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Original Research Article

Does age of patient impact the outcome of tympanoplasty? A study in a tertiary care center

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ABSTRACT

Background: Chronic suppurative otitis media (CSOM) is one of the most common cause of reversible conductive hearing loss in world especially in countries with poor socio-economic status, poor nutritional habits, hygiene and lack of health education. It affects both sexes and all age groups. Successful outcome of tympanoplasty depends on various factors.
Methods: This study was conducted to evaluate impact of age on outcome of type 1 tympanoplasty. Cases were selected, after proper history taking and preoperative evaluations, type 1 tympanoplasty was conducted under local anesthesia with temporalis fascia graft using underlay technique through post-auricular approach. Patients were followed up in postoperative period for 6 months.
Results: Best results were observed in age group of 21-40 years and poorer outcomes were seen in patients more than 40 years and those less than 20 years age.
Conclusions: The outcome of type 1 tympanoplasty is affected by age of patient.

Keywords: Tympanoplasty, CSOM, Conductive hearing loss

INTRODUCTION

It has been well established that the surgical outcome of tympanoplasty is influenced by many factors influence, patient's age being the most controversial of all. Whether to conduct tympanoplasty in a child is a dilemma faced by many otolaryngologists. Because of its long duration and greater severity compared with acute otitis media, and because most children need louder auditory stimuli than adults to perform optimally, CSOM in children is likely to impede language and cognitive development.[1]

Children suffer from frequent episodes of recurrent upper respiratory tract infection and with more patulous and straighter Eustachian tube in children the episodes of infections may lead to reinfection of operated ear, thus leading to the failure of surgery.[2]

Aim and objectives of the study were to observe and evaluate the impact of age of patient on outcome of type 1 tympanoplasty by assessing the hearing gain, status of graft and discharge free status of patients in 6 months postoperative follow up visits.

METHODS

The study was conducted from September 2011 to June 2013 in department of ear, nose and throat, in a tertiary care hospital of north India with a six month follow up in postoperative period.

Type of study

Prospective observational study was used for the current study.

Sample size

100 patients were participated in the study.

Ethical approval obtained from institutional ethical committee and institute review board.

Inclusion criteria

Patients with mucoid type of chronic suppurative otitis media, presence of conductive hearing loss with no sensorineural hearing loss, good general physical condition, no evidence of infection in nose, throat and paranasal sinuses and undergoing surgery for the first time for the concerned ear were included in the study.

Exclusion criteria

Those who refused to consent for participation, sensorineural or mixed hearing loss, squamosal chronic suppurative otitis media, revision cases and associated poor general condition, infections of nose, paranasal sinuses and throat were excluded from the study.

These selected patients were subjected to clinical, audiological, radiological and laboratorial investigations.

The pattern of examination followed was, detailed history of the patient, general physical and systemic examination, examination of nose, throat and paranasal sinuses ,especially for any source of chronic infection or allergy, otological examination, along with examination under microscope (Figure 1 showing otomicroscopic picture of Tympanic membrane perforation of different sizes), pure tone audiogram with proper masking, preoperative still image capture and relevant routine lab investigations.

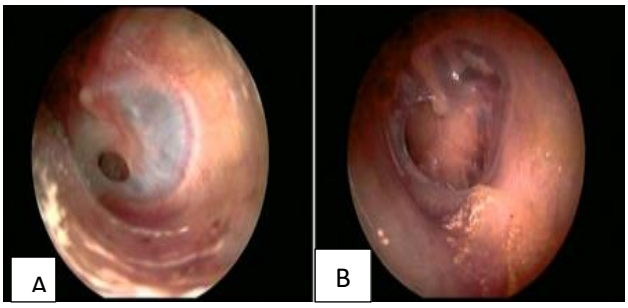

Figure 1: Otomicroscopic picture of tympanic membrane perforation of different sizes.

Type 1 tympanoplasty was performed in all selected cases by post-aural approach by underlay technique using temporalis fascia autograft.

Postoperatively all the patients were put on oral antibiotics, analgesics and steroids if middle ear mucosa was found inflamed per-operative. All patients were instructed to take adequate precautions to prevent entry of water into the ear canal. Skin stitches were removed after 7 days. Antibiotics were continued for 15 days, steroids for 10 days. Status of graft and hearing evaluation by PTA was done at 1 month, 3 and 6 months postoperative.

RESULTS

Success of tympanoplasty was based on the criterion: presence of intact graft and improvement of air conduction thresholds by more than or equal to 10 dB at 6 months follow up PTA compared to the preoperative PTA.

100 patients participated in the study to begin with out of which 15 were lost in follow up. Amongst remaining 85 patients 8 (9.4%) developed residual perforation during period of study. These 8 patients underwent chemical application (40% trichloroacetic acid) following which 3 had healed perforation (included), rest 5 underwent revision surgery and thus were excluded from study.

Amongst 80 patients who participated and were followed up for a period of 6 months in our study 38 (47.5%) were female and 42 (52.5%) were male. Majority were of 11-20 age group constituting 39 (48.8%) of patients, followed by 19 (23.7%) in 21-30 years, 16 (20%) in 31-40 years and 6 (7.5%) in 41-50 years (Figure 2).

