

Original article:

Evaluation and Treatment Option of Post Traumatic Facial Nerve Palsy

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Abstract:

Introduction: Facial nerve paralysis by trauma is common cause after idiopathic. Facial palsy as a result of intra cranial, intra temporal and extra temporal blunt injury or fracture and both. Sudden and immediate facial nerve palsy need early surgical intervention for better out come. Facial nerve decompression and termino- terminal anastomosis surgical intervention had done in present study.

Methodology: It is a prospective study was done between 2004 to 2006 in Department of Otolaryngology and Head & Neck Surgery in Gandhi Medical College and Associate Hamidia Hospital, Bhopal,(M.P.). The complete clinic examination, otoscopic, audio logical, topodiagnostic, and radiological evaluation were done in all the patients. The outcome of these patients was done on the House-Brackmann nerve grading system.

Results: All patients have infra nuclear type of facial nerve palsy. The maximum incidence of facial nerve paralysis found in the age group between 21 to 30 years. The most common mode of injury was motor vehicle accident in ten patients(60%) and thirteen(76%) patients show complete facial nerve palsy. three (18%) patients were temporal bone fracture and two patients were suffered head injury. Out of 17 patients ,13 patients were normal hearing. Suprachordal (47%) involvement is the most common site of lesion in traumatic facial nerve paralysis.

Conclusion : Sudden and immediate onset facial nerve paralysis need early surgical intervention for better outcome .facial nerve decompression were better outcome comparing to termino terminal anastomosis. The facial nerve paralysis prognosis depends upon degree of paralysis, duration of paralysis, site of injury and patient's factors.

Key words: Trauma, Facial nerve paralysis, Temporal bone fracture, Surgery

Introduction

The facial nerve is a mixed nerve which carries sensory, motor as well as parasympathetic nerve fibers. The various causes of facial nerve palsy likes idiopathic, trauma, inflammation, Infection, tumor, Congenital anomalies/dysplasia and others are mentioned. Motor vehicle accidents are the most common mechanism of traumatic facial nerve injury.

Temporal bone fracture, Blunt, Penetrating injury, Gunshot, Missile injury and Iatrogenic surgical injury other causes of facial nerve injury. Approximately 5% patient have temporal bone fracture of all trauma .These fractures are classified as longitudinal, transverse and Oblique(mixed) with respect to the long axis of the petrous pyramid (ridge).Longitudinal fracture is most commonly type of temporal bone

fracture. Facial nerve palsy developed common in transverse fracture. In transverse fracture, the facial nerve is usually injured at its labyrinthine segment and patient manifest with sensorineural hearing loss and vestibular dysfunction. It is important to diagnose early facial nerve palsy and early intervention for better recovery. In most of the cases spontaneous recovery happened. However some need surgical exploration and nerve repair with or without cables grafting.

Material and Methods

A prospective study of the 17 cases of traumatic facial nerve palsy managed during 2004 to 2006. We had enrolled infranuclear type of facial nerve palsy but we did not enroll any patient of central / supranuclear facial nerve palsy. The complete clinic examination, otoscopic, audiologic, topodiagnostic and radiography were done in all the patients. Fifteen patients were treated conservatively and one each

Table:-1

Clinical and Radiological characteristics .

Parameter	No.	Percentage(%) #
Complete	13	76
Incomplete	4	24
Hearing loss	3	18
Hemotympanum	2	12
Lacerated wound pinna	2	12
Temporal Bone Fracture	3	18
Head Injury(SDH&EDH)	2	12

Some patients have more than one symptom.

Lacerated wounds generally results in lesions of the facial nerve distal to the stylomastoid foramen (Extra temporal).

Birth trauma represents rare but important cause of traumatic facial nerve paralysis in new born.

was managed surgically like nerve decompression and termino-terminal anastomosis. The outcome of these patients was done on the House- Brackman nerve grading system.

Results

All patients have infranuclear type of facial nerve palsy. Patients were treated conservatively as well as surgically. The surgical techniques were applied in the form of facial nerve decompression and termino-terminal anastomosis. Out of seventeen patients, fifteen are male and two were female. Eleven (65%) patients had left sided facial nerve palsy and six (35%) right sided facial nerve paralysis. The maximum incidence of facial nerve paralysis found in the age group of 21-30 years(mean age 25 years). The most common mode of injury was motor vehicle accident ten patients (60%). Assault was in three (18%), fall from height was also three (18%) and one patient had birth trauma facial nerve palsy.

