

## Introduction

Aim of this work is to assess whether there is a difference in results between primary total removal of vestibular schwannoma (VS) and totally removed tumors after previous subtotal/partial resection and unsuccessful stereotactic radiosurgery (SRS). Some authors believe that SRS is effective alternative to microsurgery in patients with VS in case of primary microsurgery failure. (Iwai, 2003; Pollock, 1998). Is this really true?

## Methods

Results and complications were compared in 2 groups of patients treated during the period 1997-2013: primary radical removal (n = 333), and radical removal following partial surgery and/or gamma knife SRS failure (n = 11). See Table 1.

Figure 1

### ILLUSTRATIVE CASE OF INVALIDITY OF FAILURE OF PARTIAL RESECTION AND SRS

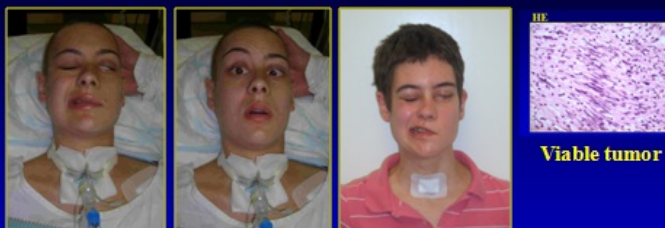


- Female, 20 years
- 3 years ago partial resection for VS 4a (residuum 38x15x33 mm) (postop. deafness, transitory n. VII and IX-XI dysfunction)
- 2 years ago SRS for growing tumor (24 Gy center, 12 Gy periphery, brainstem 12 Gy)
- VS increased its volume (VS 4b), patient deteriorated (MRI above)

Case of invalidity of failure of partial resection and SRS

Figure 2

### EXTREMELY DIFFICULT POSTOP. COURSE WITH DISABILITY



**N. V, IX - XI dysfunction: facial hypesthesia, dysphonia, dysphagia (transitory gastrostomy, tracheostomy)**  
**Transitory lesion of brainstem and cerebellum: central hemiparesis and hemihypesthesia, ataxia, transitory oculomotor dysfunction**  
**N. VII: House-Brackmann grade VI (need of tarsoraphy and XII-VII anastomosis)**

Patient from Figure 1 - Difficult postoperative course

## Results

90% of treated VS were large Grade III and IV tumors. All patients underwent removal by same team using retrosigmoid-transmeatal approach with intraoperative neuromonitoring. In the group of primary microsurgery 329/333 (99%) were removed radically. We observed 2 cases of tumor recurrence however any of these patients needed any other treatment. In case of primary microsurgery we achieved anatomical preservation of CN VII in 311/333 (96%) with House-Brackmann I-III function in 87%. We spared useful hearing in 41/333 (12%) of patients. Vast majority of these patients returned to previous social and working activities.

In case of surgery after partial resection and SRS failure it was extremely difficult to achieve radical removal. Satisfactory function of CN VII was achieved in 1/11 (9%) only without chance of hearing preservation. Further neurological deficits were common and led to invalidity of such patients. See Fig.1 and Fig.2. Viable and proliferating tumor cells were proven histologically in all tumors after SRS. See Table 1.

Table 1

### RESULTS - follow-up 1-15 years

Primary microsurgery		Previous partial resection and LGK	
Total cases	333	11	
Radical removal (MRI)	329 99%	10	90%
TU recurrence	2 <1%		
CN.VII integrity/function	311 94%	1	10%
CN.VII-VII reconstruction	19 5%	0	CN. VII absent
CN.VII-XII anastomosis	3 1%	9	80%
CN.VIII cochlear function	41 12%	0	0%
NF2	8	2	LGK only
Mortality due to surgery	3 1%	1	10%
Histology	Viable VS		Viable VS
Majority returned to previous activities		Dysability CN. VII, VIII, IX-XI	

Results

## Conclusions

This analysis supports the opinion that growing VS should be treated by primary radical microsurgery. (Bassim et al., 2010; Samii, Gerganov, 2013) SRS did not prove to be effective alternative to microsurgery in patients in whom the initial microsurgical removal failed.

## References

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