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POSTERIOR TYMPANOTOMY IN CHRONIC SUPPURATIVE OTITIS MEDIA: A PROSPECTIVE STUDY OF 38 CASES

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ABSTRACT

Chronic suppurative otitis media constitutes a major public health problem in the developing world[1]. Consequence of it is hearing loss and propensity to recurrent infection, discharge and complications. Various radical surgeries are available nowadays to prevent the further extension of disease to mastoid and complete removal of it; but such radical surgeries cannot reinforce hearing. The aim of this article is compare the hearing status pre operatively and post operatively and also look for recurrence rate by ‘’POSTERIOR TYMPANOTOMY.’’

KEYWORDS: Posterior tympanoyomy, chronic suppurative otitis media, intact canal wall.

INTRODUCTION

The art of conversation is the art of hearing as well as of being heard. Unfortunately not everyone is blessed with it. In developing world due to ignorance and unawareness of the disease most of the patients come with the long term history of ear discharge associated with decreased hearing. Many times patients present with complications. It is due to cholesteatoma. In such cases mastoid surgery is the only way of treatment.

Three basic types of mastoid surgeries can be used to manage chronic suppurative otitis media with or without cholesteatoma. There are combined approach tympanoplasty, Modified radical mastoidectomy and Radical mastoidectomy.[2] Intact canal wall with posterior tympanotomy is a canal wall up procedure which is performed to remove disease from middle ear and mastoid by postaural route approach (1) the mastoid (2) a posterior tympanotomy (3) the transcanal route followed by reconstruction of middle ear transformer mechanism.[3, 4]

This technique was 1st introduced by Jensen in 1958.[5, 6] By this technique surgeon is able to remove all pathology on one hand and to leave the physiologic structure intact 1) on the other hand. The advantage of the intact canal wall 2) mastoidectomy with posterior tympanotomy includes preservation of meatus and the normal sized tympanic cavity. Theses technique provides excellent tubal function by means of the extended closed aeration system. In this technique we thin out the posterior bony canal wall through the mastoid cavity so, we could inspect the epi-meso-hypotympanum. Thinning done close to bony posterior annulus but the annulus remains intact. So, it is a ’çonditio sine qua non.’ By means of this, surgeon is able to restore and even to enlarge the ventilation system. The big volume of the closed cavity and exposing through the mastoid cavity with intact posterior canal wall of epi-meso-hypotympanum space provide the restoration of Eustachain tube function. The mucosal lining returns to its normal size after removal of all the diseased area.[5]

MATERIAL AND METHODS

The study ’Posterior tympanotomy in chronic suppurative otitis media’ is prospective study of 38 cases conducted in patients of chronic suppurative otitis media attico-antral type with cholesteatoma or granulations. All patients are admitted in the Department of Otorhinolaryngology, Sir –T General Hospital & Govt. Medical college; Bhavnagar-Gujarat from January to October 2017 to identify the success of technique in contrast of hearing improvement and recurrence.

All subjects are regularly followed up at 1, 3 and 6 months.

INCLUSION CRITERIA

Patients having unsafe type of chronic otitis media.
Cholesteatoma /granulation in poorly accessible areas like sinus tympani, facial recess and attic area.(Intra operative)

Exclusion criteria

1) Who is not willing to participate in study. (2) Patient of age less than 16 years. (3) Presence of otogenic intra cranial complications. (4) Revision cases. (5) Malignancy of middle ear. (6) Patient who had severe to

profound hearing loss due to chronic otitis media. (7) More than 1/3rd destruction of posterior canal wall (Intra operative finding). (8) Biomaterial like TORP and PORP were used for ossicular reconstruction.

