Original Article ISSN (O):2395-2822; ISSN (P):2395-2814

An Observational Study on Butterfly Underlay Cartilage Tympanoplasty.

Amit kumar[1], Aditya Narayan Tiwari[2], Shalini Saraswat[3], Prabol Chatterji[4], Bhanu Pratap Singh[1]

[1]Assistant Professor, Department of ENT, Teerthankar Mahaveer Medical College, TMU, Moradabad, India.
[2]Junior Resident, Department of ENT, Teerthankar Mahaveer Medical College, TMU, Moradabad, India.
[3]Assistant Professor, Department of Radiology, Teerthankar Mahaveer Medical College, TMU, Moradabad, India.
[4]Professor, Department of ENT, Teerthankar Mahaveer Medical College, TMU, Moradabad, India.

Received: May 2016
Accepted: May 2016

ABSTRACT

Background: The paring of tympanic membrane is usually done by doing myringoplasty with temporal is fascia graft. **Methods:** A newer technique of butterfly cartilage underlay grafting has been used in 50 patients with small to moderate size safe perforation. **Results:** The result of the study would be analysed for hearing improvement and graft uptake. Hearing gain of 0-5 dB was observed in 4 patients, 6-10 dB in 3 patients, 11-15 dB in 14 patients, 16-20 dB in 22 patients and 21-25 dB in 7 patients. **Conclusion:** Butterfly cartilage myringoplasty is a very good technique for closure of small to moderate size central perforations.

Keywords: Butterfly Underlay technique, Cartilage Tympanoplasty, CSOM .

INTRODUCTION

Chronic Suppurative Otitis media (CSOM) is defined as chronic inflammation of mucoperiosteum of middle ear cleft, it is basically characterized by the tympanic membrane perforation and associated hearing loss. Safe perforations would not have Cholesteatoma and repair of tympanic membrane would be treatment in such cases

There have been various attempts for closure of perforated tympanic membrane [1], techniques like overlay, underlay, interlay bath plug technique, fat popping technique have been described, overlay and underlay grafting with post aural approach or endaural approach are currently mostly used technique [3].

Dr. Eavey in year 1998 for the first time used tragal cartilage and developed BCG (butterfly cartilage graft technique), this technique is found to have a reasonable result with small to medium size central perforations [2].This technique involves the use of endoscope and gives better visualization of middle ear.

Name & Address of Corresponding Author
Dr. Amit kumar
Assistant Professor, Department of ENT,
Teerthankar Mahaveer Medical College, TMU,
Moradabad, India.
E-mail: amitdoc2006@gmail.com

Other advantages with the technique are no postaural scar, good cosmetic and better hearing outcome, more suitable to do for army aspirants.

MATERIALS AND METHODS

50 patients from age group 11 yrs to 50 yrs who attended OPD in ent .dept. of ent at T.M.U between July 2013 to Nov. 2014 with safe CSOM with size ranging from small size to medium size perforation.

All cases in study were dry for at least 1 month.

Pure tone audiogram were done prior to surgery and was done during follow up, all cases were followed up for 1 year.

All the cases were done under local anesthesia, only in apprehensive children general anesthesia was used.

Lignocaine with adrenaline (1:100,0000) used for local anesthesia.

Table 1: Graft Uptake and Hearing Impairmnent.

S No.	Age/Sex	Graft Uptake	Hearing Impartment
1	16/M	+	20
2	27/F	+	15
3	22/F	+	25

4	29/F	+	20
5	34/M	+	20
6	50/M	+	15
7	12/F	+	20
8	42/M	-	10
9	39/F	+	25
10	29/F	+	25
11	17/M	+	20
12	20/M	+	15
13	32/M	+	15
14	47/F	·	0
15	42/M	+	15
16	21/F	+	20
17	32/F	+	15
18	44/M	+	15
19	18/M	·	0
20	19/M	+	20
21	25/M	+	20
22	29/M	+	20
23	33/F	+	15
24	40/F	+	20
25	42/F	+	15
26	41/F	+	20
27	47/M	-	10
28	22/F	+	20
29	25/F	+	20
30	28/F	+	15
31	32/M	+	25
32	21/M	+	20
33	26/F	+	20
34	35/M	·	0
35	34/M	+	15
36	18/F	+	20
37	13/F	+	25
38	15/M	+	25
39	19/M	+	20
40	28/F	+	20
41	42/F	+	15
42	32/F	+	20
43	37/F	+	20
44	39/M	·	0
45	15/M	+	15
46	18/F	-	0
47	17/F	+	25
48	32/F	+	20
49	22/M	+	20
50	21/M	+	15

