



## Articles of Interest - Vestibular Schwannoma

**Gharabaghi, A.; Samii, A.; Koerbel, A.; Rosahl, S. K.; Tatagiba, M. & Samii, M. (2007), 'Preservation of function in vestibular schwannoma surgery.', *Neurosurgery* 60(2 Suppl 1), ONS124 – 7; discussion ONS127-8.**

**ABSTRACT:**

The management and surgical technique for microsurgical tumor removal of vestibular schwannomas (acoustic neuroma) with the suboccipital retrosigmoid approach and semi-sitting patient positioning is described. An emphasis is placed on the preservation of auditory and facial nerve function with a stepwise description of the technical and operative nuances, including presurgical evaluation, positioning, anesthesiological and neurophysiological aspects, approach, microsurgical techniques, and postsurgical care.

**Prell, J.; Rampp, S.; Romstöck, J.; Fahlbusch, R. & Strauss, C. (2007), 'Train time as a quantitative electromyographic parameter for facial nerve function in patients undergoing surgery for vestibular schwannoma.', *J Neurosurg* 106(5), 826 – 832.**

**OBJECT:**

The authors describe a quantitative electromyographic (EMG) parameter for intraoperative monitoring of facial nerve function during vestibular schwannoma removal. This parameter is based on the automated detection of A trains, an EMG pattern that is known to be associated with postoperative facial nerve paresis.

**METHODS:**

For this study, 40 patients were examined. During the entire operative procedure, free-running EMG signals were recorded in muscles targeted by the facial nerve. A software program specifically designed for this purpose was used to analyze these continuous recordings offline. By automatically adding up time intervals during which A trains occurred, a

quantitative parameter was calculated, which was named "train time." A strong correlation between the length of train time (measured in seconds) and deterioration of postoperative facial nerve function was demonstrated. Certain consecutive safety thresholds at 0.5 and 10 seconds were defined. Their transgression reliably indicated postoperative facial nerve paresis. At less than a 10-second train time, discrete worsening, and at more than 10 seconds, profound deterioration of facial nerve function can be anticipated.

**CONCLUSIONS:**

Train time as a quantitative parameter was shown to be a reliable indicator of facial nerve paresis after surgery for vestibular schwannoma.

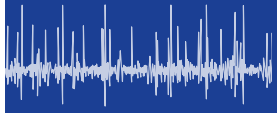
**Strauss, C.; Prell, J.; Rampp, S. & Romstöck, J. (2006), 'Split facial nerve course in vestibular schwannomas.', *J Neurosurg* 105(5), 698 – 705.**

**OBJECT:**

The facial nerve in vestibular schwannomas (VSs) is located on the ventral tumor surface in more than 90% of cases; other courses are rare. A split facial nerve course with two distinct bundles has thus far been described exclusively for medial extrameatal tumors.

**METHODS:**

Between 1996 and 2005, 16 consecutive cases of 241 surgically treated VSs were observed to have distinct splitting of the facial nerve. The mean tumor size measured 27 mm. In one third of the cases, intrameatal tumor extension with obliteration of the fundus was documented. All patients underwent extensive intraoperative neurophysiological monitoring using multichannel electromyography recordings. Patients were reevaluated 12 months after surgery. In all 16 patients, distinct splitting of the facial nerve was



demonstrated. The major portion of the facial nerve followed a typical course on the ventral tumor surface. The smaller nerve portion in all cases ran parallel to the brainstem up to the level of the trigeminal root exit zone and crossed on the cranial tumor pole to the internal auditory canal. The two nerve portions rejoined at the level of the porus acusticus. The smaller portion carried fibers exclusively to the orbicularis oris muscle, whereas the major portion supplied all three branches of the facial nerve.

#### CONCLUSIONS:

In VSS, an aberrant course with distinct splitting of the facial nerve adds considerably to the surgical challenge. Long-term facial nerve results are excellent with extensive neurophysiological monitoring, which allows the differentiation and identification of aberrant facial nerve fibers and avoids additional risks to facial nerve preservation.

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Impulse Monitoring, Inc., 10420 Little Patuxent Parkway, Suite 250, Columbia, MD 21044

Ph: 410-740-2370, [www.impulsemonitoring.com](http://www.impulsemonitoring.com)

For questions on neuromonitoring please contact Impulse Monitoring, Inc. (888) 464-7999