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RESEARCH ARTICLE

ENDOSCOPIC TYMPANOMASTOIDECTOMY IN ATTICO-ANTRAL CHRONIC SUPPURATIVE OTITIS MEDIA - AN OBSERVATIONAL STUDY

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Abstract

An Observational Study was undertaken at Department of Otorhinolaryngology and Head and Neck Surgery, AIMSIR from Jan 2019 - August 2020. The aim of this study was to observe the outcome of endoscopic tympanomastoidectomy for attico-antral type of CSOM. All the patients attending ENT OPD at AIMSIR within the age group of 11-60 yrs, irrespective of sex with Attico-Antral CSOM either unilateral or bilateral were included in this study. However, revision mastoidectomies, patients with intracranial complications of CSOM or actively discharging ear, or patients with external and middle ear abnormalities either congenital or acquired, medically and surgically unfit patients and Patient's unwilling to take part in study were not included. In our study of 50 patients, 40 patients had graft uptake after disease clearance and 8 had failure of graft uptake without chronic otorrhoea and 2 had failure with chronic otorrhoea. Through this study we concluded that Endoscopic Tympano-mastoidectomy for attico-antral type of CSOM is an excellent technique for complete removal of

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cholesteatoma
especially from inaccessible areas of middle ear cleft.

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Introduction:-

Chronic Supportive Otitis Media (CSOM) is a long standing bacterial contamination of the middle ear that has been well recognized since ancient times.¹ In this illness one encounters an irregular or constant mucoid, mucopurulent or purulent ear discharge through a chronic and permanently perforated TM. The Attico-antral chronic otitis media is characterized by the formation of granulation tissue and cholesteatoma. This cholesteatoma has been frequently observed to run a threatening course subsequently weakening the patient's hearing and spreading to adjacent structures like middle cranial fossa, accordingly accentuating the morbidity and mortality of individuals involved. Despite the fact that, the introduction and popularization of antibiotics like sulphamethoxazole based medications by Domegk in 1935 and penicillins group by Alexander Fleming in 1942 diminished the mortality if there should arise an occurrence of tubotympanic type of CSOM, but they couldn't permanently fix atico-antral CSOM.¹

Medical procedure was backbone of therapy for atico-antral CSOM till the eighteenth century. Before the advent of working magnifying instrument the point of a medical procedure was to change over the hazardous ear into safe ear. On those occasions the focal point of consideration was getting rid of the illness from the mastoid cavity and permitting any leftover infection to deplete remotely by means of meatoplasty. Treatment along these lines left exceptionally high rate of tiny remaining sickness in the ear and mastoid.

Material and Methods:-

Study design : Prospective Study
Study place : Department of ENT Adesh Institute of Medical Sciences and Research.
Study period : Jan 2019 - August 2020(9 months of data collection and 6 months of follow up)
Sample size : 50 patients
Inclusion criteria
Patients attending ENT OPD at Adesh Institute of Medical sciences and research with

- Age 11-60 yrs
- Sex: both Male and Female.
- Attico-Antral Chronic Suppurative Otitis Media.
- Unilateral or Bilateral disease.

Exclusion

- Revision Mastoid surgeries.
- Patients with intracranial complications of CSOM.
- Patients with actively discharging ear.
- Patients with external and middle ear abnormalities (congenital or acquired).
- Medically and surgically unfit patients.
- Patients unwilling to take part in study.

Results:-

The study consist of 50 patients with attico-antral chronic suppurative otitis media who were analysed taking into consideration a number of parameters. The following are the observations made during our study.

In our study patient age varied from 11 yrs to 40 yrs. The maximum incidence was 43 percent in the third decade than 31 percent in second decade and followed by 26 percent in the fourth decade. The mean age in this study was 24 years.

The most common symptom encountered was otorrhoea in 88.5% patients, followed by impaired hearing in 80%. Otaglia and tinnitus were seen in 17 and 11.5 % patients respectively. Vertigo was seen in 11.5% patients.

48.5% patients had CSOM in the active stage with persistent ear discharge. 40% patients presented with occasional discharge and 11.5% presented with no discharge.

