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## Post Mastoidectomy Delayed Facial Nerve Palsy – A Surgeon's Short-Lived Nightmare

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### ABSTRACT

Post mastoidectomy facial nerve palsy is seen either immediately or after some delay following surgery. Early diagnosis and treatment is key to prevent fatal complications. Methodology: A set of 3 case series was studied who developed facial palsy after 7 to 10 days of uneventful mastoid surgery. Serial photographs were taken to document the progression of the patients from disease to recovery after instillation of therapy. Results - All 3 patients completely recovered within 30 days. Conclusion: Delayed facial nerve palsy is rare. It can be due to virus reactivation, surgical stress, or laceration of the chorda tympani nerve with a resultant retrograde facial nerve edema. But with timely presentation & management, it has a good prognosis and recovery rate. A combined approach from the Otolaryngologist and the Physiotherapist aids in the timely improvement of the patient.

**Keywords:** Bell's palsy, Facial Nerve Palsy, Mastoidectomy.

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## INTRODUCTION

Facial expression is the most valued possession human beings have. Paralysis of facial muscles can cause severe disfigurement in affected persons. It causes psychological and emotional trauma. The facial nerve provides motor, sensory, and parasympathetic innervation to the head and neck.<sup>1</sup> The functional and aesthetic consequences of facial nerve paralysis can potentially be physically and psychologically devastating. A complete history and thorough examination should be the primary focus of the treating physician. Facial palsy is one of the immediate post-operative complications of ear surgeries. But delayed facial nerve palsy is a rare complication of ear surgeries. It occurs after more than 72 hours of an uneventful ear surgery. Shea described this phenomenon as “five and a half day syndrome,” meaning that all his personal observations shared the same time lag from surgery.<sup>2</sup> The objective of this study was to review all cases of delayed facial nerve palsy following cortical mastoidectomy for Chronic Otitis Media of tubotympanic type in patients who underwent surgery at KLEs Dr Prabhakar Kore Hospital & Medical Research Centre.

## MATERIALS AND METHOD

362 cortical mastoidectomy surgeries have happened in 2 years at our Institution. Of these, 3 cases (0.8%) of delayed facial paralysis have occurred among the patients. The clinical features and the management strategy employed has been discussed below.

STUDY DURATION- May 2017-May 2019.

### CASE REPORTS:

#### Case- 1

A 40 year old lady, who underwent right cortical mastoidectomy with tympanoplasty for right chronic otitis media, mucosal type with moderate hearing loss without any complications, presented to us on her 9th post-operative day with House-Brackmann grade IV facial palsy on the right side after an episode of fever of moderate grade. On otoscopy, graft was in situ. There was no evidence of tenderness or swelling in the mastoid region. Left ear was normal. Rest of ENT examination was normal. (Image-1)

#### Case 2

A 32 year old lady , who underwent right cortical mastoidectomy with tympanoplasty for right chronic otitis media, mucosal, active with moderate hearing loss without any complications, presented to us on her 10th post-operative day with House-Brackmann grade IV facial palsy on the right side after an episode of fever of moderate grade. On otoscopy, graft was in situ. There was no evidence of tenderness or swelling in the mastoid region. Left ear was normal. Rest of ENT examination was normal. (Image 2)

#### Case 3

A 38 year old lady, who underwent left cortical mastoidectomy with tympanoplasty for left chronic otitis media, mucosal, active with moderate hearing loss without any complications, presented to us on her 8th post-operative day with House-Brackmann grade 3 facial palsy on the left side after an episode of fever of moderate grade. On otoscopy, graft was in situ. There was no evidence of tenderness or swelling in the mastoid region. Right ear was normal. Rest of ENT examination was normal. (Image 3)

## RESULTS AND DISCUSSION

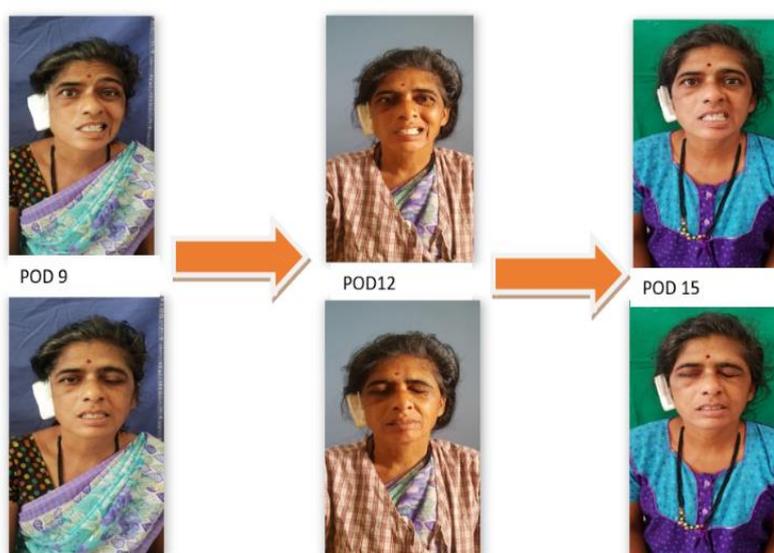
All patients had undergone cortical mastoidectomy with Type 1 Tympanoplasty with no evidence of middle ear pathology detected intra operatively. All cases were operated by the same operating team. All 3 patients were started on Broad spectrum Antibiotics, Dexamethasone 8 mg IV BID slowly tapered down over 10 days, Acyclovir 400mg TID for 7 days, ear drops containing Neomycin, Beclomethasone and Clotrimazole, Ciprofloxacin eye drops and eye care was given. Daily Physiotherapy was given for facial muscles. Within 3 days of therapy patients started showing tremendous recovery in the form of improvement of the grading to Grade 2. No steroids were given post operatively to any of the patients. Complete recovery was seen within 30 days.

