

Myringoplasty in Children: Retrospective Analysis of 65 Cases

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Abstract: ***Aims:** Find out result of a retrospective analysis of Myringoplasty results in children in tertiary care hospital in rural setup. **Materials and Methods:** sixty five children, 9 to 15 years old, who underwent Myringoplasty in UPRIMS & R, Saifai (U.P.) between March 2014 and April 2015, formed the study group. The study was proceeding only after the approval of institute ethical committee. And look for successful perforation closure, factors which influencing result of surgery and also post-operative hearing improvement were recorded. **Results:** Closure of perforation was seen in 57 (87.69%) of the 65 patients. Graft not uptake in 8(12.30%) patients. Hearing improvement was seen in 50 (76.92%) patients, out of which 41 cases had 10-15 db and 9 cases had 15-20 db air-bone gaps. Hearing was found to be worse postoperatively in only 1 patient, while no change was noted in the remaining 14 patients. There was no case of profound hearing loss. **Conclusion:** Myringoplasty is an effective treatment in the paediatric population. If performed properly, it has a good chance of restoring a child's hearing.*

Keywords: Myringoplasty; Tympanic perforation; Hearing loss

1. Introduction

Myringoplasty involves only the repair of the tympanic membrane when the lesion is a tympanic perforation without any middle ear pathology.¹ Perforation of the tympanic membrane primarily results from middle ear infections, trauma or iatrogenic causes. Up to 80% of these perforations heal spontaneously; next 20% repair by a surgical operation called myringoplasty.² The principal indications are recurrent otorrhea, the desire to swim without having to waterproof the ear and to improve conductive hearing loss. Paediatric myringoplasties were performed as early as 1962 in the United States³ and in the early 1970s in the United Kingdom⁴ chances of success in the paediatric population is less than adult because in the paediatric population include Eustachian tube dysfunction, anatomical arrangement and higher frequency of infections of the upper airways, leading to a higher number of otitis media and a higher rate of tympanic membrane perforation.⁵⁻⁹

Myringoplasty also offer many advantages in paediatric cases like, improvement of hearing function, prevention of ossicular erosion, prevention of cholesteatomatous changes, and development of language and skill.¹ The aim of present study was to evaluate the outcome of Myringoplasty among patients less than 15 years by analysing prognostic factors influencing the success of Myringoplasty in our hospital.

2. Materials and Methods

We conducted a retrospective study between March 2014 and April 2015, reviewing a total of 65 of patient's age between 9-15 years who planned for a primary tympanoplasty type 1 without mastoidectomy. All the patients had chronic suppurative otitis media (safe type) with

perforation in the pars tensa. All patients had central perforation of small to moderate size and dry for minimum period for 3 weeks. Pre-operative pure tone audiometry was done for every patient for assessing cochlear reserve. Patient who had previous ear surgery, mastoid surgery, and no follow-up excluded from study. All Myringoplasty were performed under general anaesthesia and using an underlay technique via a postauricular approach. The temporalis fascia graft was harvested and positioned medial to the drum remnant using the underlay technique. Patients discharged 7th post-op day, after removal of stitch. Follow-up period was 3 months. Post-op PTA was done for assess the improvement of hearing sensitivity and compare only with 500 Hz, 1000 Hz, and 2000 Hz.

3. Results

Success rate was slightly better in 12-15 years age group as compared to age group 9-11 years. Graft uptake was seen in 57 (87.69 %) of the 65 patients. Perforation remains present in 8 (12.30%) patients. Hearing improvements was seen in 50 (76.92%) patients out of whom 41 (82%) cases had 10-15 db air-bone gaps. Hearing was found to be worse postoperatively in 1 (1.5%) patients, while no change was noted in the remaining 14 (21.5%) patients. There was no case of profound hearing loss. The main symptoms presented by patients in our study were as follows: ear discharge (92.8%), hearing loss (85%) and tinnitus (8.5%). Vertigo and headache not present in any case. Factors which influenced result of Myringoplasty were duration of ear discharge, size of perforation, condition of middle ear mucosa, Sino nasal disease, sore throat, and socioeconomic status also. (Table I). Data collected for study shown that higher success rate when there is duration of ear discharge is short, dry ear for longer period and the small to medium size

of perforation. 5 cases in which graft not uptake, found non healthy middle ear mucosa at the time of surgery.

