

Assessment of tympanic membrane perforation in adult population- An Original Research

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ABSTRACT:

Background: The incidence of perforations of the TM due to trauma is on the increase consequent to trauma, and increased violence and accidents seen in present-day life. The present study was conducted to assess tympanic membrane perforation in adult population.

Materials & Methods: 80 patients with tympanic membrane perforation of both genders were included. Clinical parameters such as cause of injury, side, site, complaints and type was recorded.

Results: Left side was involved in 38 and right side in 42, Site was anterior in 46 and posterior in 30 and undefined in 4. Complaint was otalgia in 78, tinnitus in 70, otorrhoea in 80 and vertigo in 14. Cause was RTA in 32, domestic assault in 28 and armed robbery in 20. Type was penetrating in 56 and non-penetrating in 24. The difference was significant ($P < 0.05$).

Conclusion: Most common side involved was right and road traffic accident was the main reason for tympanic membrane perforation.

Key words: tympanic membrane perforation, road traffic accident, middle ear

INTRODUCTION

The tympanic membrane (TM) is a delicate translucent fibrous membrane which separates the external from the middle ear, and it produces a rupture, tear or perforation when traumatized.¹ The TM injury can predispose to middle ear infection which has grave consequences including facial nerve paralysis, formation of cholesteatoma, perilymph fistula, intracranial infections and may require ear and intracranial exploration.² Significant morbidity or mortality can occur when traumatic ear injuries are associated with damage to contiguous facial structures and the brain. Effective management is expedient while prevention and reduction of complications must be given utmost attention to achieve a good outcome.³

The incidence of perforations of the TM due to trauma is on the increase consequent to trauma, and increased violence and accidents seen in present-day life. Ear buzzing, earache, and hearing loss are the major symptoms of TM perforation.⁴ In addition, TM perforation can increase the risk for middle ear infection or otitis media. Although most small perforations of the eardrum can be spontaneously healed, large TM perforations should be treated with myringoplasty.⁵

Simple traumatic tympanic membrane perforation (TTMP) remains the most common type of trauma-induced otologic dysfunction. Treatment of TTMP range from inactive watchful waiting, active intervention to surgical intervention. Otolaryngologists have however been advised to be reluctant in offering surgical intervention in cases of TTMP without significant

symptoms as most patients will heal spontaneously within two months.⁶ The present study was conducted to assess tympanic membrane perforation in adult population.

MATERIALS & METHODS

The present study comprised of 80 patients with tympanic membrane perforation of both genders. All were enrolled with their written consent.

Data regarding their age, name and gender was recorded. Clinical parameters such as cause of injury, side, site, complaints and type was recorded. Results were tabulated for statistics analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

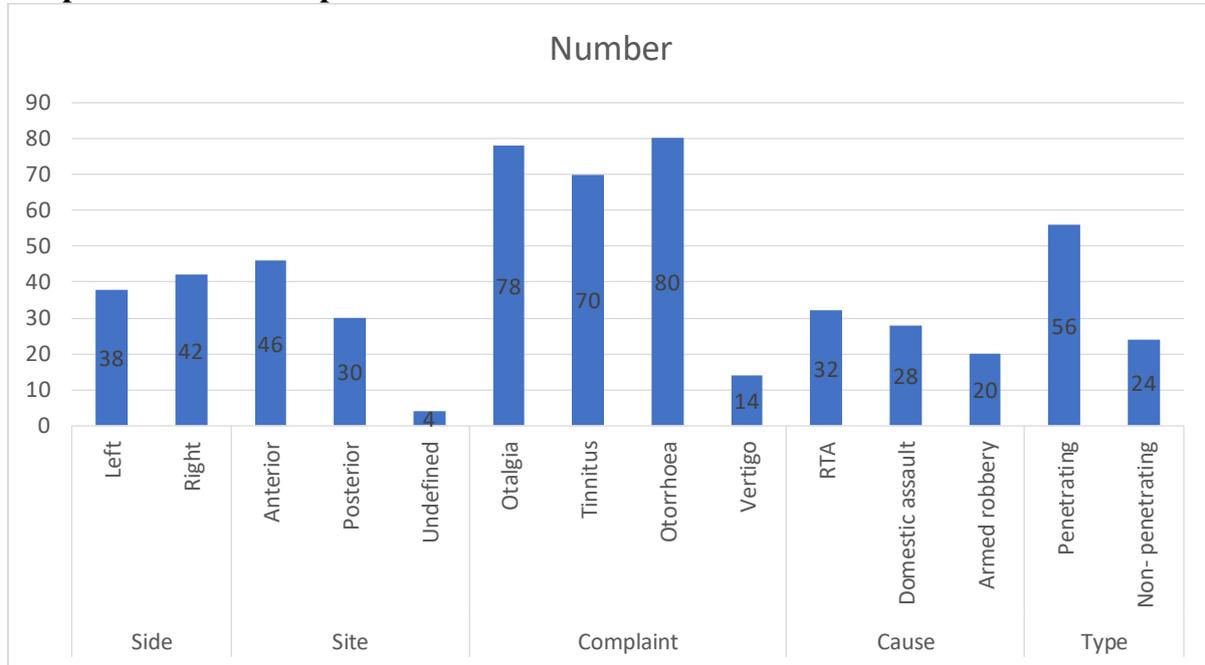
Total- 80		
Gender	Males	Females
Number	45	35

