

# TYMPANOPLASTY IN YOUNG PATIENTS

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## ABSTRACT

**Objective:** To know the anatomical and functional out come of tympanoplasty type-1 in patients of 8-14 years of age.

**Material and Methods:** This retrospective study was conducted in department of ENT & Head & Neck surgery of Lady Reading Hospital Peshawar over the period of 2000-2004. Hundred patients of different type of tympanic membrane perforation with no focus of infection in the upper respiratory tract were included in the study Eighty patients under went under lay technique while 20 patents had overlay or reverse through technique .

**Results:** Total number of cases who completed three years followup in study period was hundred. Fourty five were male and fifty five were female. Successful results with improvement in hearing was observed in 80%; and in 20 % cases 4 cases were rejected during the first postoperative year and 16 cases during the third postoperative year. The result of underlay technique was 87% as compare to overlay or reverse through technique i.e. 55 %. The failure of both the techniques in traumatic perforation was equal i.e. 30 %. The results were also good in patients who had adenoidectomy or adenotonsillectomy in past.

**Conclusion:** Tympanoplasty type 1 in young children gives eighty percent success rate provided there is no focus of upper respiratory tract infection, and a past history of adenoidectomy or adenotonsillectomy.

**Key words:** Tympanoplasty type 1, underlay technique, over lay.

## INTRODUCTION

Tympanoplasty type 1 is an operation performed to check the ossicular integrity chain and to repair the tympanic membrane<sup>1</sup>. Damage to the tympanic membrane in young children is commonly the result of chronic suppurative otitis media, trauma from direct physical injury or head injury, iatrogenic damage by inserting ventilating tube<sup>2</sup>. Long standing perforation leads to recurrent ear discharge, recurrent otitis externa and even threatens inner ear function. Tympanoplasty type1 protects the inner ear function as well as otogenic complications<sup>3</sup>. The techniques employed for chronic suppurative otitis media are underlay, overlay or reverse through<sup>4</sup>. The improvement in hearing by these techniques has a positive impact on child language, learning and socialization<sup>5</sup>.

## MATERIAL AND METHODS

The study population was composed of 100 patients younger than 14 years who had a dry tympanic perforation and underwent type 1

tympanoplasty in the department of Otolaryngology Head & Neck surgery Lady Reading Hospital Peshawar between from 2000 to 2004. Patients with chronic suppurative otitis media with cholesteatoma, or ossicular erosion were excluded from the study. In addition, patients with cleft palates were also excluded. A proforma was mad where preoperative information like sex, age, history of adenoidectomy or adenotonsillectomy, history of ventilation tube placement, size of the perforation, and otoscopic findings at the operatiion was recorded. Surgical technique used (underlay/ overly) was recorded. In all cases temporal muscle fascia was used as graft material. Patients were checked regularly after surgery in the outpatient department. Patients were followed up for 03 years. Postoperative information elicited from the charts included otoscopic findings after 1 month, 3 months, 6 months and 1 year after surgery and then annually for up to 3 years. Successful result was defined as a dry ear with cleared and mobile tympanic membrane.

**RESULTS**

The average age of the study population was 10 years (range, 8 to 14 years). There were 55 female and 45 male patients. Eighty patients had histories of either adenoidectomy (n =10) or adenotonsillectomy (n= 70). The mean age was 10 years (SD ± 3.6) for adenoidectomy and 11.5 years for (SD ± 2.8) adenotonsillectomy. The difference between groups was not significant. 10 patients had traumatic perforations and all other patients had past histories of chronic otitis media or recurrent acute otitis media.

Successful result was achieved in eighty patients of the study populations. Fifteen cases of failure were observed during the first post-operative year and 05 cases during the third post-operative year. In 20 cases of failure,06 cases were of traumatic perforation while of the remaining 14 cases ten had history of adenotonsillectomy and in 4 neither adenoidectomy nor adenotonsillectomy.

A failed tympanoplasty was always considered a failure regardless of follow-up time. Several other possible prognostic factors are presented in table-1. Male patients had significantly lower success rate than female patients. Neither age of patient at the time of surgery, prior ventilation tube treatment, or size of perforation had a significant effect on the success rate. Ears with atrophic eardrums but well aerated tympanic cavities were regarded as normal. Abnormal findings of the contra lateral ears included tympanosclerosis (n=5), perforation (n=10) and signs of previous operation (n=10).

