



RETROSPECTIVE STUDY OF FACIAL NERVE DECOMPRESSION IN OUR INSTITUTE

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ABSTRACT

INTRODUCTION: Facial nerve paralysis occurs mainly due to Bell's palsy followed by Temporal bone trauma, Cholesteatoma. Surgical decompression plays a major role in all types of cases.

OBJECTIVES:

Study about the Effectiveness of decompression by various Approaches, and to know the injured or involved segments in various cases taken in this study.

STUDY DESIGN: Retrospective Study.

MATERIALS AND METHODS:

Study was conducted in ENT Department from Apr 2012 - Mar 2016. Total number of patients are 24. UMN type of Facial Palsy cases are excluded. All cases are followed regularly.

RESULTS:

Facial Palsy due to Temporal bone fracture are more in number followed by Cholesteatoma and Bell's palsy. Longitudinal fractures are common. Transcanal decompression was effective for traumatic palsy. Mastoidectomy with nerve decompression in other cases. Horizontal segment involved in more cases.

DISCUSSION:

Facial palsy in longitudinal fracture was delayed onset and incomplete & in transverse fracture it was immediate and complete paralysis. Temporal bone trauma also presents with hearing loss, vestibular disturbances and CSF otorrhea. Early decompression gives best results. Early diagnosis and management of cholesteatoma can prevent the development facial palsy. Eye care and Postoperative Physiotherapy also plays major role.

CONCLUSION;

Modified Radical Mastoidectomy with Facial Nerve Decompression approach was more effective than Simple Mastoidectomy with FND. Transcanal approach for traumatic palsy. Early diagnosis and decompression gives best results. Horizontal segment commonly involved in our study.

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

INTRODUCTION:

Pioneers related to Facial nerve are Gabriel Fallopius- explained about Fallopius canal, Sterling Bunnell- first Facial nerve suturing and grafting, Holmgren-Binocular Operating Microscope and Professor H. Vijayendra- Transcanal facial nerve decompression.

Facial nerve paralysis occurs due to Temporal bone fracture, Cholesteatoma, iatrogenic injury, ASOM and Bell's Palsy. Because of its long intra temporal course within a bony canal (fallopian canal), it was prone to damage compare to other cranial nerves. Facial Palsy will produce obvious disfigurement of face and indirectly produce psychological problems like depression. Among the various modalities of management Surgical Decompression of the nerve is very important one.

Depending upon the fracture line to the long axis of petrous pyramid, the fractures are divided into Longitudinal and Transverse. About 80% are longitudinal due to blow on temporal or parietal bone. It courses just anterior to bony labyrinth and injuring facial nerve around the perigeniculate ganglion level in 10%-20% of cases. Haemotympanum and conductive deafness are common clinical features in this type [1].

Occipital injury causes Transverse fracture. Sensorineural deafness and Vestibular dysfunction are common due to involvement of inner ear or IAC. 50% of cases presents with facial palsy. Commonest site of injury was Labyrinthine segment. Late onset with incomplete palsy have good prognosis. Immediate palsy is due to compression of nerve by fractured bony fragments and later on due to development of oedema around the nerve. Immediate onset with complete palsy needs early decompression [2].

Bell's palsy was usually acute onset, unilateral, self-limiting, non-progressive, and non-life threatening. Spontaneously resolved in 70% of cases by 6 months-1 year. Topo-diagnostic tests are useful to locate

the level. High dose Steroids, Antiviral drugs, Physiotherapy, and Eye care are the standard treatment upto 2-3 weeks. If there is no response then proceed with surgical decompression.

Facial palsy with Acute Suppurative Otitis Media are associated with fallopian canal dehiscence. Because of dehiscence infection can easily reach the nerve. It will become rapidly progressive beyond 72hrs [3]. In Cholesteatoma 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.

Iatrogenic facial palsy commonly occurs due to inadequate surgical anatomy of facial nerve. Common site was 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.

