

Role of Facial N Decompression in Unresolved Bells Palsy: Surgical Outcome

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Abstract: *Introduction:* Incomplete return of facial motor function and synkinesis continue to be long-term sequelae in some patients with Bell's palsy. No definitive management option is quoted in literature.

Objective: The aim of this research is to describe a prospective study in which a well-defined surgical decompression of the facial nerve was performed in a population of patients with Bell's palsy who exhibit grade V and VI (House-Brackmann) after 3 weeks of conservative treatment.

Study Design and Methods: A prospective clinical study.

Results: Out of 24 patients 25 (96%) patients improved after facial nerve decompression performed in patients who didn't recovered after conservative treatment of 3 weeks.

Conclusion: Surgical decompression distal to the geniculate ganglion significantly improves the chances of normal or near normal return of facial function.

Keywords: Surgical decompression, facial nerve, Bell's palsy, House- Brackmann grading.

INTRODUCTION

Ongoing debate among prominent clinicians has dominated the discussion of the management of Bell's palsy for more than 60 years. Extremes of opinion continue to range from those who believe surgical decompression is mismanagement to those who advocate early decompression [1] for all patients with total paralysis [2, 3]. Medical management with steroids or other medications has also been controversial. The clinician remains confused regarding the appropriate management of the patient who presents with the emotional and physical trauma associated with an episode of acute facial paralysis due to Bell's palsy. Fundamental to management issues of this disorder is the question of the aetiology of Bell's palsy. Fortunately, the aetiology of "idiopathic" facial paralysis is becoming clearer [4]. These two independent pieces of evidence strongly support the concept that the facial paralysis associated with Bell's palsy is the result of a viral inflammatory response that induces edema within the facial nerve [5, 6]. A double blind prospective

clinical trial testing prednisone verses prednisone and acyclovir in patients with Bell's palsy demonstrated an improved outcome when patients received acyclovir [7]. The above studies offer more than circumstantial support for a herpes simplex viral cause of Bell's palsy first postulated by McConnick in 1972 [8]. Steroids and antiviral medication are appropriate management strategies for the acute phase of the disease. The majority of patients will completely resolve their paralysis and are left with no residual deficits; however, a small number of patients do not return to normal health. This group is bothered by asymmetric facial movements and troubling synkinesis. The Adour acyclovir trial [7] documented that a poor facial function recovery (House- Brackmann grade III or IV) occurred in 23% of the prednisone-only treatment group and 7% of the prednisone + acyclovir group. An important point to consider in this report is the fact that the characteristics of the patient population described are quite different from the usual populations described in other studies [10, 11]. Eighty percent of the individuals in this study had symptoms of facial paresis only and 20% of patients developed complete paralysis during the study. None of the patients exhibited a complete loss of nerve excitability during the acute phase of the

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paralysis. Most studies of Bell's palsy include a number of patients that exhibit loss of nerve stimulability, and the majority of these have total paralysis. Unfortunately, the electrophysiologic test results are not described for the two treatment groups. The study does point out however that regardless of the medical management, some patients will have a poor outcome with incomplete return of facial movement and bothersome synkinesis. The issues that continue to trouble the clinician treating a patient with Bell's palsy are 1) how does one identify patients who will be left with a poor outcome (poor return of facial motion-House-Brackmann grade III or worse)? 2) Can poor outcomes be prevented by surgical decompression? And 3) what is the critical timing of the surgical decompression? In this study, surgical decompression of the facial nerve was performed and results were analyzed.

MATERIAL AND METHOD

This is a prospective study conducted Vijaya ENT care in a super speciality Otolaryngology centre, in India from December 2004 to December 2014.

Selection Criteria

The patients with Bell's palsy, after conservative treatment for 3 weeks with residual Grade V or Grade VI palsy taken for surgical decompression.

The patients, who fit the inclusion criteria, underwent detailed otolaryngology examination, Schirmer's test, relevant blood investigation and admitted one day prior to surgery. Initial few cases EMG were performed, but those cases having more than 90% degeneration completely recovered with conservative treatment. So we discontinued performing EMG in our case series. High resolution CT scan of temporal bones with 3D reconstruction was performed in all the cases.

