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Original Research

Impact of Intact Bridge Mastoidectomy in Achievements of Dry and Useful Ear among Patients of Atticoantral Chronic Otitis Media

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ABSTRACT

There will always be never ending quest to find out ideal surgical technique to deal with atticoantral chronic otitis media cases with aims of achieving safe and useful ear. The present study was conducted with the aim to determine the impact of intact bridge mastoidectomy in achievements of dry ear. The present prospective study was conducted in the Rajendra Hospital, Patiala, ENT department. The study included 30 subjects with atticoantral chronic otitis media.. Intact bridge mastoidectomy was performed IN all the patients. All the patients were followed up to 4 weeks to 12 weeks for dry ear and improvement of hearing. Improvement in hearing was evaluated using pure tone audiometry. A total of 30 subjects were enrolled, there were 63.3% males and 36.7% females. At 4 weeks, 16 (53.33%) patients had dry ear and 14 (46.67%) patients had discharge but graft was well taken up in all patients (100%). At 6 weeks, 28 (93.3%) cases had dry ear, only 2 (6.7%) had discharge. At 8 weeks, 28 cases (93.33%) had dry ear and failure of graft was observed in 2 cases. Out of these discharging ears, only 1 had granulations and in another 1 case no reason could be found for the discharge.The incidence of recurrence of disease is greatly reduced after intact bridge mastoidectomy. It provides optimum hearing without sacrificing visualization during the surgery.

Key words: Discharge, mastoidectomy, perforations.

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INTRODUCTION

CSOM (AAD) is amongst the causes of acquired hearing impairment with numerous complications seen in developing countries. Prior to early 50's the only operation performed in cases of active CSOM was the radical and modified radical mastoidectomy. The purpose of these operations was to create a safe ear by exteriorizing the disease.[1] So that the external ear and site of mastoid air cells were made into one large cavity. The disadvantages of such surgery are life long post operative care necessary to remove epithelial debris, recurrent discharge and hearing is frequently poor following surgery. Unfortunately hearing results were not good because of many reasons which were, the recurrent cavity drainage or moisture that had a deleterious effect on tympanic membrane graft and another was reduced size of middle ear space which resulted from removal of bony annulus and creation of cavity.[2-4]In 1968, Jansen[5] introduced intact canal wall mastoidectomy and tympanoplasty (closed cavity). The drawback of this procedure are it required at least two planned stages with some advocating a look see operation after a couple of years to rule out recurrent or residual pathology. The benefit of staged tympanoplasty in which revision surgery is done

after 6 months is that any residual focus of cholesteatoma is present can be removed. But economic expense to the patient, inability to perform in a sclerotic mastoid and better visualization of middle ear in open cavity are advocating its use less and less.[6] So pendulum now apperaed to be swinging back to open cavity masotoidectomy. Intact bridge mastoidectomy is a combination that provides the benefit of better removal of diseased tissue and better hearing improvement can beobserved compared with closed cavity technique.[7]These deliberations led Michael M Paparella and Jung in the year 1983 to develop IBM technique, thathad salient features of both the techniques.MD Hamid Sajjadiin the year 1996 further improved this intact bridge mastoidectomy technique. [8]This procedureis normally performed for management of chronic otitis media and chronic mastoiditis associated with intractable pathological tissues like cholesteatoma, granulation tissue formation and cholesterol granuloma.[9-11]The present study was conducted with the aim to determine the impact of intact bridge mastoidectomy in achievements of dry and useful ear.

MATERIALSD AND METHODS

The present prospective study was conducted in the Rajendra Hospital,Patiala, ENT department. The study included 30 subjects with discharge from ears presenting to the OPD of the hospital. The subjects with mastoid tenderness with or without fistula were included in the study. Thirty patients clinically diagnosed to have unsafe CSOM were taken. Preoperative and postoperative pure tone audiometry was done to evaluate the status of hearing, before and after tympanomastoidectomy. Conventional radiography of both mastoids was undertaken in Law's (lateral oblique) position in all cases.The cases were done under GA/LA. Intact bridge mastoidectomy was performed amongst all the patients.A large tympanomeatal flap was raised and meatoplasty was performed followed by canaloplasty. On opening of the antrum, granulation and diseased tissue was removed. Ridge was lowered keeping the bridge intact, aditus was enlarged to remove the attic disease. Pathology was removed from the rest of the middle ear followed by reconstruction based on the status of the ossicles. All patients were put on antibiotics, oral as well as injectable, analgesics and antihistarninics. Stitches were removed after 7 days and the mastoid pack after 10 days. All the patients were followed up to 10-12 weeks for dry ear. Improvement in hearing was evaluated using pure tone audiometry. All the data was arranged in a tabulated form and analyzed using SPSS software.

