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Research Paper

A Study to Compare The Outcome of Ear Surgeries Done on Patients With Active And Inactive Csom

Medical Science

KEYWORDS : Active CSOM, inactive CSOM, type I tympanoplasty, cortical mastiodectomy.

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ABSTRACT

OBJECTIVES: To document hearing improvement after ear surgeries by means of PTA and to compare the outcome in cases of both active and inactive CSOM

METHODS: A total of 60 cases, 30 patients of active CSOM and 30 patients of inactive CSOM were compiled after applying the inclusion and exclusion criterias. All the cases underwent detailed otoscopic and audiometric examination. All were treated surgically and were followed up after 3 months.

RESULTS: Comparing the preop and 3 months postop PTA, presence of discharge at the time of surgery does not interfere with the outcome. Although the mean PTA in inactive type is bit higher than the active type, the difference between them is not statistically significant (P value > 0.05).

INTRODUCTION

CSOM is the result of an initial episode of acute otitis media and is characterized by a persistent discharge from the middle ear through a tympanic perforation. It is an important cause of preventable hearing loss, particularly in the developing world. The global burden of illness from CSOM involves 65–330 million individuals with draining ears, 60% of whom (39–200 million) suffer from significant hearing impairment.[1]

CSOM typically produces a mild to moderate conductive hearing loss. The term tympanoplasty was first used in 1953 by Wullstein to describe surgical techniques for reconstruction of the middle ear hearing mechanism that had been impaired or destroyed by chronic ear disease. Tympanoplasty is the final step in the surgical conquest of conductive hearing losses and is the culmination of over 100 years of development of surgical procedures on the middle ear to improve hearing.[2]

The main aim of surgery in CSOM is to eliminate disease process and reconstruct middle ear to give the patient a dry, safe and functioning ear. Success rate in the range of 95% are frequently quoted in various studies. There are many factors which influence this success rate, including age of the patient, site and size of the perforation, duration of the ear being dry prior to surgery and the presence or absence of infection at the time of surgery. Discharging ear at the time of surgery is one of them. The discharging ear presents to the otologist the dilemma of whether to operate on it or not.

This is due to the widespread belief that the success rate of Tympanoplasty on discharging ear is inferior to that of the inactive type. The main objective of this study is to compare the outcome of surgery in patients with active and inactive CSOM.

METHODOLOGY

This study of hearing improvement gained after Tympanoplasty by means of pure tone audiometry was done in the Department of Otorhinolaryngology, Kempegowda Institute of Medical Sciences, and Bangalore from August 2012 to August 2014. A total of 60 cases, 30 patients of active CSOM and 30 patients of inactive CSOM were compiled after applying the inclusion and exclusion criterias.

Inclusion criteria: The patients for study were selected on following criteria:

- CSOM with central perforation (small, medium and subtotal perforation)
- Age : between 15 to 50 years
- Sex: both male and female.
- All patients with wet ear having a mucoid discharge with negative on culture.
- CSOM Tubotympanic type with conductive or mixed hearing loss with good air bone gap.
- Patients having good general physical condition, with no evidence of any infection in upper respiratory tract, chronic sinusitis, adenoids or any other pathology in nasal cavity or nasopharynx which is confirmed by nasal endoscopy on OPD basis.

Exclusion criteria:

- Age : less than 14 years & more than 50 years
- Patients with total perforation and cholesteatoma (Atticoantral type)
- Patients with sensorineural hearing loss
- Revision tympanoplasty cases
- Complicated of CSOM
- General condition of the patient not permitting surgical procedure.

