



Importance of Low-Amplitude Positive Facial Nerve Stimulation Following Cerebellopontine Angle Tumor Surgery

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Introduction

Preservation of facial nerve function is crucial to a successful cerebellopontine angle tumor resection. We sought to correlate short and long-term facial nerve function with respect to the minimum amplitude of stimulation required to obtain facial nerve identification at the conclusion of the tumor resection.

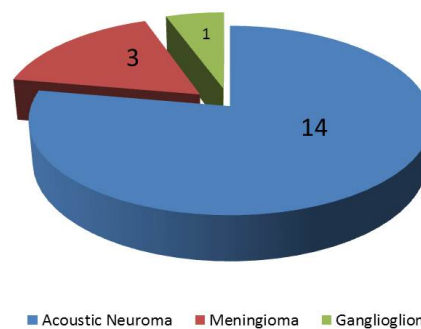
Methods

We performed a review of a prospectively collected database of patients who underwent CP angle tumor surgery from 9/2007 to 9/2010. The minimum amplitude necessary to achieve facial nerve stimulation was noted at the end of each tumor resection. Facial nerve function outcomes (HB grading scale) were noted at 3 different times: post operative day 1, 1 month post-op, and 6 months post-op.

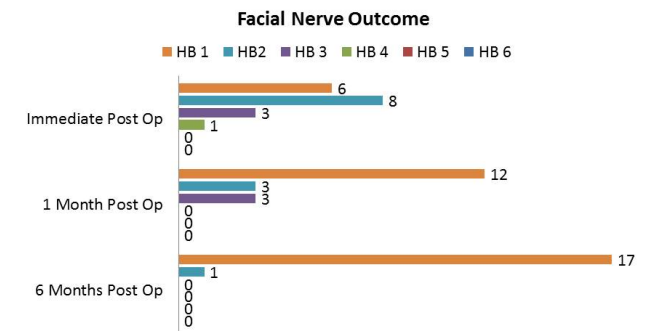
Results

20 CP angle tumor resections were performed in our study time span (15 acoustic neuroma, 4 meningioma, 1 ganglioglioma). Positive facial nerve stimulation was achieved in all cases at the conclusion of tumor resection. The minimum threshold to achieve this final positive stimulation ranged from 0.1 to 1 milliamperere (mean = 0.34 mamp). Immediated post-operative function varied from HB 1 to HB 4 (mean= 2.3). 1 month post operative facial function varied from HB 1 to HB 3 (mean = 1.6). 6 month post operative facial function varied from HB 1 to HB 2 (mean = 1.05).

BREAKDOWN OF CP ANGLE TUMOR TYPE



BREAKDOWN OF POST OPERATIVE FACIAL FUNCTION



*Facial Nerve outcome is graded by the House-Brackmann grading scale and the Grades are 1 (normal) thru 6 (complete paralysis).

INTRAOPERATIVE MINIMUM STIMULATION THRESHOLD AND POST OPERATIVE FACIAL FUNCTION

Pathology	Final Stimulation Threshold (mA)	Immediate post op HB grade	1 month post operative	6 months post operative
Acoustic neuroma	0.1	1	1	1
Acoustic neuroma	0.1	1	1	1
Acoustic neuroma	0.1	1	1	1
Acoustic neuroma	0.1	2	1	1
Meningioma	0.1	1	1	1
Meningioma	0.1	1	1	1
Ganglioglioma	0.1	1	1	1
Acoustic neuroma	0.2	2	1	1
Meningioma	0.2	2	1	1
Acoustic neuroma	0.3	2	2	1
Acoustic neuroma	0.5	2	2	1
Acoustic neuroma	0.5	3	3	1
Acoustic neuroma	0.5	2	2	1
Acoustic neuroma	0.5	2	1	1
Acoustic neuroma	0.5	2	1	1
Acoustic neuroma	0.7	3	3	1
Acoustic neuroma	1	4	3	2

Conclusions

Our study showed that the final facial nerve stimulation with low amplitude led to good long-term facial nerve outcomes. We also noted that despite some suboptimal immediate post operative facial nerve function, excellent long-term facial nerve function was seen in all patients. Our data stresses the importance of maintaining electrical as well as anatomic integrity of the facial nerve; we advocate doing this at all costs even if a thin layer of tumor is left adherent to the facial nerve.

Learning Objectives

By the conclusion of this session, participants will be able to

- 1) Describe facial nerve stimulation
- 2) Emphasize its importance during CP angle tumor resection
- 3) See results that advocate maintaining facial nerve integrity even if a small residual tumor is left