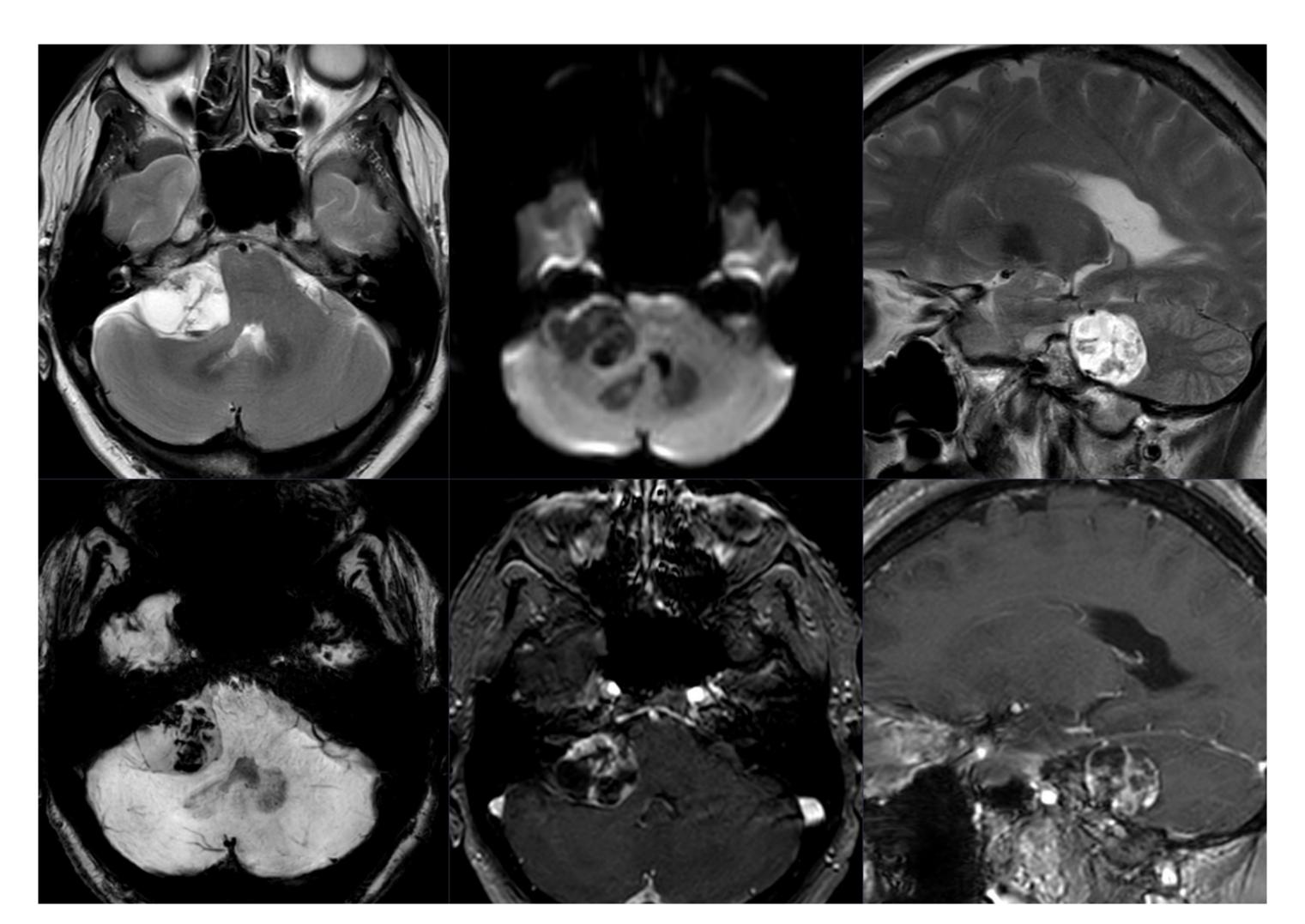
# Comparative Analysis of Adverse Outcomes in Vestibular Schwannoma Treatment: Stereotactic Radiosurgery vs. Surgery

Praneet C. Kaki B.S.\*, Hani Samarah B.S.\*, Julian Jackson B.S., Kalena Liu B.S., Jacob B. Hunter MD

### INTRODUCTION

Vestibular schwannomas (VS) are benign neoplasms that arise from Schwann cells of the vestibulocochlear nerve. Management options include microsurgical resection and stereotactic radiosurgery (SRS), each with distinct risk profiles. While microsurgery offers definitive tumor removal, it carries a higher risk of immediate postoperative complications, including facial nerve palsy and cerebrospinal fluid (CSF) leak. SRS, in contrast, provides tumor control with lower morbidity but may present delayed adverse effects.

This study utilizes a large national dataset to compare short- and longterm adverse outcomes of SRS versus surgery at 30, 90, and 365 days post-treatment, aiming to provide data-driven insights into optimizing treatment selection.



