



**ORIGINAL RESEARCH PAPER**

**ENT**

**A STUDY ON TYMPANOMASTOID SURGERY WITH TYMPANOPLASTY IN A TERTIARY CARE HOSPITAL**

**KEY WORDS:** tympanomastoid, Tympanoplasty

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**ABSTRACT**

Chronic suppurative otitis media is quite a common disease in Odisha. Because of lack of awareness, low socio economy status and paucity of trained health care professional, such patients do not get a proper treatment in time leading to different complications. A study was conducted in Department of E.N.T. & Head and neck Surgery- V.S.S. Medical College, Burla, between November 2013 TO October 2015 to gain a knowledge base about different aspects of tympanomastoid surgery (pre and postoperatively) to throw light on management patterns of such cases. Altogether, 260 patients undergoing tympanomastoid surgery were taken for the study and 120 no. of them could be followed up and proper data was collected and analysed.

**INTRODUCTION**

Chronic suppurative otitis media is one of the commonest disease entity presenting in E.N.T. departments across our country. It is characterised by persistent or intermittent otorrhea, hearing loss, otalgia and the cardinal feature of tympanic membrane perforation. It is quite a prevalent disease with global prevalence of 65-330 million individuals with India accounting for more than 4% of prevalence (highest in the world) as per WHO PUBLICATION, GENEVA.2004.

Few decades ago, the aim of surgical intervention in the discharging ear was to control infection only. But, with the advent of operating microscope, newer investigation modalities and better antibiotic, the aim has changed to hearing restoration along with prevention of complications. To achieve this goal tympanomastoid surgery has become the main stay of treatment modality.

In Odisha, cases of chronic suppurative otitis media are quite common. Because of low socio-economic status, lack of education and awareness, many present with gross hearing loss and complications. To make their ear dry and prevent complication as well as improve hearing, tympanomastoid surgery is the mainstay of intervention in them.

The present study was undertaken to clinically assess all the cases undergoing tympanomastoid surgery (pre and postoperatively) and study the different outcomes of the procedures

**MATERIALS AND METHODS**

The patients taken for this study were those attending Department of E.N.T. & Head and neck Surgery- V.S.S. Medical College, Burla between November 2013 TO October 2015. The present study took 260 no. of such cases. Only those cases undergoing tympanomastoid surgery were included in the study after obtaining wilful written consent.

The patients were thoroughly clinically examined as regard their symptoms in the following phases:

- (1) Preoperative otolaryngologic clinical examination
- (2) Preoperative hearing assessment
- (3) Intraoperative middle ear and mastoid status
- (4) Postoperative follow-up

Pure tone audiometry was done in every case. X-ray of skull (lateral view) and PNS, CT scan temporal bone routine, haematological investigations and examination under microscope were done. During surgery, presence or absence of cholesteatoma or granulation tissue, condition of middle ear and mastoid including status of ossicular chain were kept in record. Patients were followed up and their hearing status was evaluated at three months postoperatively.

**RESULTS**

The incidence of cases of chronic suppurative otitis media is 20.83% over a period of two years in respect of total patients attending ENT OPD. Out of them, 260 no. of csom cases were taken up for surgical intervention.

**TABLE – 1 INCIDENCE OF CSOM CASES IN THE SPECIFIED TIME PERIOD**

TIME PERIOD	TOTAL ENT Pts. IN OPD	No. OF CSOM CASES	% OF CSOM CASES
! NOV. 2013 TO OCT 2015	96000	20000	20.83
TIME PERIOD	TOTAL ENT Pts. IN IPD	No. OF CSOM CASES	% OF CSOM CASES of total ENT Pts.
NOV. 2013 TO OCT 2015	2526	260	10.29

Sex distribution wise, maximum patients were in between 11-20 years in age for both sexes and correspondingly that age group was predominant to undergo tympanomastoid surgery. Male patients predominated (63.85%) over female patients (36.15%) in the surgery group. 70% of cases belonged to rural areas and bilaterality was noted in only 34 (13%) cases. Maximum no. of cases (134) had a duration of symptoms of more than five years.