4. Discussion

The tympanic membrane perforation especially seen in infants and children in low socioeconomic group. This creates lots of problem in children for hearing and intelligence, affects his life style and poor performances in school. Myringoplasty is simple, safe, and effective procedures in children that results in the successful closure of the perforation in many of them and also improve hearing sensitivity. However, till date no otologist/stell regarding the benefits of Myringoplasty in children.¹⁰⁻¹² Age of tympanic membrane repair in the paediatric population is very controversial. Glasscock said that children under three or four years of age are prone to upper respiratory infections and otitis media hence chance of failure is more.¹³ Koch et al reported an good result after Myringoplasty children age 8 and older.¹⁰ Other studies found that Myringoplasty in children may prevent progression of ossicular chain resorption and no significant difference occur between age group less than 9 and more than this.¹⁴ Ear discharge was the main symptom declare by many author followed by hearing loss.^{1,6,15} our study also similar to this results. The result of Myringoplasty depends on criteria based on patient selection, duration of dryness of ear, chronicity of disease, and length of follow up. Our study was conducted on patients aged 9-15 years and the result of successful graft uptake was 87.69% which is comparable to the results of other studies.^{16, 17, 18}

5. Conclusion

Myringoplasty is a safe and effective procedure in the paediatric population for tympanic membrane perforation. If performed properly in the hands of experienced surgeons, it has a good chance of restoring a child's hearing. Our study shows that Myringoplasty is a valid treatment modality for tympanic membrane perforation in the paediatric population. factors which affecting outcome of our study include- age older than 12 years, absence of sinonasal disease, healthy middle ear mucosa, dry ear and size of perforation, preoperative conductive hearing loss and placement of the graft under the malleus handle. However, a large study with a long follow up is warranted to come to a definite conclusion.

References

- [1] Castro O, Pe´rez-Carro AM, Ibarra I, et al. Myringoplasties in children: our results. *Acta Otorrinolaringol Esp.* 2013;64:87-91.
- [2] Galdstone HB, Jackler RK, Varav, K. *Tympanic membrane wound healing. An overview.* *Otolaryngol Clin North Am* 1995;28:913-32
- [3] Bajaj Y, Bais AS, Mukherjee B. Tympanoplasty in children: a prospective study. *J Laryngol Otol.* 1998;112:1147-9.
- [4] Blanshard JD, Robson AK, Smith I, et al. A long term view of myringoplasty in children. *J Laryngol Otol.* 1990;104:758-62.
- [5] Uyar Y, Keles_ B, Koc, S, Oztu" rk K, Arbag" H. Tympanoplasty in pediatric patients. *Int J Pediatr Otorhinolaryngol.* 2006;70:1805-1809.
- [6] Singh GB, Sidhu TS, Sharma A, Singh N. Tympanoplasty type I in children: an evaluative study. *Int J Pediatr Otorhinolaryngol.* 2005;69:1071-1076.
- [7] Mendes Neto JA, Neiva FC, Brodskyn F, et al. Plug cartilage tympanoplasty in children. *Braz J Otorhinolaryngol.* 2008;74: 890-895.
- [8] Pie´drola Maroto D, Escalona Gutie´rrez JJ, Conde Jimenez M, Casado Morente JC, Povedano Rodrı´guez V, Beni´tez-Parejo N. Functional results in myringoplasties. *Acta Otorrinolaringol Esp.* 2010;61:94-99.
- [9] Lau T, Tos M. Tympanoplasty in children, an analysis of late results. *Am J Otol.* 1986;7:55-59.
- [10] Koch WM, Friedman EM, Trevor JI, et al. Tympanoplasty in children. *Arch Otolaryngol Head Neck Surg.* 1990;116:35-40.
- [11] Kessler A, Potsic WP, Marsh RR. Type I tympanoplasty in children. *Arch Otolaryngol Head Neck Surg.* 1994;120:487 90.
- [12] Tos M, Orntoft S, Stangerup S-E. Results of tympanoplasty in children after 15 to 27 years. *Ann Otol Rhinol Laryngol.* 2000;109:17-23.
- [13] Glasscock ME 3d. Contraindications to tympanoplasty II: an exercise in clinical judgment. *Laryngoscope.* 1976;86:70-6.
- [14] Lau T, Tos M. Tympanoplasty in children: an analysis of late results. *Am J Otol.* 1986;7:55-9.
- [15] Knapik M, Saliba. Pediatric myringoplasty: a study of factors affecting outcome. *Int J Pediatr Otorhinolaryngol.* 2011;75:818-823.
- [16] Black JH, Hickey SA, Wormald PJ. Analysis of myringoplasty in children. *Int J Pediatr Otorhinolaryngol.* 1995;31:95-100.
- [17] Raine CH, Singh SD. Tympanoplasty in children: a review of 114 cases. *J Laryngol Otol.* 1983;97:217-21.
- [18] Friedberg J, Gillis T. Tympanoplasty in childhood. *J Otolaryngol.* 1980;9:165-8.

Table 1: Factors influencing success rate of Myringoplasty

Contributing factors	No. of Cases	Success Rate (%)	p value
Age	No.	%	
12-15 years	45	87.45	>0,05
9-11 years	20	85.43	
Duration of ear discharge	No.		
1-2 years	38	90.4	>0,05
3-5 years	16	87.6	
6-9 years	11	84.5	
Duration of dry ear	No.		
>15 weeks	30	91.2	<0,05
13-15 weeks	27	85.7	
10-12 weeks	8	81.3	
Size of perforation			
Small central	47	95.1	<0,01
Medium	18	86.72	