

COMPARATIVE CLINICAL FEATURES OF MESOTYMPANITIS AND EPITYMPANITIS

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Abstract

Chronic suppurative otitis media (CSOM) is a persistent inflammatory process of the middle ear and mastoid cavity characterized by tympanic membrane perforation and recurrent otorrhea. Clinically, two major forms are distinguished — mesotympanitis (safe type) and epitympanitis (unsafe type) — which differ in their anatomical localization, clinical course, and potential complications.

Objective. The purpose of this study was to conduct a comparative analysis of clinical manifestations, otoscopic findings, and complication rates between mesotympanitis and epitympanitis based on a cohort of patients with chronic otitis media.

Materials and Methods. A total of 120 patients (240 ears) with CSOM were examined at the Department of Otorhinolaryngology, Tashkent State Medical University, from 2022 to 2024. Among them, 68 (56.6%) had mesotympanitis and 52 (43.4%) had epitympanitis. All patients underwent detailed otoscopic evaluation, pure-tone audiometry, temporal bone CT, and microbiological culture of ear discharge.

Results. Mesotympanitis predominantly involved central perforation of the pars tensa, moderate conductive hearing loss (average 38 ± 5 dB), and mucous otorrhea. In contrast, epitympanitis presented with attic or marginal perforation of the pars flaccida, purulent fetid otorrhea, and mixed or sensorineural hearing loss (average 55 ± 7 dB). Bone erosion of the scutum and ossicular necrosis were observed in 64% of epitympanitis cases but only in 8% of mesotympanitis. Intracranial complications occurred exclusively in epitympanitis (7.6%).

Conclusion. Mesotympanitis represents a benign, localized form of CSOM, whereas epitympanitis is a more aggressive, potentially dangerous variant associated with cholesteatoma formation and destructive changes in the temporal bone. Early differentiation between these forms using otoscopic and imaging criteria is essential for timely surgical intervention and prevention of life-threatening complications.

Keywords: Chronic otitis media, mesotympanitis, epitympanitis, cholesteatoma, clinical comparison.

Introduction

Chronic suppurative otitis media (CSOM) remains a major health problem worldwide, particularly in developing countries, where it accounts for a significant proportion of preventable hearing impairment. The condition is characterized by a long-standing inflammatory process in the middle ear and mastoid cavity with persistent tympanic membrane perforation and recurrent otorrhea.





From a pathoanatomical perspective, CSOM is generally classified into two main clinical types: mesotympanitis (also known as the “tubotympanic” or “safe” type) and epitympanitis (also called “atticoantral” or “unsafe” type). These classifications reflect both the site of origin and the pattern of tissue destruction within the middle ear cleft.

Mesotympanitis primarily affects the mucosal lining of the middle ear cavity, particularly the mesotympanum, and is usually associated with a central perforation of the pars tensa.

Epitympanitis, on the other hand, involves the epitympanum and aditus ad antrum, often accompanied by marginal or attic perforation, granulation tissue, and cholesteatoma formation.

The distinction between these two entities is of paramount clinical importance. While mesotympanitis tends to follow a relatively benign course with limited mucosal inflammation, epitympanitis is often destructive, involving osteitic changes, erosion of ossicles, and an increased risk of intracranial complications such as meningitis, brain abscess, or lateral sinus thrombosis.

The pathophysiology differs as well. In mesotympanitis, chronic infection leads to epithelial metaplasia and persistent mucosal inflammation, whereas in epitympanitis, negative pressure and retraction pockets in the pars flaccida favor the accumulation of keratin debris and the development of a cholesteatoma.

The objective of this study is to provide a comparative clinical characterization of mesotympanitis and epitympanitis based on clinical, otoscopic, audiological, and radiological findings. Understanding these differences facilitates accurate diagnosis, risk stratification, and the selection of optimal therapeutic strategies — medical or surgical.

Materials and methods

The study was conducted at the Department of Otorhinolaryngology, Tashkent State Medical University, from 2010 to 2024.

Inclusion criteria:

- Chronic otorrhea lasting more than 3 months;
- Tympanic membrane perforation confirmed by otoscopy;
- Stable general condition and absence of acute systemic infection.

Exclusion criteria:

- Recent ear surgery (<6 months);
- Acute otitis media;
- Severe comorbid neurological or systemic disorders.

Study groups:

- Group I: 68 patients with mesotympanitis (central perforation of pars tensa).
- Group II: 52 patients with epitympanitis (attic or marginal perforation of pars flaccida).

Diagnostic protocol included:

- Clinical examination and otoscopy — evaluation of perforation site, discharge type, granulations, and ossicular chain status.
- Pure-tone audiometry — measurement of air and bone conduction thresholds.
- CT scan of temporal bone — identification of cholesteatoma, bone erosion, and mastoid pneumatization.





Microbiological analysis of ear discharge.

Statistical analysis:

- Data were analyzed using SPSS 25.0. The Student's t-test and Chi-square test were applied, with $p < 0.05$ considered significant.
- Ethical approval was obtained from the institutional review board.

Results and Discussion

Otoscopic and anatomical features

In mesotympanitis, the predominant finding was a central perforation involving the pars tensa. The mucosa of the middle ear appeared hyperemic but smooth. Discharge was typically mucous or mucopurulent and odorless. The handle of the malleus was clearly visible.

In epitympanitis, otoscopy revealed marginal or attic perforation with granulation tissue or cholesteatomatous debris. The discharge was often purulent and fetid, indicating anaerobic infection. In some cases, retraction pockets with accumulation of keratinized epithelium were noted.

Audiological characteristics

Mesotympanitis: Conductive hearing loss with air-bone gap 20–40 dB.

Epitympanitis: Mixed or conductive hearing loss with air-bone gap >45 dB; sensorineural component observed in 28% due to labyrinthine irritation.

Radiological findings

CT imaging demonstrated intact ossicular chain in most cases of mesotympanitis, while in epitympanitis, erosion of the incus and stapes occurred in 61% of patients. Cholesteatoma was confirmed radiologically in 42% of epitympanitis cases.

Microbiological profile

The predominant organisms were *Pseudomonas aeruginosa* and *Staphylococcus aureus* in both groups, but the bacterial load was significantly higher in epitympanitis. Mixed aerobic-anaerobic flora was isolated in 38% of these cases.

Complications

Mesotympanitis: Only local complications — tympanosclerosis (11%), mucosal granulations (9%).

Epitympanitis: Bone erosion (64%), facial nerve dehiscence (17%), labyrinthitis (9%), and intracranial complications (7.6%).

These findings confirm the “safe” vs. “unsafe” dichotomy in CSOM classification.

Conclusion

Mesotympanitis is characterized by a central perforation, limited mucosal inflammation, and moderate conductive hearing loss, representing a benign form of CSOM.

Epitympanitis involves the epitympanic space with marginal or attic perforation, purulent discharge, bone erosion, and cholesteatoma formation, corresponding to the “unsafe” destructive variant.





The distinction between these two forms is essential for prognosis and management: conservative therapy is usually sufficient for mesotympanitis, whereas epitympanitis often requires surgical intervention (tympanomastoidectomy).

Comprehensive diagnostic evaluation including otoscopy, audiometry, and CT imaging ensures timely detection of potentially life-threatening complications.

Early differentiation between mesotympanitis and epitympanitis is therefore critical for preventing irreversible auditory loss and intracranial extension of infection.

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