Representative magnetic resonance imaging (MRI) of a vestibular schwannoma, demonstrating typical cystic and solid components across multiple sequences.1

## Methods

# Study Design and Cohort Selection

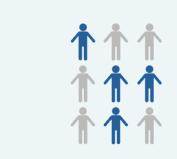


**Step 2: Patient Selection** 



- Inclusion: Adults with vestibular schwannoma (ICD-10: D33.3)
- Exclusion: Neurofibromatosis (ICD-10: Q85.00, Q85.02), otologic/audiologic **implants (ICD-10: Z96.2)**





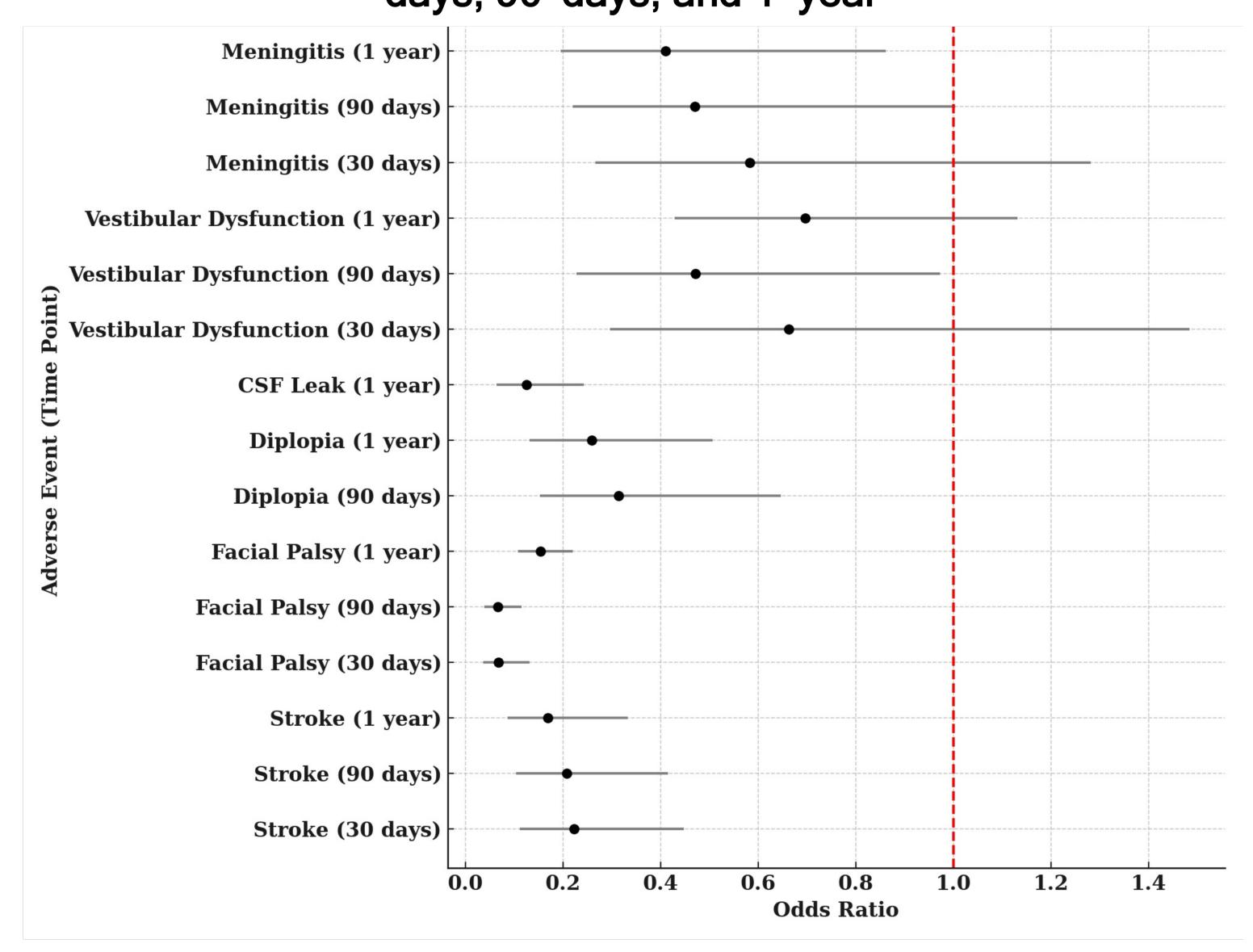
- Stereotactic Radiosurgery (SRS): CPT 61798
- Surgical Resection: CPT 61616, 6159x
- 1:1 Propensity Score Matching (n=850 per group)



- Follow-up at 30, 90, and 365 days Primary Outcomes: Death, stroke, facial palsy
- Secondary Outcomes: Vestibular dysfunction, diplopia, trigeminal neuralgia, CSF leak, meningitis, ataxia

### Results

## Select Post Surgical or SRS Adverse Events measured at 30 days, 90-days, and 1-year



- SRS had lower risks of stroke, facial palsy, diplopia, and CSF leak at 30 days, 90 days, and 1 year post-intervention.
- Meningitis risk was lower in the SRS group at 1 year.
- No significant difference in vestibular dysfunction at 1 year, but SRS had lower risk at 90 days.

## Conclusion

- SRS has a lower risk of stroke, facial palsy, diplopia, and CSF leaks at 1 year, suggesting it may be a safer alternative patients prioritizing for lower perioperative morbidity.
- Surgery demonstrates higher vestibular dysfunction at 90 days, while vestibular dysfunction rates at one year comparable.
- Lower meningitis risk in SRS at 1 year reinforces post-interval lower risk infections.
- Findings patient-specific support balancing tumor selection, treatment control, functional preservation, and long-term quality of life.

## Citations

1. Hellerhoff, CC BY-SA 4.0 <https:// creativecommons.org/licenses/by-sa/4.0>, via Wikimedia Commons

Created with BioRender Poster Builder