

OUTCOMES AFTER TREATMENT OF VESTIBULAR SCHWANNOMA BY 2 DIFFERENT MODALITIES; MICROSURGICAL AND RADIOSURGICAL TECHNIQUES

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Introduction

The choice between microsurgery and radiosurgery for treatment of vestibular schwannoma (VS) is debatable [1]. There are a lot of treatment schedules, but the widely accepted is to treat tumors larger than 2.5 cm surgically, while tumors less than 2.5 cm could be offered the radiosurgical treatment [2].

The aim of this work was to assess efficacy and safety of surgery and radiosurgery in treatment of vestibular schwannoma.

Methods

The study was performed as a retrospective evaluation of 70 patients who had undergone vestibular schwannoma treatment during the period between June 2004 and June 2010. Patients with follow up less than one year and those subjected to previous vestibular schwannoma treatment were excluded from the study. The patients were classified into two groups; surgery group included 20 patients and radiosurgery groups included 50 patients. Patient records, treatment reports, and follow-up data were analyzed. The main outcome measures were magnetic resonance imaging, neurological status, patient complaints, and complications.

Tumor control at the last follow up in relation to tumor extension in the surgery group.

	Exte				
Hannover Classification	Total	Near total	Subtotal	Total	
T3b	6	0	0	6	
T4a	8	2	1	11	
T4b	1	0	2	3	
Total	15	2	3	20	

Results

In the surgery group total or near total tumor removal was achieved in 85% of patients and tumor recurrence after surgery occurred in 1 patient (5%) (tumor control rate was 95%). Preservation of useful hearing was achieved in 30.8% of patients. Facial nerve was anatomically preserved in 85% of patients, and functional preservation (House - Brackmann grade I or II) was achieved in 75% of patients at the last follow up after surgery. Class T3b tumors showed the best results, with hearing preservation rate of 75% and functional facial nerve preservation rate of 83.3%. In the radiosurgery group tumor control rate was 98%. Hearing preservation rate was 57.1%, however facial nerve preservation rate was 98%. Results of Class T3b tumors were 50% and 80% for hearing and facial nerve preservation rate respectively.

Conclusions

Tumor control rate after total or near total removal of vestibular schwannoma was comparable to control rate after radiosurgery. Although hearing and facial nerve preservation were better in the radiosurgery group, the results of Class T3b tumors after surgery were comparable to those after radiosurgery.

Pre- and post-radiosurgery facial nerve function
according to House-Brackmann grading.

	House-Brackmann grade							
	I	II	III	IV	v	VI		
Before treatment	44	2	0	3	0	1		
At last follow up	44	3	0	2	0	1		

Learning Objectives

- Excellent tumor control rate after surgical removal of VS can be achieved after total and near total removal; however control rate is less after subtotal removal [3].
- In this work no recurrence was detected in totally and near totally removed tumors, however one patient developed tumor recurrence after subtotal removal.
- Hearing preservation after VS surgery is affected dramatically by both tumor size and preoperative hearing quality [4]. Tumor extension significantly affected postoperative hearing grade in patients with preoperative serviceable hearing. Although the rate of hearing preservation after surgery (30.8%) is less than radiosurgery (57.1%), but in Class T3b the rate of hearing preservation was higher after surgery (75% after surgery versus 50% after radiosurgery).
- The introduction of routine intraoperative facial nerve monitoring increases the rates of facial nerve preservation [5]. Also radiosurgery may endanger the facial nerve, with a documented permanent facial neuropathy rate between 4% and 19% [6].

References

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