

Article

Evaluation of effect of type 1 tympanoplasty on the quality of life of chronic suppurative otitis media patients

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Abstract: Background: The aim of the study is to evaluate effect of type 1 tympanoplasty on the quality of life of CSOM patients.

Materials and Methods: In this observational study, ninety- two patients of chronic suppurative otitis media with perforations of either genders were included. The chronic otitis media-5 (COM-5) questionnaire was administered to all patients. Air bone gap, physical suffering scores, hearing loss score, caregiver's concern scores, emotional distress score and activity limitation scores were recorded.

Results: Side involved was right in 58 and left in 34. Location of perforation was anterior quadrant in 15, posterior quadrant in 7 and central perforation in 70 cases. Pre- operative physical suffering scores was 3.74 and post- operative score was 2.10, hearing loss score was 3.24 and 1.28, caregiver's concern scores was 2.34 and 1.12, emotional distress score was 1.92 and 1.04 and activity limitation scores was 1.62 and 1.10 respectively. Pre-op mean air bone gap was 32.2 db and post- op mean air bone gap was 18.4 db. The difference was 13.8 decibels.

Conclusion: Type 1 tympanoplasty is common surgical procedure performed in patients with chronic suppurative otitis media and it found to be effective in improving quality of life in these patients.

Keywords: Chronic otitis media; Tympanoplasty; Ear; Quality of life.

1. Introduction

Chronic otitis media (COM) is a common occurring condition in which patient frequently visit otolaryngologist. It is involving middle ear with persistent or intermittent otorrhea. It is painful condition affecting most of the patients [1]. Common complaints patients may encounter are loss of hearing, discomfort in ear, otalgia, otorrhea etc. There can be otorrhea which is evident with upper airway infections [2]. Otorrhea is mostly not associated with pain, is a smelling and with increased chances of hearing loss. Factors such as perforation of tympanic membrane, its position and size, disruption of ossicular chain, the degree of membrane and fixation of ossicles in inner ear play an important role [3].

Due to COM, the social life is hampered. There are functional limitations in affected subjects. The affected social activities may be found in patients with severe hearing loss [4]. Other symptoms such as persistent ear discharge ear and pain affect the general health and individual well-being [5]. Among managements of COM, type 1 tympanoplasty or myringoplasty is common surgical techniques. It is the surgical repair of a tympanic membrane perforation without ossicular reconstruction [6].

Health-related quality of life (HRQL) is an important aspect of human life [7]. It is a subjective outcome that reflects the patient's perception of their health status. In the context of otitis media, HRQL defines the outcomes of chronic middle ear infection on a patient's daily activities, physical symptoms, social interactions, and emotional well-being [8,9]. Considering this, we attempted present study to evaluate effect of type 1 tympanoplasty on the quality of life of CSOM patients.

2. Material and methods

After obtaining ethical clearance certificate from institutional ethical review board, we selected ninety-two patients of chronic suppurative otitis media with perforations of either genders. A valid written consent was also obtained from all enrolled patients.

Demographic profile was entered in case history sheet. A detailed history and clinical findings were recorded. Procedures such as otoscopy and anterior rhinoscopy were performed. Other test such as Valsalva Maneuver, tuning fork tests and pure tone audiometry were also conducted. We recorded type, size and location of the perforation. The patency of the eustachian tube was recorded. The chronic otitis media-5 (COM-5) questionnaire was administered to all patients. Air bone gap, physical suffering scores, hearing loss score, caregiver’s concern scores, emotional distress score and activity limitation scores were recorded. Statistical analysis was performed using Mann Whitney U test, setting p value below 0.05 as significant.

3. Results

There were 54 male and 38 females in our study (Table 1).

Table 1. Patients distribution

Total- 92		
Gender	Male	Female
Number (%)	54	38

Side involved was right in 58 and left in 34. Location of perforation was anterior quadrant in 15, posterior quadrant in 7 and central perforation in 70 cases. A significant difference was observed ($P < 0.05$), see Table 2 and Figure 1.

Table 2. Clinical presentation

Parameters	Variables	Number	P value
Side	Right	58	<0.05
	Left	34	
Location	Anterior quadrant	15	<0.05
	Posterior quadrant	7	
	Central perforation	70	

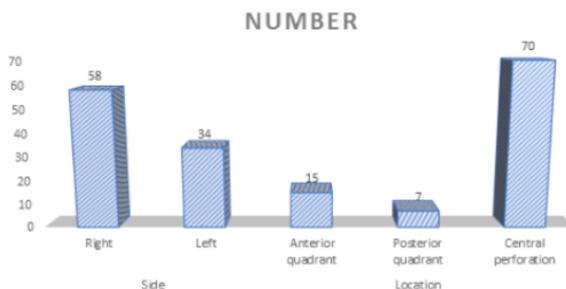


Figure 1. Graphical distrusting of clinical presentation

Pre- operative physical suffering scores was 3.74 and post- operative score was 2.10, hearing loss score was 3.24 and 1.28, caregiver,s concern scores was 2.34 and 1.12, emotional distress score was 1.92 and 1.04 and activity limitation scores was 1.62 and 1.10 respectively. The difference was significant ($P < 0.05$), see Table 3 and Figure 2.

