

Intact bridge mastoidectomy, a versatile single stage surgical method for chronic suppurative otitis media

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Abstract

Objective: To evaluate the efficacy of intact bridge mastoidectomy for chronic ear diseases and compare it with canal wall down technique and intact canal wall technique.

Materials and Methods: A prospective and comparative study was done on 120 patients, divided into three equal groups. Patients of chronic suppurative otitis media with granulation, cholesteatoma and cholesterol granuloma were taken for study. 40 patients were operated by IBM technique, 40 patients by CWD technique and 40 patients by ICW technique. Results were compared in terms of air bone gap improvement and success rate.

Results: In our study, in terms of outcome, air bone gap improvement by IBM technique was better than CWD technique, but was comparable to ICW technique. Incidence of recurrence of disease was less than that of ICW technique but was almost equal to CWD technique.

Conclusion: IBM technique is a very good technique in comparison to CWD and ICW technique, as it results in better ABG improvement and recurrence is less.

Keywords: IBM (Intact bridge mastoidectomy), CWD (Canal wall down), ICW (Intact canal wall), ABG (Air bone gap)

Introduction

Eradication of disease and preservation of function are two of the most important goals in surgery for chronic problems of ear. Over the past decades, various surgical approaches have been attempted to achieve these objectives. Closed cavity tympanomastoidectomy described by Jansen (1968) has better preservation of function, but traditionally there is high failure rate in eradicating the disease, and it requires two or more staged approach.⁽¹⁾ Open cavity technique is relatively successful in eradicating the disease, but it has drawback of cavity problems and poor hearing results. Intact bridge mastoidectomy (IBM) combines the benefit of better eradication of disease and better hearing results seen with closed cavity technique.⁽²⁾ These considerations led Michael M Paparella and Jung (1983) to develop IBM technique, which combines salient features of both open and closed techniques. MD Hamid Sajjadi (1996) further improvised this IBM technique.⁽³⁾ This procedure is indicated for treatment of chronic otitis media and chronic mastoiditis with intractable pathological tissues such as cholesteatoma, granulation tissue and cholesterol granuloma.^(4,5,6)

We have adopted this technique of IBM in pts with cholesteatoma and cholesterol granuloma.

Materials and Methods

This prospective and comparative study was done in Government medical college and super facility hospital, Azamgarh, UP, on 120 pt suffering from csom, cholesteatoma and cholesterol granuloma. Pts of 10 to 50 yrs age and both genders were included in this study. Three groups were formed. 40 pts were operated

by closed technique, 40 pts were operated by open technique and 40 pts were operated by IBM technique. Preoperative investigations and evaluations were done including pure tone audiometry. CT scan of every patient's temporal bone was done to access the extent of disease.

All the pts were operated under LA with sedation. For IBM technique, pts were taken to Operation Theater, painting and draping done. LA was achieved by injecting 2% xylocaine with adrenaline. Postural incision was given. Mastoid cortex exposed. Temporalis fascia was harvested. Mastoidectomy was done. Bridge was preserved and sculptured depending upon diseased tissue. Atticotomy may be done as needed, which may displace the bridge posteriorly. Bridge and continuous facial buttress should remain as high enough to increase the mesotympanic space adequately. Aditus may be enlarged for adequate removal of disease. Intact ossicular chain was not dismantled. With the help of otoendoscope, disease was removed thoroughly from the medial as well as lateral surface of ossicular chain. Reconstruction of middle ear was done. Aditus was closed by periosteum harvested from mastoid cortex. Meatoplasty was done. Canal was packed with medicated gel foam. Other two groups of pts were operated by standard open cavity technique and closed technique respectively. After postoperative monitoring, patients were discharged next day. Patients were reviewed after one week for suture removal. Further follow-up was done after 1, 3 and 6 months. Pts were observed for recurrence of disease and postoperative hearing improvement.

Observation

In our study, among the patients operated by IBM technique, 50% were male and 50% were female. Among the patients operated by ICW technique, 70% were male and 30% were female and among patients operated by CWD technique, 55% were male and 45% were female. (Fig. 1)

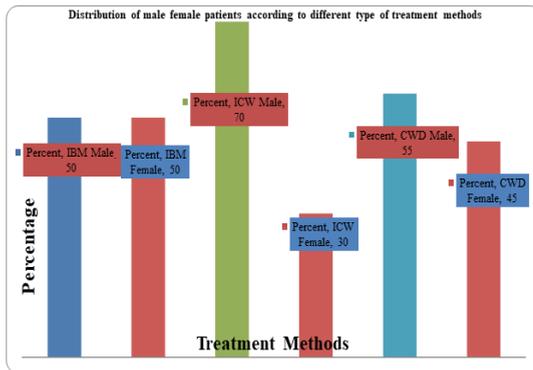


Fig. 1: Sex Ratio

Among patients operated by IBM technique, 75% were from urban and 25% were from rural population. In the patients operated by ICW tech, this distribution was 62.5% urban and 37.5% rural. In the patients operated by CWD technique, this urban rural distribution was 75% and 25% respectively. (Fig. 2)