RESULTS

In the present study, a total of 30 subjects were enrolled, there were 63.3% males and 36.7% females. Majority of the subjects i.e. 46.67% were between 11-20 years of age. There were 10 subjects between 21-30 years of age. Approximately 66.6% subjects were from rural background. Table 1 illustrates the site of perforation. Most of the patients had attic and posterosuperior (12) perforation. 3(10%) patients had combined attic and posterosuperior perforation. In 3 patients (10%), who presented with aural polyp, the site of perforation could not be ascertained before removal of the polyp. Incus was the most commonly affected ossicle. It was eroded in 19 (63.33%) and absent in 6 (20%) cases. In most of the cases long process was eroded. Malleus was next commonly affected being eroded in 10 (33.33%) cases and absent in 1 (3.33%) case. Stapes was intact in 26 (86.67%) cases while it was eroded in 4 (13.33%) cases. Table 3 shows the type of reconstruction performed. Surgical reconstruction (tympanoplasty) was done in first sitting only in all the thirty cases after removing disease from attic, antrum, middle ear and mastoid air cells. Tympanomalleostapediopexy (malleus-stapes assembly) was the most common procedure performed, 15 (50%) cases followed by tympanoplasty type III (myringostapediopexy) in 6 (20%) cases. Tympanoplasty type I and tympanomalleostapediopexy with incus interposition were performed in 5 (16.67%) and 3 (10%) cases respectively. In one case tympanoincudostapediopexy i.e. incus-stapes assembly was performed. Table 4 demonstrates the results of follow up. Follow up of patients done at 4 weeks, 6 weeks and 3 months. At 4 weeks, 16 (53.33%) patients had dry ear and 14 (46.67%) patients had discharge but graft was well taken up in all patients (100%). At 8 weeks, 28 (93.3%) cases had dry ear, only 2 (6.7%) had discharge. Out of these discharging ears, only 1 had granulations and in another 1 case no reason could be found for the discharge. At 3 months, same situation as far as dryness concerned but graft take up also failed in 2 discharging ears. Table 6 shows the audiometric improvement in the hearing test performed postoperatively. At 3 months, 17 (56.6%) of operated cases had air bone gap within 21-30 d I. HL, 8 (26.6%) had 0-20 dB HL and 5 (16.8%) cases had more than 31 dBHL air bone gap.

Table 1: The site of perforation amongst the subjects

Site	No. of Cases	%Age
Attic	12	40.0
Posterosuperior (marginal)	12	40.0
Aural Polyp	3	10.0
Posterosuperior and attic	3	10.0
Total	30	100.00

Table 2: PEROPERATIVE OSSICULAR STATUS

Ossicle		No. Of cases	%Age
Incus	Absent	6	20.00
	Eroded	19	63.33
	Intact	5	16.67
Malleus	Absent	1	3.33
	Eroded	10	33.33
	Intact	19	63.33
Stapes	Absent	-	-
	Eroded	4	13.33
	Intact	26	86.67

Table 3: RECONSTRUCTION PROCEDURE PERFORMED WITH INTACT BRIDGE MASTOIDECTOMY

Procedure	No. Of Cases	%Age
Tympanoplasty type I	5	16.67
Tympanoplasty type III (Myringostapediopexy)	6	20.0
Tympanomalleostapediopexy	15	50.0
Tympanomalleostapediopexy with Incus interposition	3	10.0
Tympanoincudostapediopexy	1	3.33
Total	30	100

Table 4: FOLLOW UP

Fllow up	No. of cases		
	4 wks	6 wks	3 th
Dry ear	16	28	28
Discharge	14	2	2
Granulations		1	1
Take up of graft	30	30	28

Table 5: Preoperative PTA

Audiometric value	No. of cases	Percentage
0-20	2	6.6
21-30	8	26.6
31-40	16	53.3
41-55	3	10.0
56-70	1	3.33
Total	30	100

Table 6: Postoperative improvement in hearing test

Audiometric value	No. Of Cases	%Age
0-20	8	26.6
21-30	17	56.6
31-40	3	10.0
41-55	2	6.8
56-70	-	-
Total.	30	1.00

DISCUSSION

Intact canal wall and canal wall down or combined approaches were usually recommended for tympanomastoidectomies in attico antral ear disease patients. Patients were not happy either because of recurrence of disease or hearing improvement. In view of above scenario, Michael M paprella and Jung[7] (1983) developed Intact bridge mastoidectomy technique. Hamid Sajjid (1996)[8] further improvised this technique which has desirable elements of both canal wall down and canal wall technique. This present prospective observational study is an attempt to find results of IBM in terns of achieving dry and useful year among patients of atticoantral chronic otitis media. In our study incidence of recurrence of disease is 6.7% at 12 weeks compareable to studies done by Paparella and jung (1983)[7] with this technique. But failure rate was 5% in study of MK Gupta et al 2017. The graft success rate in present study was 93.3% slight less as that of Albirmawyo et al[9] 2011 having success rate 95%.

The probable explanation of graft failure in both studies was discharging ears. Air bone gap improvement of 10-20 dB achieved in 56.6% patients in present series. These are comparable to 62.5% in study of MK Gupta et al[10] 2017. In study of Michahel M Paparello et al 1983 age of patients were in range of 10-80 years with 45% males but in our study, range was 11-30 years with 63.3% males.[11]

CONCLUSION

Chronic suppurative otitis media is a commonly encountered disorder amongst the subjects. In the present study, posteriosuperior and attic perforations were commonly observed. This study was a small effort to establish role of intact bridge mastoidectomy in achieving dry ear. After 4 weeks of follow up 93% subjects had dry ear after intact bridge mastoidectomy. The incidence of recurrence of disease is greatly reduced after intact bridge mastoidectomy. It provides optimum hearing without sacrificing visualization during the surgery. The results are comparable to the studies already done. The limitations recognized during the study period were: 1) non uniformity of patient selection. 2) Small sample data. 3) Most patients undergoing intact bridge mastoid cavities have small mastoid cavities devoid of squamous epithelium which may require grafting postoperatively, however, results in producing dry, useful ear are equal to or better than intact wall procedures.

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