

SS1-1-1 Malignancies of the temporal bone

Gianluca Piras
Gruppo Otologico, Italy

SS1-2-4 Management of lesions of the petrous apex

Mario Sanna
Gruppo Otologico, Italy

SS1-1-2 Management of Non Vascular Tumors of the Jugular Foramen

Sampath Chandra Prasad Rao
Gruppo Otologico, Italy

SS1-3-1 Long-term headache disability in patients with sporadic vestibular schwannoma

Colin L. Driscoll, Oystein Vesterli Tveiten,
Matthew L. Carlson, Morten Lund-Johansen,
Michael J. Link
Department of Otolaryngology – Head and Neck Surgery, Mayo Clinic, USA

SS1-1-3 Refinements in TLA for VS

Alessandra Russo
Gruppo Otologico, Italy

Object: To examine headache disability in patients with sporadic vestibular schwannoma (VS).

Methods: Cross sectional observational study with multicenter enrollment. Patients with sporadic <3.0cm VS and a separate group of general population non-tumor control subjects were surveyed via postal questionnaire. Univariate and multivariable associations with Headache Disability Inventory (HDI) score were explored.

Results: Data from 538 patients with VS were included. The average age at time of survey was 64 years, 56% were female, and the average duration between treatment and survey was 7.7 years. Twenty-seven percent of patients received microsurgery, 46% stereotactic radiosurgery (SRS) and 28% observation. VS patients who were managed with observation were more than twice as likely to have severe headache disability compared to 103 control subjects without VS. When accounting for baseline differences, there was no statistically significant difference in HDI outcome between treatment modalities at time of survey. Similarly, among the microsurgery cohort, the long-term risk of severe headache disability was not different between surgical approaches. Multivariable regression demonstrated that younger age, greater anxiety and depression, and a preexisting diagnosis of headache were the primary predictors of severe long-term headache disability, while tumor size and treatment modality had little influence.

Conclusions: At a mean of almost 8 years following treatment, approximately half of patients with VS experience headaches of varying frequency and severity. Patient driven factors including age, sex, mental health, and preexisting headache syndrome are the strongest predictors of long-term severe headache disability. Tumor size and treatment modality have less impact. These data may assist with patient counseling regarding long-term expectations following diagnosis and treatment.

SS1-1-4 Management of ICA in lateral skull base surgery

Mario Sanna
Gruppo Otologico, Italy

SS1-2-1 Management of petrous bone cholesteatomas

Gianluca Piras
Gruppo Otologico Piacenza-Roma, Italy

SS1-2-2 The infratemporal fossa approaches: Evolution and indications

Sampath Chandra Prasad Rao
Gruppo Otologico, Italy

SS1-2-3 Management of tumors of the facial nerve

Alessandra Russo
Gruppo Otologico, Italy

SS1-3-2 Self-perceived hearing and audiometry in VS patients: "Excellent" hearing is not all that excellent

Morten Lund-Johansen¹, Øystein Tveiten¹, Erling Myrseth¹, Monica Katrine Finnkirk¹, Matthew Carlson², Michael J. Link², Ruby Mahesparan¹

¹Bergen University Hospital, Norway, ²Mayo Clinic, Rochester MI, Norway

Object: Compare 1: long-term bilateral audiometry and self-perceived hearing and tinnitus in 539 patients with VS<30mm treated with Surgery, GKRS or OBS. 2: self-reported hearing within the subgroup with bilateral "excellent" (AAOHNS Grade A) hearing with controls and patients with unilateral deafness.

Methods: Patients (n=682) with ≤ 30 mm VS treated in our centers between 1998 and 2008. Database records (baseline and f.u.) were used. Patients filled out Hearing Handicap Inventory for Adults (HHIA) at 7.7 years post baseline.

Results: n= 539 (79% response to questionnaire). Less than 25% of the patients kept useful audiometry hearing. Good baseline hearing predicted good f.u. hearing. Patients who were observed had the greatest probability of good hearing. The VS subgroup with bilat A hearing scored below controls but above remaining patients on HHI.

Conclusion: The prognosis for long- hearing in VS is poor regardless of management. Conservative management yielded best outcomes, but data are partly confounded by age and tumor size. Patients with "excellent" hearing perceive their own hearing as less excellent than control subjects do.

SS1-3-3 Impact of facial nerve dysfunction on disability and quality of life in patients with vestibular schwannoma

Øystein V. Tveiten^{1,2}, Morten Lund-Johansen^{1,2}, Michael Link³, Matthew L. Carlson⁴, Erling Myrseth²

¹Department of Clinical Medicine, University of Bergen, Norway,

²Neurosurgical department, Haukeland University Hospital, Norway,

³Department of Neurologic Surgery, Mayo Clinic School of Medicine, Rochester, MN, USA,

⁴Department of Otolaryngology-Head and Neck Surgery, Mayo Clinic School of Medicine, Rochester, MN, USA

Object: To characterize subjective facial nerve function, disability and QoL in VS patients.

Methods: 103 controls and all singly treated patients with ≤ 3 cm VS treated at two centers between 1998 and 2008 were identified. Clinical data were extracted from VS databases. Patients and controls were surveyed using the Facial

Disability Index (FDI), the SF-36 and the Penn Acoustic Neuroma Quality-of-Life scale, PANQOL 7.7 years after treatment.

