Surgery or Gamma Knife

TO THE EDITOR: It was instructive and interesting to read the article by Samii and colleagues in the October issue of the Journal of Neurosurgery (Samii M, Gerganov V, Samii A: Improved preservation of hearing and facial nerve function in vestibular schwannoma surgery via the retrosigmoid approach in a series of 200 patients. J Neurosurg 105: 527–535, October, 2006).

Abstract

Object. The aim of this study was to evaluate and present the results of current surgical treatment of vestibular schwannomas (VSs) and to report the refinements in the operative technique.

Methods. The authors performed a retrospective study of 200 consecutive patients who had undergone VS surgery over a 3-year period. Patient records, operative reports, follow-up data, and neuro-radiological findings were analyzed. The main outcome measures were magnetic resonance imaging, neurological status, patient complaints, and surgical complications.

Complete tumor removal was achieved in 98% of patients. Anatomical preservation of the facial nerve was possible in 98.5% of patients. In patients treated for tumors with extension Classes T1, T2, and T3, the rate of facial nerve preservation was 100%. By the last follow-up examination, excellent or good facial nerve function had been achieved in 81% of the cases. By at least 1 year postsurgery, no patients had total facial palsy. In the patients with preserved hearing, the rate of anatomical preservation of the cochlear nerve was 84%. The overall rate of functional hearing preservation was 51%. There was no surgery-related permanent morbidity in this series of patients. Cerebrospinal fluid leakage was diagnosed in 2% of the patients. The mortality rate was 0%.

Conclusions. The goal of VS treatment should be total removal in one stage and preservation of neurological function, as they determine a patient’s quality of life. This goal can be safely and successfully achieved using the retrosigmoid approach.

The purpose of this letter is to raise questions about the current VS treatment paradigm. Hasn’t the time come to ask whether a paradigm shift is in order?

The philosophy underpinning the management of VSs grew out of the historical experiences of Cushing, Dandy, Olivcrona, Pennybacker, Cairns, and others. It is, however, a philosophy that antedates the age of computerized imaging. For these early masters there was no way to check the radicality of surgery and postoperative course of a tumor. This is no longer true. Thus, Dandy’s requirement of radical removal to avoid recurrence, with the corollary that a facial palsy is an acceptable price to pay for survival, lacks the force it had at the time that he promulgated the notion.

I should like to mention a feature of VS management that is familiar to all who treat these lesions. There are few diseases in which treatment has less effect on symptoms. There is no VS treatment that can reliably relieve the common symptoms of deafness, vertigo, tinnitus, and ataxia. All treatments in use today offer protection against deterioration rather than symptomatic improvement. This fact is important for patients. It should also mean that if the medical profession can only offer protection against future deterioration, then the treatment should be as free of complications as possible.

Today, it is possible to achieve a very low treatment complication rate in the majority of patients. However, it is not possible to do so using the radical surgery that is still the currently favored treatment paradigm. In this latest paper from Dr. Samii and his colleagues, the limitations of this method are clearly and honestly documented. The paper is yet another excellent contribution from the group in Hannover. I am second to none in my admiration for the quality of the work and the constant search for improvement that have characterized Dr. Samii’s group over the years. It would be fair to say that the results presented in this paper represent the state of the art for radical microsurgery. If this assessment is accepted, then it in itself raises the first query. How many centers can match these results? How many centers have access to the surgical talent available in Hannover and how many have the experience of over 3000 operations on which to build?

Let us look a little more closely at the results presented in this paper. In particular, let us look at two pieces of information. According to Table 1, in 46% of the 200 reported cases, the tumors were big enough to distort the brainstem. Yet the incidence of significant facial palsy at 2 weeks after surgery was 38% if patients with preoperative facial palsy were excluded. The discrepancy between these two percentages is yet further evidence of the excellence of the surgery, because 8% of the patients who could have been expected to have a significant facial palsy in fact did not.

However, 38% of the patients did have a facial palsy of House–Brackmann Grade III or worse, and with all due respect, it is unlikely that any patient would regard a Grade III palsy as a “good” result. There is, however, a way to avoid this dilemma. It was presented in 1991 by the late great Charles Drake in a paper in this journal. Dr. Drake was concerned with preserving facial nerve function in a group of patients with larger tumors and in poor condition. He suggested a return to the intracapsular approach. He was not a supporter of radiosurgery, and the last sentence of the abstract in his 1991 paper reads: “The results suggest that radical intracapsular removal may be the procedure of choice under certain circumstances and may offer an alternative to focused high-energy radiation.”