Table 3. Comparison of scores calculated on visual analogue scale

Symptoms	Pre- operative	Post- operative	P value
Physical suffering scores	3.74	2.10	<0.05
Hearing loss score	3.24	1.28	<0.05
Caregiver’s concern scores	2.34	1.12	<0.05
Emotional distress score	1.92	1.04	<0.05
Activity limitation scores	1.62	1.10	<0.05

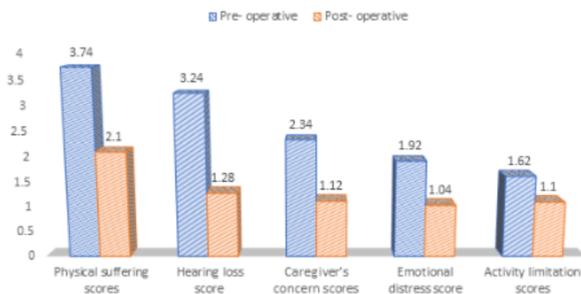


Figure 2. Graphical distrusting of comparison of scores calculated on visual analogue scale

Pre-op mean air bone gap was 32.2 db and post- op mean air bone gap was 18.4 db. The difference was 13.8 decibels. A significant difference was observed ($P < 0.05$), see Table 4 and Figure 3.

Table 4. Measurement of air bone gap

Air bone gap	Mean	P value
Pre-op mean air bone gap	32.2	<0.05
Post- op mean air bone gap	18.4	
Difference	13.8	

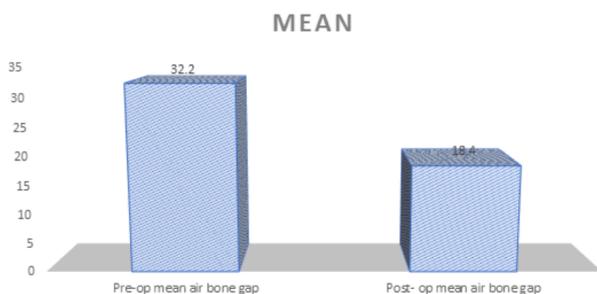


Figure 3. Graphical distribution of measurement of air bone gap

4. Discussion

Chronic suppurative otitis media (CSOM) is a middle ear infection of great concern. It has high impact on social life and general health of human beings [10]. Universally, hearing impairment is the most well-known sensory deficit. In India, the incidence of COM found to be 7.8%. World health organization (WHO) described it as a silent epidemic. It has been easily overlooked and underestimated in last few years [11]. Type 1 tympanoplasty included closure of perforation with a dry stable grafted membrane [12,13]. Grafting the tympanic membrane with autologous temporal fascia helps in restoration of its integrity, as temporalis fascia is a thin, non-shrinking tissue with low metabolic rate resembling tympanic membrane in texture and structure [14,15]. This procedure has led to improvement in hearing levels. In this study we evaluated effect of type 1 tympanoplasty on the quality of life of CSOM patients. Our study demonstrated that there were 54 male and 38 females. Bhatia *et al.*, enrolled 45 patients of chronic suppurative otitis media [16]. Type 1 tympanoplasty

was performed. It was observed that 82% (37) had an intact graft 6 months after surgery. Subjective scores showed marked improvement with the mean improvement in total scores of 7.89 ± 4.81 on VAS. The mean improvement of 14.73 ± 8.58 dB of mean air bone gap was observed. A significant correlation existed between subjective and objective scores. Type 1 tympanoplasty brought significant improvement in the quality of life of chronic suppurative otitis media patients.

We observed that side involved was right in 58 and left in 34. Location of perforation was anterior quadrant in 15, posterior quadrant in 7 and central perforation in 70 cases. Devi *et al.*, in their study determined improvement quality of life of COM patients and surgical success in terms of graft uptake and improvement in hearing [17]. One hundred patients with COM underwent tympanoplasty performed by an expert otolaryngologist. The correlation between preoperative and postoperative assessment by questionnaire was statistically significant. All patients showed a significant improvement in hearing postoperatively. 80% of patients showed effective graft uptake.

Our study showed that pre-operative physical suffering scores was 3.74 and post-operative score was 2.10, hearing loss score was 3.24 and 1.28, caregiver's concern scores was 2.34 and 1.12, emotional distress score was 1.92 and 1.04 and activity limitation scores was 1.62 and 1.10 respectively. Nadol *et al.*, conducted a study on 54 patients of CSOM [18]. There were 26 (48.1%) females and 28 (51.9%) males. 18% of patients showed bilateral CSOM. Poor socioeconomic circumstances lead to increased prevalence of CSOM compared to that in more affluent population groups. Results showed that QOL is not affected in patients.

Pre-op mean air bone gap was 32.2 db and post-op mean air bone gap was 18.4 db. The difference was 13.8 decibels. Podoshin *et al.*, in their study showed that the rate of uptake of graft was 90% [19]. The COM-5 questionnaire was used to measure patient responses as they relate to patient's symptoms, functional status, social and emotional consequences of disease and its treatment. Vlastos *et al.*, mentioned the COM-5 questionnaire, which was very useful for determining the quality of life in children with chronic otitis media (COM) [20]. The COM-5 questionnaire is disease specific quality-of-life survey that shows high reliability and adequate construct validity, as well as responsiveness.

5. Conclusions

Type 1 tympanoplasty is common surgical procedure performed in patients with chronic suppurative otitis media and it found to be effective in improving quality of life in these patients.

6. Disclaimers

The opinions expressed in this article are the authors' personal views and do not represent that of their affiliated organizations, employers, or associations.

7. Highlights of the study

- Type I Tympanoplasty in patients suffering from CSOM is helpful in improving the Quality of life.
- This procedure provides good post-operative analgesia and improved VAS scores.
- Haemodynamic stability is preserved in patients operated under Type I Tympanoplasty.

Conflicts of Interest: "The authors declare no conflicts of interest."

Author Contributions: HG conceived the review idea. SRK conducted the literature search. SRK prepared the first draft of the manuscript. HG reviewed, edited, and revised the manuscript substantially on the key intellectual content. HG finalized and approved the current version agreed to be accountable for accuracy and integrity and decided to submit the manuscript to Trends in Medical Research.

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