44/50 patients presented with complaints of discharge. Out of these 44 patients , 39 presented with some degree of hearing impairment. Longer duration of otorrhoea more is the severity of the disease and more the hearing impairment. Also the degree of the hearing loss is more in sinus cholesteatoma than attic cholesteatoma. This is due to involvement of the ossicular chain frequently by the sinus cholesteatoma.

Visualization of the tympanic membrane without any manipulation was possible in 51.5% of the cases and visualization after manipulation was possible in 31.5% of the cases. However partial visualization even after manipulation was seen in 17% cases.

Among the 50 cases, 66% of showed postero superior quadrant retraction pocket (PSQRP) with cholesteatoma, 17 patients showed findings in the attic region and out of these 10 patients (20%) showed attic perforation while 7 patients (14%) showed attic granulation .

In 55% of the cases the diseased ear showed retracted pars tensa with the TM directly resting over the head of stapes. 14% patients showed same side central perforation and 31% showed normal TM. On the contralateral side retraction was noticed in 40% of the cases, perforation in 9% and about 51% had normal TM.

Out of 50 cases B/L sclerosis was noted in about 31% and U/L sclerosis on the affected side in 37% . B/Lly Pneumatized mastoid was noted in 26%. The cavitory mastoid diagnosed in only 6%.

Sinus cholesteatoma showed more amount of hearing loss. Pure CHL implies > 25db air conduction loss and A-B gap > 20db and in the mixed variety the bone conduction loss > 25db and A-B gap > 20db. In our study 66% showed Pure conductive hearing loss and 33% showed mixed hearing loss.

Incus was most common ossicle necrosed because of the nature of its blood of supply and its location seen in 50% of the patients , next was suprastructure of stapes (26%), followed by partial necrosis of malleus head noted in 14%. Absent ossicles were seen in 11% of the cases. This incus erosion was more frequently encountered in Sinus type of cholesteatoma (66 %) than Attic cholesteatoma (34%).

The cholesteatoma was seen extending to the attic in 11% of the cases, involving further the aditus as well in 11% of the cases, spreading further to mastoid antrum in 11% of the cases. Cholesteatoma limited to the posterior mesotympanum was seen in 17% of the cases. Cholesteatoma involving both

the posterior mesotympanum and aditus ad antrum was seen in 20% of the cases. Extension into mastoid tip cells was seen in 28.5% patients.

On the basis of extent of the disease different surgical procedures were used, 65% underwent CWD procedure with augmented tympanoplasty with autologous incus and cartilage graft placed over head of stapes in 31% and over footplate of stapes in 34%. 17% with limited cholesteatoma disease confined to posterior mesotympanum underwent marginectomy with tympanoplasty and about 11% had atticotomy with tympanoplasty.

While assessing the post-operative graft uptake it was observed that successful graft uptake was seen in 96% cases while graft uptake was unsuccessful in 4% cases after 6 months of followup. At routine follow ups of 1, 3 and 6 months it was observed that the chances of graft uptake decreased as the post op time period increased ($p < 0.05$).

While assessment of post op chronically discharging ear it was observed that only 2% of the cases had chronic discharge at 6 month follow up period. Chronically discharging ear is negatively associated with post operative time period ($p < 0.005$). As time progresses the rate of chronically discharging ear decrease.

Degree of hearing improvement is from 10-14dB in 36% of cases and 15-19 dB in 34% of the cases and 20-25 dB in 2% of the cases and 25-30 dB in 1% of the cases at the end of the study period. When the degree of hearing improvement was compared at 1, 3 and 6 months follow up it was observed that endoscopic tympanomastoidectomy had a positive effect on post operative degree of hearing improvement ($p \text{ value} < 0.05$).

Immediate postoperative complication including canal stenosis and postoperative infection was seen in 11% and 21% respectively.

Discussion:-

The management of cholesteatoma is one of the most challenging tasks in otologic surgery as the chances of residual disease and the morbidity of the conventional procedures involved in the cholesteatoma treatment are high. With incorporation of endoscopes in the otologic field much of the recidivism and morbidity of the procedures has been reduced.

