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# A Clinical Study of Complications of Tympanoplasty in Children

Dr.N.Veeraswamy[1] , Dr.S.Surya prakasa Rao [2], Dr. T.Leela Prasad[3], Dr.Rima Joseph[4]

[1]*Assistant Professor, Department Of ENT, Andhra Medical College, Vishakapatnam.*
[2]*Professor, Department Of ENT, Andhra Medical College, Vishakapatnam.*
[3]*Assistant Professor, ENT,Andhra Medical College, Vishakapatnam.*
[4]*Post Graduate Department Of ENT, Andhra Medical College, Vishakapatnam*
*Corresponding author: Dr.N.Veeraswamy*

***ABSTRACT***

***AIM :***

*To identify the post operative complications in children so that we can take measures to improve the surgical technique and post op care.*

***MATERIALS AND METHODS***

*The study was conducted in Government ENT Hospital of Andhra Medical College, Visakhapatnam from April 2016 to March 2018 ,for a period of two years. We have selected children between 6 to 12 years of age for this study. Pre opertive examination was done in all, for ear, nose and throat specially for adenoiditis, tonsillitis, any gross deviated nasal septum and allergic rhinitis. Ear was examined including pinna for type of perforation, any granulations and polyps and ossicular chain. Tuning fork test and Pure tone audiometry were also done . Under general anaesthesia,, in postaural approach with Temporalis fascia, Tympanoplasty and mastoidectomy were performed.*

***OBSERVATION***

*In this group, males(32) to females(18) ratio is 1.77:1. Rare complications like Facial palsy, vertigo, Sensorineural hearing loss, ossicular disruption and lateralization of graft were not encountered post operatively. The recurrent perforation was seen in 6% .Infection of the post aural incision was found in 6%. Injury to chorda tympani in 4%.Post op granulation at the site of incision and over tympanic membrane were observed in 4%. otitis externa in 4%, Medialisation in 2%, epithelial pearl in 2%, Post op Cholesteotoma were observed in 2% patients.*

***CONCLUSION***

*In our study, males and females ratio was 1.77:1.The recurrent perforation was seen in 6% . Post aural incision Infection in 6%.Injury to chorda tympani, otitis externa and Post op granulation were seen with each 4% . Medialisation or atelectasis, epithelial pearl and Post op Cholesteotoma was observed with each 2%.This encourages to consider Tympanoplasty in children as hearing is essential at the age of learning curve*

***KEY WORDS:*** *Tympanoplasty , mastoidectomy, CSOM, conductive deafness*

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## I. Introduction :

Chronic suppurative otitis media is one of the commonest ear disease of children for which the patients attend the out- patient department. Patients present with ear discharge and deafness as the frequent symptoms. On examination the central perforation with or without discharge is the commonest finding even though some patients may present with attic perforation, posterior marginal granulations, polyps from the middle ear, atelectasis, acute or chronic mastoiditis, post auricular fistula and rarely with congenital cholesteatoma.

As the growing children are in the learning curve, the hearing is very important for their psychological and academic growth. Hence we need to treat CSOM of children, in both medical and surgical line. CSOM with a discharging ear should be treated first medically to control active infection with sensitive antibiotic, systemic antihistaminic, decongestant and analgesic. Local nasal decongestant[1] and local antibiotic with or without steroids are also added in the treatment. In the surgical aspects Type I tympanoplasty[2] is performed mostly. Sometimes type II,III tympanoplasty with or without cortical mastoidectomy and modified radical mastoidectomy may be required depending upon the pathology.

The complications come across in the CSOM surgery[3,4,5] are residual perforation, medialisation and lateralization of the tympanic membrane, injury to the chorda tympani nerve, blunting of the antero inferior angle, ossicular chain dislocation,injury to the round window, SN loss and injury to the facial nerve, epithelial

pearls and infection of post aural incision are common. Injury to the dura at tegmen tympani and antri and injury to the sigmoid sinus and TM joint may rarely occur as complications in cortical and modified radical mastoidectomy.

Iatrogenic cholesteatoma and injury to the high jugular bulb are reported as rarest complications.

## II. Aims And Objectives

To identify the post operative complications in children so that we can take measures to improve the surgical technique and post op care.

## III. Materials And Methods;

The study was conducted in Government ENT Hospital of Andhra Medical College Visakhapatnam, for a period of 2 years from April 2016 to March 2018.We have selected children between 6 to 12 years of age for tympanoplasty. All the cases were routinely examined for ear, nose and throat specially for adenoiditis, tonsillitis, any gross deviated nasal septum and allergic rhinitis.

Ear was examined including pinna, external auditory canal, tympanic membrane and middle ear. Both pre and post auricular areas are also inspected thoroughly. The type of perforation, any granulations and polyps and ossicular chain status if visible or noted.

Routine blood investigations were performed and later tuning fork test and Pure tone audiometry were also done . The parents and the patients were counselled regarding the surgical procedure and also complications of ear surgery and anaesthesia. After taking the consent , all the cases were operated under general anaesthesia. The regular postaural approach with Wilde's incision was chosen. Temporalis fascia was used as a graft material in all cases. Tympanoplasty with or without mastoidectomy were also performed depending upon the indication. Postoperative follow up was done after 15 days, 1 month, 3 months and 6 months.

