

# Per-Operative Evaluation of Chronic Suppurative Otitis Media after Mastoid Exploration

Chronic  
Suppurative  
Otitis Media  
After Mastoid  
Exploration

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## ABSTRACT

**Objective:** To describe the per-operative findings of chronic suppurative otitis media atticofurcal type on mastoid exploration.

**Study Design:** Descriptive case series study.

**Place and Duration of Study:** This study was conducted at the Department of Oto-Rhino Laryngology Head and Neck Surgery, Shaheed Mohtarma Benazir Bhutto Medical College & Sindh Govt. Lyari General Hospital Karachi from March, 2019 to February, 2020 for a period of one year.

**Materials and Methods:** 30 patients of CSOM, atticofurcal type with cholesteatoma, were operated through canal wall down technique for the per-operative examination.

**Results:** Among 30 cases 73% were male and 27% were female with mean age of 20.63 (SD  $\pm$  6.95). middle ear and mastoid with ossicular chain damage was the most prevalent one per-operative finding was observed.

**Conclusion:** Periphery living condition showed higher prevalence chronic CSOM. No data available for the post-operative evaluation as there was no follow up of patients.

**Key Words:** Otitis media, cholesteatoma, mastoid exploration

**Citation of article:** Jilani MA, Ahmed S, Soomro SH, Abro AA, Abro A, Shah V. Per-Operative Evaluation of Chronic Suppurative Otitis Media After Mastoid Exploration. Med Forum 2021;32(6):58-61.

## INTRODUCTION

Inflammation of the middle ear cleft which is suppurative and chronic lasts more than 3 months results clinical deafness and discharge this condition known as chronic suppurative otitis media (CSOM)<sup>1</sup>. CSOM can be of two types, tubotympanic and atticofurcal. First one is less complicated and other one is associated with cholesteatoma with deep under lying bone inflammation<sup>2</sup>. Cholesteatoma has bone invasive properties which may be due to release of collagen and osteolytic enzymes from the subepithelial connective tissue and by the release of inflammatory mediators including the cytokine, interleukin 1a from macrophages and epidermal keratinocytes. Bilateral cholesteatoma is a rare presentation<sup>3</sup>.

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Received: January, 2021  
Accepted: February, 2021  
Printed: June, 2021

Chronic suppurative otitis media may also be associated with extra cranial (0.5-1.4%) and intracranial (0.3-2%) complications<sup>4</sup>. Atticofurcal type is considered to be highly chronic early treatment may be fruitful<sup>5</sup>. There are reported two surgical techniques for CSOM patients one is open cavity mastoidectomy (canal wall down) and second is closed cavity mastoidectomy (canal wall up)<sup>6</sup>. Canal wall down (CWD) approach was done in this study to examine the per-operative condition of CSOM patients. The importance of this study is to observe per operative findings that the patients with atticofurcal disease in accordance with damage to the surrounding structures, to help in reconstruction of middle ear and restoration of hearing.

The rationale of the study is that in tympano mastoid surgery we shall find the site of cholesteatoma and granulation tissues and its extension and implication of this pathological process to surrounding structures that is integrity of the ossicular chain, bone destruction, labyrinthine or facial nerve involvement, sigmoid sinus involvement.

## MATERIALS AND METHODS

Ethical review board ERB of SMBMU College & Sindh Govt. Lyari General Hospital Karachi approved this descriptive case study and conducted at Department of Oto-Rhino Laryngology Head and Neck Surgery, Civil Hospital Karachi and the duration of this study was 12 months from 01 March 2019 to 28 February 2020. After taken the written informed consent from

the patients' per-operative observations and images were taken. Total 30 patients of CSOM were enrolled in this study.

**Inclusion criteria:** All the patients of either sex presenting with atticofur type of chronic suppurative otitis media with cholesteatoma.

**Exclusion Criteria:** All the cases of tubo tympanic type of chronic suppurative otitis media.

Patient were evaluated by history, clinical examination of ear, nose and throat. Otoscopy and otomicroscopy of ear were also done. Observational parameters include Complete blood picture, urine examination, bleeding profile, aural pus swab for culture and sensitivity for every discharging ear, audiometry, radiological examination i.e., X-ray of mastoid, chest and PNS. CT-Scanning of the temporal bone advised in special cases. Canal wall down technique was used to per-operative findings on all the patients. Data was statistically analyzed through SPSS V10.

## RESULTS

Among 30 subjects 66.66% were observed in 10 to 20 years of age (Table 1).

CSOM is highly prevalent in males as 73.33% (Table 2). and Under prevailed population (Table 3, 4). 73.33% subjects showed ear discharge (Table 6).