METHOD OF COLLECTION OF DATA

1. All the patients in the study were clinically evaluated by taking detailed history and clinical examination including TFT, as per the proforma.
2. In the patients who presented with active ear discharge were catogerized into group a (mucoid/mucopurulent discharge) and with no discharge group B (dry with no active discharge for atleast 3 months)
3. Dry aural toilet was done to remove debris from the ear canal.
4. Status of TM perforation was evaluated under video endoscopy.
5. Septic foci in the nose or in the throat were treated at the out patients if present.
6. PTA was done as per Hughson Westlake method.
7. For cases with suspicion of Unsafe CSOM, HRCT was done to know the extent of disease and status of hearing apparatus.
8. Cases then were diagnosed and surgical plan of management was formulated.
9. The patients routine Hb, BT, CT, urine analysis, GRBS, B. Urea, HIV, HBsAg were done.
10. The patients underwent cortical mastoidectomy with type I tympanoplasty under GA

Patients were followed up to three months. Patients underwent otoscopic examination to assess the uptake of the graft. The hearing evaluation was made 3 months after surgery by means of PTA. All the data were statistically analyzed.

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RESULTS

Patients between the age group of 15 to 50 years were included in this study. Maximum numbers of patients were seen in the age group of 21-30 years. In active group 9 patients were between age group of 15-20 years(30%), 12 patients were between age group of 21-30 years(40%) and 4 patients were between age group of 31-40 years and 5 patients were between age group of 41-50 years. In inactive(dry) group 5 patients were between age group of 15-20 years, 13 patients were between age group of 21-30 years(43%) and 10 patients were between age group of 31-40 years(33%) and 2 patients were between age group of 41-50 years. Both the groups were matched in age distribution.

Out of 60 patients, 28 were male (46.7%) and 32 were females (53.3%). Among male patients 16 were of inactive group (57.2%) and 12 were of active group (42.8%). Among female patients 14 were of inactive group (43.7%) and 18 were of active group56.3%). The sex distribution was statistically similar.

Bilateral perforation was seen in 15 patients. In the active group, 6 patients were seen and in inactive group, 9 patients were seen. In bilateral cases, the worse ear was chosen to operate. Left side was more common (52%), including 17 in active and 14 in inactive group. Right side (48%), 13 were in active and 16 were in inactive group.

Out of 60 cases, 15 patients (25%) had bilateral CSOM. In inactive group 9 patients had bilateral CSOM and in active group 6 had bilateral CSOM. It was not statistically significant. Presence of bilateral CSOM did not have any influence on rate of graft uptake.

Maximum numbers of patients, about 25 had duration of discharge since childhood. In active group 16 patients had discharge since childhood, 5 patients less than 1 year and 6 patients had discharge between duration of 1-10 years and 3 patients discharge more than 10 years. In inactive (dry) group 9 patients had discharge since childhood, 8 patients less than 1 year and 9 patients had discharge between duration of 1-10 years and 4 patients discharge more than 10 years. No statistical difference between the 2 groups and also there was no significant difference between rate of graft intake and duration on disease.

Among 60 cases, 35 had big central perforation (58.3%), in which 21 were of inactive group (60%) and 14 were of active group (40%). 18 patients had medium sized perforation, in which 10 were of inactive group and 8 were of active group. 5 patients had small perforation, in which 3 were of inactive group and 2 were of active group. 2 patients had subtotal perforation and they belonged to inactive group. No statistical significance was seen between the two groups.

Graft uptake was seen in 87.3% patients with big central perforation, 70% patients with subtotal perforation, 91.7% patients with medium sized perforation and 99% of patients with small perforation. Graft failure was seen in 12.7% patients with big central perforation, 30% patients with subtotal perforation, 8.3% patients with medium sized perforation and 1 patient with small perforation. Therefore, high failure rates were noted with increasing size of perforation. ("Figure1 about here")

Postoperative follow up by otoscopic examination showed intact graft in 26 patients in inactive group (86.66%) and 24 patients in active group (80%). Graft failure was seen in 4 patients of inactive group and 6 patients of active group. Graft uptake rate was slightly better in inactive group compared to active group, but it was statistically insignificant.

In the preoperative audiological assessment by means of PTA, higher mean decibels was recorded in inactive group which was 43.27dB compared to active group which was 40.97dB. The difference between them was not statistically significant with P value more than 0.05.