**TABLE – 2 SEX DISTRIBUTION**

TABLE-2		
SEX	NO OF PATIENTS	PERCENTAGE
MALE	166	63.85
FEMALE	94	36.15
TOTAL	260	100

In the series, 252 (96.92%) patients presented with complain of otorrhoea followed by varying degree of deafness (231). Both the symptoms were present in 208 patients (80%).Symptoms like tinnitus, otalgia and headache were complained by 56 (21.54%), 74 (28%), 34 (13%) number of patients respectively. Post aural discharge, swelling and mass in ear canal were the symptoms with 23 (8.85%), 32 (12%), 12 (4%) no. of cases. Central perforation was seen in 208 (80%) cases followed by attic retraction in 22 cases and posteriosuperio retraction pocket in 10 (3%) cases. Marginal perforation was present in only 6 cases. 212 cases were with conductive hearing lass and 48 had mixed hearing loss.

**TABLE-3 DURATION OF EAR DISCHARGE**

TABLE- 3		
DURATION OF EAR DISCHARGE	NO OF PATIENTS	PERCENTAGE
<1 YEAR	31	11.92
1-5 YEAR	95	36.54
>5 YEAR	134	51.54
TOTAL	260	100

**TABLE – 4 CLINICAL PRESENTATIONS**

TABLE- 4		
CHIEF COMPLAINS	NO OF PATIENTS	PERCENTAGE
OTORRHOEA	252	96.92
DEAFNESS	231	88.85
DEAFNESS+ OTORRHOEA	208	80
TINNITUS	56	21.54
VERTIGO	10	3.85
PAIN	74	28.45
HEADACHE	34	13.08
FEVER	42	16.15
DISCHARGE BEHIND EAR	23	8.85
SWELLING BEHIND EAR	32	12.3
MASS IN THE EAR	12	4.62

**TABLE- 5 INCIDENCE AND TYPE OF HEARING LOSS**

TABLE-5		
TYPE OF HEARING LOSS	NO OF PATIENTS	PERCENTAGE
CONDUCTIVE LOSS	212	81.54
SENSORINEURAL LOSS		0
MIXED LOSS	48	18.46
TOTAL	260	100

As far as surgery is concerned, Type-1 tympanoplasty was done in majorities of cases 132 (51%) followed by combined approach tympanoplasty in 48 (18%) cases. Intra operatively, healthy middle ear mucosa was noted in 106 ( 40%) cases, cholestatoma in 68 ( 26%) cases, granulation in 40 ( 15%) cases and combination of cholestatoma and granulation in 46 ( 17%) cases. Most common ossicle to be affected was incus.

**Table-6 Surgical Technique And Approaches Involved**

TABLE-6				
Surgical Technique	No. Of Patients	Approaches		Percentage (%)
		Postaural	Endaural	
Tympanoplasty	168	158	10	64.61
TYPE- I	132	122	10	50.77
TYPE- II	24	24	0	9.23

**TABLE-9 HEARING ASSESSMENT AFTER DIFFERENT SURGERIES**

TABLE-9					
TYPE OF SURGERY	NO OF PATIENTS FOLLOWED UP	HEARING GAIN	HEARING LOSS	NO CHANGE	PERCENTAGE OF PATIENTS SHOWING HEARING GAIN
TYPE I TYMPANOPLASTY	36	36	0	0	100
TYPE II TYMPANOPLASTY	12	10	1	1	83.33
TYPE III TYMPANOPLASTY	8	5	1	2	62.5
MRM (CWD) + TYMPANOPLASTY	12	6	3	3	50
COMBINED APPROACH TYMPANOPLASTY	43	42	1	0	97.67
RADICAL MASTOIDECTOMY	9	0	9	0	0

Out of the 260 cases operated, 120 cases regularly came for follow-up and they were followed up by regular audio logical evaluation and through clinical examinations. Out of the cases, tympanoplasty had been done in 56 and combined approach tympanoplasty in 43 cases. Hearing gain was maximum in Type-1 tympanoplasty cases followed by combined approach tympanoplasty group.

**DISCUSSION**

Tympanomastoid surgery has become the mainstay of management modality for both safe and unsafe type of csom.

The incidence of csom is quite prevalent in Odisha. The present study shows the incidence is 20.83% over two years period in respect to total patients attending ENT OPD. This incidence is comparable to the observation of Rao et al 1 (1994) who observed 120 cases of csom in a series of 921 ENT OPD attendance.

Most affected age group was 11-20 years (50.77%) followed by 21-30 years group (26.92%). Similar observation was made by Rao et al<sup>1</sup> (1994), Handa et al<sup>2</sup> (1996), Bskota et al<sup>3</sup>(1998), Gulati et al<sup>4</sup> (2002,) Behera et al<sup>5</sup> (2013).

