



Facial Nerve Paralysis Management – Our Experience

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ABSTRACT

Introduction:

Facial nerve traverse a long course within a bony canal in Temporal bone. It is vulnerable for damage during ear surgeries & trauma. Otitis Media also leads to Facial palsy.

Objectives:

Study about the Causes, Effects of different management protocols and Outcome after a minimum of 6 months follow-up.

Study Design:

Retrospective Study.

Materials and Methods:

Conducted in our department from Sep 2013 - Aug 2016. 39 cases of LMN type of Facial Palsy cases included & followed for 6 months to 2½ years. Treatment outcomes are assessed and compared.

Results:

Bell's Palsy is commonest one followed by CSOM and Traumatic causes. Cholesteatoma and Granulation tissue are common finding in AAD cases. Longitudinal fracture more in number.

Discussion:

Management with high dose steroids for Bells Palsy and Surgery in case of no response. Mastoidectomy with Facial Nerve Decompression for COM. Trans Canal Facial nerve Decompression in Traumatic cases. Dehiscent Fallopien Canal common is finding in ASOM with Facial Palsy cases.

Conclusion:

Medical Management was enough for 90% of Bells palsy cases. Early Decompression gives better results in Traumatic cases. Early diagnosis and proper treatment will avoid the development of Facial palsy in Cholesteatoma.

KEYWORDS : Facial Nerve, Chronic Otitis Media, Cholesteatoma, Bell's Palsy, Temporal Bone Fracture, Facial Nerve Decompression.

Introduction:

Facial nerve is called as Master Organiser for Facial Orchestra, because it innervates all the muscles of facial expression. Incidence was 20-25 cases per 100000 Population [1]. Aetiology ranges from Temporal bone fracture to Idiopathic Bells Palsy. Because of its long intra temporal course, it was more vulnerable to trauma compare to other cranial nerves. Facial Palsy will produce Facial asymmetry and this will affects patient's Psycho-Social status.

Treatment is entirely depends upon the Cause, Duration, and Degree of lesion. Age is an important prognostic factor . Age was Inversely related to Recovery in Adult . [2]. Bell's Palsy was named by Scottish neurologist Sir Charles Bell in 1821. It was more common in Females & during pregnancy. Commonest age groups are 15-45yrs. Positive family history in 14%. 90% Childhood Facial palsy due to Bells Palsy. 10% of cases recur even after 10 years. Spontaneous recovery in 70% of cases. Topodiagnostic tests are useful to locate the level of lesion.

Longitudinal fractures are more common(80%) than Transverse fractures (20%). Peri Genu region was commonest site in Longitudinal fracture. Complications are more in Transverse fractures and need emergency treatment. Facial palsy occurs in 50% of transverse fractures and it was immediate onset and complete paralysis[3]. Recovery was 94% in delayed onset longitudinal fracture without surgical intervention[4]. Patients of incomplete paralysis with non- progression and less than 95% degeneration in ENoG at the admission time does not require surgery. Immediate palsy is due to compression of nerve by fractured bony fragments and later on due to development of oedema around the nerve. Transcanal Facial nerve

Decompression is the latest treatment of traumatic cases.

Mostly all patients of ASOM with facial palsy are dehiscent fallopien canal at tympanic or horizontal segment (30%). Natural dehiscence of fallopien canal allows the infection to enter the nerve(Toxic Neuritis) and later on oedema of nerve occurs. After 2-3 days it will become rapidly progressive. In COM tympanic segment and Second Genu is commonly involved, and the facial palsy is gradual in onset and slowly progressive. Facial Palsy in COM with cholesteatoma is due the pressure effect and some time due to strangulation of epineural blood vessels. Early surgical intervention plays major role in association with antibiotics in COM and ASOM cases.[5,6].

Facial palsy in Malignant Otitis Externa occurs only in advanced stage of the disease. Mostly associated with uncontrolled Diabetes and Immuno compromised individuals. Management consists of debridement of granulation tissue in External Auditory Canal with Diabetes Control and Facial nerve decompression depending upon the segments involved and regular follow up.

Iatrogenic causes of facial palsy is due to damage of facial nerve at Second Genu in Simple Mastoidectomy and Tympanic segment in Modified Radical Mastoidectomy. Depending upon the degree of damage and the length of damaged segment we have to go for End to End Anastomosis or Nerve Grafting by using Greater auricular nerve.