Female patients had significantly higher success rates in follow up visits up to 3 years. The technique of under lay gives 87% results as compare to over lay i.e. 55% .

**DISCUSSION**

Proper function of the eustachian tube is a

prerequisite for a successful tympanoplasty. In children, it is clear that removal of enlarged adenoid may improve middle ear aeration, and reduce the frequency and severity of upper respiratory tract infection<sup>6</sup> , Some what surprisingly, all successful tympanoplasty in our study were observed in patients who had previous history of Adenoidectomy, or adenotonsillectomy. Infact, only1 patient was found to have hypertrophy of adenoid referred for treatment of a dry ear and he was subjected to adenotonsillectomy before tympanoplasty. Previously adenoidectomy and adenotonsillectomy reduces the severity of middle ear diseases.<sup>7</sup> In our study the same findings were observed.. Many otologists believe that adenoidectomy and adenotonsillectomy will improve the eustachian tube function resulting in good middle aeration<sup>8</sup>. Persistent source of infection in adenoid or tonsil causing abnormal Eustachian tube function results in surgical failure<sup>9</sup>. The recurrence of the middle ear disease is quite negligible in adenoidectomy or adenotonsillectomy patients as compare those patient who had neither adenoidectomy or adenotonsillectomy<sup>10</sup>.

The controversy between the results of this study and those of Gianoliet et al highlights the limitations of retrospective investigations, specially those with relatively small study populations. This study showed that the success rate in tympanoplasty was lower in male patients than in female patients<sup>11</sup>. The reason for this finding is not clear, but several previous studies have shown that male children have more frequent acute otitis media.<sup>12</sup>

One might conclude that the more frequent and more severe middle ear infections in male patients damage the tympanic membrane to the point where successful surgery is less easily achieved. It has been reported that patients who had been treated with ventilation tubes had as high

**EFFECT OF SOME PER OPERATIVE & OPERATIVE FACTORS ON TYMPANOPLASTY SUCCESS.**

Parameter	No of case	No of successful case	Success rate %
Sex M/F	44/55	35/45	77/81%
Age </> 14years	70/30	60/20	85/66%
Perforation size</> 50%	60/40	44/35	76/87%
Eustachian tube function checked/ not checked	75/25	69/10	92/40%
<b>Surgical technique</b>			
i Underlay	80	69	87%
ii Overlay	20	11	55%

Table 1

tympanooplasty success rate as other patients with dry perforations<sup>13</sup>.

In this study the technique of underlay in young children gave 87 percent results as compare to overlay or reverse through to i.e. 55 percent. The possible reason is because the graft is lying medial to the fibrous layer of tympanic membrane and laterally covered by flap. Previous studies have shown that underlay technique reduced the middle ear space resulting in low compliance and adverse effects on hearing. This disimprove the claim because the graft is lying on the middle ear ossicles and laterally covered by superiorly or inferiorly based flap. This technique gives good middle ear space which is pre requisite for successful tympanoplasty. The chances of blunting and lateralization is minimized by this procedure<sup>14,15</sup>

In pediatric patients generally and those with permanent perforations after ventilation tube placement treatment particularly, timing of tympanoplasty often is difficult because there is no simple routine method for the accurate preoperative examination of Eustachian tube function.<sup>15</sup> Our treatment policy has been to observe patients before tympanoplasty for at least 1 year after the last episode of otitis media. Delayed tympanic membrane repair is important as there is possibility of spontaneous healing. In our series, one third of the tympanoplasty failures occurred as late as 3 years after surgery . This finding stresses the importance of sufficiently long follow –up of these patients.

## CONCLUSION

In this study 100 young patients for tympanoplasty type 1 were evaluated with the results being better in patients who had past history of adenoidectomy, adenotonsillectomy. Successful tympanoplasty with improvement in hearing is much better in chronic suppurative otitis media than traumatic perforation. Success rate of tympanoplasty type 1 depend on good Eustachian tube function, no upper respiratory tract infection ,underlay technique and posterior perforation.

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