Table I shows that out of 80 patients, males were 45 and females were 35.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Side	Left	38	0.07
	Right	42	
Site	Anterior	46	0.05
	Posterior	30	
	Undefined	4	
Complaint	Otalgia	78	0.15
	Tinnitus	70	
	Otorrhoea	80	
	Vertigo	14	
Cause	RTA	32	0.80
	Domestic assault	28	
	Armed robbery	20	
Type	Penetrating	56	0.01
	Non- penetrating	24	

Table II, graph I shows that left side was involved in 38 and right side in 42, Site was anterior in 46 and posterior in 30 and undefined in 4. Complaint was otalgia in 78, tinnitus in 70, otorrhoea in 80 and vertigo in 14. Cause was RTA in 32, domestic assault in 28 and armed robbery in 20. Type was penetrating in 56 and non- penetrating in 24. The difference was significant ($P < 0.05$).

Graph I Assessment of parameters

DISCUSSION

Traumatic tympanic membrane (TM) perforation is an injury of the eardrum, which is frequently faced by otolaryngologists.⁷ Common causes to traumatic TM perforation include rapid change in ear pressure (eg, occurring when flying and scuba diving), thermal or chemical burns, direct penetrating trauma, and barotrauma. The primary mechanism of conductive loss caused by a perforation is a reduction in ossicular coupling caused by a loss in the sound pressure difference across the TM.⁸ Perforation-induced losses are greatest at the lowest frequencies and generally decrease as frequency increases. Perforation size is an important determinant of the loss; larger perforations result in larger hearing losses.⁹ The present study was conducted to assess tympanic membrane perforation in adult population.

In present study, out of 80 patients, males were 45 and females were 35. Lou et al¹⁰ reported that slap or a fist by a spouse or lover was responsible for more than half of cases of TTMP in their study. Spousal abuse is both a legal and a social issue, however this action should be condemned. Equally condemnable is the assault from state security personnel, and they are also enjoined to desist from assault of the citizenry even if a criminal act has been committed. We found that left side was involved in 38 and right side in 42, Site was anterior in 46 and posterior in 30 and undefined in 4. Complaint was otalgia in 78, tinnitus in 70, otorrhoea in 80 and vertigo in 14. Cause was RTA in 32, domestic assault in 28 and armed robbery in 20. Type was penetrating in 56 and non-penetrating in 24. Darad et al¹¹ correlated the size and site of perforation with hearing loss in chronic suppurative otitis media (CSOM). Infection was the most common etiology of tympanic membrane perforation in 92 (92%) cases and trauma in 08 (08%) with otorrhea as the most common presenting complaint. Half of the cases were in the age group of 20–30 years. Seventy-nine percentage cases had mild hearing loss whereas 19% had moderate hearing loss. Anterior quadrant perforations on an average had

31.4 dB hearing loss, whereas there was 43.9 dB average hearing loss in posterior quadrant perforations.

Gao et al¹² enrolled 370 patients with traumatic TM perforations of different sizes. These patients were randomly assigned to control group and treatment group. In the treatment group, a sterile cotton patch with sea buckthorn oil was used to cover the TM perforations. In the control group, patients were treated with a sterile cotton patch. The healing rate and time were compared between the two groups. They found that the overall healing rate was significantly higher in the treatment group than in the control group. For middle and large TM perforations, sea buckthorn oil treatment led to a significant increase in the healing rate. At 2 months after injury, the duration of healing was, generally, shorter in the treatment group than in the control group ($P < 0.05$).

CONCLUSION

Authors found that most common side involved was right and road traffic accident was the main reason for tympanic membrane perforation.

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