

Surgical Treatment of Bell's Palsy: Current Attitudes

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Objectives/Hypothesis: To learn the current management of Bell's palsy among practicing otologists and neurotologists and to better define the role of surgical decompression of the facial nerve in the treatment of Bell's palsy.

Study Design: Survey questionnaire.

Methods: We conducted a survey of members of the American Otological Society and the American Neurotology Society to learn their current practices in the treatment of Bell's palsy.

Results: Eighty-six neurotologists responded out of 334 surveys (26%). The majority of respondents obtain magnetic resonance imaging and electrical testing for new patients and treat with a combination of steroids and antiviral agents. More than two thirds of respondents would recommend surgery to patients who met the established electrophysiologic criteria (electroneuronography <10% normal, no spontaneous motor unit action potentials on electromyography within 10 days of onset of complete paralysis). However, only half believe that surgical decompression should be the standard of care, and only half would use a standard middle fossa approach. Lack of evidence was the most commonly cited reason for not recommending surgery. Several respondents wrote that they would leave the option of surgery to the patient. Most important, one third of neurotologists have not performed a surgical decompression for Bell's palsy in the last 10 years, and 95% perform less than one procedure per year.

Conclusions: Disagreement persists among practicing otologists about the role of surgical decompression for Bell's palsy. More convincing clinical evidence will be needed before there is widespread consensus regarding the surgical treatment of this condition.

Key Words: Bell's palsy, surgical decompression, facial nerve, facial nerve surgery.

Level of Evidence: 5.

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INTRODUCTION

Bell's palsy is acute, unilateral, peripheral facial nerve weakness of unknown cause. Recent evidence has shown that the etiology of Bell's palsy is probably reactivated herpes simplex type I viral neuritis.¹ Most patients who are affected by Bell's palsy will recover full return of facial function, but a few do not. Disagreement persists about the optimal management of patients with this condition. The goal of treatment of Bell's palsy is to improve the functional outcome for the subset of patients who do not achieve full recovery. Most clinicians agree that steroid therapy is beneficial. The role of surgical decompression remains controversial.

The natural history of Bell's palsy was elucidated by Peitersen.² In a study published in 1982 of 1,011 patients with Bell's palsy who were given no treatment, it was observed that all patients showed some degree of

recovery. Complete return of function was observed in 71% of patients. The remainder had residual weakness—13% had only mild sequelae, 16% had permanent facial weakness with contracture, and none had permanent complete paralysis. Recovery began within 3 weeks of onset in 85% of patients.

Patients with Bell's palsy are evaluated and treated by doctors in a variety of medical specialties, including general practitioners, emergency physicians, neurologists, and otolaryngologists. Most agree that medical treatment improves outcome, although some believe that no treatment is necessary. A recent randomized study by Sullivan et al.³ examined the role of corticosteroids and antiviral drugs in a large group of 496 patients. Patients with Bell's palsy were randomized and treated with either prednisolone, acyclovir, placebo, or both; treatment was initiated within 72 hours of onset. Prednisolone led to improved outcome as compared to controls; acyclovir alone showed no benefit. On the other hand, a large meta-analysis by de Almeida et al.⁴ found that “when combined with corticosteroids, antiviral agents were associated with greater risk reduction of borderline significance compared with corticosteroids alone.”

Electrodiagnostic testing has been investigated as a tool for identifying which patients might have a poorer prognosis. Electroneurography (ENoG; synonymous with electroneuronography and evoked electromyography) is valuable when performed within the first 10 days of onset of palsy. ENoG compares the amplitude of facial muscle contraction of the affected side to the normal

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side, using a suprathreshold electrical stimulus at the stylomastoid foramen and surface electromyographic recording electrodes in a standard placement. Fisch⁵ showed that the degree of nerve degeneration occurring within the first 10 days, as determined by ENoG, was predictive of recovery. Those patients who had greater than 90% loss of amplitude within 10 days generally had poorer recovery, whereas those who maintained an amplitude greater than 10% of the normal side on ENoG compared to their normal side had better recovery. Electromyography (EMG), using needle electrodes in the facial muscles to look for spontaneous and electrically evoked activity (as opposed to ENoG, which is electrically evoked), added additional prognostic information. In patients with greater than 90% loss of amplitude on ENoG, the absence of voluntary muscle contraction on EMG confirms a severe degeneration of function and a poor prognosis. The presence of volitional response on EMG implies incomplete nerve degeneration and a better prognosis (loss of ENoG response in these cases is attributed to neural dyssynchrony rather than complete loss of function).

