

## Study of Conservative Treatment in Traumatic Perforation of Tympanic Membrane and Its Clinical Outcome

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### Abstract:

**Introduction:** A large majority of patients with history of injury over the temporal region present with traumatic perforation of tympanic membrane the ENT outpatient department or emergency department

**Aim:** To assess the clinical outcome in patients with conservative treatment for traumatic perforation of tympanic membrane at the end of three months follow-up.

**Materials and methods:** It a prospective study conducted at McGann Teaching Hospital, Shimoga from Aug 2014 to July 2015. 70 (72 as two patient had bilateral ear involvement ) patients who presented with injury to ear were examined and found to have traumatic perforation of tympanic membrane all patients were treated conservatively and followed up three months.

**Result:** Majority of the patients were between 21-30 year age group male to female ratio is 3.1 :1\ 42.8% gave history of assault / slap over the corresponding side of the face. 37.14% presented with history of RTA. 14.2% history of self fall. 61 patients out of 70 had hard of hearing and tinnitus as associated symptoms. at the end of three months 63 perforated tympanic membrane showed spontaneous healing with resolution of tinnitus and those with mild to moderate conductive hearing loss (27 Patients ) showed remarkable improvement in hearing at the end of three months..

**Keywords:** Tympanic membrane, traumatic perforation, spontaneous healing.

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### I. Introduction

A large majority of patients with history of injury over the temporal region present with traumatic perforation of tympanic membrane in the ENT outpatient department or emergency department. Besides pain in the ear and reduced hearing tinnitus is almost always a accompanying symptom.

#### Aim

To evaluate the incidence of

- a) Spontaneous healing of traumatic perforation of tympanic membrane
- b) Age and sex predilection.
- c) Associated hearing loss, type and severity of hearing loss.
- d) Tinnitus in patients with traumatic perforation
- e) Incidence of follow-up patients with hearing improvement and tinnitus resolution by conservative treatment alone.

### II. Materials And Methods

It's a prospective study conducted in the in the ENT department of Mc.Gann Teaching Hospital, Shimoga between August 2014 to July 2015. 70 patients (72, as two had bilateral ear involvement) who presented with injury to ear and were diagnosed with traumatic perforation of tympanic membrane were included in the study. all patients were treated conservatively and followed-up at the end of three months.

### III. Results

Majority of the patients were between 21-30 years age group. number of males were more than female male female ratio is 3.1:1. 42.8% gave history of assault / slap over the corresponding side of the face. 37.14% presented with history of RTA. 14.2% history of self fall. 61 patients out of 70 had hard of hearing and tinnitus as associated symptoms. at the end of three months 63 perforated tympanic membrane showed spontaneous healing with resolution of tinnitus and those with mild to moderate conductive hearing loss (27 Patients ) showed remarkable improvement in hearing at the end of three months. 56 patients had left ear involvement, 12 had right ear involvement. 2 patients with bilateral ear involvement. while studying the involvement of quadrant in the traumatic perforation – 22 out of 72 tympanic membrane had anteroinferior quadrant involvement. in majority of perforation (48 out of 72) edges of the perforation was intact with no inrolled or outrolled edges are loss of tissue.

**Table 1: Age incidence and male female ratio**

Age	Male	Female	Ratio
1-10	Nil	Nil	Nil
11-20	3	2	1.5:1
21-30	19	10	1.9:1
31-40	12	3	4:1
41-50	13	1	13:1
51-60	3	1	3:1
61-70	3	0	3:0
Total	53	17	

**Table 2: Laterality**

Right	Left	Bilateral
12	56	2

**Table 3: Quadrant involved**

Quadrant	Number
Postero superior	6
Postero inferior	16
Antero superior	10
Antero inferior	23
Junction of postero superior + postero inferior	8
Junction of Antero superior + Antero inferior	7
Junction of Antero Inferior + postero inferior	2
Total	72

**Table 4: E**

Edges	Number
Outrolled	13
Inrolled	9
Intact	48
Total	70

**Table 5: Cause of injury**

Cause of injury	Number
Slap / assault	30
RTA	26
Self fall	10
Self inflicted	3
Cracker blast	1
Total	70

**Table : Type of hearing loss**

Type of hearing loss	Number
Mild to moderate conductive hearing loss	27
Sensorineural hearing loss	8
Mixed hearing loss	35
Total	70

**Table Associated with tinnitus**

With tinnitus	Without tinnitus	Total
61	9	70

#### IV. Discussion

Patient presenting with traumatic perforation are usually healthy individuals and may not have any preexisting ear pathology. which makes the rate of spontaneous healing in such patients very high. (2, 4). After closely monitoring such patients with avoidance of water entering the ear and prophylactic antibiotics and follow-up very months for three months. If healing does not takes place in such patients surgical closure of the perforation is required. Following acute trauma no external instillation ear drops is recommended as this may cause entry of infection into the middle ear and cause otitis media. Early studies have shown spontaneous healing rate up to 48 to 98% (6, 16). Our study results are comparable to the earlier studies. younger age group showed remarkably better results in spontaneous healing (14). Tympanic membrane perforation causes conductive hearing loss of up to 40-50 db (18%). However with healing of perforation the hearing improvement is near normal in 27 of traumatic perforation cases with conductive hearing loss (with no preexisting ear

diseases) in our study. Also a striking feature noticed amongst 9 out of 70 patients in whom the traumatic perforation failed to heal spontaneous at the end of three months was that the edges of perforation in 5 out of 9 was outrolled in another 2 edges were inrolled and two patients had intact edges. However healing rate did not show significant relation to cause of trauma.

Follow-up after three months		
Spontaneously healed tympanic membrane	63	Not Spontaneously healed tympanic membrane
		9

Amongst the not Spontaneously healed tympanic membrane, quadrant predilection.

Age	Quadrant involvement	Cause
52 years	Anetro inferior with outrolled edges	RTA
45 Years	Postero inferior with outrolled edges	RTA
49 years	Postero inferior with outrolled edges	Slap/ assault
65 years	Postero inferior with outrolled edges	RTA
40 years	Anetro inferior with intact edges	Assault
60 years	Anetro superior with outrolled edge	Self fall
66 years	Junction of postero superior + postero inferior outrolled edge	RTA
40 years	Junction of postero superior + postero inferior inrolled edge	RTA
48 years	Junction of anetro superior + Anetro inferior outrolled edge	RTA

## V. Conclusion

Our study showed a very high rate of spontaneous healing of traumatic perforation at the end of three months by conservative treatment alone. along with improvement in conductive hearing loss and resolution of tinnitus, thus indicating that surgical intervention may not be necessary immediately in such cases there by reducing the psychological, physical and financial burden on the patient caused by hospital stay and surgery.

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