**INCLUSION CRITERIA**

1. All tympanoplasties performed in children 6yrs to 12 yrs were included

**EXCLUSION CRITERIA**

1. Age below 5yrs and below
2. Allergic rhinitis with CSOM

**OBSERVATION :**

**Sex Distribution**

| S no | Sex | Number | Percentage |
|---|---|---|---|
| 1 | Male | 18 | 36 |
| 2 | Female | 32 | 64 |

In this group,males(32) dominated than females(18) for tympanoplasty in the ratio of **1.77:1.**

**Age Distribution**

| S no | Age of the patient | Number | Percentage (%) |
|---|---|---|---|
| 1 | 6 | 2 | 4 |
| 2 | 7 | 3 | 6 |
| 3 | 8 | 9 | 18 |
| 4 | 9 | 7 | 14 |
| 5 | 10 | 9 | 18 |
| 6 | 11 | 13 | 26 |
| 7 | 12 | 7 | 14 |

In this list of children, patient with 11 years of age required tympanoplasty commonly(26%), followed by 8 and 10 years of age with each 18%, 9 and 12 year of age with 14% each and 7 years with 6%.The least was 6 years of age with 4%.

**Complications**

| S no | Complication | Number | Percentage(%) |
|---|---|---|---|
| 1 | Epithelial pearls | 1 | 2 |
| 2 | Residual perforation | 3 | 6 |
| 3 | Blunting | 2 | 4 |
| 4 | Infection of post aural incision | 3 | 6 |
| 5 | Granulation EAC | 2 | 4 |
| 6 | Injury to chorda tympani | 2 | 4 |
| 7 | Medialisation | 1 | 2 |
| 8 | Otitis externa | 2 | 4 |
| 9 | Chlesteatoma | 1 | 2 |
| 10 | Lateralisation | 0 | 0 |

| | | | |
|---|---|---|---|
| 11 | Ossicular disruption | 0 | 0 |
| 12 | Facial palsy | 0 | 0 |
| 13 | SN Loss | 0 | 0 |
| 14 | Vertigo | 0 | 0 |

Facial palsy, vertigo, Sensorineural hearing loss, ossicular disruption and lateralization of graft were not seen in any of the patient in post operative.

Two commonest complications observed were recurrent perforation with 6% and infection of the post aural incision and minimal gaping with 6%, Later were injury to chorda tympani(4%), otitis externa (4%) and post op granulation at the site of incision and over tympanic membrane ( 4%). Medialisation or atelectasis was resulted in 2%, epithelial pearl in 2%. Post op Cholesteotoma was evolved in 2% patients.

## IV. Discussion

In our study, males (32) required tympanoplasty more than females(18) which is in the ratio of 1.77:1.In Joao Carlos Rebeiro et al.[6], M:F ratio is 1.32:1,Shabbir Indore Wala et al[7]. M:F ratio is ,1:1.1, Dr.Khalid Mahmud et al[2], M:F ratio is 1:2,Adva B Friedman et al[8], M:F ratio is ,1:1.28.

Here it is observed that the patients who are promoting into secondary grade schools are attending with deafness and discharge most frequently. That is the reason why children with 11 years of age required tympanoplasty most commonly with 26% , followed by 8 and 10 years of age with each 18%, 9 and 12 year of age with 14% each and 7 years with 6%.The least was seen in lower primary school children i.e., 6 years of age with 4%.

In our observation, the recurrent perforation is seen in 6% due to displacement of the graft, hemotympanum, tear and fibrosis of the graft material , which is similar to Dr**.**Khaled Mahmud et al[2] .,with a recurrent perforation 6.6%. William O Collins Et al.[9], showed recurrent perforation in 16% which varies from ours.

In postoperative follow up infection of the post aural incision and minimal gaping which has healed with change of antibiotics and application of betadine ointment,was found in 6% cases .In T.Shankar et al.,[10] post op wound infection with gaping 4% which is almost similar to us. DrJoao Carlos Rebeiro et al[6]., wound infection 2.9% and William O Collins Et al.[9], wound infection 1% which varies with us.

Injury to chorda tympani during tympanomeatal flap reflection with altered taste sensations was observed in 4% of patients.In T.Shankar et al[10]., taste disturbances 3%, DrJoao Carlos Rebeiro et al.[6], injury to chorda tympani 5.7% which are almost nearest to us.

Post op granulation at incisional site and over tympanic membrane were seen in 4% which is equal to William O Collins Et al[9] (4%).

Medialisation or atelectasis was seen in 2% in ours compared to William O Collins Et al[9] with atelectasis 5% and Jeffrey T Vrabec et al[11].,with atelectasis 6.7%.

In our series, otitis externa was seen in 4% compared with William O Collins Et al[9],otitis externa 2%, DrJoao Carlos Rebeiro et al[6]., otitis externa 2.9%.

In our group, epithelial pearl was seen in 2% almost similar with DrJoao Carlos Rebeiro et al[6]., otitis externa 2.9% and William O Collins Et al[9],4 %.

Choleasteotoma formed post operatively in 2% patients which resembles Jeffrey T Vrabec et al[11].,with 2.3% and William O Collins Et al[9] 1%

The rare complications like facial palsy,vertigo, Sensorineural hearing loss, ossicular disruption and lateralization of graft were not encountered in our study

## V. Conclusion

In our study, males (32) required tympanoplasty more than females(18) in the ratio of 1.77:1.The most common age which required tympanoplasty was 11 year and the least common being 6 years of age. The recurrent perforation was seen in 6% due to displacement of the graft, hemotympanum, tear and fibrosis of the graft material. Infection of the post aural incision and minimal gaping was found in 6%.Injury to chorda tympani was in 4% .Post op granulation at incisional site and over tympanic membrane were seen in 4%.Medialisation or atelectasis was seen in 2%, otitis externa in 4%, epithelial pearl in 2%, Post op Choleasteotoma in 2% patients.

The rare complications like facial palsy, vertigo, Sensorineural hearing loss, ossicular disruption and lateralization of graft were not encountered in our study. This encourages to perform Tymanoplasty even in children between age of 6-12yrs as hearing is essential at the age of learning curve

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