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Ossicular Erosion in Patients with Chronic Suppurative Otitis Media.

Nilank Saroha[1], Nitin Tomar[1], Abhey Sood[2], Upender Yadav[3]

[1]Assistant Professor, Department of ENT & HNS, Muzaffarnagar Medical College.
[2]Professor, Department of ENT & HNS, Muzaffarnagar Medical College.
[3]Junior Resident, Department of ENT & HNS, Muzaffarnagar Medical College.

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ABSTRACT

Background: To study ossicular defects in cases of Chronic Suppurative Otitis Media. Study design: Retrospective. **Methods:** The study included 90 patients of Chronic Suppurative Otitis Media who underwent surgery in the Department of Otorhinolaryngology, Muzaffarnagar Medical College, a tertiary care centre in the state of Uttar Pradesh. The period of study was from September 2014 to August 2017. **Results:** The overall male: female ratio was 1:1.14. Most of the patients had bilateral disease (38.89%), followed by left ear as the only diseased ear. Malleus was involved in 11 patients, all with active squamousal disease. Incus was involved in total 21 patients (3- mucosal category, 19 – squamousal). Stapes involvement was seen in 15 patients (2-mucosal and 13-squamousal disease). Incus was involved most frequently in 21.11%; followed by stapes; involved in total 16.66% patients. Malleus was most resistant ossicle, involved in 12.22% patients. **Conclusion:** Malleus was the most resistant ossicle to erosion in chronic suppurative otitis media whereas incus was found to be the most susceptible. Overall, the order of ossicular involvement was incus>stapes>malleus. In active squamousal disease, stapes and malleus were equally involved.

Keywords: Ossicles, mucosal disease, squamousal disease.
Abbreviations: CSOM-Chronic Suppurative Otitis Media

INTRODUCTION

Chronic Supppurative Otitis Media (CSOM) is a persistent disease, insidious in onset which is clinically manifested with deafness and discharge more than 3 months. Overcrowding, poor living conditions, poor hygiene and nutrition have been enumerated as the reason for the widespread prevalence of CSOM in developing countries.[1-3]

Ossicular erosion may be a feature of atticoantral (or squamousal disease) which is considered unsafe as well as tubotympanic (or mucosal disease) which is considered safe.[4,5] This propensity for ossicular destruction is much greater in cases of unsafe CSOM, due to the presence of cholesteatoma and/or granulations.[6] CSOM is thus an inflammatory process with a defective wound healing mechanism.[7]

This study was undertaken to study the clinical profile of CSOM patients being admitted in ENT IPD for surgery. An attempt was made to study the ossicular status.

Name & Address of Corresponding Author
Dr. Nitin Tomar
Department of ENT and HNS,
Muzaffarnagar Medical College,
Muzaffarnagar,
U.P.

MATERIALS AND METHODS

This retrospective study included patients who underwent tympanoplasty with or without mastoidectomy by the first author in the Department of Otorhinolaryngology, Muzaffarnagar Medical College, a tertiary care centre in the state of Uttar Pradesh. The period of study was from September 2014 to August 2017. This study comprised of 90 patients whose complete records were available. The study was approved by the Institutional Ethical Committee of the college and informed consent taken from patients.

Patients aged more than 08 years, diagnosed with CSOM (mucosal or squamousal) and posted for middle ear surgery were included. Patients who had malignancy of middle ear, otitis externa or previous history of ear surgery were excluded.

The case notes of patients with CSOM who were operated during the study period in our hospital were sort for and retrieved using their registration numbers from the records department. Those who met the inclusion criteria above were included in the study. Subsequently, a proforma was designed to collect the following data: bio-data, symptom history, examination findings, preoperative audiograms and details of their surgical procedure. Intra-operative middle ear findings including erosion

of the individual ossicles, granulation, cholesteatoma and dehiscence of facial nerve canal were noted.

RESULTS

Of all patients, 68 had mucosal disease (64- inactive mucosal and 4- active mucosal) and 22 patients were of squamousal variety (5- inactive disease and 17- active disease). The overall male: female ratio was 1:1.14.

Table: Intra Operative Ossicular Status

Table 1: Malleus.

	normal	%	Eroded handle	%	Eroded head	%	absent	%
Inactive mucosal	64	100	0	0	0	0	0	0
Active mucosal	4	100	0	0	0	0	0	0
Inactive squamousal	5	100	0	0	0	0	0	0
Active squamousal	6	35.29	1	5.88	7	41.18	3	17.65
total	79	87.78	1	1.11	7	7.78	3	3.33

Table 2: Incus.

	normal	%	Lenticular/long process eroded	%	Body eroded	%	absent	%
Inactive mucosal	61	95.31	1	1.56	0	0	2	3.13
Active mucosal	4	100	0	0	0	0	0	0
Inactive squamousal	3	60	2	40	0	0	0	0
Active squamousal	1	5.88	8	47.06	3	17.65	5	29.41
total	69	76.67	11	12.22	3	3.33	7	5.56

Overall, about 38.89 % patients had bilateral disease accounting for the largest group, followed by left ear involvement (33.33%), only right ear was diseased in least number of patients. In atticoantral or active squamousal variety, maximum no. of patients had their left ear diseased (47.06%).

In 10 patients, ossicular erosion could be seen preoperatively; of which 3 patients were with mucosal disease. Most of the patients (41.18%) with active squamousal disease had ossicular erosion evident on examination. Malleus was intact in majority of the patients, and involved in 11 patients with active squamousal disease. Eroded head was the most common finding in diseased malleus (7 patients), followed by absent malleus (3 patients), eroded handle was seen in 1 patient.

