

## ORIGINAL RESEARCH

# Over underlay graft technique versus conventional underlay myringoplasty in patients with chronic suppurative otitis media

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### ABSTRACT

**Background:** 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. The present study compared over underlay graft technique with conventional underlay myringoplasty in patients with mucosal CSOM. **Materials & Methods:** 90 patients of chronic suppurative otitis media of both genders were divided into 2 groups of 45 each. Group I patients were treated with conventional underlay myringoplasty and group II patients with over-underlay myringoplasty. Parameters such as status of graft, size of perforation, degree of hearing loss etc. was compared in both groups. **Results:** Group I had 25 males and 20 females and group II had 23 males and 22 females. Degree of hearing loss was mild seen in 36 in group I and 32 in group II, moderate 9 in group I and 13 in group II. Site of perforation was grade IV seen in 13 in group I and 15 in group II and grade V 32 in group I and 30 in group II. Graft status was graft taken up in 40 in group I and 41 in group II and graft failure was 5 in group I and 4 in group II. The difference was significant ( $P < 0.05$ ). Air born gap value pre-op was 35.2 dB in group I and 39.6 dB in group II and post- op was 19.4 dB in group I and 19.2 dB in group II. The difference was significant ( $P < 0.05$ ). **Conclusion:** The over-underlay technique found to be better than conventional underlay myringoplasty. The over-underlay technique has advantages of graft uptake rate.

**Key words:** Chronic suppurative otitis media, conventional underlay myringoplasty, Graft

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### INTRODUCTION

Chronic suppurative otitis media (CSOM) is an inflammatory process of the mucoperiosteal lining of the middle ear space and mastoid. Infection of the middle ear has been a problem encountered in the human race and is as old as humanity itself.<sup>1</sup> Myringoplasty is the term used to describe the surgical repair of a perforated tympanic membrane and is the most to evaluate and compare the results of over-underlay graft technique with conventional underlay myringoplasty an adequate area of contact between the graft and tympanic membrane remnant is fundamental to the successful closure of any perforation. Graft failure is considerably higher in anterior perforation, large perforation, and more so by the dexterity of graft placement.<sup>2</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>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. 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> The present study compared over-underlay graft technique with conventional

underlay myringoplasty in patients with mucosal CSOM.

**MATERIALS & METHODS**

The present study comprised of 90 patients of chronic suppurative otitis media of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 45 each.

Group I patients were treated with conventional underlay myringoplasty and group II patients with over-underlay myringoplasty. Parameters such as status of graft, size of perforation, degree of hearing loss etc. was compared in both groups. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

**RESULTS**

**Table I: Distribution of patients**

Gender	Group I	Group II
Male	25	23
Female	20	22

Table I shows that group I had 25 males and 20 females and group II had 23 males and 22 females.

**Table II Comparison of parameters**

Parameters	Variables	Group I	Group II	P value
Degree of hearing loss	Mild	36	32	0.04
	Moderate	9	13	
	Moderately severe	0	0	
	Severe	0	0	
Site of perforation	Grade I	0	0	0.05
	Grade II	0	0	
	Grade III	0	0	
	Grade IV	13	15	
	Grade V	32	30	
Graft status	Graft taken up	40	41	0.03
	Graft failure	5	4	

Table II shows that degree of hearing loss was mild seen in 36 in group I and 32 in group II, moderate 9 in group I and 13 in group II. Site of perforation was grade IV seen in 13 in group I and 15 in group II and

grade V 32 in group I and 30 in group II. Graft status was graft taken up in 40 in group I and 41 in group II and graft failure was 5 in group I and 4 in group II. The difference was significant (P < 0.05).