The Cholesteatomic condition was observed highest during the per-operative finding (Table 8)

**Table No.1: Age Distribution (30 Cases)**

S.no	Age in years	Number of cases	%age
1	0.5-10	03	10%
2	11 -20	20	66.66%
3	21-45	07	23.33%

**Table No.2: Sex Distribution (30 Cases)**

S.no	Sex	Number of cases	%age
1	Male	22	73.33%
2	Female	08	26.66%

**Table No.3: Socio Economic Status (30 Cases)**

S.No	Status	Number of cases	%age
1	Poor	20	66.66%
2	Fair	05	16.66%
3	Average	05	16.66%

**Table No.4: Area Distribution (30 Cases)**

S.no.	Area	Number of cases	%age
1	Rural	20	66.66%
2	Urban	10	33.33%

**Table No.5: Side Predilection (30 Cases)**

S.no	Ear	No. of Pts	%age
1	Right	20	66.66%
2	Left	10	33.33%

**Table No.6: Discharge Observation (30 Cases)**

S.No	Nature of discharge	Number of cases	%age
1	No discharge	08	26.66%
2	Thick purulent Foul smell Blood stained	22	73.33%

**Table No.7: Management & Surgical Technique (30 Cases)**

S.No	Management	Number of cases	%age
1	Mastoid Exploration	30	100%
2	CWD Technique i. Radical ii. Modified Radical	27 03	90% 10%

**Table No.8: Per-Operative Findings (30 Cases)**

S.No	Pathology seen	No.of cases	%age
1	Cholesteatoma extended to mastoid & Middle ear cavity	20	66.66%
2	Granulation tissues with Cholesteatoma	07	23.33%
3	Aural Polyp with Cholesteatoma	03	10%
4	Facial Canal dehiscence	10	33.33%
5	Ossicular chain involvement Malleus, incus and head of stapes involved & necrosed	20	66.66%
6	No ossicle was present	07	23.33%
7.	Preservation of supra structure only (Foot plate of stapes)	03	10%

## DISCUSSION

Cholesteatoma is notorious to cause more damage. Potentially it is dangerous because of its capacity to destroy bone. This action allows the spread of infection beyond the middle ear and pneumatized areas of temporal bone, and may result in otologic and intracranial complications<sup>7</sup>.

This study was conducted to determine the per-operative findings of chronic suppurative otitis media atticofur type with cholesteatoma in 30 cases.

Chronic suppurative otitis media is a disease of children and young adults, its incidence decreases after the age of forty years and relatively low after sixty years<sup>8</sup>. The results of this study are, 66.66% of patients were under the age of 20 years which was comparable to the study of Murugan, N at Madurai<sup>9</sup>. Similar findings were obtained in the study of Goh BS, et al<sup>10</sup>. In our study males were (73.33%), effected more than females (26.66%) this ratio was comparable to the study of Sangeetha S, et al<sup>11</sup> while contradicting with the study of Sinnatamby CS<sup>7</sup> in which male and female ratio was (40% & 60%). In multiple studies it is reported that most of the patients belonged to underprivileged communities which seconds the result of this study<sup>7,10,11</sup>.

In our study ear discharge was present in 22 patients (73.33%) at the time of operation while in 8 patients (26.66%) ears were dry on mastoid exploration.

In our study all the patients under went mastoid exploration by canal wall down technique and the per-operative findings were cholesteatoma, ossicular chain was involved and necrosed in (66.66%) cases, no ossicle was seen in (23.33%) cases, while the supra structure of the stapes was preserved in (10%) cases only which was comparable to the study of Baklaci D<sup>12</sup>.

In our study 5 patients age ranged between 05 to 14 years in which behavior of cholesteatoma was more aggressive than in adults and a worse state of ossicular chain was observed which was comparable to the study of Zang J, et al<sup>13</sup> and Cassano, P. et al<sup>14</sup>. In our study cholesteatoma was present in the middle ear and mastoid with necrosis of multi ossicular chain, while contradicting with the study of Panetti G, et al.<sup>15</sup> in which they reported that attic cholesteatoma was present in (70%), mastoid involvement was present in (50%), extensive cholesteatoma was present in (38.7%) and sinus tympani involvement was present in (28%) cases in 70 patients. In our study there was deeper extension of cholesteatoma in sinus tympani in 12 patients (40%) and granulation tissues were present with destruction to the ossicles in 7 patients (23.33%) which was comparable to the review by Verma, B, & Dabholkar YG.<sup>16</sup> In our study facial canal dehiscence was observed in 10 patients (33.33%) out of them 7 patients (23.33%) were male and 3 patients (10%) were female which was comparable to the study of Kalcioğlu, M. T et al<sup>17</sup> and Sharma S, et al<sup>18</sup> while contradicting to the study of Sangeetha, S. et al<sup>11</sup> at Tamil Nadu. Ossicular chain damage was observed as most common complication almost in all cases having cholesteatoma while temporal lobe abscess was present in 1 patient of seven years age this was compared with the studies of Toros SZ, et al<sup>19</sup> and Kahn SA, et al<sup>20</sup>. They had observed significant extra cranial and intra cranial complications.

According to study performed by Zang J, et al<sup>21</sup> a delayed ossicular reconstruction is the preferred option when extensive middle ear / mastoid surgery is performed but, in our setup, due to economical constraints the patients are unable to come for second stage procedure from far areas so single stage surgery is more practicable.

## CONCLUSION

Prevalence of chronic supportive otitis media atticotympanic type with cholesteatoma is equal in both sexes. And there is a high prevalence was observed in under privileged community and in age group of 10 to 20 years.

### Author's Contribution:

Concept & Design of Study:	Muhammad Aqil Jilani
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Final Approval of version:	Muhammad Aqil Jilani

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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