Facial Palsy severity was graded by HOUSE- BRACKEMAN SYSTEM. It consists of Gr I-Gr VI. After a perfect decompression Gr III-IV lesion it will return to Gr I. But Gr V-VI lesion will return to Gr III-IV only [4].

OBJECTIVES:

Study about the Effectiveness of Decompression by various Approaches, and to know the injured or involved segments in various cases taken in this study.

STUDY DESIGN:

Retrospective Study.

MATERIALS AND METHODS;

Study was conducted in Department of Otorhinolaryngology and Head and Neck Surgery, Government Thanjavur Medical

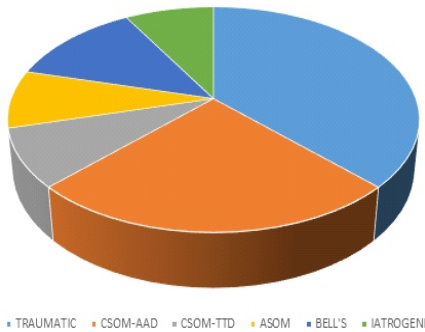
College, Thanjavur, Tamil Nadu, India. Study period was April 2012 to march 2016 (4 years). Total number of cases included in this study was 24 (Twenty Four Only). Upper Motor Neuron Facial Palsy cases are excluded. All age groups are taken into study. All patients underwent HRCT Temporal bone to locate the lesion, Topo diagnostic tests to identify the level. Most of the cases subjected for Electro physiologic study such as ENoG and EMG & finally palsy graded by House-Brackmann grading system.

Treatment approaches consists of Simple and Modified Radical Mastoidectomy with Facial Nerve Decompression and Transcanal Decompression. Response was assessed by comparing HB grading system. All cases were followed for minimum of one year. Postoperative Physiotherapy and Eye care also very important.

DISTRIBUTION OF CASES: [TAB-1]

CAUSES	NO.OF CASES(24)	PERCENTAGE(%)
1.TRAUMATIC PALSY	9	37.5%
2.COM –AAD	6	25%
3.COM –TTD	2	8.3%
4.BELL'S	3	12.5%
5.ASOM	2	8.3%
6.IATROGENIC	2	8.3%

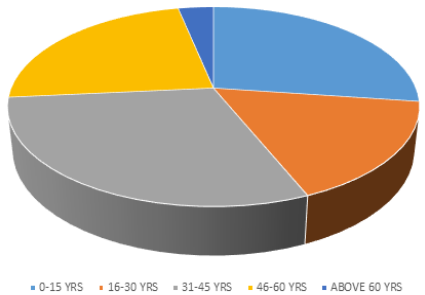
PIE CHART-1. DISTRIBUTION OF CASES



AGE WISE DISTRIBUTION : [TAB-2]

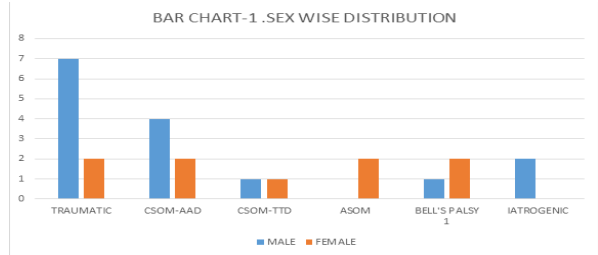
AGE GROUP	NO.OF CASES (24)	PERCENTAGE(%)
0-15 YRS	2	8.3%
16-30YRS	5	21%
31-45YRS	9	37.5%
46-60YRS	7	29%
ABOVE 60 YRS	1	4%

PIE CHART-2. AGE WISE DISTRIBUTION



SEX WISE DISTRIBUTION: [TAB-3].

