Retrosigmoid transmeatal approach for intracanalicular vestibular schwannoma

The aim of a study of Madjid Samii et al., was to analyze the efficacy and risks of Intracanalicular Vestibular Schwannoma Surgery via the hearing-preserving retrosigmoid approach in patients with intracanalicular vestibular schwannoma (VS) suffering from disabling vestibular symptoms, with special attention to vertigo.

This was a retrospective analysis of 19 patients with intracanalicular VS and disabling vestibular dysfunction as the main or only symptom (Group A). All of the patients reported having had disabling vertigo attacks. Subjective evaluation of the impairment of patients was performed before surgery, 3 weeks after surgery, 3 months after surgery, and 1 year after surgery, using the Dizziness Handicap Inventory (DHI). The main outcome measures were improvement in quality of life as measured using the DHI, and general and functional outcomes, in particular facial function and hearing. Patient age, preoperative tumor size, preoperative DHI score, and preservation of the nontumorous vestibular nerve were tested using a multivariate regression analysis to determine factors affecting the postoperative DHI score. The Mann Whitney U test was used to compare the postoperative DHI score at 3 weeks, 3 months, and 1 year after surgery with a control group of 19 randomly selected patients with intracanalicular VSs, who presented without vestibular symptoms (Group B). The occurrence of early postoperative discrete vertigo attacks was also compared between groups.

The preoperative DHI score was ≥ 54 in all patients. All patients reported having had disabling rotational vertigo before surgery. The only significant factor to affect the DHI outcome 3 weeks and 3 months after surgery was the preoperative DHI score. The DHI outcome after 1 year was not affected by the preoperative DHI score. Compared with the control group, the DHI score at 3 weeks and 3 months after surgery was significantly worse. There was no significant difference between the groups after 1 year. Vertigo was improved in all patients and completely resolved after 1 year in 17 patients.

Disabling vestibular dysfunction that affects quality of life should be considered an indication for surgery, even in otherwise asymptomatic patients with intracanalicular VS. Surgical removal of the tumor is safe and very effective in regard to symptom relief. All patients had excellent facial nerve function within 1 year after surgery, with a very good chance of hearing preservation [1)].

In a technical note, Turek et al., presented the retrosigmoid transmeatal approach with an endoscopic assistance and highlight its advantages over middle fossa (MF) approach in surgical management of pure intracanalicular vestibular schwannomas.

Retrosigmoid transmeatal approach with an endoscopic assistance is presented as an optimal surgical treatment for intracanalicular vestibular schwannomas, and its advantages are compared to those offered by MF approach.

Under an endoscopic guidance, they found a residual tumor in the fundus of the inner acoustic canal and performed its gross total resection.

RT approach is an excellent technique suitable for safe radical surgical treatment of T1 vestibular schwannomas; this technique is associated with lower morbidity risk than MF approach [2)].

A longitudinal study of a series of consecutive patients operated on with the 2 techniques by the same surgeon was conducted. Selection criteria included tumor confined to the internal auditory canal (IAC) with a length ranging from 4 to 12 mm and hearing class A or B. Patients were alternately assigned to 1 of the 2 groups regardless of auditory class and distance of the tumor from the IAC fundus. Thirty-five subjects were operated on with the RS-TM technique and 35 via the MF route.

No significant differences in auditory and facial nerve function results between the 2 techniques were observed. The RS-TM approach, however, showed better facial nerve results at discharge. VS size, IAC enlargement, and, particularly, the distance from the IAC fundus were found to influence the postoperative results more than the type of approach itself.

The MF approach has been described as being the better technique for VS surgery in terms of auditory results. However, this claim lacks statistical substantiation because no prospective studies are to be found in the literature. The present longitudinal investigation shows that the MF approach does not afford any particular advantages over the RS-TM route in terms of auditory results in intracanalicular VS, with the exception of tumors reaching the IAC fundus [3)].

Twenty-six of these procedures (5.1%) were performed in cases of intracanalicular tumor and 68 (13.2%) were for larger lesions in which most of the tumor was located medial to the porus acusticus within the cerebellopontine angle. Preservation of useful hearing was achieved in 13 (50%) of 26 patients with intracanalicular tumors and in 20 (29%) of 68 with larger tumors. A trend toward higher success rates in intracanalicular tumors appears to be present, although the difference is not statistically significant ($p = 0.09$). Normal or near normal facial function (House and Brackmann Grades I and II) was present postoperatively in 25 (96%) of 26 patients. Indications for treatment of intracanalicular acoustic neuromas are considered and treatment alternatives are reviewed. Results from other series reporting removal of intracanalicular acoustic neuromas are considered with respect to hearing conservation and postoperative facial nerve function. Surgical excision of intracanalicular acoustic neuromas in otherwise healthy patients appears to be warranted if preservation of useful binaural hearing is considered a worthwhile objective and if perioperative morbidity can be maintained at an acceptably low level. The retrosigmoid approach is familiar to all neurosurgeons and offers a comparable success rate for hearing conservation and probably a superior outcome in terms of facial nerve function when compared with the middle fossa approach [4)].

Case reports

A 39-year-old man presented with a history of progressive right-sided hearing loss without facial weakness or other associated symptoms3. Magnetic resonance imaging (MRI) demonstrated an intracanalicular lesion, suggestive of vestibular schwannoma. During follow-up, audiometry confirmed a further slight deterioration of hearing and repeated MRI demonstrated tumor growth (T2 according to Hannover classification). Since the patient opted against radiosurgery, a retrosigmoid transmeatal approach under continuous intraoperative monitoring was performed in supine position. Following drainage of cerebrospinal fluid and exposure of the cerebellopontine cistern, the AICA was found to be firmly adherent to the petrous dura mater. Both structures were elevated conjointly and displaced medially for safe drilling of the inner auditory canal, sufficient exposure, and complete excision of the

vestibular schwannoma. The patient had an excellent recovery, hearing and facial function were preserved, and no secondary neurological deficits noted.The patient consented to publication of this anonymized video [5].

References

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