Surgical Procedure

Following Wide cortical Mastoidectomy and thinning of the posterior bony meatal wall, facial recess cell identified and widened. Incudo – stapedial joint disarticulated and incus removed. Facial nerve exposed from the 2nd genu to the stylomastoid foramen leaving an egg shell layer of bone. Incus buttress removed and facial nerve decompressed upto the geniculate ganglion again leaving an egg shell layer of bone. One observation which has been consistently noticed is that the epineurium is seen thickened from

the 2nd genu and the vertical segment which has been proved by the radiological evidence of widening of the nerve noticed in the vertical segment contrary to the belief that the labyrinthine segment is the bottle neck area as shown in the Figure 1. The thick fibrotic epineurium is cut using iris scissors and a piece of which has been sent for HPE which shows –Thickened wavy Nerve Tissue and amorphous eosinophilic material with few dilated vascular channels.

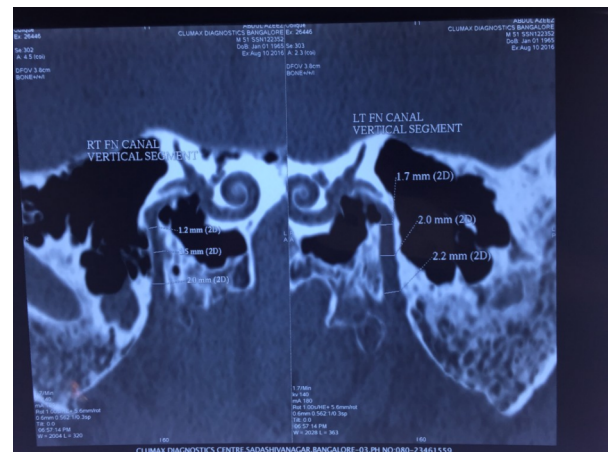


Figure 1: Widening of nerve in vertical.

As the sheath is thick and fibrotic, it is incised using iris scissor, following which bulge of the normal perineurium seen (Figure 2). Fine fibrotic bands compressing the perineurium released using a tenotome. In one of our case, grade VI facial Palsy, Anterior placed lateral sinus and low lying tegmen encountered making it impossible to access the stylomastoid region, hence canal wall down procedure done followed by facial nerve decompression as above. Ossiculoplasty was performed at the same sitting following facial nerve decompression.

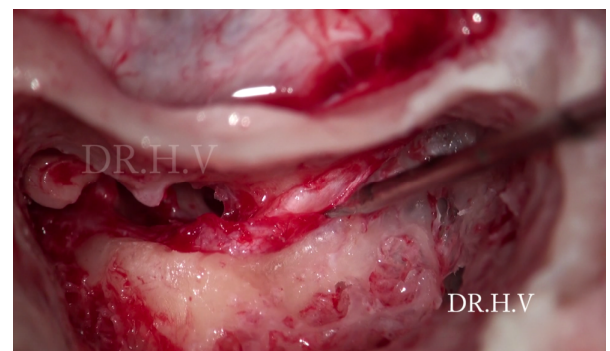


Figure 2: Incising the edematous vertical segment nerve sheath.

RESULTS

There were 25 cases included in this study with mean age of 37.60 with standard deviation of

13.41(±2SD) which includes 21 males and 4 females. Ten cases having right sided Bell's palsy and 15 having left sided palsy (Table 1). Nine patients were taken conservative treatment of 4 weeks and rest 16 patients were continued conservative management for more than 4 weeks. At the time of presentation 11 having Grade V palsy and 14 having grade VI palsy (Table 2). Schirmer's test is negative in all cases, showing greater superficial nerve is free and facial nerve involvement distal to the geniculate ganglion. High resolution temporal CT scan with 3D reconstruction performed in all the case with 0.625 mm sections. Significant widening of facial canal in compared to the normal was noticed at the level of stylomastoid foramen, mid segment and the level of promontory.

Table 1: Affected Side of Facial Palsy

No. Of Patients	Right side facial palsy	Left side facial palsy
25	10	15

Table 2: Grade of Facial Palsy at the Time of Presentation

No. Of Patients	H- B Grading
11	Grade V
14	Grade VI

Intra operative finding showed 16 cases having involvement of vertical segment and 9 cases having involvement of vertical segment along with second genu (Table 3).

Table 3: Intra-Operative Segment of Facial Nerve Affected

Patient No.	Site involved intra-operatively
1	Vertical segment
2	Vertical segment
3	Vertical segment+ second genu
4	Vertical segment
5	Vertical segment
6	Vertical segment
7	Vertical segment+ second genu
8	Vertical segment+ second genu
9	Vertical segment+ second genu
10	Vertical segment

(Table 3). Continued.