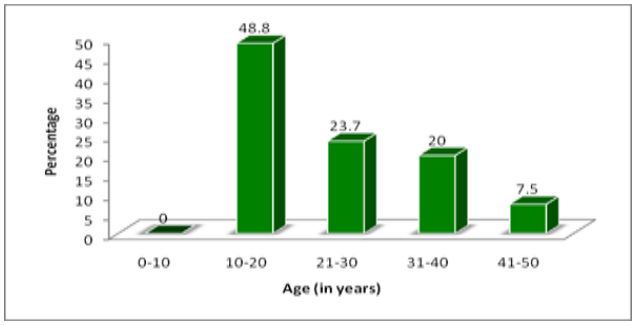

Figure 2: Age distribution of patients.

On otomicroscopy we found that 21 (26.3%) had small (0-25%) perforation, 27 (33.75%) had medium (26-50%) sized perforation, 32 (40%) had large (>50%) perforation. 13 (16.25%) had anterior perforation, 14 (17.5%) had posterior perforation, 53 (66.25%) involved both halves (Figure 3).

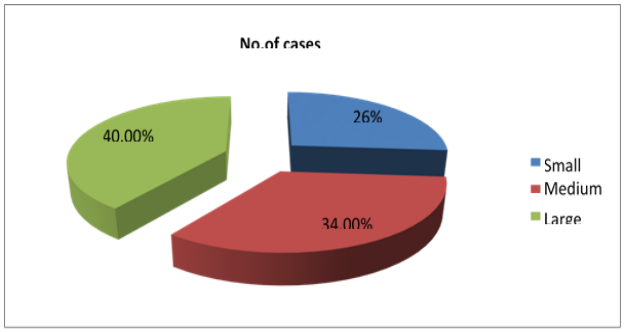

Figure 3: Pie chart of size of perforation.

66 (82.5%) of 80 patients with intact graft had improvement of pure tone thresholds >10 dB at the end of 6 months follows up. Rest 14 patients failed to have specified improvement in hearing.

12 (30.8%) of 14 failure cases were in 11-20 age group however maximum number of cases were also in this age group, rest 2 belonged to 41-50 age group (Figure 4). These statistics shows significant association of success of surgery with increase in age of patient with p value equal to 0.004.

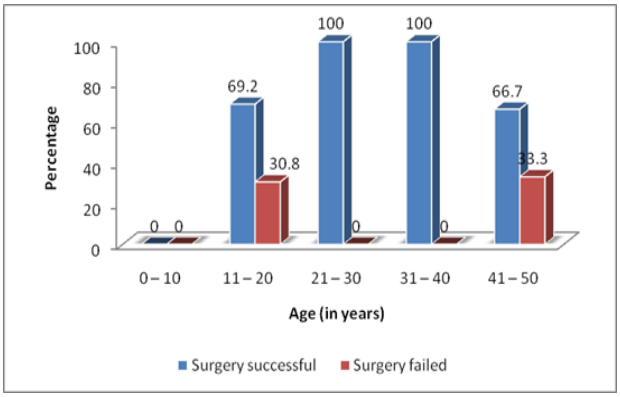

Figure 4: Bar diagram of the outcomes of surgery with respect to age.

DISCUSSION

"To do or not to do tympanoplasty in children?" is a dilemma faced by an otolaryngologist very commonly. Some advocate early hearing reconstruction so as to not interfere with a child's academic, social and mental development while others are in favor to delay surgery considering straighter and more patulous Eustachian tube.[1,2]

A recent study In Nepal medical concluded that the graft takes rate was better with the advancing ages.[3] In another study graft was taken up successfully in 80% (40/50) cases. They concluded that the success rate of myringoplasty is affected by various factors especially age, nature and size of perforation, the type of graft used, cellularity of mastoid and good functioning Eustachian tube.[4] In 1994 study published by Kessler et al concluded that reperforation was more common in patients younger than 6 years.[5]

The success rate in this study was slightly higher in 12–15-year age group (90.24%) than in 8- 11-year age group (81.8%).[6]

Tos did a study in 1972 were found results of 535 tympanoplasties in different age groups which were analyzed by calculating the mean postoperative hearing, hearing gain, air-bone gap, and speech audiometry. Of these 269 dry ears were treated by tympanoplasty without mastoidectomy, and 266 discharging ears with tympanoplasty with mastoidectomy in single stage. Dry ears fared better than the discharging ears and the results were best in paediatric age group under 10 years of age. Results were very good both in dry and discharging ears in 11- to 30-year-old. However, in the age group of 31- to 60-year bit of poor results were found in discharging ears but for dry ear it was good. And the poorest results were found in above 60 years age patients which was worse in the discharge ears.[7]

In another study, results contradictory to our study was found, where on two groups of patients aged 20 to 40 and patients aged 65 and older, 163 and 97 consecutive type I tympanoplasties were performed over a 5-year period. The patients were followed up for 6 to l0 years. No difference was found in the success or failure of the graft-take rates between the two groups.[8]

CONCLUSION

Graft uptake rate in our study was 80%. Out of this 82.5% showed improvement in hearing documented by improvement in average air conduction by more than or equal to 10 dB in month follow up PTA. Surgical results improved with increase in patient's age with significant p value equal to 0.004.

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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