In all types of Facial Palsy severity was graded by HOUSE-BRACKEMAN SYSTEM. It consists of Gr I-Gr VI. After a perfect decompression Gr III-IV lesion will return to Gr I. But Gr V-VI lesion will return to Gr III-IV only.[7]

OBJECTIVES:

Study about the various causes for Facial Palsy and its percentages, Effects of various treatment protocols and its outcome after follow-up(6months to 2 ½ yrs).

STUDY DESIGN;

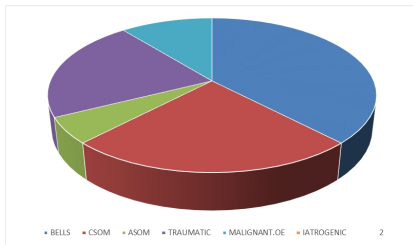
Retrospective Study.

MATERIALS AND METHODS:

Study was conducted in Department of Otorhinolaryngology and Head and Neck Surgery ,Government Thanjavur Medical College, Thanjavur, Tamil Nadu, India. Study period was September 2013 to August 2016 (3 years). Total number of cases included in this study was 39 (Thirty Nine Only).Only Lower Motor Neuron Facial Palsy included. .Study includes all age groups. All patients underwent HRCT Temporal bone to locate the pathology, Topognostic tests to identify the level of block of nerve conductive system, most of the cases subjected for Electro physiologic study and finally palsy graded by House-Brackmann grading system. Treatment protocols for Bells palsy are simple observation, observation with high dose steroid and antiviral drugs and surgical decompression of the nerve. For rest of the causes simple, modified radical and radical mastoidectomy with facial nerve decompression. Transcanal approach for traumatic cases. All patients are followed and treatment outcome assessed.

VARIOUS CAUSES OF FACIAL PALSY: [TAB-1]

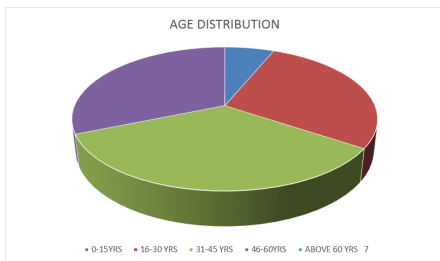
| CAUSES | NO.OF CASES(39) | PERCENTAGE (%) |
|-------------------|-----------------|----------------|
| 1.BELL'S PALSY | 14 | 36% |
| 2.COM –AAD | 7 | 18% |
| 3.COM –TTD | 2 | 5% |
| 4.TRAUMATIC PALSY | 8 | 20% |
| 5.MALIGNANT OE | 4 | 10% |
| 6.ASOM | 2 | 5% |
| 7.IATROGENIC | 2 | 5% |



PIE-DIAGRAM 1: DISTRIBUTION OF CAUSES FOR FACIAL PALSY.

AGE DISTRIBUTION:[TAB-2]

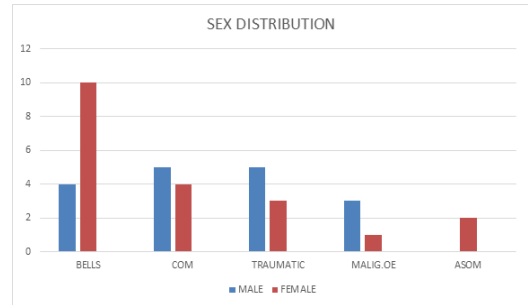
| AGE GROUP | NO.OF CASES | PERCENTAGE(%) |
|--------------|-------------|---------------|
| 0-15 YRS | 2 | 5% |
| 16-30YRS | 9 | 23% |
| 31-45YRS | 11 | 28% |
| 46-60YRS | 10 | 26% |
| ABOVE 60 YRS | 7 | 20% |



PIE DIAGRAM-2:AGE DISTRIBUTION.

SEX DISTRIBUTION:[TAB-3].