Hearing improvement after 3 months of postoperative period was assessed by means of PTA. Higher mean PTA of 32.19dB was recorded in inactive group and 29.12 dB in cases of active group. The difference was not statistically significant with P value more than 0.05. (Table 1 about here")

Mean PTA in inactive group at preoperative assessment was 43.27 dB and postop after 3 months was 32.19 dB. Mean hearing gain of 11.08 dB was recorded at the 3rd month, which was found to be statistically significant. In active group at preoperative assessment was 40.97 dB and postop after 3 months was 29.12 dB. Mean hearing gain of 11.85 dB was recorded at the 3rd month, which was found to be statistically significant. Mean hearing gain between both the groups were similar.

Among 60 cases, there was an average improvement of 11.46 dB in speech frequencies in 50 patients, 10 patients were not taken into account because of failure of graft up take, and there was no worsening of hearing in patients of both the groups. Hearing improvement was seen in 89% of cases in inactive group and 85%of cases in inactive group. ("Table 2 about here")

DISCUSSION

CSOM is a very common condition characterized by chronic inflammation of the mucoperiosteal lining of middle ear cleft. Perforation of the tympanic membrane primarily results from middle ear infections, trauma or iatrogenic causes etc. Spontaneous healing of chronic tympanic membrane perforation is uncommon and medical management is not effective in this regard. Hence, surgical intervention is necessary for closure of perforation.

In this study patients are grouped into active CSOM and inactive CSOM with 30 cases each. Both the groups were matched by the distribution of age, sex, duration of discharge. All the patients underwent cortical mastoidectomy with type I tympanoplasty.

In our study patients below 15 years were excluded. Maximum numbers of patients were seen in the age group of 21-30 years.40% in active group and 43% in inactive group.

In our study, out of 60 patients, 28 were male (46.7%) and 32 were females (53.3%). The sex distribution was statistically similar.

In a study conducted by Vijayendra H. et al found out the graft failure rate is more in totally dry perforation than in wet central perforation, mainly because of avascularity of remnant tympanic membrane in totally dry central perforation. Where as in our study graft uptake was seen in 26 patients in inactive group(86.66%) and 24 patients in active group(80%) which shows that Graft uptake rate was slightly better in inactive group compared to active group.[3]

Nagle et al, 2009; conducted a study to compare outcome of Type1 Tympanoplasty in dry and wet ears. In this case study of 100 patients, 50 patients had wet ear and 50 patients had dry ear. In dry ear, complete graft uptake was seen in 44 (88%) patients and in wet ear complete graft uptake was seen in 37 cases (74%), with p value 0.07 ($p > 0.05$) which was statistically insignificant. They concluded that the presence of discharge in the ear at the time of operation did not interfere with the results of Tympanoplasty, but only when the discharge was mucoid and scanty.[4]Similarly in our study presence of discharge did not interfere with the outcome.

Zakaria Sarker et al, 2011; did a prospective study which showed graft take-up rate was 89.36% in dry perforation and 53.85% in wet perforation. Graft take rate was greater in dry perforation. Closure

of air-bone gap was 18.23 dB and 7.8 dB in dry and wet perforation respectively. Hearing improvement was greater in dry perforation.[5]

Raj A and Vidit T, 1999; did a study on myringoplasty on wet ear. Wet ear was meant as mucoid discharge only. A result of primary closure of 84 percent of the perforations, which was similar to that seen in dry ears, was observed. Hearing improvement was seen in 68 percent of the patients. The incidence of complications was also low and similar to that seen in the dry ears.

In our study hearing improvement was seen in 89% of cases in inactive group and 85% of cases in inactive group, which was almost similar.