Nonetheless, intracapsular surgery followed by radiosurgery can be the answer to the problem of facial palsy in patients with larger tumors because VSs collapse and shrink following such surgery. This makes the residual postoperative tumors accessible to radiosurgery (Fig. 1).

In Cairo in the last 5 years we have treated 168 patients with VSs; of these, 127 have returned for follow up. The mean tumor volume in these 127 cases was 4.84 cm³; and the median tumor volume was 3.8 cm³. In 30 of the cases, however, the tumor volume was 8 cm³ or more. One small tumor has required retreatment. Two patients have had transient Grade II facial palsies. There have been no other complications. In five patients, surgery was performed using an intracapsular approach prior to radiosurgery in order
Magnesium and Vasospasm

TO THE EDITOR: We read with interest the article by Stippler and colleagues (Stippler M, Crago E, Levy EI, et al: Magnesium infusion for vasospasm prophylaxis after subarachnoid hemorrhage. J Neurosurg 105:723–729, November, 2006), and would like to congratulate the authors for adding data to the literature in this field.

Abstract

Object. Despite the application of current standard therapies, vasospasm continues to result in death or major disability in patients treated for ruptured aneurysms. The authors investigated the effectiveness of continuous MgSO₄ infusion for vasospasm prophylaxis.

Methods. Seventy-six adults (mean age 54.6 years; 71% women; 92% Caucasian) were included in this comparative matched-cohort study of patients with aneurysmal subarachnoid hemorrhage on the basis of computed tomography (CT) findings. Thirty-eight patients who received continuous MgSO₄ infusion were matched for age, race, sex, treatment option, Fisher grade, and Hunt and Hess grade to 38 historical control individuals who did not receive MgSO₄ infusion. Twelve grams of MgSO₄ in 500 ml normal saline was given intravenously daily for 12 days if the patient presented within 48 hours of aneurysm rupture. Vasospasm was diagnosed on the basis of digital subtractions angiography, CT angiography, and transcranial Doppler ultrasonography, and evidence of neurological deterioration.

Symptomatic vasospasm was present at a significantly lower frequency in patients who received MgSO₄ infusion (18%) compared with patients who did not receive MgSO₄ (42%) (p = 0.025). There was no significant difference in mortality rate at discharge (p = 0.328). A trend toward improved outcome as measured by the modified Rankin Scale (p = 0.084), but not the Glasgow Outcome Scale (p = 1.0), was seen in the MgSO₄-treated group.

Conclusions. Analysis of the results suggests that MgSO₄, infu-

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RESPONSE: We thank the editor for giving us the opportunity to respond to Dr. Ganz’s letter. We would like to address several points.

1) It is not correct to comment on the results of VS surgery based purely on early postoperative facial nerve function (2 weeks after surgery). In our experience we have found that in large tumors (tumor extension Classes T4a and T4b) the dissection along the facial nerve may create a temporary facial nerve weakness that usually recovers completely. At the most recent follow-up examinations, 81% of the patients in the group we reported on had outcomes ranging from excellent to good (House–Brackmann Grades I–III).

2) Performing enucleation or partial removal of a VS with the goal of brainstem decompression does not guarantee the patient facial nerve preservation in every case. Furthermore, there is no evidence from a significant series in the literature that the combination of partial removal and radiosurgical treatment prevents tumor regrowth. (Note that our case series included five patients who had previously been treated with radiosurgery and still had tumor growth.)

3) Total microsurgical removal of VS is a curative treatment. Nevertheless, the evaluation of radiosurgical treatment is only meaningful when long-term follow-up data are available. The same is true for evaluation of facial nerve function.

4) We agree with Dr. Ganz that the quality of surgery has to be excellent to achieve such results as those achieved at our center. During the last 30 years, the senior author (M.S.) has taught numerous neurosurgeons around the world who have achieved almost comparable results.

5) For situations in which a well-educated and experienced VS surgeon is not available, we can follow the rationale of Dr. Ganz that partial removal with subsequent radiation therapy could be a valid option under such specific circumstances.

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