All patients had undergone through history taking and complete ENT examination including tuning fork tests. Other investigations including routine blood investigation, urine examination, X ray mastoid schuller´s view, chest X ray (PA view), ECG, audiometry, examination under microscope was done in all patients. Pus for culture and sensitivity, HRCT Scene temporal bone were done in indicated cases.
Anaesthesia under GA

Surgical steps were
The surgery was performed in Surgeon's position. Wilde's incision was given in all cases after cutting the skin, periosteum elevated and spine of henle identified. Tympanomeatal flap elevated up to fibrous annulus and cortical mastoidectomy was performed in routine way. Posterior Tympanotomy was done through the Transcortical route. Diamond burr was used to prevent facial nerve injury. Once these type of tympanotomy was completed ossicular status were inspected and cholesteatoma & granulation from the middle ear removed in toto. Temporalis fascia graft taken and placed over intact ossicles. In some cases ossicular reconstruction done by taking tragel cartilage and placed as vertical strurt manner.

The surgical procedure performed with type of ossicular reconstruction and graft placement also noted. Post operative ear examination was done at 7th and 15th day, and after 1, 3 and 6 months of surgery to assess healing, post operative healing of wound, condition of mastoid cavity. Post operative hearing evaluation done in all patients at 3 and 6 month of surgery.

In our study hearing results were reported using the guide line recommended by committee on hearing and equilibrium of the American Academy of Otolaryngology for the evaluation of result of treatment of conductive hearing loss. (Guideline of committee on hearing & equilibrium.) This included reporting of standard deviation, range of post operative air bone gap (ABG), mean, the number of decibels of changes in air bone gap and the change in high tone bone condition level.[8, 9]

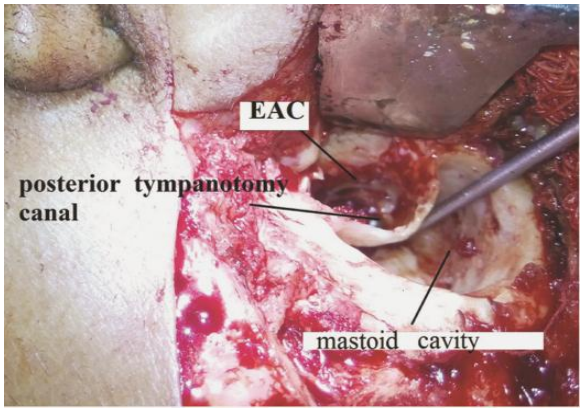

Figure 1: Intra operative picture of intact canal wall mastoidectomy with posterior tympanotomy.

DISSCUSSION AND OBSERVATION

In our study total 38 patients were included, who were underwent for intact canal wall mastoidectomy with posterior tympanotomy. Out of which 15 (39.47%) were male and 23 (60.5%) female cases. Almost all patients were having complaint of otorrhea. Where as earache and decreased hearing was found in 8 (21.06%) cases and 23 (60.52%) cases respectively. Unilateral disease was notified in total 16 (42.10%) patients, out of which right ear affected in 10 (26.3%) cases and rest 6 (15.7%) cases were presented with left ear disease. Bilateral ear involvement was encountered in 22 (57.89%) cases. All 38 patient were underwent for Intact canal wall mastoidectomy with posterior tympanotomy, out of which 17 (44.73%) for left side and rest 21 (55.26%) for right side ear surgery.

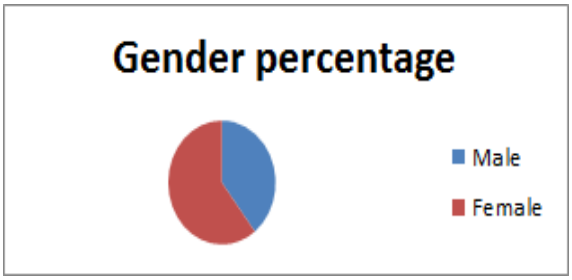

Figure-2 Sex predilection.

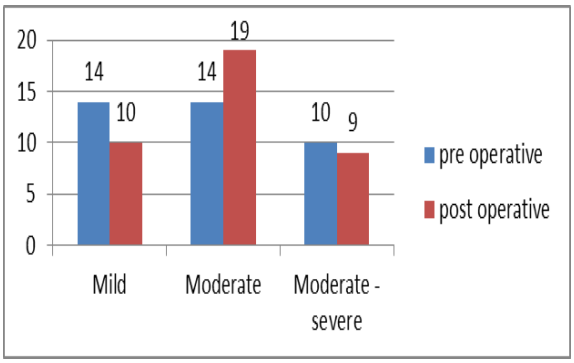

Figure 3: Pre and post operative hearing assessment.

