



## Evaluation Of Patients Of Traumatic Facial Palsy Treated By Facial Nerve Decompression Via Transmastoid Approach

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### ABSTRACT

Management of traumatic facial nerve disorders is challenging. Facial nerve decompression is indicated if 90–95% loss of function is seen at the very early period. A thorough knowledge on diagnosis, treatment and prognosis of facial nerve injuries is essential. Treatment of facial nerve injuries depends on two principal factors : onset of facial weakness (acute or delayed) and extent of facial weakness. Transmastoid approach is suitable for patients whose nerve injury lies distal to geniculate ganglion. The aim of this study is to present retrospective review of 6 patients with facial paralysis after trauma who underwent facial nerve decompression via the transmastoid approach between 2011 to 2013. Good recovery of facial nerve function was observed in 5 out of the 6 patients after surgical decompression with post operative HB grade I/II .

### Introduction:

Facial palsy is a common condition with an estimated incidence of 20-25 cases per 100000 population[1,2] Trauma is the second most common cause of facial nerve paralysis, second only to idiopathic Bell's palsy. These patients may present with bloody otorrhoea, haemotympanum, dizziness and deafness. Longitudinal fractures of the temporal bone comprise 80% of all temporal bone fractures and facial nerve injuries occur in 10 - 20% of these. Transverse fractures comprise only 20% of fractures, yet the incidence of facial nerve injuries is 50%[3] Other causes of traumatic paralysis include iatrogenic, birth canal trauma/forceps delivery, penetrating parotid or middle ear trauma and facial fractures.

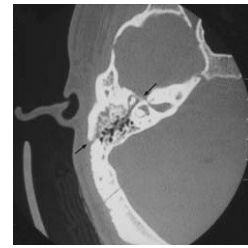
Indication and timing of the facial nerve decompression for facial paralysis and the anatomical extent of decompression has been a subject of controversy for years. The aim of this study is to present retrospective review of 6 patients with facial paralysis after trauma who underwent facial nerve decompression via the transmastoid approach between 2011 to 2013.

#### Materials and methods:

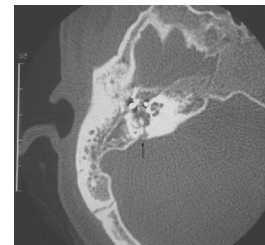
Study consists of review of 6 patients treated for traumatic facial palsy with facial nerve decompression via transmastoid approach in 2011 to 2013 . Out of 6 patients , 5 were male and 1 was female . Age group of patient was 18 to 50 years . Mode of injury was road traffic accidents. All patients had immediate onset paralysis. House – Brackmann system (HB GRADE ) was used for grading facial nerve palsy[4]..All patients treated for facial nerve palsy underwent auditory assessment ( PTA –pure tone audiometry ), schirmers test , High resolution CT (HRCT) scan of temporal bone and electrophysiological workup consisting of electromyography and electroneurography .

#### Results:

Postoperative period of all patients was uneventful and no surgical complications were observed .The tympanic segment was most affected part of facial nerve and oedema was most commonly encountered finding. Mean follow up ranging from 3 months to 1 year showed recovery of House –Brackmann grade I or II which was grade IV in all patients preoperatively.



CT temporal bone showing longitudinal Fracture



CT temporal bone showing transverse fracture

Sr. No	Age/ Sex	Site of palsy	PTA	House-Brackmann Grade	HRCT	Intraoperative findings
1	26/M	Left	Left mild conductive loss	IV	Longitudinal	Fracture line through mastoid Involving spine of henle -facial nerve in horizontal part oedematous
2	28/M	Left	Left moderate conductive loss	IV	Longitudinal	Fracture line extending from parietal bone passing through Macewans triangle , reaching upto Posterior Wall of EAC , oedema And granulations around Second Genu
3	30/M	Left	Left moderate conductive loss	IV	Longitudinal	Oedema of horizontal part of facial Nerve. Fracture line through Mastoid Involving Spine of Henle