Male/female: 24/26

Table 2: Hearing Gain

Hearing gain	No. of patients
0-5	4
6-10	3
11-15	14
16-20	22
21-25	7

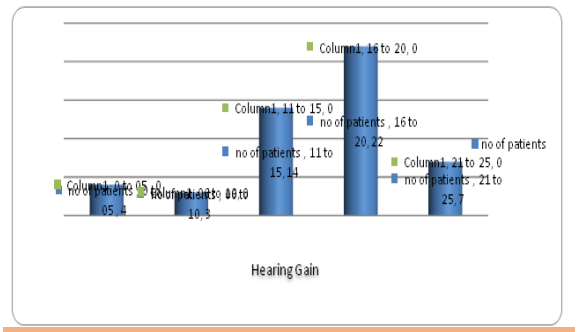

Figure 1: Hearing Gain.

Operative steps:-

Using 0 endoscope perforation is seen, and margins are freshened.

Undersurface of the perforation is made raw.

Using circular knife approximate dimension of perforation are measured.

Tragal cartilage with perichondrium is harvested.

Approximately 1 mm bigger size tragal cartilage piece than if the perforation is scored in butterfly shape.

Now using endoscope this cartilage is fitted into perforation just like a button where one edge is medial to perforation and other is lateral to perforation.
Medicated gel foam is placed in EAC.

RESULTS

All patients were successfully enrolled in the study. The graft update and hearing impairment is shown in all patients [Table 1]. Hearing gain of 0-5 dB was observed in 4 patients, 6-10 dB in 3 patients, 11-15 dB in 14 patients, 16-20 dB in 22 patients and 21-25 dB in 7 patients [Table 2, Figure 1].
Graft failure was observed in 4 patients. Residual perforation was seen in 3 patients. Graft uptake fully and dry ear was observed among 43 ears. No hearing gain the graft failure cases and were taken up for underlay postural technique subsequently.
3 cases where there was residual perforation were dealt with chemical cauterization.

DISCUSSION

Closure of tympanic membrane has been tried since ages, some even tried cadveric edura for this.
Benzer in 1640 have tried using pig bladder for closure of tympanic membrane perforation[3]
Prof. Wullstein and Dr. Heermen tried SSG also; but it was an otologist
Goodhill who in 1964 introduced tragal perichondrium for myringoplasty for first time, many refinement of technique has taken place over the years.
Gibb and chang used plugging technique [4]. In 1998, Eavey's introduced for butterfly cartilage technique[5]
We performed butterfly cartilage technique in 50 patients, all patient had safe perforation size ranging from the small to moderate size. A patient who had no cochlear reserve or had a history of ear surgery was not included.
We operated 50 patients with butterfly cartilage technique in which 24 males and 26 females with age ranging from 11 years to 50 years
43 out of 50 patients (86%) had intact mesotympanum post operatively; 4 patients (8%) had graft failure and 3 (6%) had residual perforations. Those 4 with failure were taken underwent postaural myringoplasty and 3 with residual perforation were treated with chemical cauterization with intact drum later on follow up.
No hearing gain in failure cases.
This procedure has many technical advantages.
Lesser surgical time, inspection of middle ear, lesser morbidity, could be done as day care procedure, and good choice of operations for army aspirants.
Tragal cartilage is tough and stiff but hearing gain posts operatively are good; this graft is pretty resistant against the initial nutritional requirements.[6]
The disadvantage is that large size of perforation cannot be treated with the technique.

CONCLUSION

Butterfly cartilage myringoplasty is a very good technique for closure of small to moderate size central perforations.
This technique is surely takes less time and lesser morbid technique and prevents an obvious postaural scar and patient can be discharged same day
This technique should definitely gain more recognition and should be considered in day to day routine surgeries for chronic otitis media
Also a better surgery for army recruits as the post operative scar due to previous history of a ear surgery becomes an hindrance for their selection.

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How to cite this article: Kumar A, Tiwari AN, Saraswat S, Chatterji P, Singh BP. An Observational Study on Butterfly Underlay Cartilage Tympanoplasty. Ann. Int. Med. Den. Res. 2016;2(4):158-60.

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