A PROSPECTIVE OBSERVATIONAL STUDY OF INTRAOPERATIVE PATTERN OF OSSICULAR STATUS IN PATIENTS OF CHRONIC SUPPURATIVE OTITIS MEDIA MUCOSAL TYPE AND ITS CO-RELATION WITH INTRAOPERATIVE CATEGORIZATION OF PATIENTS ACCORDING TO BELLUCI'S CLASSIFICATION

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AIMS AND OBJECTIVES
AIM:

To study the intraoperative pattern of ossicular status in patients of chronic suppurative otitis media mucosal type and its co-relation with intraoperative categorization of patients according to Belluci's classification.

OBJECTIVES:

1. To note the intraoperative ossicular status whether intact/necrosed or fixed due to sclerosis.

2. To note Tympanic membrane status preoperatively (size of perforation, TS, etc)

3. To note Middle ear mucosa status preoperatively (normal, edematous, polypoidal, etc) & pre operative category of patients according to Bellucci's classification.

4. To note preoperative hearing deficit as average of Air bone gap (conductive deafness) at - 1000 Hz, 2000 Hz, 3000 Hz & 4000 Hz.

INTRODUCTION

Hearing is just receiving sound waves : listening is interpreting their meaning. Hearing without comprehension is like looking without seeing.

Hearing loss due to CSOM is a major problem in the developing countries due to various factors like poor living conditions, overcrowding, poor hygiene and nutrition in the developing countries. [1,2].

Chronic otitis media inactive mucosal type is an inflammatory condition involving the middle ear cleft which is associated with ear discharge and a permanent tympanic membrane perforation which can lead to the thickening of middle ear mucosa and subsequent polyps.

CSOM, mucosal may lead to erosion of the ossicular chain.

The proposed mechanism for ossicular erosion is chronic middle ear inflammation as a result of overproduction of cytokines—TNF alpha 1, interleukin-2,fibroblast growth factor, and platelet derived growth factor, which promote neovascularization , granulation tissue formation, osteoclast activation and bone resorption causing ossicular damage.[3]

Bellucci is a prognostic index that indicates the middle ear mucosal status and this thus helps in determining the prognosis of ossiculoplasty results.

Hence this study to analyze the status of ossicular chain intraoperatively and consequent hearing loss if any in patients of CSOM mucosal type with its coorelation to bellucci classification that helps to determine the outcome of ossiculoplasty.

Bellucci [4] proposed a dual classification comprising a nomenclature of the stability of the ear against infection and the original Wullstein classification:

Bellucci classification :

Bellucci 1 : Good prognosis

Always dry, ear is stablised for long period

Bellucci 2 : Fair prognosis

Occasionally wet, alternates dry and wet. Ear is stabilised but discharges during URL

Bellucci 3: Poor prognosis

Always wet, persistent discharge. No periods of quiescence. Mastoiditis.

Bellucci 4: Very poor prognosis

Chronic discharge present. Cleft palate or major nasopharyngeal deformity.

Bellucci Classification of otorrhea[5]

Otorrhea	Risk value
Dry ear	0
Occasionally wet	1
Persistently wet	2
Persistently wet + cleft palate	3

MATERIAL & METHODS

This study is a prospective, observational one for which data was collected from the patients attending ENT OPD and undergoing surgical management of CHRONIC OTITIS MEDIA INACTIVE MUCOSAL TYPE at Dhiraj Hospital.

Study Design : Prospective observational study.

Sample size: 50 patients.

 Calculated by following formulae-

Sample size $n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$

During the study clinical history taking & otoscopic examination including pure tone audiometry of CSOM mucosal type patients coming to ENT OPD at Dhiraj Hospital was done. All patient were allocated in study according to the inclusion and exclusion criteria. Surgery was carried out under Local or General Anesthesia using standard post aural/transcanal approach in all patients. Intraoperative findings of the ossicular pattern was noted. All data was noted in predesigned proforma for the study.

INCLUSION CRITERIA :

Patients undergoing operative management for chronic suppurative otitis media mucosal type.

EXCLUSION CRITERIA :

 Patients not giving consent to be a part of the study.

Patients unfit for surgery.

Patients undergoing conservative management.

Patients having sensorineural hearing loss preoperatively.

Result and observation

In our present study , we studied 50 cases of chronic suppurative otitis media mucosal type during the time period of one year.