Table:-2

Hearing assessment .

Pure Tone Audiometry	No.	Percentage(%)
Normal Hearing	13	76
Conductive hearing loss	2	12
Mixed hearing loss	1	6

Facial nerve palsy show normal hearing in 13 patients out of 17 patients. Conductive hearing loss duo to Hemotyimpanum and a patient did not do pure tone audiometry because his age was less than one month.

Table:-3

Topographical site of lesions.

Site	No	Percentage(%)
Suprachordal	8	47
Infrachordal	5	30
Transgeniculate	3	18

Suprachordal (47%) involvement is the most common site of lesions in traumatic facial nerve paralysis. Topographical test was not done in one patient(neonate).

Table:-4

Stapedial Reflex Test.

Stapedial Reflex	No.	Percentage(%)
present	6	35
Absent	10	59

Stapedial reflex test was done in sixteen cases, one patient (neonate) did not co-operate. Out of sixteen patients, ten (59%) cases show absent Stapedial reflex and six (35%) cases show present Stapedial reflex.

Discussion:

The facial nerve contains motor, sensory and parasympathetic fibers. The facial expression convey us the twinkle of fun, smile of love, composure of confidence, hence the name of the “Nerve of facial expression”. All this is lost in facial nerve paralysis .More than 40 causes of facial nerve paralysis such as Idiopathic, Traumatic, Inflammatory, Tumors and others as mentioned.

The traumatic facial nerve paralysis due to its variety of forms and outcomes, its difficult to diagnose and represents a challenge especially from the therapy point of view. In present study motor vehicle accidents (60%) is the most common causes followed by blunt trauma and fall from height (18%) each. One case had birth trauma. Temporal bone fractures have divided into three types as longitudinal, transverse and oblique (mixed) in relation to the long axis of the

petrous pyramid. Longitudinal fractures are clinically more common and produce delayed and less common facial nerve palsy. Transverse fracture are clinically less common but produce severe, immediate facial nerve palsy(3,8).As per literature many surgical option for facial nerve palsy like facial nerve decompression, end to end anastomosis, interposition grafting, facial reanimation and facial reconstruction procedure. There are limitations for primary repair and grafting. It can be repair and decompression by intracranial,intratemporal, extra temporal and in combination. Facial nerve repaired can be immediate or delayed. It can be accomplished without tension by greater auricular or sural nerve. it is best to freshen both end of nerve and make 45⁰ or oblique cut with sharp knife and used minimal number of neurosuture. We have done end to end repair of extra temporal facial nerve transaction and facial nerve decompression of vertical segment.

Electrophysiological test is an important diagnostic tool to estimate the amount of severe facial nerve degeneration which was not available at our center, so we used clinical topographic diagnostic test.Electroneuronography(ENoG) is a mandatory because it is an important prognosis factor which is positive only after 4 days of facial nerve injury. It can estimate the amount of severe facial nerve fiber degeneration, if degeneration of greater than 90%of the individuals within 14 days of complete facial nerve paralysis indicates poor prognostic factors are likely to recover normal facial function. Electromyography (EMG) performed by using intramuscular recording electrodes probably most useful more than 2 weeks of facial nerve paralysis.

This test measures motor activity of facial muscles that indicate wallerian degeneration or polyphasic potentials is a sign of regenerating nerve fibers

Surgical intervention for post traumatic facial nerve paralysis remains controversial and most of the patients recover fully without surgical intervention. Out of 17 patients, a patient underwent facial nerve decompression and one patient for end to end anastomosis. Both patients have sudden immediate onset facial nerve paralysis. The complete facial nerve recovery was seen of facial nerve decompression and incomplete was in end to end anastomosis. Remaining fifteen patients managed conservatively on steroids, symptomatic treatment and eye care. Out of 17 patients,13 patients (76%) was done complete recovery and rest 4 patients (23%) had incomplete recovery. These patients are managed by adjunctive measures like tarsoraphy and gold weight.

The facial nerve paralysis prognosis depends upon degree of paralysis, duration of paralysis , site of injury, and patients factors. The final goal of the facial nerve paralysis managed as defect reconstruction, facial re animation by hypoglossal to facial, nerve grafting, muscles trans position and adjuventive measures.

Conclusion:

1. Sudden and immediate onset facial nerve paralysis need early surgical intervention.
2. Facial nerve decompression gives better outcome comparing to termino–terminonalanastmosis.
3. Surgical intervention and result depends upon duration of nerve paralysis, degree of paralysis site of injury and patients factor

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