Surgical decompression of the facial nerve has had its proponents. Surgery is reserved for patients who might not achieve satisfactory recovery, based on prognostic testing by ENoG and EMG. May et al. were early advocates of surgical decompression, showing improved outcome in earlier studies⁶, but later recanting these conclusions.⁷ It should be mentioned that May advocated transmastoid decompression of the facial nerve, probably not reaching the labyrinthine segment of the nerve. Fisch and Esslen theorized that constriction of the facial nerve at a more proximal location in the bony fallopian canal contributed to adverse outcome, and they recommended decompression of the nerve by unroofing the bony canal at its narrowest point, at the meatal foramen, a procedure that requires a middle cranial fossa approach.⁸ Gantz et al. published a landmark study in 1999 that examined the functional outcomes of surgically treated patients versus nonsurgical controls treated with steroids only.⁹ This was a prospective, multi-institutional study in which patients with Bell's palsy who were found to be in a poorer prognostic category by electrodiagnostic testing self-selected either surgical or medical treatment and were followed for long-term functional recovery. Patients were admitted to the study if they had greater than 90% degeneration by ENoG, and absent muscle activity by EMG, within 14 days of onset. Few patients qualified for surgery, and even fewer selected surgical treatment. Of those who did, surgery was found to confer benefit, with 91% of 34 surgically treated patients achieving normal or near-normal recovery (House-Brackmann¹⁰ grades I or II), versus 58% of 36 nonsurgically treated patients with permanent partial weakness (House-Brackmann grades III or IV). Control subjects who did not reach 90% degeneration on ENoG all returned to House-Brackmann grade I or II at 7 months after onset of the paralysis. The authors concluded that surgical decompression could prevent an adverse outcome in patients with poor prognostic findings on ENoG, if performed within 14 days of onset of total paralysis.

Although most patients with Bell's palsy will recover, a few will have persistent palsy. The results of the study by Gantz et al. indicated that patients should receive electrodiagnostic testing within a few days of their diagnosis, and those with poor prognoses should undergo surgical decompression to achieve a better outcome. Although these conclusions have been widely acknowledged, they have not been embraced by everyone. Some have questioned the statistical validity of their results.^{11,12} Patients may be reluctant to undergo surgical treatment for a benign condition associated with a normal or near-normal spontaneous outcome in 85% of cases. Surgeons may be reluctant to recommend a surgical operation that requires a craniotomy, retraction of the temporal lobe of the brain, and drilling in an area with few landmarks. Surgery that is poorly performed can risk permanent damage to the facial nerve, worsening outcome, as well as injury to the cochlea and vestibular apparatus.

We undertook this study to gauge the attitudes and current practices of surgical specialists in the field of otology-neurotology. We developed a questionnaire (Fig. 1) and circulated it to members of the American Neurotology Society and the American Otological Society. Our hypothesis was that the majority of practicing otologist-neurotologists were conservative in recommending surgical intervention to their patients with Bell's palsy.

MATERIALS AND METHODS

We conducted a survey of members of the American Otological Society and the American Neurotology Society to learn their current practices in the treatment of Bell's palsy. A list of all the members of these societies was compiled. Members were sent the questionnaire, which is reproduced in Figure 1, by e-mail, using an online survey service (<http://www.surveymonkey.com>). The questions were designed to search for prevailing attitudes regarding the diagnosis and treatment of idiopathic Bell's palsy. Multiple-choice responses were tabulated and plotted on bar graphs. Verbal comments were compiled separately and tabulated.

Because this study did not directly involve patients, institutional review board approval was not sought. Survey responses were anonymous and not retraceable.

RESULTS

We sent 334 surveys and received 86 responses (26%). Of the respondents, 83 (97%) stated that they were otologist-neurotologists, and three were general otolaryngologists.

In patients who presented with sudden, unilateral peripheral facial nerve palsy, 67% (of 66 respondents) indicated that they would obtain magnetic resonance imaging (MRI), and 15% stated that they would obtain no tests at all (Fig. 2).