Table 1 : Distribution of patients according to Age

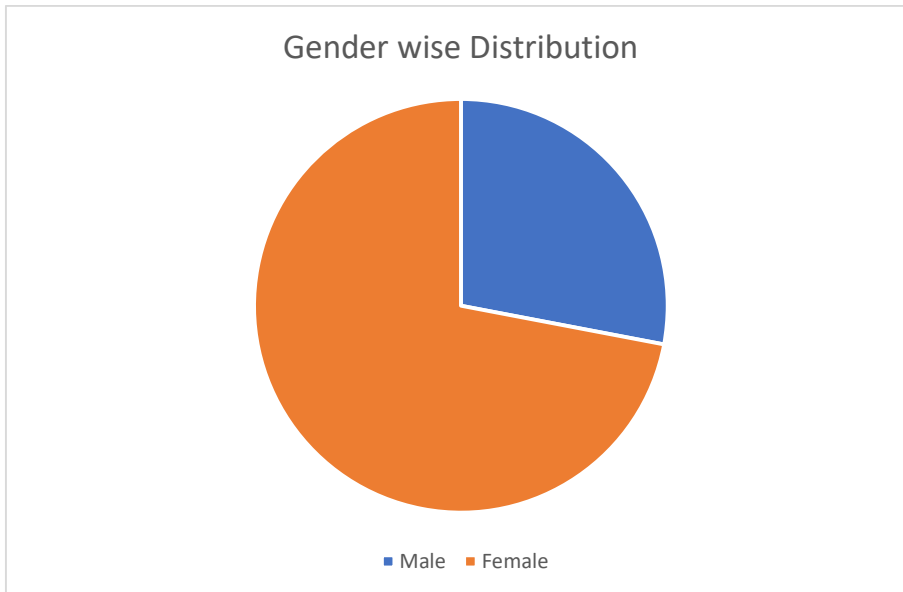| Sr No.	AGE	NUMBER	PERCENTAGE
1	<20	8	16%
2	20-29	13	26%
3	30-39	13	26%
4	40-49	14	28%
5	>=50	2	4%
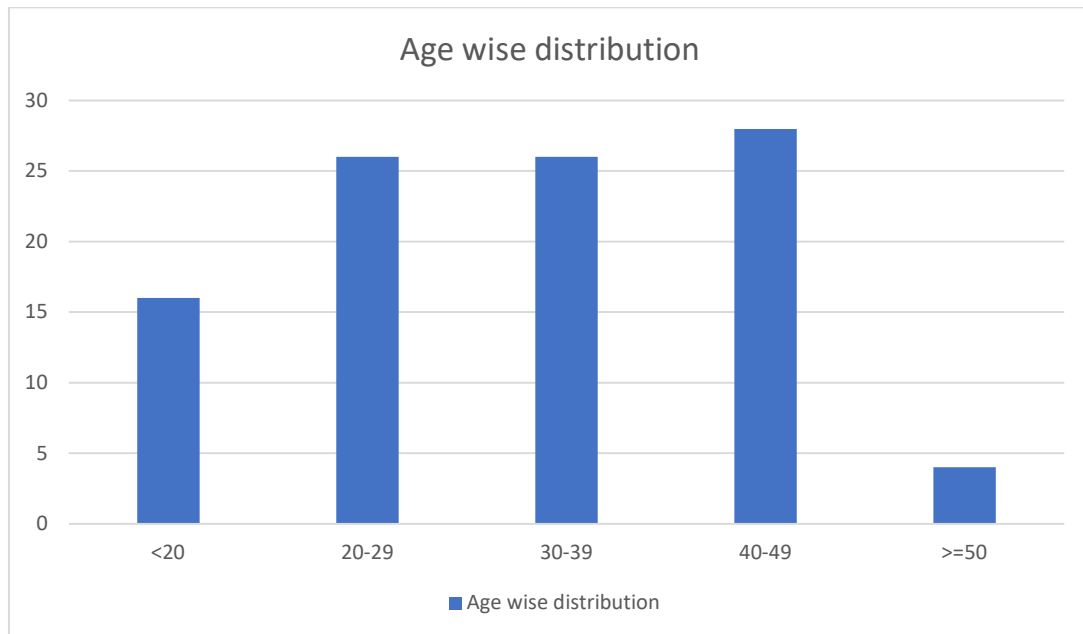
In our present study, maximum patients lies in the age group of 40-49 years(14 patients) and then subsequently in 20-29 and 30-39 years of age group followed by less than 20 years of age followed by the age group of more than 50 years(2 patients).

Table -2: Distribution of patients according to sex

Sr. No	Gender	Number

| 1 | Male | 14 |
| 2 | Female | 36 |

Gender wise Distribution

- Male - Female

In our present study , 72% patients are females while rest 28% are males.

