



## MYRINGOTOMY AND GROMMET INSERTION IN CASES OF OTITIS MEDIA WITH EFFUSION WITH HEARING LOSS: CASE SERIES

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### ABSTRACT

**Objective:** Otitis media with effusion (OME) can lead to hearing loss. Adenoidectomy with myringotomy and ventilation tube insertion are used in the management of OME. This study aimed to know the outcomes of myringotomy with grommet tube insertion in children with OME in tertiary care hospital in Hyderabad. **Materials and Methods:** A prospective randomized study of 20 patients with serous OME, was conducted over 3 months. 10 patients underwent adenoidectomy with myringotomy and grommet tube insertion, while 10 patients underwent only myringotomy with grommet insertion. Average age, gender, preoperative hearing loss and postoperative hearing gain, tympanometry 6 weeks after the operation, and incidence of otorrhea and myringosclerosis were compared. **Results:** There is a significant improvement in hearing after both myringotomy with grommet and adenoidectomy. **Conclusion:** adenoidectomy + Myringotomy showed favourable results with fewer complications in treatment of serous OME.

**KEYWORDS :** OME, grommet, adenoidectomy, pure tone audiometry

### INTRODUCTION

Otitis media with effusion (OME) or "glue ear" is defined as middle ear effusion without signs or symptoms of an acute infection of otalgia, otorrhea, fever and irritability. It is very common in children, especially between the ages of 1 and 3 years, with a prevalence of 10% to 30% and a cumulative incidence of 80% at the 4 years old<sup>[1]</sup>. It may occur spontaneously because of poor eustachian tube function, or after acute otitis media. Many episodes resolve spontaneously within 3 months, but 30% to 40% of children have recurrent OME and 5% to 10% of episodes last 1 year or longer<sup>[2]</sup>. OME results in conductive hearing loss averaging 30dBHL, ranging from 5 to 50 dBHL. Hearing loss is significant especially if bilateral, lasts longer than 3 months, or if the child already has cognitive, speech and language delay.

It can delay speech and language acquisition, alter behaviour, result in erosion of ossicles, impair the ear drum integrity, increase the risk of cholesteatomas and negatively impact the quality of life. Candidates for myringotomy and Grommet insertion (M&G) include children with OME lasting 4 months or longer with persistent hearing loss or other signs and symptoms, recurrent or persistent OME in children at risk regardless of hearing status, and OME with structural damage to the tympanic membrane or middle ear<sup>[3]</sup>.

The hearing level improves by 6 to 15 dB when tubes are patent. Approximately 20% to 50% of children have OME relapses after tube extrusion that may require repeat surgery. Adenoidectomy is recommended for those who require repeat surgery, unless contraindicated, because it gives 50% reduction of repeat operation<sup>[4]</sup>. The benefit of adenoidectomy is apparent at 2 years old, 6 greatest for 3 years old or older and it is independent of adenoid size.

Many treatment modalities have already been used in the literature. The "wait and see" policy has been adopted, where it has been seen that spontaneous resolution of OME is common. In a study conducted by Tos et al., type B tympanometry showed improvement in 78% to 88% of cases with OME<sup>[5]</sup>.

### MATERIALS AND METHODS

A prospective randomized study was conducted on paediatric patients of 12 years old or younger who presented with OME to the outpatient of the department of otorhinolaryngology in malla reddy institute of medical sciences between September

2022 to November 2022, informed consent taken from the parents of each child to be included in the study.

Cases were considered chronic after a time period of 3 months with no resolution of type B or Cs tympanometry. All cases presenting with a hearing gap of an average loss of at least 25 decibels and fulfilling the inclusion criteria were included in the study. Cases were subjected to either x ray nasopharynx lateral view or endoscopic examination, according to their cooperation, to assess adenoid hypertrophy. Adenoidectomy was done in required patients-based on symptoms and x ray nasopharynx. Myringotomy with grommet insertion was done in 10 cases, whereas adenoidectomy in addition to grommet insertion was done in 10 cases. Under aseptic conditions under GA, with the help of 0° endoscope, small nick was given in antero-inferior quadrant of tympanic membrane with the help of myringotome. shepard grommet is inserted in that incision.

All patients were compared regarding demographic presentation of age and gender. The degree of preoperative conductive hearing loss (air-bone gap) and postoperative hearing gain, which referred to the improvement of air bone gap thresholds after the operation, were compared. Presence or absence of otorrhea was monitored and compared pre and post op.