4	18/M	Right	Right moderate conductive loss	IV	Longitudinal	Facial nerve exposed in mastoid part ,bone chips seen ,oedematous horizontal part and second genu
5	50/F	Left	Left mild conductive loss	IV	Transverse	Oedema around vertical part
6	22/M	Left	Left mild conductive loss	IV		Oedema around horizontal part and second genus

## Discussion:

In traumatic facial paralysis, degeneration of 90% or more of facial nerve within 6 days of onset of complete paralysis is predictive of poor recovery unless decompression is performed. Significant prognostic criteria includes extent of paralysis, timing of onset of paralysis and electroneurography. Surgical approach for traumatic facial nerve palsy depends upon possible site of injured facial nerve segment and also on clinical and radiological information. All our patients underwent transmastoid approach for facial nerve decompression after clinical evaluation and radiological assessment. Intraoperative pathology of the facial nerve was as follows: the integrity of the nerve was not interrupted as seen during surgery. Two types of facial nerve pathology were noted namely neural oedema and bony impingement. Good recovery facial nerve function was observed in 5 patients after surgical decompression with post operative HB grade I/II. Management of traumatic facial palsy challenging.

The type of injury, sudden or delayed onset, complete or partial paralysis, localization of injury and severity of conduction block based on electrophysiological tests are main determinants of prognosis.

Transmastoid approach is suitable for patients whose nerve injury lies distal to geniculate ganglion. Ulug and Ulubil have reviewed 10 patients with immediate-onset facial paralysis associated with temporal bone fracture who underwent surgical intervention ranging between 14 and 75 days after injury.

They have reported HB-I recovery in 5 and HB-II recovery in 4 patients regardless of timing of surgery [5]. The incidence of temporal bone trauma and associated facial nerve injury has increased in recent decades together with the increasing traffic and population [6].

Coker et al. have reported that 14 of 18 patients with temporal bone fracture who needed to have facial nerve exploration had longitudinal fracture [7]. The rate of recovery within HBG I-II after total facial nerve exploration in our short series is 83.33% (5/6).

## Conclusion:

Surgical therapy of precisely determined cases of peripheral traumatic facial palsy gives good functional results. Early surgical intervention will improve final outcomes of facial nerve function. Facial nerve decompression with rebuilding of ossicular chain through transmastoid approach is good approach for treatment of facial paralysis in temporal bone fracture. The transmastoid approach for facial nerve decompression can be utilized when trauma is clearly localized to the tympanic or mastoid segments of facial nerve.

## References:

1. AG Kerr and GDL Smyth. Ear Trauma:Scott-Brown's Otolaryngology, Butterworth International Edition 1987;5:172-84.
2. C Hartley, AD Mendelow. Post traumatic bilateral facial palsy.J Laryngol Otol 1993;107:730-1.
3. Jackler RK; Facial, auditory, and vestibular nerve injuries associated with basilar skull fractures.In, Youman JR (ed) Neurological Surgery. WB Saunders 1990;3:2305-16.
4. J. W. House and D. E. Brackmann, "Facial nerve grading system," Otolaryngology-Head & Neck Surgery, vol. 93, no. 2, pp. 146–147, 1985.
5. T. Ulug and A. S. Ulubil, "Management of facial paralysis in temporal bone fractures: a prospective study analyzing 11 operated fractures," American Journal of Otolaryngology, vol. 26, no. 4, pp. 230–238, 2005.)
6. S. Yetiser, Y. Hidir, and E. Gonul, "Facial nerve problems and hearing loss in patients with temporal bone fractures: demographic data," The Journal of Trauma, vol. 65, no. 6, pp. 1314– 1320, 2008.
7. N. J. Coker, K. A. Kendall, H. A. Jenkins, and B. R. Alford, "Traumatic intratemporal facial nerve injury: management rationale for preservation of function," Otolaryngology-Head & Neck Surgery, vol. 97, no. 3, pp. 262–269, 1987.