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### “Early Results with Hypofractionated Gamma Knife Radiotherapy for Treatment of Vestibular Schwannoma”

**Objective:** Vestibular schwannoma (VS) management with stereotactic radiation previously only included stereotactic radiosurgery with Gamma Knife (GKRS) or LINAC-based radiotherapy (LBR). Hypofractionated Gamma Knife radiotherapy (hfGKRS) is a novel protocol potentially producing less toxicity than the alternatives. This study examines early results in tumor control, complications and hearing preservation outcomes in a consecutive series of vestibular schwannoma patients treated with hfGKRS.

**Study Design:** A retrospective review was conducted for all patients with unilateral VS treated with primary hfGKRS at a single academic center between 2017 and 2023.

**Methods:** Pre- and post-treatment imaging studies, notes and audiograms were analyzed. Pre and post-treatment tumor volume were tabulated. Audiometric data recorded were pure-tone average (PTA), word recognition score (WRS), and speech reception threshold (SRT). Collected data included pre and post treatment tinnitus, imbalance, House-Brackmann score, and facial spasms. Outcomes obtained were compared to literature controls of traditional GKRS and LBR.

**Results:** A total of 25 hfGKRS cases were identified. Mean tumor volume was 1.79 cm<sup>3</sup> (range .14-9.29cm<sup>3</sup>). Mean patient follow-up was 28 months (range 6-86 months). Pre-treatment PTA for the ipsilateral ear was 62.9dB with WRS of 40% and SRT of 33.1dB. Post-treatment PTA was 68.8dB with WRS of 30.8% and SRT of 34.1dB. Serviceable hearing was preserved in 80% of patients and tumor control was 96%. hfGKRS complications included tinnitus (12.5%), dizziness (12.5%), facial pain (8%), and facial spasms (4%). Outcomes compared favorably with GKRS and LBR reports.

**Conclusion:** Multiple factors prior to treatment may influence outcomes. Short term results for VS treated with hfGKRS had high rates of tumor control, favorable hearing results and comparable complication rates to literature reports for both GKRS and LBR. Further follow-up is needed for long-term outcomes in tumor control, toxicity and audiometric results.