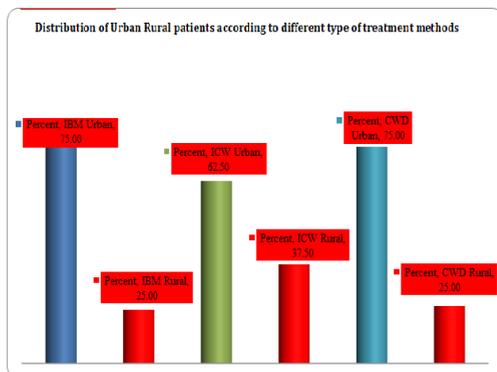


Fig. 2: Urban rural population distribution

As for as ABG improvement was concerned, in IBM tech, 0-10 db improvement was seen in 25% patients, 10-20 db improvement was seen in 62.5% patients and 20-30 db improvement was seen in 12.5% cases.

Among patients operated by ICW tech, 0-10 db ABG improvement was seen in 37.5% cases, 10-20 db improvement was seen in 50% pts and 20-30 db improvement was seen in 12.5% cases.

Among patients operated by CWD tech, 0-10 db improvement was seen in 25% cases, 10-20 db improvement was seen in 12.5% cases and no improvement was seen in 62.5% cases. (Table 1)

Table 1: ABG improvement in different groups

| Types Of Surgery | ABG Improvement | No. Of Patients | Percentage |
|------------------|-----------------|-----------------|------------|
| IBM | 0-10 | 10 | 25.00 |
| | 10-20 | 25 | 62.50 |
| | 20-30 | 5 | 12.50 |
| ICW | 0-10 | 15 | 37.5 |
| | 10-20 | 20 | 50.00 |
| | 20-30 | 5 | 12.50 |
| CWD | 0-10 | 10 | 25.00 |
| | 10-20 | 5 | 12.50 |
| | 20-30 | 0 | 0.00 |
| | No Improvement | 25 | 62.50 |

Incidence of recurrence of disease was 5% among patients operated by IBM tech, 2.5% in CWD Tech and 17.5% in ICW tech. (Fig. 4)

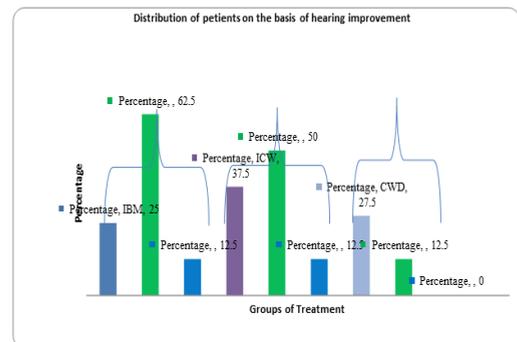


Fig. 3: ABG improvement in different groups.

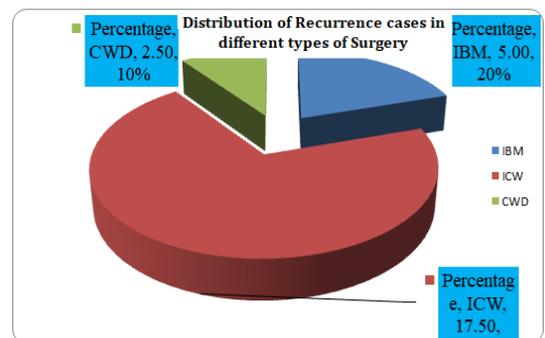


Fig. 4: Distribution of Urban Rural patients according to different type of treatment methods

Discussion

In the patients who were operated by CWD method are not happy with their hearing results. In this era of modernization, even the poorest patient's uses mobile phone, they are very much concerned with hearing improvement. Therefore, it is not feasible to dismantle the intact chain.^(5,6,7) In ICW procedure, recurrence of disease is common and it also requires staging.^(8,9) In view of above scenerio, Michael M paparella and Jung (1983) developed the IBM technique. Hamid Sajjadi

(1996) further improvised this technique. In our study, we found incidence of recurrence higher (17.5%) in patients operated by ICW technique. In patients operated by CWD technique, recurrence was 2.5% and in patients operated by IBM technique, it was 5%. ABG improvement of 10-20 db was seen in 62.5% cases, in 50% cases and in 12.5% cases in patients operated by the techniques of IBM, ICW and CWD respectively. It shows ABG improvement in IBM technique comparable to ICW technique, and better than in CWD technique.

Success rate in our study was comparable to the earlier studies done by Paparella and Jung (1983).

Conclusion

Among all the three techniques, we found IBM technique usefull in improving the hearing. Recurrence of disease is also less in IBM technique. Hence we advocate IBM technique for csom with choleseatoma and cholesterol granuloma.

Compliance with Ethical Standards

Conflict of interest

No conflict of interest is there as declared by the author's.

Informed consent

Informed consent was obtained from all the patients

Ethical approval

All procedures performed in studies involving human participants were in accordance with ethical standards of institutional research committee and with the 1964 Helisinky declaration and its later amendments.

Acknowledgments

Author would like to thank the Principal, GMC Azamgarh, UP for granting permission to carry out the study and participants for their cooperation.

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