Regarding medical treatment of Bell's palsy, virtually all of the respondents would use steroids, most (92%) would use antivirals, and none would administer no treatment. The results to this question totaled greater than 100%, probably because some of those who would administer both steroids and antivirals checked off three boxes (steroids, antivirals, both).

Regarding the use of electrodiagnostic testing, 97% (of 58 respondents) replied that they would order ENoG

Bell's Palsy Questionnaire

The intent of this brief questionnaire is to learn the *current practices* of otolaryngologists toward the role of surgical decompression in the treatment of idiopathic facial nerve (Bell's) palsy.

1. Please indicate your primary area of expertise:

- otologist/neurotologist
- general otolaryngologist
- other ENT subspecialist (please specify _____)

2. In a patient with sudden onset of complete, unilateral facial nerve paralysis, would you *routinely* obtain a:

- MRI scan CT scan
- Lyme titer Glucose/HbA1c
- Other tests (please elaborate _____)

3. Would you treat that patient with:

- Steroids
- Antivirals
- Both
- Neither

4. In a patient with acute, unilateral, complete facial nerve paralysis seen within the first 10 days, do you *routinely* obtain:

- ENOG or evoked EMG
- Needle EMG

5. If the patient meets electrical criteria for surgical decompression (ENoG less than 10% normal, no spontaneous motor unit action potentials on EMG within 10 days of onset of complete paralysis), would you recommend surgical decompression of the facial nerve to this patient?

- Yes
- No (Reason: _____)

6. Do you think it is the standard of care to offer patients surgical decompression of the facial nerve if they meet these clinical and electrical criteria?

- Yes
- No (Reason: _____)

7. Would you offer to perform this surgery yourself?

- Yes
- No, because I am not comfortable performing the surgery
- No, because I do not believe surgery is effective/beneficial

8. Which approach would you use?

- Transmastoid only
- Middle fossa only
- Combined transmastoid-middle fossa

9. Which surgical risks would you discuss with the patient?

- Hearing loss or deafness
- Further injury to facial nerve
- Intracranial hemorrhage or stroke
- CSF leak

10. How many surgical cases of facial nerve decompression for idiopathic Bell's palsy have you personally performed in the past 10 years?

- None
- <5
- 5-10
- >10

If <5, what is the reason for so few cases? _____

Fig. 1. The survey that was distributed to members of the American Otological and the American Neurotology Societies is reproduced here. ENT = ear, nose, and throat; MRI = magnetic resonance imaging; CT = computed tomography; ENoG = electroneurography; EMG = electromyography; CSF = cerebrospinal fluid.

and 17% would order EMG for a patient with Bell's palsy that presented within 10 days of onset.

To the key question, "If the patient meets electrical criteria for surgical decompression (ENoG less than 10% normal, no spontaneous motor unit action potentials on

EMG within 10 days of onset of complete paralysis), would you recommend surgical decompression of the facial nerve to this patient?", almost all of the respondents (83 of 86) submitted a reply (Fig. 3). Two thirds responded in the affirmative, one third stated they

Routine diagnostic testing

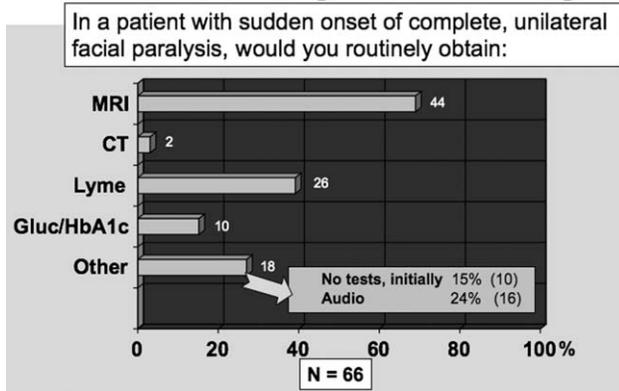


Fig. 2. Responses to question 2 of the survey. MRI = magnetic resonance imaging; CT = computed tomography; gluc = glucose.

would not, and many (n = 43) supplied their reasons. The verbal replies could be classified into four general types, as summarized in Table I: 21% felt the surgery offers better recovery; 26% said they would let the patient decide; 14% indicated that they would offer surgery selectively, taking age and medical status into account; 35% stated that surgery was not indicated or that they were not convinced that it improved outcome.