Incus was involved in total 21 patients. In inactive mucosal category, 3 patients had involvement of incus (1 lenticular process erosion and in 2-it was absent). Lenticular process/long process erosion was the most common finding, seen in 11 patients (1-active mucosal, 2-inactive squamousal , 8-active squamousal disease) , followed by absent incus, seen in 7 patients (2-inactive mucosal, 5-active squamousal disease). Three patients had eroded body along with long process erosion.

Table 3: Stapes.

	normal	%	Suprastructure eroded	%	absent	%
Inactive mucosal	62	96.88	0	0	2	3.13
Active mucosal	4	100	0	0	0	0
Inactive squamousal	3	60	2	40	0	0
Active squamousal	6	35.29	9	52.94	2	11.76
total	75	83.33	11	12.22	4	4.44

Stapes involvement was seen in 15 patients. Suprastructure erosion was evident in 11 patients (2-inactive squamousal, 9-active squamousal). It was absent in 4 patients (2-inactive mucosal, 2-active squamousal).

Intraoperatively, granulations were found in 11 patients of squamousal disease (2-inactive squamousal disease and 9 active disease). Cholesteatoma was present in all patients of active squamousal disease).

Mastoid cortex fistula was present in 4 patients, all with active squamousal disease. Labyrinthine fistula was seen in 1 patient. Facial nerve was found exposed in total 5 patients (1-inactive squamousal and 4-active squamousal disease). Mastoid tip eroded was found eroded in 1 patient, erosion of posterior wall was evident in 3 patients and extra

dural abscess was seen in 1 patient (all of active squamousal disease).

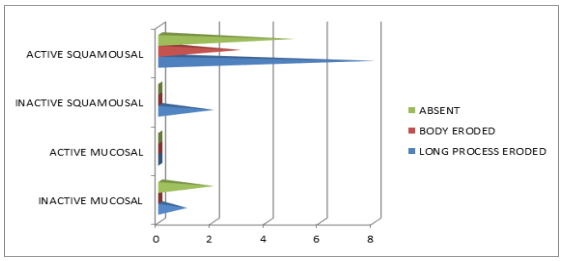

Figure 1: Incus erosion in patients with mucosal and squamousal type of CSOM

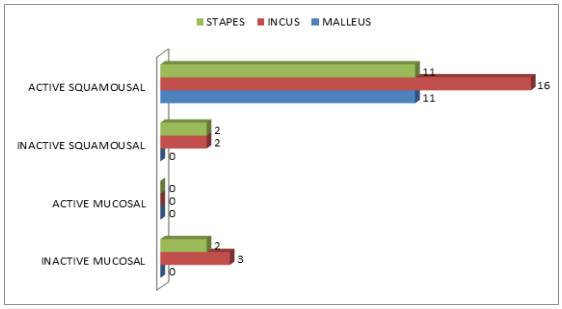

Figure 2: Ossicular involvement in mucosal and squamousal type of CSOM

DISCUSSION

Our study included patients who were admitted and operated under the author. Their case sheet records were retrieved and required details noted.

The study comprised of total 90 patients, of whom 68 had mucosal disease (64-inactive mucosal and 4 active mucosal) and 22 belonged to squamousal category (5-inactive and 17-active squamousal). The male:female ratio was 1.00:1.14. Similar findings have been reported by several other authors where females have outnumbered males.[8-12]

Most of the patients had bilateral disease (38.89%), followed by left ear as the only diseased ear. Bilateral affection may be due to the fact that the etiology or risk factors of CSOM are likely to affect both ears.

Incus was involved most frequently; in 21.11% (long process erosion in 12.22%, followed by absent incus in 5.56% and body eroded in 3.33%). Jareen et al reported it to be 16% in their study.[13] Thomsen et al also quoted long process of incus to be most commonly eroded.[14] In patients with active squamousal disease, incus was involved in 94.12% (long process -47.06%, absent -29.41% and eroded body -17.65%, in that order). Overall, incus was followed by stapes; involved in total 16.66% patients. In active squamousal disease, 64.70% patients had stapes involvement. Malleus was most resistant ossicle, involved in 12.22% patients, all of active squamousal disease (64.71% patients). Head of malleus was most frequently eroded part of malleus in active squamousal disease (41.18%).

Varshney et al also found malleus to be most resistant and incus to be most susceptible ossicle.[11] Albera et al and Mohammadi et al reported most frequent involvement of incus followed by stapes.[15,16] Our results are in correspondence with Binti el al in terms of incus being most involved ossicle in active squamousal disease.[17] Though they reported malleus to be next, our study revealed both malleus and stapes to be eroded in equal number of patients, which is in tandem with Kurein et al who documented 67% patients with stapes and malleus erosion.[18]

CONCLUSION

In this study we found that the incidence of ossicular erosion was much greater in squamousal CSOM than in CSOM with mucosal disease. Malleus was the most resistant ossicle to erosion in chronic suppurative otitis media and was the only ossicle which was exclusively involved in squamousal disease. Incus was found to be the most susceptible. Overall, the order of ossicular involvement was incus>stapes>malleus. In active squamousal disease, stapes and malleus were equally involved.

Thus the surgeon operating patients for cholesteatoma should be prepared to face some degree of ossicular erosion especially of incus. Preoperative consent regarding hearing and ossiculoplasty should be taken and surgery planned accordingly.

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