

# Circumferential Subannular Grafting Technique Versus Conventional Underlay Technique in Cases of Chronic Otitis Media

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Received: June 2018

Accepted: July 2018

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## ABSTRACT

**Background:** Chronic otitis media (COM) has been an important cause of middle ear disease. The present study was conducted to compare circumferential subannular grafting technique and conventional underlay technique in cases of chronic otitis media. **Methods:** 50 cases suffering from chronic suppurative otitis media were divided into 2 groups of 25 each. Group I were treated with circumferential subannular grafting technique and group II were treated with conventional underlay technique. **Results:** Group I had 13 males and 12 females and group II had 14 males and 11 females. The mean pre- op PTA in group I was 36.2 dB and in group II was 38.4 dB and post- op PTA in group I was 25.7 dB and in group II was 30.2. The difference was significant ( $P < 0.05$ ). **Conclusion:** Circumferential grafting technique was better in terms of postoperative hearing improvement as compared to conventional underlay technique.

**Keywords:** Chronic otitis media, Circumferential grafting, Hearing.

## INTRODUCTION

Chronic otitis media (COM) has been an important cause of middle ear disease. The prevalence of COM in India and different countries of Africa were in between 2 and 17% among children. Chronic otitis media is still alarming and day to day practical experience. Poor living condition, overcrowding, poor hygiene, malnutrition and inadequate health care all have been suggested as a basis for the widespread prevalence of chronic otitis media.<sup>[1]</sup>

Now-a-days myringoplasty is one of the more commonly performed otolaryngological procedures in adults and children. However, there is still uncertainty about prognostic factors in myringoplasty and there are also significant variation is the reported success rates for achieving an intact tympanic membrane after surgery.<sup>[2]</sup>

There are various factors that influence the success of myringoplasty. These factors are surgical approach, size and site of perforation, graft material, surgical technique, use of prophylactic antibiotic, condition of middle ear at the time of surgery, associated cortical mastoidectomy,

age of patient and grade of surgeon. Surgical approach is one important factor determining the prognosis of myringoplasty. When performing myringoplasty, otologists are faced with three choices concerning which approach is to be used during the intervention: postaural, transmeatal or endaural.<sup>[3]</sup>

Although overlay technique has higher success rate for the reconstruction of anterior large or subtotal tympanic membrane perforation, it's more challenging and demands surgeons skill and serious complications including anterior angle blunting, graft lateralization, epithelial pearls and delayed healing may occur.<sup>4</sup> Underlay technique is the most common and time tested technique, is typically used for posterior perforations, whereas the overlay technique is more technically challenging and particularly suited for anterior large or subtotal perforations.<sup>5</sup> The present study was conducted to compare circumferential subannular grafting technique and conventional underlay technique in cases of chronic otitis media.

## MATERIALS AND METHODS

The present study was conducted among 50 cases suffering from chronic suppurative otitis media (CSOM) of both genders. All were informed regarding the study and their consent was obtained.

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## Babu & Reddy; Circumferential Subannular Grafting Technique Versus Conventional Underlay Technique

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 25 each. Group I were treated with circumferential subannulargrafting technique and group II were treated with conventional underlay technique. In both groups graft success rate and improvement in hearing after 3 months postoperatively were compared. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

### RESULTS

**Table 1: Distribution of patients**

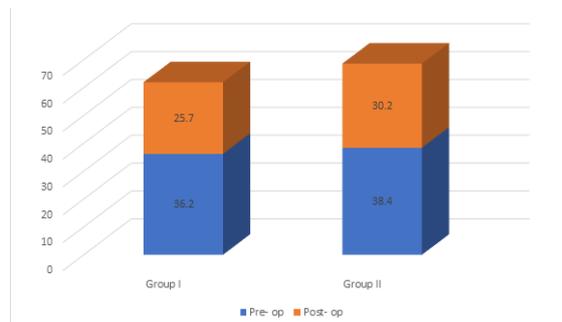
Groups	Group I	Group II
Technique	Circumferential subannular grafting	Conventional underlay
M:F	13:12	14:11

[Table 1] shows that group I had 13 males and 12 females and group II had 14 males and 11 females.

**Table 2: Improvement in hearing after 3 months**

Groups	Pre- op	Post- op	P value
Group I	36.2	25.7	0.04
Group II	38.4	30.2	0.03

[Table 2, Figure 1] shows that mean pre- op PTA in group I was 36.2 dB and in group II was 38.4 dB and post- op PTA in group I was 25.7 dB and in group II was 30.2. The difference was significant (P< 0.05).



**Figure 1: Improvement in hearing after 3 months**

### DISCUSSION

Myringoplasty is defined as simple surgical repair of tympanic membrane perforation without ossicular reconstruction. The three principal indications for myringoplasty are to prevent recurrent otorrhoea to improve a conductive hearing loss resulting from nonhealing perforation of tympanic membrane and desire to swim without having to waterproof the ear.<sup>[6]</sup> Now-a-days myringoplasty is one of the more commonly performed otolaryngological procedures in adults and children. However, there is still uncertainty about prognostic factors in myringoplasty and there are also significant variation in the reported success rates for achieving an intact tympanic membrane after surgery.<sup>[7]</sup> The present study was conducted to compare circumferential

subannular grafting technique and conventional underlay technique in cases of chronic otitis media.