Majority of the patients have history of discharging ear for more than 10 years. Pre operatively the air bone gap

was ranged between 26.5 dB to 65 dB where as the gap was ranged between 28 dB to 60.5 dB post operatively. In our study mean air bone gap of 41.90 dB and 41.92 dB was found in pre and post operative hearing assessment. Pre operatively 14 cases had mild conductive hearing loss, 14 cases had moderate conductive hearing loss, 10 cases with moderate – severe hearing loss. Post operatively cases had mild 10 conductive hearing loss, 19 cases had moderate conductive hearing loss, 9 cases with moderate – severe hearing loss.

Table 1: Study calculation.

	Pre operative	Post operative
Mean	41.85	41.86
Standard deviation	11.063	11.069
	1.795	1.633

Confidence interval of this difference = degree of freedom = 75, standard error of difference = 2.427, t value = 0.0184.

The obtain data used to calculate P value. The P value for this study is 0.9853 which suggest that no statistically significant pre operative and post operative hearing difference.

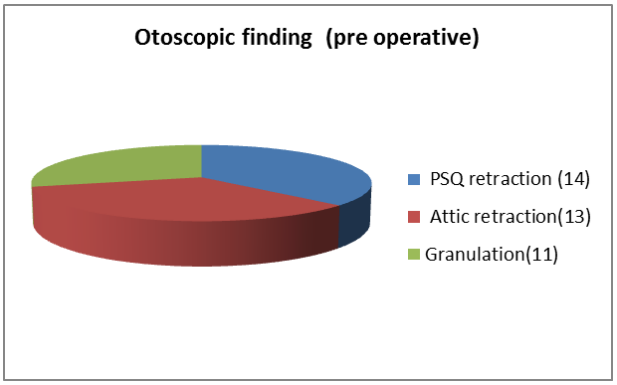

Figure 4: Pre operative otoscopic finding.

Table 2: Intra-operative findings related to ossicles.

Ossicles affected	Number of Cases	Percentage of cases
Malleus	5	13.15%
Incus	6	15.78%
Stapes	5	13.15%
Malleus + Incus	2	5.26%
Incus +Stapes	3	7.89%
Malleus + Incus + Stapes	17	44.73%
Total	38	100%

In our study there were 14 cases with PSQ retraction, 13 cases with attic retraction and rest 11 had granulation in various quadrant of tympanic membrane.

Table 3: Post operative otoscopic finding.

S. No.	Otoscopic finding	Post operative follow up, n (%)		
		1 month	3 month	6 month
1.	Residual perforation	3 (7.8%)	3 (7.8%)	3 (7.8%)
2.	Retracted TM	1 (2.6%)	1 (2.6%)	1 (2.6%)
3.	Residual Cholesteatoma	0	0	0

A study conducted by Chouhan A et al in 2014, described 50 cases of cholesteatoma disease, who underwent for modified radical mastoid surgery. This study mentioned reduction in air bone gap in the post operative period. In post operative assessment we found residual perforation in 3cases (7.8%) where as retracted TM found in 1case (2.6%). similar study results were documented by Chouhan A et al in year 2014.[8]

CONCLUSION

Intact canal wall mastoidectomy with posterior tympanotomy was found to result in complete removal of disease from the middle ear and provided a durable and resistant reconstruction of middle ear as a single stage procedure. There is no significant improvement found in hearing. Residual cholesteatoma was not found in any case after 6 month of surgery but retracted tympanic membrane was found in one patient. There is no significant reduction found in pre and post operative air bone gap. So, intact canal wall mastoidectomy with posterior tympanotomy is good for cholesteatoma removal without compromising the hearing.

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