Responses were divided evenly to the question, “Do you think it is the standard of care to offer patients surgical decompression of the facial nerve if they meet these clinical and electrical criteria?” (41 yes, 40 no). Apparently, there is not consensus among practicing otologists that facial nerve decompression surgery should be deemed the standard of care.

The majority of the respondents (77%) would perform facial nerve decompression surgery themselves, but 7% stated that they were not comfortable performing the surgery, and 17% stated that they did not think the surgery was beneficial or effective. Fifty-four percent would use a middle fossa approach, 41% a combined transmastoid–middle fossa approach, and 5% transmastoid only. Regarding surgical risk, 98% would discuss hearing loss or deafness

Surgical decompression of facial nerve?

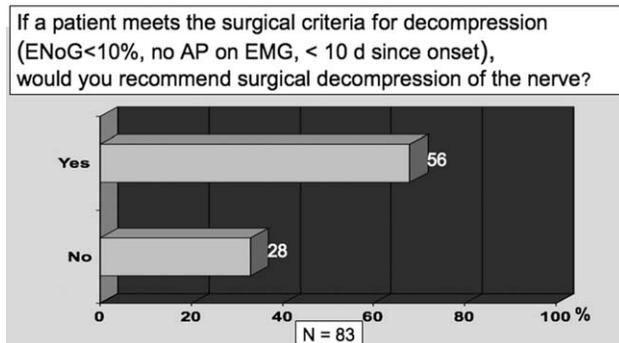


Fig. 3. Responses to question 5 of the survey. ENoG = electro-neurography; AP = action potential; EMG; = electromyography.

TABLE I.

Responses to the Question of Whether to Recommend Surgical Decompression of the Facial Nerve.

Submitted Comments	No. of Comments (N = 43)	%
Yes, surgery offers better recovery	9	21
Offer procedure, let patient decide	11	26
Offer surgery selectively (age, medical status)	6	14
Not indicated; not convinced that surgery improves outcome	15	35

with the patient, 88% would discuss further injury to the facial nerve, 81% would discuss intracranial hemorrhage or stroke, and 90% would discuss cerebrospinal fluid leak.

When asked, “How many surgical cases of facial nerve decompression for idiopathic Bell’s palsy have you personally performed in the past 10 years?”, 34% had performed none and an additional 41% had performed five or less (Fig. 4). The most common reasons offered were that most patients do not meet candidacy criteria or present outside the effective time window (Table II). Sixteen percent indicated that patients usually opted against surgery. Fourteen percent felt that surgery was not effective.

DISCUSSION

Overall, the results of the survey indicate that neurotologic surgeons remain ambivalent about the role of surgical decompression in the treatment of Bell’s palsy. This is not surprising, given the high rate of spontaneous recovery of the disease and the complexity of the surgical treatment. Despite this, the fact remains that a significant minority of patients with Bell’s palsy will have permanent disfigurement, and specialists who treat these patients must continue to seek methods of improving outcomes.

The survey revealed some inconsistencies in the diagnostic workup of Bell’s palsy. The question asked about routine diagnostic testing, and it is likely that most tests will be ordered selectively. The majority of respondents would obtain MRI on new patients with

Number of surgical cases

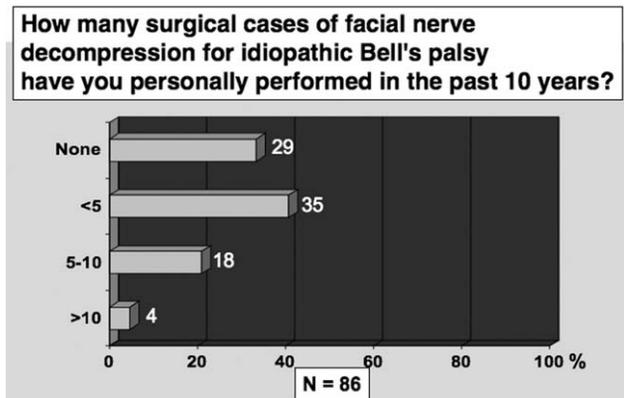


Fig. 4. Responses to question 10 of the survey.

TABLE II.
Responses to the Question of Why Surgeon May Have Performed <5 Cases.