Results: The response rate was 79%, a total of 539 patients were analyzed. Treatment with surgery was a risk factor for facial nerve dysfunction compared to gamma knife and observation. These results were mirrored by the physical FDI results, but not the social/well-being assessment. Patients with $HB \leq 2$ (n=19) had poorer FDI physical score but comparable FDI social/well-being scores to those with $HB \geq 3$ (n=520). No differences were found between the two groups on the SF-36 or the total PANQOL.

Conclusion: The prognosis for facial nerve function in VS is good. It is slightly worse after treatment with surgery than with other modalities. Having an unfavorable facial nerve outcome, however, does not seem to have a huge impact on disability or QoL.

SS1-3-4 What factors are the strongest predictors of quality of life outcome in patients with sporadic vestibular schwannoma?

Matthew L. Carlson, Oystein Vesterli Tveite, Colin L. Driscoll, Morten Lund-Johansen, Michael J. Link

Department of Otorhinolaryngology, Head and Neck Surgery, Mayo Clinic, USA

Object: To evaluate the influence of hearing loss, dizziness, facial paresis and headache on long-term quality of life in patients with vestibular schwannoma (VS).

Methods: Patients with sporadic <3.0 cm VS who were evaluated at two separate tertiary academic referral centers were surveyed. Multivariable associations with the PANQOL and the SF-36 physical and mental component scores were evaluated using regression analysis.

Results: 538 surveyed patients were included. Multivariable regression analysis revealed that ongoing dizziness was associated with the greatest reduction in PANQOL total score, followed by headache. After adjusting for all examined features, ongoing dizziness and ongoing headache were the only two conditions that were associated with both the SF-36 physical and mental component scores. Patient gender and treatment modality did not significantly influence PANQOL or SF-36 scores.

Conclusions: Ongoing dizziness and headache are the strongest predictors of long-term quality of life reduction in patients with sporadic VS, while the impact of hearing loss, facial nerve function, and tinnitus are lesser by comparison.

SS1-3-5 Long-term quality of life in patients with sporadic vestibular schwannoma: A comparison between observation, microsurgery, radiosurgery and non-tumor controls

Michael J. Link, Oystein Vesterli Tveiten, Matthew L. Carlson, Colin L. Driscoll, Morten Lund-Johansen
Department of Neurosurgery, Mayo Clinic, USA

Object: Optimal treatment of small to medium-sized sporadic vestibular schwannoma (VS) remains controversial. The objective of this study was to compare long-term quality of life (QoL) between treatment modalities and to compare to a non-tumor control population.

Methods: All patients (n=539) with VS less than 3 cm who underwent surgical resection, radiation (SRS) or observation (obs) over a 10 year period at two tertiary care centers, one in the USA and one in Norway were surveyed at a mean of 7.7 years after treatment. A group of 103 non-tumor controls were also surveyed. 11 different survey instruments were administered comprising 293 questions.

Results: Patients who underwent obs had the best hearing outcome. The SRS and obs patients had the best facial nerve outcomes. Patients who underwent surgery had the largest tumors. These difference were controlled for. The diagnosis of VS significantly impacts QoL. Overall differences in general QoL measurements between treatment groups were small. Using the disease specific PANQOL, surgery scored worse in facial, balance, pain and total scores. However, all were within the minimal clinically important difference.

Conclusion: Differences in QoL outcomes between treatment modalities are small. Future studies should emphasize use of disease specific QoL measures rather than more general tools such as the SF-36. Results of symptom specific analysis will also be provided.

SS1-4-1 3D endoscopy to the sella and beyond

Alessandro Ducati
Section of Neurosurgery, University of Torino, Italy

SS1-4-2 3D endoscopic transnasal transsphenoidal pituitary surgery

Albert Sufianov
Department of Neurosurgery, Federal Center of Neurosurgery, Russia

OBJECTIVES: Currently, the endonasal endoscopic approach to skull base is still the basic in pituitary surgery. The main goal is minimal invasive approach to pathology with the best overview of the surgical access. Here we report our technique of endoscopic transnasal neurosurgery using 3D endoscopic equipment.

METHODS: We operated 63 patients with pituitary macroadenomas using 3D endoscopic equipment (Vision Sense, USA). All procedures were carried out between 2014 and 2015. The patients were followed prospectively.

RESULTS: Visualization and handling were conducted at a good level in all cases. In all cases, we had to improve depth perception and a clearer understanding of complex surgical anatomy. The effect of binocular vision allows the surgeon to easily switch from microscopic to endoscopic operation, and make it easy to navigate in the wound and use the surgical instruments. On follow-up, magnetic resonance imaging revealed radical tumor resection in 91% of all cases when intended. There was no mortality, and low complication rate was remarkable.

CONCLUSION: 3D endoscopic pituitary surgery shows better visualization compared to 2D endoscopy. This type of surgical technique can be used by neurosurgeons that typically use a microscope.

SS1-4-3 3D endoscopic surgery

Jörg Schipper
Department of Otorhinolaryngology, University Hospital Düsseldorf, Germany

SS1-4-4 3D endoscopic surgery

Diego Mazzatenta

Center of Pituitary and Skull Base Endoscopic Surgery, Institute
of Neurological Sciences of Bologna, Italy

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