Facial nerve palsy is seen either immediately or after some delay following surgery. Immediate palsy may be due to local anaesthetics used for infiltrations and may regress within a few hours. In the case of delayed facial palsy, the symptom occurs several days or even weeks after surgery. The most popular theory related to the explanation of delayed facial palsy at present is the reactivation of dormant viruses<sup>5</sup>. Reversible delayed facial paralysis is usually due to edema causing compression of nerve fibers<sup>6</sup>, decreased blood supply to facial nerve which gets damaged during surgeries, due to heat or inflammation due to drilling which can cause palsy in the early post-operative period<sup>7</sup>. Both the thermal effect of the drill<sup>7</sup> and the elevation of the tympanomeatal flap can reactivate viruses resting inside the ganglion geniculi, facial nerve, or facial nuclei. It is commonly seen after acoustic neuroma surgeries (2.2-29%)<sup>1</sup>. It has also been described after vestibular neurectomy (0- 18%), stapes surgery (0.5-1%), endolymphatic sac surgery(1%), cochlear implantation surgery(0.4-0.7%) and mastoidectomy (0.38-1.4%)<sup>(8)</sup>

In our series, all 3 patients were females aged between 30-40 years of age, who had a history of varicella zoster infection during their childhood. All patients were not from same locality and presented at different times of the year and were not associated with any co morbidities. All the patients presented to us in their post-operative period between 8th to 10th day with Grade 3 to 4 House Brackmann Grading. Zohar and Laurian hypothesized that such a Bell's palsy like condition may be provoked by surgical stress, assuming that this was reinforced by

the fact that patients presenting with facial palsy generally exhibited trigeminal sensory deficits on the same side <sup>1</sup>. The viruses can be reactivated during periods of generic temporary depression of the immune system induced by physical or emotional stress, concurrent bacterial or viral infections, neoplasms, mechanical or surgical trauma, including local surgical stress. <sup>2</sup> In delayed facial nerve, an isolated increase in serum anti-VZV IgG antibodies has been reported in literature confirming the suspicion of viral reactivation <sup>9,10</sup>. The surgical trauma as well as the induced immunosuppression following surgery and the use of exogenous steroids may predispose to reactivation of the viruses, which are normally dormant in the geniculate ganglion. <sup>3</sup> Prognosis is generally good if the palsy does not progress to complete paralysis. Patients with complete paralysis have a more variable prognosis, which ranges from normal function to permanent total paralysis. This could be due to edema around facial nerve due to surgery. Steroids are the important first line management for this condition. Intra-operative decompression of the meatal foramen has been used with some success in a few studies. Acyclovir has been advised by a few. Acyclovir can be given for patients with history of viral activation as prophylaxis to delayed facial palsy <sup>4</sup>. Geral et al suggested the standard postoperative steroid regimen was 4 mg of dexamethasone every 6 hours, tapered over 5 to 7 days postoperatively. <sup>3</sup> The recovery time after Delayed facial palsy onset ranges from 2 to 270 days (mean 45±43 days) with I-II final House Brackmann grade in all the reported cases, regardless of the therapies.

There is no clear cut guideline for management of this emergency. Timely supportive presentation to the Otolaryngologist along with appropriate supportive treatment for right duration of time is of paramount importance in order to alleviate the symptoms and give relief to the patient.



**Image 1: Case Report 1 showing series of images depicting progression of the patient from presentation to recovery**



**Image 2: Case Report 2 showing series of images depicting progression of the patient from presentation to recovery**



**Image 3: Case Report 3 showing series of images depicting progression of patient from presentation to recovery**

## SUMMARY

- Post mastoidectomy facial nerve palsy is seen either immediately or after some delay following surgery.
- Early diagnosis and treatment is key to prevent fatal complications.
- It can be due to virus reactivation, surgical stress, or laceration of the chorda tympani nerve with a resultant retrograde facial nerve edema
- A combined approach from the Otolaryngologist and the physiotherapist aids in the timely improvement of the patient.

## CONCLUSION

Delayed facial nerve palsy is rare. It can be due to virus reactivation following surgical stress, intraoperative trauma, or laceration of the chorda tympani nerve with a resultant retrograde facial nerve edema. All of these can be provoking etiological factors. But it has a good prognosis and recovery rate if presented and treated in time by the Otolaryngologist. A combined approach from the Otolaryngologist and the physiotherapist aids in the timely

improvement of the patient. However larger studies sharing details of such encounters at multiple centres is required to evaluate and formulate an algorithmic guideline.

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