

## “A study on fate of traumatic tympanic membrane perforation”

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### Abstract

TTMF is very common in daily day to day life & highest incidence occur by slap injury (by teacher to student, wife to her husband etc.) & also age group 20-30 years old male, by teachers 5-15 years, by husband 25-35 years females. In these type of injuries mild conductive hearing loss most commonly found, in some cases SNHL also finding- blast injury, sports injury or RTA. The prognosis of tm perforation is excellent either certainty of time with variation of 45-90 days.

**Keywords-** Road traffic accident, Sensory neural hearing loss, Conductive hearing loss, Traumatic tympanic membrane perforation, Tympanic membrane, External auditory canal.

### Introduction

The first recorded use of silver nitrate to stimulate closure of tympanic membrane perforations is by William Wilde in (1848)<sup>(22)</sup>. Trauma generally is blight on our society and it is a major cause of morbidity and mortality in any society<sup>(23)</sup>. TTMF most commonly seen in Otorhinolaryngology OPD. The pathway for conduction of sound via its character of vibration<sup>(1,2,3,4)</sup>. The common cause of increase of cases due to domestic violence & Road traffic accident (RTA)<sup>(5)</sup>. TM is very thin & rupture by sudden increase air pressure in external auditory canal (EAC) by RTA, blast injury, slap<sup>(6)</sup>.

Closing a perforation has the following advantages like improvement in hearing, that the patient can tolerate getting water in to the ear like swimming, taking shower etc. and that recurrent ear discharges is unlikely to occur during upper respiratory tract infections<sup>(24,25)</sup>. Sometime it occurs by self-cleansing of own ear or their children ear, scraping by safety pin, match stick, warm oil, caustic or thermal burn & syringing in ENT OPD & also by barotrauma<sup>(7)</sup>. Spontaneous healing of TTMF is very good but spontaneous healing of perforated TM is controversy<sup>(8)</sup>.

Human body have complex temporal bone, in which many vital structure found eg-cochlea, facial nerve. In RTA involvement of all these structure in such type of manner blunt trauma, laceration, avulsion of pinna, with TM perforation<sup>(9-14)</sup>. Sometimes ossicles & inner ear was affected hearing loss is depends on the side of trauma & size of perforation by some authors but results found to be conflicting & inconclusive<sup>(15)</sup>. Traumatic perforations often occur in the healthy members of the community; and generally the prognosis is excellent<sup>(20,21)</sup>.

### Aim & Objectives

- Etiology of TTMF.
- Degree & type of hearing loss.
- Prognosis & outcome.

### Observation & Results

#### 1. Age

5-20 years=8 cases  
21-35 years=12 cases  
35-50 years=7 cases  
Above 50 years=3 cases

#### 2. Etiology

Slap injury=12 cases  
RTA=7 cases  
Self-trauma=3 cases  
Syringing=3 cases  
Crackers=3 cases  
Sports injury=1 case  
Barotraumas=1 case

#### 3. Sex

Male was 18 & female was 12

#### 4. Source of Slap

Husband=6 cases  
Teacher= 3 cases  
Assault= 3 cases

#### 5. Degree of Hearing Loss

Mild=20 cases  
Moderate=5 cases  
Severe=3 cases  
Maligners=2 cases

#### 6. Site of Perforation

Postero-inferior=22 cases  
Antero-inferior=3cases  
Large central=5

In my study 30 cases was noted with TTMF from 2011-2015 in Otorhinolaryngology OPD of GMC Kota & my home practice OPD. These all patients were satisfactorily examined by otological examination, otoscopic examination, PTA, TFT. TTMF was seen & hearing loss noted. These observation were found

during examination & investigations. Out of 30 cases 18 (54%) were male & rest were 12 (46%) female, so ratio was 3:2. 28 cases was unilateral perforation but 2 case bilateral perforation seen. 22 cases were mild conductive hearing loss, 5 were moderate hearing loss found & also 3 cases were mixed hearing loss. Age from 5-75 years ranges, mostly perforation found as our results in postero-inferior part of tympanic membrane. 25 were small perforation & 5 were large central.

Etiology of TTMF most commonly occurs by slap injury 12 cases (40%), RTA 7 (23%) cases & rest others. TTMF in 85% cases heals spontaneously & healing time was ranging from 45-90 days, depend on size, site or etiology of perforation. In one case facial nerve & CSF leak was occurred, which was RTA case, also recovered 95% by medication. One case was healed with tympano-sclerotic patch, causes conductive hearing loss. 3 cases were undergone for tympanoplasty procedure. Those patients who suffered with TTMF with self-injury combined with otitis externa.

### Discussion

In our study commonest sign or symptom was earache for first few hours then tinnitus, hearing loss & bleeding from affected ear. Slap injuries are most common etiology in our study. 12 cases most commonly slapped by their husband or RTA is 2<sup>nd</sup> most common. Our study is similar to the study of Rahmen et AL (2012)<sup>(5)</sup>, Afolabi et al (2009)<sup>16</sup>, Sarjomanma et al (2014)<sup>7</sup>, Aljuboori A.N. et al(2014)<sup>3</sup>. Davood M.R. et al(2014)<sup>2</sup> also reported blast injury most common in their study. In our study RTA cases with temporal bone fracture longitudinal or transverse fracture one case was with facial paralysis & CSF leak.

We also observed that syringing itself causes injury, self-instrumentation (match stick, safety pin), also causes of some cases of TTMF as wrote above. Left ear is more common than right from TTMF as we seen in study of Sarjan et al (2014)<sup>(7)</sup>. Afolab OA et al (2009)<sup>(16)</sup> but T.O. Adedeji et al(2014)<sup>(17)</sup> reported right ear more common. In our study Post-inferior quadrant of TM was more affected. 22 cases out of 30 cases was in post inferior part of TM while in anteroinferior only 3 cases was found & large central found in 5 cases. In all type of TTMF small size perforation inverted in the middle ear with ragged margin. Our study is similar with Dawood MR (2015)<sup>(2)</sup>, in which study small perforation reported 51.5% also similar reported in Lan Z-C et al (2011)<sup>(8)</sup>. 3 pts. Was needed for Tympanoplasty which was affected by RTA, blast injury, sports injury, fire crackers. These study similar to<sup>(2,5,3,4)</sup>. Spontaneous healing of TTMF was associated with size of perforation & etiology of perforation, conservative & tympanoplasty operation both was given 100 % results.

After RTA which patient come within 2-3 days was good results from facial paralysis or other finding?

We advise the keep the ear dry by avoiding water in the external auditory canal. Our this study also similar with Lou Z.C. et al (2011)<sup>(8)</sup>. Zengeai Lou et al (2013)<sup>(18)</sup> Zafarullah (2012)<sup>(19)</sup>.

Ali Juboori A.N. et al (2014)<sup>(3)</sup> studied that rate of healing was reported faster in young adults people because of higher protease turn over in these age group. My wife Deepti Ramachandra Meena is very helpful nature & always ready to help anytime to the patients. She is gold hearted & she is always listen in vacant time out of her service period. She specially help cancer, Tubercular or end stage disease patients. She counsel the patient for the treatment & other various method like palliative procedure to end stage patients. She always helps them assaulted by their husbands.

### Conclusion

Overall healing in all cases with traumatic perforations with (either conservatively or with tympanoplasty) groups were 100%. Results. It is very common in day to day life and the highest incidence is by slap and in males in age group between 20 -30years of age and mild conductive hearing loss was seen in majority of the cases and the perforation was mainly seen in poster inferior quadrant of tympanic membrane.

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