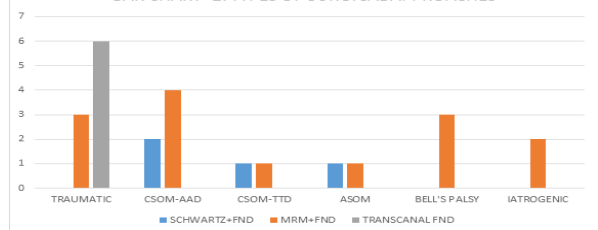
CAUSE	MALE	FEMALE
1.TRAUMATIC PALSY	7	2
2.CSOM -AAD	4	2
3.CSOM-TTD	1	1
4.BELL'S PALSY	1	2
5.ASOM	0	2
6.IATROGENIC	2	0



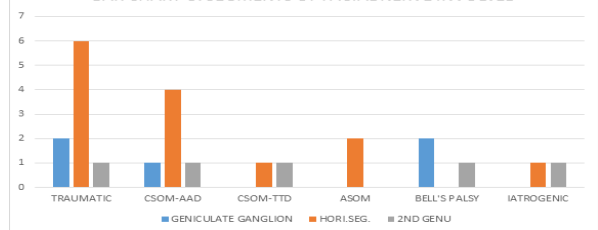
TYPES OF SURGICAL APPROACHES: [TAB-4]

CAUSE	SCHWARTZ+F ND	MRM+ FND	TRANSCANAL FND
TRAUMATIC	0	3	6
CSOM-AAD	2	4	0
CSOM-TTD	1	1	0
ASOM	1	1	0
BELL'S PALSY	0	3	0
IATROGENIC	0	2	0

BAR CHART -2. TYPES OF SURGICAL APPROACHES



BAR CHART-3. SEGMENTS OF FACIAL NERVE INVOLVED



HOUSE – BRACKMANN GRADING SYSTEM COMPARISON:[TAB-5]

CASES	PRE-OP GRADE	POST-OP GRADE
TRAUMATIC PALSY	III-IV	I-II
CSOM-AAD	IV-V	II-III.
CSOM-TTD	II-III	I-II
ASOM	II-III	I-II
BELL'S PALSY	III-IV	II-III
IATROGENIC	V-VI	II-III

RESULTS:

In our study Tab-1 and Pie chart-1 shows the distribution of cases. Traumatic 9 cases (37.5%) followed by Cholesteatoma 6 cases (25%), Bell's palsy 3 cases, ASOM-2, TTD-2 and Iatrogenic cases 2.

Age wise distribution of cases are shown in Tab-2 and Pie-chart-2. About 37.5% of cases (9) are 31-45 years age group followed by 7 cases (29%) belongs to 46-60 years group. Above 60 years are less in number.

Tab-3 and Bar chart-1 reveals sex wise distribution of cases in our study. Males are affected more in number 15 cases (62.5%). But the ASOM with facial palsy cases are involved only in females.

Surgical approaches followed in our study were displayed in Tab-4 and Bar chart-2. Transcanal approach(6 cases)was preferable than Modified Radical Mastoidectomy (3) for Traumatic cases. Overall MRM with FND was done for 14 cases (58%).Other than Traumatic cases Modified Radical Mastoidectomy with FND is the treatment of choice.

Bar chart-3 shows the involved and injured segments of facial nerve in various cases. Commonest segment injured was Horizontal or

Tympanic segment (14 cases) constitutes 58%, followed by Geniculate Ganglion (5 cases) and Second Genu (5 cases). Bell's palsy cases commonly involve around Geniculate Ganglion. All this levels can be confirmed by HRCT Temporal Bones and Topognostic tests and Intra operatively also.

Tab-5 shows the Pre and Postoperative HB grades of facial palsy. It reveals that Best recovery was seen in Traumatic cases, and least results seen in Iatrogenic cases. Generally the pre-op HB grade II-III will recover fully (near normal). For HB grade IV-VI it will return to II-III only. All these results achieved by timely decompression of nerve followed by proper postoperative care.