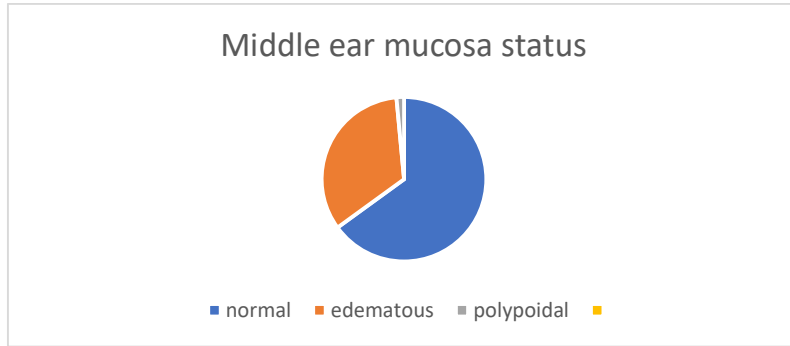**Table 3 : Distribution of patients according to tympanic membrane status**

Sr No.	Tympanic membrane perforation size	Number	Percentage
1	Small	15	30%
2	Medium	17	34%
3	Large	13	26%
4	Subtotal	5	10%

Out of 50 patients assessed and operated , 34% had medium sized perforation followed by small perforation (30%) , large perforation (26%) and then subtotal perforation (10%).

Table 4: Distribution of patients according to middle ear mucosa status

Sr No.	Middle ear mucosa status	Number	Percentage
1	Normal	31	62%

| 2 | Edematous | 16 | 32% |
| 3 | Polypoidal | 3 | 6% |

Middle ear mucosa status

■ normal ■ edematous ■ polypoidal ■

62% of operated cases had normal healthy middle ear mucosa while 32% had edematous mucosa and 6% had polypoidal mucosa.

Table 5: Distribution of patients according to Bellucci Classification

Sr No.	Bellucci Classification	Number	Percentage
1	1	30	60%
2	2	19	38%
3	3	1	2%
4	4	0	0%

Out of all patients assessed,

- 60% of them Always had dry stable ear for long period (Belluci 1),
- 38% patients had occasionally wet, (usually dry but discharges during URTI) (Belluci 2) ,
- 2 % patients had Always wet, persistent discharge (Belluci 3)
- None of the patients had cleft palate or any major nasopharyngeal deformity (Belluci 4).

Table 6: Distribution of patients according to intraoperative ossicular chain status

Sr No.	Ossicular status	Number	Percentage (of total sample size)

1	Isolated lenticular process necrosis	6	12%
2	Isolated long process necrosis	1	2%
3	Isolated malleus handle erosion	1	2%
4	Isolated malleus neck erosion	1	2%
5	Isolated long process of incus and stapes suprastructure	1	2%
6	Incus eroded/absent	2	4%
7	All three ossicles erosion	0	0

Out of all the patients assessed ,

- 24% (12 patients) of people have ossicular chain necrosis while 76% (38 patients) of people have normal ossicular chain.
- Majority of the patients (6 patients) have isolated lenticular process of incus necrosis,while 2 patients have absent incus.

Table 7: Distribution of patients according to intraoperative ossicular chain status and its corelation with belluci classification

Sr. No.	Belluci Classification	Total patients	Ossicular chain necrosis present	Intact ossicular chain	Percentage of necrosis in each category
1	1	30	4	26	13.33%
2	2	19	7	12	36.8%
3	3	1	1	0	100%
4	4	0	0	0	0

Out of the 50 patients assessed and operated ,

•	86.6% patients who have dry stable ear (Belluci class 1) had intact ossicular chain while 13.3% remaining patients had ossicular chain necrosis

•	63.2 % patients who have occasionally wet ear (Belluci class 2) had intact ossicular chain while 36.8% remaining patients had ossicular chain necrosis

•	Only one patient presented with persistent wet ear (belluci class 3) and had ossicular chain necrosis.

•	No sufficient data was available on Belluci class 4 patients.

<u>CONCLUSION</u>

•	This study was useful in understanding the burden of the disease in the population.

•	This study shows the effects of persistent otorrhea and the subsequent risk of ossicular chain erosion it causes. Thus causing hearing loss and increasing the burden of hearing disability among the working class population.

•	Belluci's classification works as a prognostic factor and can thus help us predict the likelihood of a successful tympanoplasty.

•	It can help us to guide for patient selection and counselling of patients pre operatively

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