Patient No.	Site involved intra-operatively
11	Vertical segment
12	Vertical segment
13	Vertical segment
14	Vertical segment
15	Vertical segment
16	Vertical segment
17	Vertical segment+ second genu
18	Vertical segment+ second genu
19	Vertical segment+ second genu
20	Vertical segment+ second genu
21	Vertical segment+ second genu
22	Vertical segment
23	Vertical segment
24	Vertical segment
	Vertical segment

Eighteen out of 25 patients (72%) were recovered to grade I, 6 patients (24%) improved to grade II and 1 patient didn't improved might be due to late presentation (Figures 3, 4, 5, 6).



Figure 3: Pre-op picture no movement at angle of mouth.



Figure 4: Pre operative image with no movement at frontalis.

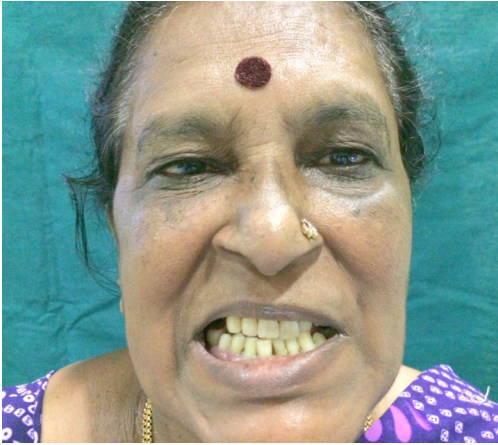


Figure 5: Improvement of movement of angle of mouth after 1 month.



Figure 6: Improvement of movement of frontalis after 1 months.

Ten patients were improved to grade I within 1 month following surgery, 11 patients were improved within 3 months and rest 3 patients were improved within 6 months.

DISCUSSION

There is a difference of opinion on an issue management of residual Bell's palsy is noted in literature. Bell's palsy management is such an issue that all otolaryngologists have experienced the distress of patients who have recovered from Bell's palsy, been treated with steroids, and seek an opinion 6 months to 1 year later about how to improve their House Brackmann grade III facial movement. The result was not satisfactory when acyclovir is added to the treatment regimen [7]. If all patients recovered to normal or near-normal with medical management after Bell's palsy, other treatments would be unnecessary. Unfortunately, this is not the case. On the other hand, the overwhelming majority of patients who experience Bell's palsy do not recover normal or near-normal facial movement. This study was conceived to address the

new concept that a surgical decompression is a useful treatment regimen in a selected population of patients who had grade V or VI palsy after adequate conservative treatment for 3 weeks [8-11].

ENOG and voluntary EMG, performed using the protocol originally described by Esslen [12-16], were useful electro-diagnostic strategies to differentiate individuals with Bell's palsy into those who have a favourable prognosis and good outcome and those who had a poor outcome. Our study established that patients having more than 90% degeneration, recovered completely with conservative treatment. So we did it in initial few cases and didn't perform in any patients further.

The chances of achieving a House-Brackmann Grade I or II result is extremely high after surgery. Originally Fisch stated that "the destiny of the facial nerve in Bell's palsy is decided within the first 2 to 3 weeks [17]. In this study 96% improved to Grade I or grade II.

As per the literature the site of involvement of facial nerve is proximal to 1st genu and meatal segment. And recent literatures did not advocate facial nerve decompression for Bell's palsy. But our study revealed that the site of involvement is distal to the geniculate ganglion which was documented in all cases radiologically and intra-operatively. The Schirmer's test was negative in all 25 cases which corroborates with intra-operative findings. So the relevance of Schirmer's test still important in Modern Otolaryngology practices. The facial nerve decompression described for Bell's in literature is via middle cranial fossa approach and that gives morbidity to the patients. In this case series, all cases were done by transmastoid approach. The pathology is noticed mostly in vertical segment and second genu.

The results of our study explained the need of surgery in unresolved Bell's palsy. The surgical decompression is considered when the residual grade V or grade VI palsy present after 3 weeks of adequate conservative treatment.

CONCLUSION

The surgical decompression of residual Bell's palsy is an innovative treatment via transmastoid approach without giving any morbidity to the patients. There were 17 patients who had grade V or VI, initially refused surgery, but came back after 1 yr with same facial

nerve status. It has to study further the role of delayed facial decompression in those selected patients.

CONFLICT OF INTEREST

No conflict of interest in this study.

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