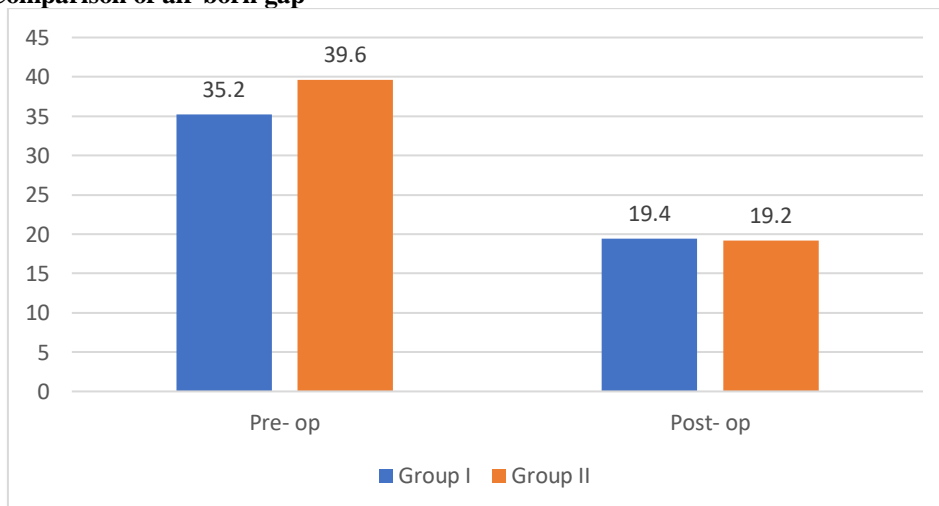
**Table III: Comparison of air born gap**

Period	Group I	Group II	P value
Pre- op	35.2	39.6	0.01
Post- op	19.4	19.2	

Table III, graph I shows that air born gap value pre-op was 35.2 dB in group I and 39.6 dB in group II and

post- op was 19.4 dB in group I and 19.2 dB in group II. The difference was significant (P < 0.05).

**Graph I: Comparison of air born gap**



## DISCUSSION

There are two established techniques of myringoplasty, overlay technique and underlay technique. In overlay technique we place the graft lateral to the fibrous layer of the tympanic membrane.<sup>5</sup> In underlay technique we place the graft medial to the tympanic membrane remnant. 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>6</sup> Myringoplasty is the operative procedure performed to repair the tympanic membrane perforation and to improve hearing level.<sup>7</sup> The graft success rate depends on various factors such as the size of the perforation, functioning of eustachian tube, graft placement techniques, the experience of the operating surgeon etc. There is marked diversity noted in achieving an intact tympanic membrane following myringoplasty.<sup>8</sup> It is often reported that repair of anterior and subtotal perforation by conventional underlay technique is less successful when compared to small perforation because it is technically more difficult.<sup>9</sup> The present study compared over-underlay graft technique with conventional underlay myringoplasty in patients with mucosal CSOM.

We found that group I had 25 males and 20 females and group II had 23 males and 22 females. Kartush et al<sup>10</sup> studied 120 patients who underwent over-underlay tympanoplasty. The average follow-up period was 1.8 years (range: 6 months–6.5 years). Their group of patients included 81 (67.5%) patients with cholesteatoma. Fifty-four patients (45%) underwent intact canal mastoidectomy, 19 (15.8%) had a canal wall down mastoidectomy, 25 (20.8%) had endaural atticotomies, and only 22 (18.3%) had no mastoidectomy. All 120 patients had a full take-up of the graft at 6 months follow-up. However, the authors reported delayed tympanic problems such as atelectasis in 17 cases and perforation in 12 cases. There was no recurrence of cholesteatoma apart from small epithelial pearls on tympanic membrane in three children, which were removed easily.

We found that degree of hearing loss was mild seen in 36 in group I and 32 in group II, moderate 9 in group I and 13 in group II. Site of perforation was grade IV seen in 13 in group I and 15 in group II and grade V 32 in group I and 30 in group II. Graft status was graft taken up in 40 in group I and 41 in group II and graft failure was 5 in group I and 4 in group II. Murugendrappa et al<sup>11</sup> compared circumferential subannular grafting technique and conventional underlay technique in cases of chronic otitis media. 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.

We found that air born gap value pre-op was 35.2 dB in group I and 39.6 dB in group II and post- op was 19.4 dB in group I and 19.2 dB in group II. Panchal et al<sup>12</sup> in their study twenty patients underwent conventional underlay myringoplasty and 20 patients underwent over-underlay myringoplasty. The follow-up period was 3 months. Graft uptake and hearing improvement was comparable in both groups. Although the graft uptake was 5% lower in the group which underwent conventional underlay myringoplasty (90%) as compared to over-underlay myringoplasty (95%), however, the difference was not statistically significant (P = 0.5). However, there was statistically significant difference in gain in hearing threshold (gain in A-B gap) in the conventional underlay myringoplasty (14.5 dB ± 7.236) as compared to over-underlay myringoplasty (18.75 dB ± 5.349) (P = 0.04).

## CONCLUSION

Authors found that the over-underlay technique found to be better than conventional underlay myringoplasty. The over-underlay technique has advantages of graft uptake rate.

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