A repeat tympanometry was performed 6 weeks after the procedure to evaluate recurrence, if any, where types A and C were considered as resolution of effusion, while grades Cs and B were considered as recurrence of the disease. Otoscopic examination was performed to assess myringosclerosis (hyalinization and calcification of the tympanic membrane), which appeared as whitish patches in the tympanic membrane.

#### Inclusion Criteria:

- 1- Paediatric age group, 12 years of age or younger.
- 2- Chronic otitis media with effusion with no resolution after a period of time not less than a 3-month duration.
- 3- A conductive hearing loss of not less than 25 decibels.
- 4- Persistent tympanometry test of either type B or Cs result.

#### Exclusion Criteria:

- 1- Older than 12 years of age.
- 2- Any improvement of middle ear effusion during the first 3 months of the disease.

3- Mixed hearing loss.

**RESULTS**

There were 20 patients who have GT inserted between September 2022 and November 2022. There were 12 males and 08 females, ages between 5 months to 12 years. 10 patients have undergone adenoidectomy in addition to GT insertion.

The Pure tone audiometry was used to measure the pre-operative hearing loss among the patients with Otitis Media with Effusion according to the type of interventions they had been planned to undertake (Table II). The mean air-bone gap was used as a measure to assess the amount of hearing loss in the patients. The audiometry recording was done after 6 weeks post operatively, for all the patients who had undergone the various modes of interventions and it was compared. The mean AB gap has improved from 27.06 to 14.96 and 28.80 to 13.04 in hearing threshold after myringotomy + grommet and after adenoidectomy with tube insertion respectively (Table III). the readings of the air-bone gap had significantly reduced during the follow-up period when compared to the pre-operative readings (p<.0001).

**Table 1: gender distribution**

GENDER	%	
MALE	12	60
FEMALE	8	40
TOTAL	20	

**Table 2:mode of intervention**

MODE OF INTERVENTION	NO. OF CASES	U/L ear	B/L ears
MYRINGOTOMY +GROMMET ONLY	10	6	4
ADENOIDECTOMY +MYRINGOTOMY +GROMMET	10	8	2

**Table 3: comparison of pure tone audiometry readings among various interventions among the study population**

MODE OF INTERVENTION	MEAN A-B GAP	
	PRE-OP	POST-OP (6 -WEEKS)
MYRINGOTOMY +GROMMET ONLY	27.06	14.96
ADENOIDECTOMY +MYRINGOTOMY +GROMMET	28.80	13.04

**DISCUSSION**

In our study a total of 20 patients were checked for ear pathologies in which 12 were males and 08 were females, 60 % were males and 40 % were females. adenoid hypertrophy was noted in 10 cases and adenoidectomy was done.

The mean AB gap has improved from 27.06 to 14.96 and 28.80 to 13.04 in hearing threshold after myringotomy + grommet and after adenoidectomy with tube insertion respectively.

A study done by Okolugbo et al<sup>[6]</sup> on prevalence of Otitis Media with Effusion amongst primary school children in Benin city Nigeria had shown the prevalence as 15.9%.

Adhikari<sup>[7]</sup> in his study over 1245 students in Kathmandu valley during the calendar year of 2008, found Otitis Media with Effusion as 3.7%. Shah<sup>[8]</sup> found incidence Otitis Media with Effusion as 8.31%, of which 8.50% were males and 7.49% were females. Maximum number of cases were in 6 to 7 years of age group which is 13.21%.

A study conducted by Ryding<sup>[9]</sup> compared myringotomy, tympanostomy tube and medical line of treatment. He found that tympanostomy tube and myringotomy produced significant improvement in hearing when compared to the medical line of management.

In 2004, Coyle,<sup>[10]</sup> in a study compared the effects of adenoidectomy, adenotonsillectomy and ventilation tube. They found that at 6 months after surgery there was an average of 15.40 dB improvements in hearing threshold after adenoidectomy with tube insertion, 12.18 dB in adenoidectomy and 15.15 dB in ventilation tube insertion. There was just 3.60 dB improvement in the no surgery group. On long term follow up they found adenoidectomy results in long term sustained resolution while grommet insertion produces immediate resolution. In the present study, on comparing the various treatment modalities for students with Otitis Media with Effusion, adenoidectomy with grommet insertion had best results in cases of adenoid hypertrophy along with OME.

**CONCLUSION:**

adenoidectomy+ Myringotomy showed favourable results with fewer complications and better results in treatment of serous OME, if adenoid enlargement is present.

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