DISCUSSION:

Facial palsy leads to Functional and Cosmetic problems because it contains Motor, Sensory, and Parasympathetic fibres. So proper evaluation of patients, Early diagnosis and Timely intervention are very important. Most of the cases managed by Medical treatment. Our study includes only those patients not responded to medical management.

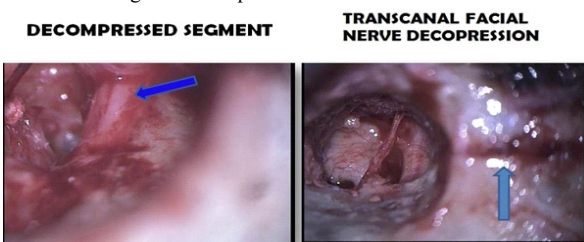
Schirmer test, and Stapedial Reflex test are important tests to locate level of lesion. Stapedial reflex test is most objective and reproducible one. Return of stapedial reflex within 3 weeks indicates good recovery, so this test is called as "Otolaryngologist's Electromyography" by Adour[5]. Surgical Decompression consists of decompression of the nerve few millimetre in front and behind of the involved segment.

Incidence of facial palsy in Cholesteatoma was 0.16% to 5%. Bony erosion in Acute stage is due to Hyperemic Decalcification and in Chronic stage by Chronic Osteitis. In case of severe palsy it may be due to Nerve interruption or Fibrosis of facial nerve[6]. If the facial nerve palsy was progressive beyond 3 weeks and no recovery by 6 months it may be due to Tumours of facial nerve such as Schwannoma and Haemangioma.

Treatment protocols for Bell's palsy consists of High dose oral steroids, Antiviral drugs, physiotherapy, eye care and observation for 2-3 weeks. If there was no response then surgery is the treatment of choice.

Nerve stimulation should be done after 3-7 days of injury. Loss of nerve stimulus within one week and more than 90% Degeneration in ENoG within 2 weeks requires surgical management[7].

Injury in horizontal segment can be managed by simple mastoidectomy with facial nerve decompression. Modified Radical Mastoidectomy with FND in cases of involvement near second genu and Horizontal segments. For Trans canal approach and simple mastoidectomy with FND requires Canalplasty. After complete canalplasty it is possible to visualise the 360 degree of tympanic annulus in a single microscopic view.



audiological evolution is mandatory. Reconstruct the ossicular chain in the same sitting or second sitting in case of conductive deafness. Commonly incus was reshaped and repositioned[8].

Facial nerve Decompression can be done by Barber-Pole Technique. In this method the thickness of Fallopiian canal reduced upto the thickness of egg shell (Egg Shelling) in Vertical segment -Posteriorly, At 2nd genu-Antero laterally and in horizontal segment -Antero inferiorly. Unroofing or Skeletanisation of the nerve upto 180 degree (more than 2/3rd of circumference of nerve) is very important. Decompression is complete only after incision of Epineurium. Immediately after the incision of epineurium the nerve become a bulged one and oedema fluid comes out. Incision of epineurium should be always Retrograde in the direction of Stylomastoid foramen to Geniculate Ganglion by [9].

Recovery depends upon Aetiology, Severity of paralysis, Degenerative process, Neuronal factors, Time interval between the of onset of facial palsy to surgery and patient's Age and other systemic comorbidity. The common and dreadful complication of decompression was permanent facia palsy[10]. Even a single nerve fibre damage can produce permanent damage.



CONCLUSION:

Modified Radical Mastoidectomy with Facial Nerve Decompression was done commonly than other approaches. Transcanal Facial nerve Decompression for traumatic cases. Horizontal segment was commonly involved in our study. Postoprative physiotherapy, Eye care and Regular follow up also important for the achievement of excellent results.

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Hearing status is very important in case of traumatic cases. Conductive deafness was due to Ossicular disruption and Haemotympanum. So