TYPE- III	12	12	0	4.61
Modified Radical Mastoidectomy(cwd)+ Tympanoplasty	32	32	0	12.31
Combined Approach Tympanoplasty	48	48	0	18.46
Radical Mastoidectomy	12	12	0	4.61
TOTAL	260	250	10	100

**TABLE- 7 DISTRIBUTION OF PATHOLOGY IN MIDDLE EAR CAVITY**

TABLE-7		
PATHOLOGY	NO OF PATIENTS	PERCENTAGE
HEALTHY MIDDLE EAR MUCOSA	106	40.77
CHOLESTEATOMA ALONE	68	26.15
CHOLESTEATOMA WITH GRANULATION	46	17.69
GRANULATION ALONE	40	15.38
TOTAL	260	100

**TABLE—8 SURGICAL TECHNIQUE AND APPROACHES EMPLOYED IN 120 PATIENTS**

TABLE-8				
Surgical Technique	No. Of Patients	Approaches		Percentage (%)
		Postaural	Endaural	
Tympanoplasty	56	46	10	46.66
TYPE- I	36	26	10	30.00
TYPE- II	12	12	0	10.00
TYPE- III	8	8	0	6.66
Modified Radical Mastoidectomy(cwd)+ Tympanoplasty	12	12	0	10.00
Combined Approach Tympanoplasty	43	43	0	35.84
Radical Mastoidectomy	9	9	0	7.50
Total	120	110	10	100

Total number of male patients were 166 (63%) as compared to 94 (36%) female patients. Similar observation was made by Rao et al 1 (1994), Handa et al<sup>2</sup> (1996), Bskota et al<sup>3</sup>(1998), Gulati et al<sup>4</sup> (2002,) Behera et al<sup>5</sup> (2013).

Total 182(70%) cases belong to rural areas as compare to 78(30%) from urban areas. Almost same findings were reported by Tuli et al<sup>6</sup>(2001).

Duration of otorroea was present for more than five years in maximum cases (51.54%) and only 11% cases were symptomatic for less than 1 year similar to the finding of Manekar G<sup>7</sup> (1999) whose series had 43.5% of cases had symptoms for more than five years and 14% for less than one years.

Symptom wise otorroea (97%) was the commonest one .This type of finding was noted by Blake et al<sup>8</sup>(1991), Rao et al<sup>1</sup>(1994), Tuli et al<sup>6</sup>(2001), Gulati et al<sup>6</sup>(2002 and Behera et al<sup>5</sup>(2013).

Conductive hearing loss of varying degree was found in 212(81%) and mixed hearing loss was found in 48(18%) patients. Kaur et al<sup>9</sup> (2003) found 24% mixed loss cases in their series.

During surgery, healthy middle ear mucosa was found in 106(40.77%), cholesteatoma alone in 68 (26%) and mixed with granulation tissue in 46 (17%) number of cases respectively. Incus was the commonest eroded icicle.

Type 1 tympanoplasty was done in 132 cases and follow-up could be possible in only 36 cases with hearing improvement recorded in all cases. Raveendran et al<sup>10</sup> (2000) had noted hearing improvement in 92% of their cases. Hearing deterioration was noted in all cases of radical mastoidectomy.

Type-2 tympanoplasty was done in 24 patients, out of which 12 cases came for regular follow up and 10 showed good hearing improvement. Maximum hearing gain was 15dB with AB gap closure between 10-15 DB (33.33%). This correlates well with the finding of Panda et al<sup>11</sup>(2001).

Type-3 tympanoplasty was done in 12 patients, out of which 8 cases came for regular follow up and 5 showed good hearing improvement with maximum gain being 13 dB. This findings were similar to that of Guilbeault<sup>12</sup>.

Combined approach tympanoplasty was done in 48 (18%) cases. Out of 43 followed up cases, hearing gain was noted in 41 case and no improvement was found in one case.

No hearing improvement was found in cases undergoing radical mastoidectomy. Although it is done rarely now a days, its importance lies in eradicating extensive cholesteatoma or granulation containing cases to make the ear safe and dry.

## CONCLUSION

Chronic suppurative otitis media is quite a common disease in Odisha with incidence of 20.83% of ENT patients and commonest age group to be involved was 11-20 years and majority of the come from rural background. Large central perforation with moderate conductive deafness being common signs.

Intervention wise type 1 tympanoplasty is the best way for hearing augmentation followed by combined approach tympanoplasty.

Hence motivating CSOM cases for early clinical intervention with surgical aspects will go a long way in improving their quality of life as far as hearing is concerned.

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