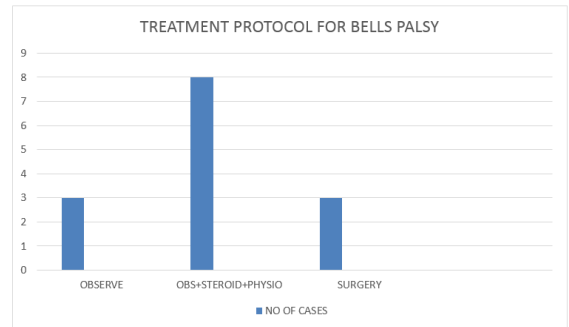
| CAUSE | MALE | FEMALE |
|-------------------|------|--------|
| 1.BELL'S PALSY | 4 | 10 |
| 2.CSOM -AAD | 4 | 3 |
| 3.CSOM-TTD | 1 | 1 |
| 4.TRAUMATIC PALSY | 5 | 3 |
| 5.MALIGNANT OE | 3 | 1 |
| 6.ASOM | 0 | 2 |
| 7.IATROGENIC | 1 | 1 |



BAR CHART-1:SEX DISTRIBUTION.

TREATMENT PROTOCOL FOR BELLS PALSY:[TAB-4].

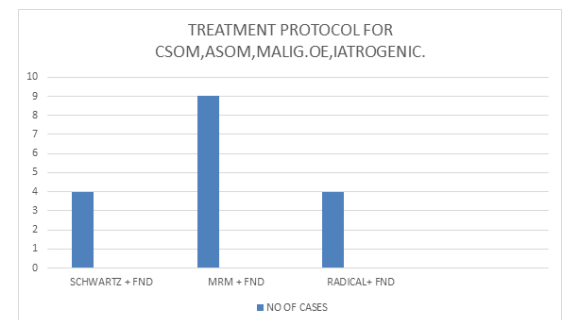
| TYPE OF TREATMENT | NO. OF CASES(14) | PERCENTAGE |
|----------------------|------------------|------------|
| OBSERVATION | 3 | 21.5% |
| OBSER+STEROID+PHYSIO | 8 | 57% |
| SURGICAL DECOMPRESS | 3 | 21.5% |



BAR CHART-2:TREATMENT PROTOCOL FOR BELL'S PALSY.

TREATMENT PROTOCOL FOR CSOM &ASOM& MALIGNANT.OE& IATROGENIC: [TAB-5]

| TYPE OF SURGERY | NO.OF CASES(17) | PERCENTAGE(%) |
|-----------------|-----------------|---------------|
| SCHWARTZ+FND | 4 | 23.5% |
| MRM + FND | 9 | 53% |
| RADICAL + FND | 4 | 23.5% |

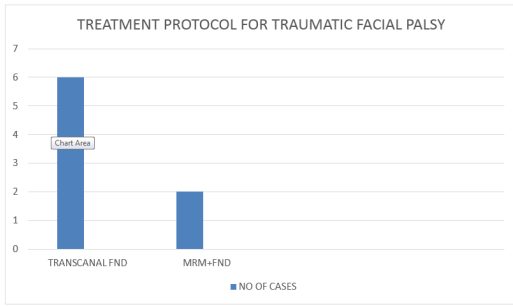


BAR CHART-3:TREATMENT PROTOCOL FOR CSOM ,ASOM, MALIGN.OE&IATROGENIC CAUSES.

TREATMENT PROTOCOL FOR TRAUMATIC FACIAL PALSY:

[TAB-6]

| TYPE OF SURGERY | NO.OF CASES(8) | PERCENTAGE (%) |
|-----------------|----------------|----------------|
| TRANS CANAL FND | 6 | 75% |
| MRM +FND | 2 | 25% |



BAR CHART-4:TREATMENT PROTOCOL FOR TRAUMATIC CASES. HOUSE –BRACKMANN GRADING COMPARISON:[TAB-7].

| CASES | PRE TREAT HB GRADE | POST TREAT HB GRADE |
|-------------------|--------------------|---------------------|
| 1.BELL'S PALSY | HB GR II-III | HB GR I-II |
| 2.COM –AAD | HB GR IV-V | HB GR II-III |
| 3.COM TTD | HB.GR III-IV | HB GR II-III |
| 4.TRAUMATIC PALSY | HB GR III-IV | HB GR I |
| 5.ASOM | HB GR II-III | HB GR I |
| 6.MALIGNANT. OE | HB GR V-VI | HB GR II-III |
| 7.IATROGENIC | HB GR V-VI | HB GR II-III |

RESULTS:

Table-1 & Pie chart-1 show the various causes for facial palsy. In our study facial palsy due to Bells Palsy are more in number (14) and constitutes 36%. Other causes are Traumatic (8), CSOM-AAD (7), CSOM-TTD (2), ASOM (2), Malignant Otitis Externa (4) and Iatrogenic (2) cases.

