

## Incidence of Facial Nerve Canal Dehiscence in Primary Cholesteatoma Surgery: A Prospective Clinical Study

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### Abstract

**Background:** Chronic otitis media surgery is the most prevalent operation in the field of otology, particularly in developing countries with one of the ominous intra-temporal complications being facial nerve paralysis. **Material and Methods:** After written informed consent, this prospective clinical study was carried out in a tertiary care hospital in Bihar. Inclusion criteria was all canal wall down tympanomastoidectomy in patients who suffers from chronic otitis media. All patients with bells palsy, tumours, history of traumatic fracture of temporal bone and patients with any documented congenital anomaly were excluded from the study. **Results:** Intra-operative findings under high magnification microscope examination revealed dural plate dehiscence in 29 patients (36.25%). In 6 patients (7.5%) we encountered labyrinthine fistula. Sigmoid sinus dehiscence was seen in 7 patients (8.75%). Facial canal dehiscence was seen in 13 (16.25%) patients. Among these 13 patients, most common site was horizontal segment of facial canal (11 patients). **Conclusion:** Otorrhea (90%) is the most common finding in patients with long standing disease for more than 10 years followed by hearing loss (73.7%). facial nerve paralysis was associated in only 2 patients as relatively rare findings. external auditory canal polyp was present in 18.7% and postauricular abscess / postauricular fistula in 27.5% cases. Facial canal dehiscence was seen in 16.25% cases with horizontal part being the most common site.

**Keywords:** Chronic otitis, Surgery, Bells palsy, Tumours.

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### Introduction

Chronic otitis media surgery is the most prevalent operation in the field of otology, particularly in developing countries with one of the ominous intra-temporal complications being facial nerve paralysis. Dehiscence of the fallopian facial canal is

caused by congenital anatomical variation, inflammatory or infectious involvement, or iatrogenic procedures[1].

Facial canal dehiscence increases the risk of facial nerve trauma in chronic otitis media surgery. Facial canal dehiscence may be an

anatomical normal variation due to the congenital process or association with chronic otitis media, particularly with cholesteatoma. One of the most unpleasant intra-operative complications of mastoid surgery is facial nerve trauma. The tympanic segment and second genu of the facial nerve are most commonly involved by cholesteatoma. However, the mastoid portion of the nerve may be at risk, but the involvement of the geniculate ganglion is less common[2,3].

### Material and methods:

After written informed consent, this prospective clinical study was carried out in a tertiary care hospital in Bihar. Inclusion criteria was all canal wall down tympanomastoidectomy in patients who suffers from chronic otitis media. All patients with bells palsy, tumours, history of traumatic fracture of temporal bone and patients with any documented congenital anomaly were excluded from the study.

Preoperative clinical data and intra-operative findings were documented properly. Preoperative clinical findings included sign and symptoms pre-operatively such as hearing loss, otalgia, otorrhea, vertigo, and facial nerve paralysis, external auditory canal polyp and postauricular abscess. Intra-operative findings included all abnormal or pathologic detections during surgery such as labyrinthine fistula, dural plate or sigmoid sinus dehiscence.

Facial canal dehiscence was defined as the lack of bony covering over the facial nerve in tympanic and mastoid segment of the facial nerve. Assessments were performed by visual inspection under operating microscope with high magnification and also by palpation with a blunt pick. The locations of Facial canal dehiscence were recorded depending on whether it was located in (1) horizontal segment or (2) vertical segment.

### Result:

80 ears underwent tympanomastoid surgery which met the inclusion criteria. The age of patients ranged from 9 years to 65 years. There were 36 females and 44 males.

The most common complains among the patients in study group were otorrhea (90%) in which disease was long standing for more than 10 years. hearing loss (73.7%), otalgia (18.7%), vertigo (10%) and facial nerve paralysis (2.5%) were other associated findings. We detected preoperative otologic signs of external auditory canal polyp (15 patients: 18.7%) and postauricular abscess / postauricular fistula in 27.5% patients.

Intra-operative findings under high magnification microscope examination revealed dural plate dehiscence in 29 patients (36.25%). In 6 patients (7.5%) we encountered labyrinthine fistula. Sigmoid sinus dehiscence was seen in 7 patients (8.75%). Facial canal dehiscence was seen in 13 (16.25%) patients. Among these 13 patients, most common site was horizontal segment of facial canal (11 patients).

### Discussion:

Female predominance was seen by Bulja D et al[1] and Bucak A et al[2]. There was male preponderance in our study as also found by Ozbek C et al[3] whereas, an equal sex ratio was seen in the study by Lin JC et al[4]. Slight Male predominance in our study may be due to social disparity in our society.

In the present study, prevalence of dehiscent facial nerve was seen in 16.25% patients. Similar results were seen by Gulustan F et al<sup>5</sup> in 23.6% of the cases. Martino ED et al<sup>6</sup> found that prevalence of only 6.4% whereas Bulja D et al found the prevalence to be 33.8%, which was higher than our findings. Relatively high incidence of fallopian canal dehiscence in our study may be due to late presentation and poor socio-economic profile of patients.

Out of the total patients with fallopian canal dehiscence, maximum had a dehiscence at

the horizontal segment of facial canal. Lin JC et al and Ozbek C et al also found tympanic segment as the most common dehiscence site.

#### **Conclusion:**

Otorrhea (90%) is the most common finding in patients with long standing disease for more than 10 years followed by hearing loss (73.7%). facial nerve paralysis was associated in only 2 patients as relatively rare findings. external auditory canal polyp was present in 18.7% and postauricular abscess / postauricular fistula in 27.5% cases. Facial canal dehiscence was seen in 16.25% cases with horizontal part being the most common site.

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