Reasons Given for <5 Cases	No. (N = 64)	%
Few candidates meet criteria	23	36
Present outside of time window	12	19
Patients opt against	10	16
Do not believe surgery effective	9	14

Bell's palsy. This is interesting because MRI will rarely demonstrate a central nervous system lesion in the absence of other neurologic signs,¹³ and the finding of inflammatory nerve enhancement does not influence the prognosis or the treatment. This practice may be driven by defensive medicine, as the generally accepted indications for MRI (no recovery in 2 months, slowly progressive palsy, facial palsy with spasm, recurrent palsy, bilateral palsy, and presence of other neuropathies¹⁴) are signs that do not occur acutely. Other tests were obtained inconsistently. Lyme titers, ordered by 39% of respondents, are important, but probably more so in endemic areas.¹⁵ Diabetes is a common comorbidity, but Bell's palsy will usually not be the first manifestation of this disease. Fifteen percent of respondents order no tests routinely.

The vast majority of respondents (97%) stated that they would routinely obtain ENoG in patients with Bell's palsy who are seen within 10 days of onset. This is consistent with accepted guidelines,⁵ and serial testing should be obtained in patients with complete paralysis if the initial ENoG does not show >90% degeneration. EMG was obtained less often, and this is appropriate since the only value of obtaining EMG early after the onset of palsy is to confirm severe neural degeneration seen on ENoG.

The medical treatment of Bell's palsy appears not to be controversial. Almost all respondents give steroids to their patients, and most treat with a combination of steroids and antiviral agents. Whether antivirals are truly beneficial is still debated.²⁻⁴

The surgical treatment of Bell's palsy remains controversial, however. According to the survey, more than two thirds of respondents would recommend surgery to patients who met the established electrophysiologic criteria, but only half believe that surgical decompression should be the standard of care, and 35% of the verbal responses stated that surgery was not indicated or that they were not convinced that it improved outcome. Lack of evidence was the most commonly cited reason for not recommending surgery, revealing some uncertainty about the conclusions of the study by Gantz et al. and others. These statements reflect ambivalence about the role of surgery among neurotologic surgeons. Many respondents say that they would leave the option of surgery to the patient. But many patients decline the surgery when they weigh the chances of spontaneous improvement against the possible complications of surgery, even though the complication rates may be very low in experienced hands. It is possible, too, that if the surgeon is ambivalent, the patient may be less likely to choose a potentially beneficial option.

Most important, one third of neurotologists have not done a surgical decompression for Bell's palsy in the

last 10 years, and 95% of the doctors perform less than one procedure per year. This is a telling statistic because actions are in part a reflection of attitudes. The reasons cited include a low number of candidates, patients presenting outside the effective time window, and low acceptance by patients. It appears that surgical treatment is not commonly done, and the decision to perform surgery is influenced by these various factors.

The limitations of the present study must also be acknowledged. First, the survey instrument is limited in the type of information that can be elicited. Multiple-choice questions may overlook certain responses. Second, and most important, this survey had a low rate of return, with only 26% responding. The small sample size makes it possible that the prevailing attitudes are misrepresented. However, the low number of surgical decompression cases that are actually performed is commensurate with the responses obtained in our survey. Third, the survey cannot account for surgeons' prejudices regarding middle fossa surgery in general. For example, not all otologic surgeons perform middle fossa surgery frequently or routinely and therefore might be reluctant to offer their patients facial nerve decompression for that reason. This question was indirectly addressed in question 7 of the survey, "Would you feel comfortable performing this surgery yourself?", to which only 7% responded that they would not, implying that reluctance to perform the operation was not often a factor in offering surgery to the patient. It would have been interesting to correlate the response to question 7 with the responses to questions 8, 9, and 10, but this is not possible because the survey was anonymized. Finally, the survey was only sent to otologists and therefore does not gauge the treatment preferences of the many nonotologists who manage the majority of Bell's palsy cases, and whose opinions and practices might also be considered.

CONCLUSION

Disagreement persists about the role of surgical decompression for Bell's palsy, as determined by a survey of practicing otologist-neurotologists. Two thirds of survey respondents said they would recommend surgical treatment to a patient who met surgical criteria, but only half felt that this should be the standard of care. The number of surgical procedures actually performed is much lower than would be expected given the prevalence of this disease. Verbal responses on the survey revealed uncertainty about the perceived efficacy of surgery among survey participants. It appears that more convincing clinical evidence will be needed before there is widespread consensus regarding the surgical treatment of this condition.

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