In present study, group I had 13 males and 12 females and group II had 14 males and 11 females. Ralli et al,<sup>[8]</sup> used underlay anchored myringoplasty which utilizes anterior and posterior tunnels to achieve proper tension of the tympanic membrane as well as lateral traction of the malleus handle. It resulted in drum healing (91.7%) and pure tone average (PTA) post operatively was 27dB as compared with 55 dB preoperatively. Primrose and Kerr<sup>9</sup> were able to improve graft tension by using an anterior tunnel created under the annulus.

We found that mean pre- op PTA in group I was 36.2 dB and in group II was 38.4 dB and post- op PTA in group I was 25.7 dB and in group II was 30.2. Murugendrappa et al,<sup>[10]</sup> in their study 50 patients admitted for myringoplasty, 25 in each group. Results were calculated in terms of graft success rate and improvement in hearing after 3 months postoperatively. A total of 50 cases are included in this study, out of which 21 were males and 29 were females with male to female ratio of 0.72:1. The success rate of graft take up by circumferential subannular grafting technique is 96% and by conventional underlay technique is 76% respectively. In circumferential subannular grafting technique, the pre-op mean PTA was 36.92db, and the post-op mean PTA after 3 months was 25.87 db with a mean difference in PTA (dB) was 11.05 with t value of 7.74. In case of conventional underlay technique, the pre-op mean PTA was 38.24 db, and the post-op mean PTA after 3 months was 30.28 db with a mean difference in PTA (dB) was 7.96 with t-value of 14.39.

Goyal et al,<sup>[11]</sup> included 25 children in the age group of 8-14 years suffering from chronic suppurative otitis media were taken up for myringoplasty using onlay technique under general anaesthesia. All selected cases had a central type of dry perforation, good cochlear reserve and healthy middle ear mucosa. Cases having enlarged adenoids, infection in nose or throat, any traumatic perforation or previous attempt at closure were excluded from the study. It was found that there was 76% take up of graft after two months who also had improvement in hearing. Authors concluded that myringoplasty stands a good chance in children.

Alam et al,<sup>[12]</sup> included 75 patients of age 15-45years having inactive mucosal chronic otitis media with central perforation. All patients has undergone myringoplasty and patients were divided into three groups according to surgical approach such as postaural, transcanal and endaural. All patients were followed up postoperatively and all postoperative findings were recorded. The three groups were compared with regard to healing of tympanic membrane and improvement of hearing. Results: The success rate in this study was 80%. Graft take rate in postaural, transcanal and endaural approaches

## *Babu & Reddy; Circumferential Subannular Grafting Technique Versus Conventional Underlay Technique*

were 92.5%, 66.67% and 63.64% respectively. Improvement of mean air bone gap in postaural, transcanal and endaural approaches were 19.04dB, 10.02dB and 11.36dB.

### CONCLUSION

Authors found that circumferential grafting technique was better in terms of postoperative hearing improvement as compared to conventional underlay technique.

### REFERENCES

1. Famarzi A, Hashemi SB, Razaee A. Mucosal pocket myringoplasty modification of underlay technique for anterior or subtotal perforations. American journal of otolaryngology-Head and Neck Surgery. 2012.
2. Schraff S, Dash N, Strasnick B. Window shade tympanoplasty for anterior marginal perforations. Laryngoscope. 2005;115:1655-59.
3. Aslam MA, Aslam MJ. Comparison of Over-Underlay and Underlay techniques of Myringoplasty. Pak Armed Forces Med J. 2009;3: 1-4.
4. Aggarwal R, Saeed SR, Green KJM. Myringoplasty. The journal of Laryngology and otology. 2006;120:429-32.
5. Mishra P, Sonkhya N, Mathur N. Prospective study of 100 cases of underlay tympanoplasty with superiorly based circumferential flap for subtotal perforations. Indian J Otolaryngology. 2007;59:225-28.
6. Lee P, Kelly G, Mills RP. Does the size of the perforation matter? Clinical otolaryngology and allied sciences. 2002;27(5):331-34.
7. Palva T. Middle ear surgery in Northern Europe. Arch Otolaryngol. 1963;78:363- 70.
8. Ralli, et al. Anchored Myringoplasty. The laryngoscope. 2000;110:674-79.
9. Primose WJ, Kerr AG. The anterior perforation. ClinOtolaryngol. 1986;11:175- 76
10. Murugendrappa MA, Siddappa PN, Shambulingegowda A, Basavaraj GP. Comparative study of two different myringoplasty techniques in mucosal type of chronic otitis media. Journal of clinical and diagnostic research: JCDR. 2016 Feb;10(2):MC01.
11. Goyal, Vartiainen E, Nuutinen J. Success and pitfalls in myringoplasty: follow-up study of 404 cases. The American journal of otology. 1993 May 1;14(3):301-5.
12. Alam KN, Alam MM, Hossain MD, Karim MA, Hossain MA, Sarker MZ. Comparative study of different approaches of myringoplasty in chronic otitis media. Bangladesh Journal of Otorhinolaryngology. 2016;22(1):21-5.

**How to cite this article:** Babu VHK, Reddy KA. Circumferential Subannular Grafting Technique Versus Conventional Underlay Technique in Cases of Chronic Otitis Media. Ann. Int. Med. Den. Res. 2018; 4(5):EN01-EN03.

**Source of Support:** Nil, **Conflict of Interest:** None declared