Tab-2 and Pie chart-2 shows the pattern of age group involvement. Age group of 31-45 years are involved more in number (11) and represents 28%, followed by 26% of 46-60 years of age group (10). Least commonly involved age group is 0-15 years.

In our study the overall incidence in male (21) is more than female (18). Tab-3 and Bar chart-1 reflects the sex wise incidence of facial palsy. But the incidence of Bells palsy more in females (10) than males (4). Like wise ASOM also presents only in female in our study.

Tab-4 and Bar chart-2 shows the treatment protocol response rate for Bells palsy. Simple observation, Observation plus High dose steroid plus Physiotherapy and Surgical Decompression are the three treatment protocols. Among this second one shows good results 57% (8 cases) followed by first and third options.

Treatment options for ASOM, CSOM, Malignant OE, and Iatrogenic causes of Facial Palsy are Simple Mastoidectomy, Modified Radical Mastoidectomy(MRM) and Radical Mastoidectomy with Facial Nerve Decompression(FND).Tab-5 and Bar chart -3 shows MRM with FND gives best results 53% (9 cases) followed by simple and Radical Mastoidectomy with facial nerve decompression.

Tab-6 and Bar chart-4 shows the treatment protocols for traumatic facial palsy. Trans canal facial nerve decompression give excellent results 75% (6 cases) followed by MRM with FND -25%.

Tab-7 shows the various grades of facial palsy according to House-Brackmann. It gives pre and post treatment results of all causes.

DISCUSSION:

Bell's palsy is the most common cause for facial palsy in our study and also goes similar to previous international studies[8]. Bell's palsy

occurs due to Viral infection (HSV, EBV, HIV) ,Vascular Ischemia ,Auto immune and Hereditary[9]. Majority are self limiting .Reactivation and replication of dormant virus occurs. PCR detects HSV in Post auricular muscles, endo neural fluids and saliva of bell's palsy patients.

Bell's palsy is typically diagnosis of exclusion. Thorough history and physical examination is essential to rule out other treatable or emergency causes. The American Academy of Neurology [AAN] guidelines 2012 shows that steroids are highly effective in Bell's palsy. Prednisolone dose was 1mg/kg. Diabetic patients with bell's palsy requires high dose[10].Antiviral drugs Acyclovir 400 mg five times daily for 7 days or Valacyclovir 1gm three times daily for 7 days beneficial. A 2004 cochrane review shows that good result will be seen when steroid and antivirals are used combined rather than separately.[11]. Benefits for medical management comes only if you start treatment within 4days. Surgery may be considered if there is no response upto 2 weeks. In 2011 Pereira et al explains the benefit of facial exercises in improving facial function and recovery.

Around 20-25 percent of head injuries are associated with temporal bone fracture .Symptoms are Hearing loss, Vestibular dysfunction, CSF Otorrhea and Facial palsy. Facial palsy occurs in 50% of Transverse fracture and 20% of longitudinal fractures. Conductive deafness common in longitudinal and Sensorineural deafness in transverse fractures. If more than 95% of degeneration occurs within 6 days of complete type palsy indicates poor prognosis. Transcanal facial nerve decompression shows good results. Early decompression gives better results.

Facial palsy in ASOM and CSOM are produced by Osteitis, Bone erosion, external compression ,oedema and inflammation of the nerve. Cholesteatoma is the most common cause for facial palsy among infective causes. It was produced by direct inflammation of nerve, by bacteria or by neurotoxic substances released by cholesteatoma matrix. Surgical results are directly related to the time interval between onset of facial palsy and the surgical intervention [12]. Facial nerve decompression is complete only after incision of perineurium.

Malignant otitis externa (Skull base Osteomyelitis) cases with adequate control of diabetic status and good immunity have less chances to get facial palsy. Drug of choice for this condition is double strength ciprofloxacin with proper wound debridement and regular followup.

Iatrogenic facial palsy can be avoided by thorough surgical anatomy of facial nerve course in temporal bone. Inappropriate size of the burr bit will damage facial nerve during Modified Radical Mastoidectomy at the stage of removal of bridge. Immediate management for the damaged segment will give better results.

Conclusion:

Proper Evaluation and Early Diagnosis with Timely Intervention and Regular Follow up is mandatory. Most of the Bell's palsy cases are managed by medical management and physiotherapy rather than surgery. Complete removal of cholesteatoma in hidden areas like facial recess and sinus tympani prevent the occurrence of facial palsy. Immediate decompression of facial nerve gives excellent results in traumatic cases.

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