Effect of anatomic segment involvement on stereotactic radiosurgery for facial nerve schwannomas: An international multi-center cohort study

Gautam U. Mehta MD, Gregory P. Lekovic MD PhD, William H. Slattery MD, Derald E. Brackmann MD, Hao Long MD PhD, Hideyuki Kano MD PhD, Douglas Kondziolka MD, Monica Mureb BS, Kenneth Bernstein MS, Anne-Marie Langlois MD, David Mathieu MD, Ahmed M. Nabeel MD PhD, Wael A. Reda MD PhD, Sameh R. Tawadros MD PhD, Khaled Abdelkarim MD PhD, Amr M. N. El-Shehaby MD PhD, Reem M. Emad MD PhD, Nasser Mohammed MBBS MCh, Dusan Urgosik MD PhD, Roman Liscak MD PhD, Cheng-chia Lee MD PhD, Huai-che Yang MD, Amanallah Montazeripouragha MSc, Anthony M. Kaufmann MD MSc, Krishna C. Joshi MD MCh, Gene H. Barnett MD, Daniel M. Trifiletti MD, L. Dade Lunsford MD PhD, and Jason P. Sheehan MD PhD

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Disclosures

• Dr. Lunsford reports stock ownership in Elekta AB
Introduction

• Facial nerve schwannomas are rare, challenging tumors to manage due to their nerve of origin. Functional outcomes after stereotactic radiosurgery (SRS) are incompletely defined.

• The relationship between facial nerve segment and outcome is unknown.

• We sought to analyze the effect of facial nerve segment involvement on functional outcome for these tumors.
Methods

• Patients who underwent single-session SRS for facial nerve schwannomas with at least 3 months follow-up were included.

• Data from 11 participating centers were included

• Preoperative and treatment variables were recorded

• Outcome measures included radiologic tumor response, and neurologic function.
Results

• 63 patients (34 females) included

• 75% with preoperative facial weakness

• Mean tumor volume: 2.0±2.4 cm³

• Mean margin dose: 12.2±0.54 Gy

• Mean radiologic follow-up: 45.5±38.9 months.
Results

• 60-year-old woman who underwent Gamma Knife SRS (13 Gy)
• 10-year follow-up demonstrated complete regression
Results

• 59-year-old woman who underwent Gamma Knife SRS (12.5 Gy)
• 10-year follow-up demonstrated progression beginning at 3 years
Results

- **A**: Progression-free survival (%)
  - Time after radiosurgery (years)

- **B**: Cumulative proportion with regressing tumors (%)
  - Time after radiosurgery (years)

Bar graph showing:
- Labyrintheine segment not involved
- Labyrintheine segment involved

- Pre-SRS
- Post-SRS

Statistical significance: $P=0.02$
Discussion

• Patients with labyrinthine segment involvement are more likely to have functional facial nerve improvement after SRS

• Patients with a greater number of involved segments were more likely to progress after SRS
Summary Points

• SRS should be considered among primary treatment options for large or growing facial nerve schwannomas associated with some degree of facial nerve function

• Tumor progression appears to be significantly predicted by the number of involved facial nerve segments, not volume

• A statistically significant improvement in facial function was seen overall
  • The majority of this improvement appears to occur in the cohort of patients with labyrinthine facial nerve segment.