Gautam Dhar et al, 2014; did a prospective case control study on 100 patients of CSOM, with central perforation (50 dry and 50 wet perforations). Wet ear had culture negative mucoid discharge. Graft take up rate of both the groups were compared following myringoplasty. There was no significant difference in the success rate for both the groups. Even our study did not have any statistically significant result difference in outcome of surgery between the two groups.[7]

Mean hearing gain of 11.85 dB in active group and 11.08dB in inactive group was recorded at the 3rd month, which was found to be statistically significant.

Among 60 cases, there was a average improvement of 11.46 dB in speech frequencies in 48 patients, 12 patients were not taken into account because of failure of graft up take, and there was no worsening of hearing in patients of both the groups. Mean hearing gain between both the groups were similar.

CONCLUSION:

In inactive group, complete graft uptake was seen in 86.66% patients of inactive group and in active group graft uptake was 80% Hearing improvement was seen in 89% of cases in inactive group and 85%of cases in inactive group and a average improvement of 11.46 dB in speech frequencies. The difference between the success rates of both active and inactive group in terms of both graft uptake and hearing improvement is statistically insignificant. Hence, from our study, we conclude that the presence of ear discharge at time of surgery does not affect the success rate of the ear surgery.

ABBREVATIONS

- CSOM: Chronic suppurative otitis media
- PTA: Pure tone audiometry
- dB: decibels
- TM: tympanic membrane.

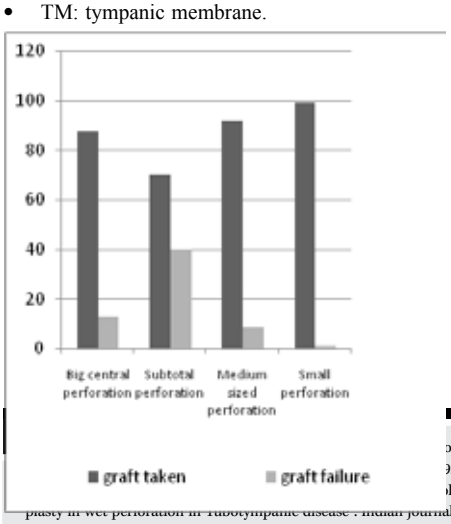

Figure1: size of perforation with regard to graft uptake

Table 1: Comparision of mean PTA between 2 groups

Time interval	Active group	Inactive group
Preoperative	40.97 dB	43.27 dB
3 months postoperative	29.12 dB	32.19 dB

Table 1: audiological assessment after 3 months of surgery

Hearing	Group	No of cases	percentage
Improvement	active	24	80%
	inactive	26	86.66%
No change	active	6	20%
	inactive	4	6.66%
Worsened	active	0	0%
	inactive	0	0%
Total		60	100%

of disease due to chronic suppurative otitis. In: Chronic Suppurative Otitis Media: Burden of Illness and Manage- 9. | 2. Browning George G, Merchant Saumil N, Kelly Gerard. Chronic Otits Media. In: Michael Gleeson, editor. Scott- ol. 3. London; Arnold, 2008: p. 3395-3445. | 3.Vijayendra H, Chetty K.R, Sangeetha R. "Comparative study of tympano- plasty in wet perforation in Tubotympanic disease". Indian journal of otorhinolaryngology, Head and neck surgery, 2006; 58: 165-167 | 4. Nagle S.K, Jagade M.V, Gandhi S.R, Pawar P.V. "Comparative study of outcome of type1tympanoplasty in dry and wet ear". Indian journal of otorhinolaryngology Head and neck surgery, 2009;61: 138-140. | 5.Zakaria Sarker et al. Factors affecting surgical outcome of myringoplasty. Bangladesh J Otorhinolaryngol. 2011; 17(2): 82-87. | 6. Raj A and Vidit T. Review of patients undergoing wet myringoplasty. Indian J of Otol. Vol 5, no.3, september 99; 134-136. | | 7. Gautam Dhar et al. Outcome of myringoplasty in dry and wet ear- a comparative study. IOSR Journal of Dental and Medical Sciences. Vol. 13(3), Ver V, (March 2014), pp 01-03. |