Endoscopic Tympano-mastoidectomy for attico-antral type of CSOM is an excellent technique for complete removal of cholesteatoma especially from inaccessible areas of middle ear cleft including facial recess and sinustympani. Transmeatal removal of disease from mastoid antrum and even tip cells is possible with endoscopes. Preservation of as much of normal mucosa of the middle ear cleft is possible with this technique, which promotes early re-aeration of the mastoid cavity leading to better hearing outcome. Like Functional Endoscopic sinus surgery (FESS) for nose, Endoscopes have changed the treatment concept of atticoantral disease, with complete removal of the disease and preservation of normal mucosa, that restores the normal physiology of middle ear cleft. This has led to the development of new concept of Functional Endoscopic Ear Surgery (FEES) for atticoantral type of CSOM.

Conclusion:-

Endoscopic Tympano-mastoidectomy for attico-antral type of CSOM is an excellent technique for complete removal of cholesteatoma especially from inaccessible areas of middle ear cleft including facial recess and sinustympani.

Informed Consent:

written informed consent was taken from patients .

Ethical Approval:

Ethical committee approval was taken from the AIMSR institutional committee of ethics.

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Conflict Of Interest –

There was no conflict of interest

References:-

1. Takahashi H. The middle ear: the role of ventilation in disease and surgery. Springer Science and Business Media; 2012 Dec 6.
2. Takahashi H, Hasebe S, Sudo M, Tanabe M, Funabiki K. Soft-wall reconstruction for cholesteatoma surgery: reappraisal. *Otology and Neurotology*. 2000 Jan 1;21(1):28-31.
3. Tarabichi M. Endoscopic management of cholesteatoma: long-term results. *Otolaryngology—Head and Neck Surgery*. 2000 Jun;122(6):874-81.
4. Tarabichi M. Endoscopic middle ear surgery. *Annals of Otolaryngology, Rhinology and Laryngology*. 1999 Jan;108(1):39-46.
5. Marchioni D, Mattioli F, Alicandri-Ciuffelli M, Presutti L. Endoscopic approach to tensor fold in patients with attic cholesteatoma. *Acta oto-laryngologica*. 2009 Jan 1;129(9):946-54.
6. Marchioni D, Mattioli F, Alicandri-Ciuffelli M, Molteni G, Masoni F, Presutti L. Endoscopic evaluation of middle ear ventilation route blockage. *American journal of otolaryngology*. 2010 Nov 1;31(6):453-66.
7. Sade J. The correlation of middle ear aeration with mastoid pneumatization. *European archives of oto-rhino-laryngology*. 1992 Oct 1;249(6):301-4.
8. Sadé J, Fuchs C. Secretory otitis media in adults: II. The role of mastoid pneumatization as a prognostic factor. *Annals of Otolaryngology, Rhinology and Laryngology*. 1997 Jan;106(1):37-40.
9. Haginomori SI, Takamaki A, Nonaka R, Mineharu A, Kanazawa A, Takenaka H. Postoperative aeration in the middle ear and hearing outcome after canal wall down tympanoplasty with soft-wall reconstruction for cholesteatoma. *Otology and Neurotology*. 2009 Jun 1;30(4):478-83.
10. Wackym PA, King WA, Barker FG, Poe DS. Endoscope-assisted vestibular neurectomy. *The Laryngoscope*. 1998 Dec;108(12):1787-93. 56
11. Karhuketo TS, Puhakka HJ, Laippala PJ. Tympanoscopy to increase the accuracy of diagnosis in conductive hearing loss. *The Journal of Laryngology and Otolaryngology*. 1998 Feb;112(2):154-7.
12. Rosenberg SI, Silverstein H, Willcox TO, Gordon MA. Endoscopy in otology and neurotology. *The American journal of otology*. 1994 Mar;15(2):168-72.
13. Poe DS, Bottrill ID. Comparison of endoscopic and surgical explorations for perilymphatic fistulas. *The American journal of otology*. 1994 Nov 1;15(6):735-8.
14. Nomura Y. Endoscopic photography of the middle ear. *Otolaryngology--Head and Neck Surgery*. 1982 Jul;90(4):395-8.
15. Thomassin JM, Korchia D, Doris JM. Endoscopic-guided otosurgery in the prevention of residual cholesteatomas. *The Laryngoscope*. 1993 Aug;103(8):939-43.