



COMPARISON OF THE RESULTS OF OUTCOME OF CANAL WALL UP MASTOIDECTOMY AND CANAL WALL DOWN MASTOIDECTOMY FOR CHRONIC SUPPURATIVE OTITIS MEDIA

Comparison

Dr. M. Vidhya	Assistant Professor Of Ent, Govt Medical College And Esi Hospital, Coimbatore
Dr. S. Bhuvana*	Senior Resident In Ent, Govt Medical College And Esi Hospital, Coimbatore *Corresponding Author
Dr. K.R. Kannappan	Retired Prof And Hod Of Ent, Madurai Medical College, Madurai
Dr. P. Swaminathan	Dean And Prof Of Surgery, Govt Medical College And Esi Hospital, Coimbatore

ABSTRACT

Introduction: In cases of chronic suppurative otitis media with attico-antral /postero superior marginal pathology, treatment modality is only surgery. Surgical options available are the canal wall down mastoidectomy and intact canal wall mastoidectomy.

Aim: To compare the post-operative results like recurrence of ear discharge, improvement in hearing and requirement of postoperative follow up in CSOM patients undergoing canal wall down mastoidectomy and canal wall up mastoidectomy .

Materials and Methods: 32 patients who attended ENT Department, Govt Rajaji Hospital, Madurai from June 2007 to September 2009 were included in this study. The diagnosis of CSOM – atticoantral pathology with or without cholesteatoma or granulations was made on clinical grounds. Informed written consent was obtained before the initiation of the study. Mastoid cortex exposed and drilled. Cholesteatoma removed and disease clearance given with canal wall up mastoidectomy in 13 cases and with canal wall down mastoidectomy in the rest 19 cases. Post-operative results like recurrence of ear discharge, improvement in hearing and requirement of postoperative follow up were studied and statistically analysed.

Results: In canal wall up mastoidectomy, only about 15% of cases had postoperative ear discharge. About 69% of cases had improvement in hearing post operatively and 31% had no significant improvement and none had deterioration of hearing. 15% only required regular follow up post operatively. In canal wall down mastoidectomy, 26% had recurrence of ear discharge. About 37% of cases had improvement in hearing post operatively, 58% had no significant improvement in hearing and 5% had deterioration of hearing. 32% required regular follow up post operatively. Statistically significant postoperative improvement of hearing and less need for frequent follow up was noted in canal wall up mastoidectomy.

Conclusion: Canal wall up mastoidectomy is a better option than canal wall down mastoidectomy since the posterior canal wall is maintained with significant improvement in hearing post operatively. In addition there are nil cavity problems. Regular follow up for cavity cleaning is not required.

KEYWORDS

CSOM, canal wall up mastoidectomy, canal wall down mastoidectomy

INTRODUCTION

The chronic discharging ear is still one of the common problems that the Otorhinolaryngologists in India and other developing countries are encountering. Although, thanks to the advent of newer antibiotics, the incidence of acute suppurative otitis media and its complications have reduced, chronic suppurative otitis media and their complications are still prevalent.

The continuation of the infection and the bone eroding properties of granulation tissue and cholesteatoma seen in CSOM are known to be the major pathological process causing these complications. As there is no simple means to eradicate this chronic pathology, appropriate and timely intervention by an otologist goes a long way in the prevention of these human maladies¹.

In cases of chronic suppurative otitis media with atticoantral / postero superior marginal pathology, treatment modality is only surgery. Surgical options available are the canal wall down mastoidectomy and intact canal wall mastoidectomy².

Goals of surgical management of chronic otitis media include the eradication of disease, restoration of hearing and to the extent possible, maintenance or restoration of a normal anatomic configuration. Prior to the mid-1950s, the first 2 of these goals were usually accomplished by removal of the posterior external auditory canal wall, resulting in a radical or modified radical mastoidectomy cavity³. The past 50 years have witnessed a trend away from mandatory canal wall removal. Many otologic surgeons now prefer intact canal wall mastoidectomy with tympanoplasty except when canal wall removal is required because of extensive disease, inadequate access for cholesteatoma excision, operation on an "only hearing ear," or uncertainty of adequate follow-up. The popularity of intact canal wall mastoidectomy stems from the benefits of maintaining a canal wall, which include freedom from the need for frequent mastoid bowl cleanings, freedom from water intolerance and calorically induced vertigo, and less difficulty in fitting and use of hearing aids.

In canal wall down mastoidectomy, complete disease clearance can be given. But this could be achieved only at the cost of postoperative cavity problem and considerable hearing loss.

Though the complications of CSOM can be averted, still they are on the rise due to poverty, ignorance of the patient and the non-availability of facilities on time. Therefore there is a need to make public aware of the serious nature of this illness, the importance of early diagnosis and managing so as not only to reduce the morbidity and mortality but also to give them safe, dry and functioning ear.

The present study has been carried out to compare the postoperative results of canal wall up mastoidectomy and canal wall down mastoidectomy in patients with atticoantral or postero superior marginal pathology of chronic suppurative otitis media.

MATERIALS AND METHODS

A total of 32 patients with 18 males and 14 females who attended ENT Department, Govt Rajaji Hospital, Madurai from June 2007 to September 2009 were included in this study. The diagnosis of chronic suppurative otitis media- atticoantral pathology with or without cholesteatoma or granulations was made on clinical grounds.

SELECTION CRITERIA:

1. Chronic suppurative otitis media
2. Attico-antral pathology – retraction or perforation
3. Postero-superior marginal pathology – retraction / perforation.
4. Cholesteatoma or granulations.
5. Secondary acquired cholesteatoma.

EXCLUSION CRITERIA:

1. Age less than 5 years.
2. Age above 40 years.
3. Pregnant and lactating women
4. CSOM- Tubotympanic type.
5. CSOM with intracranial complications.

All patients were explained about the disease and the benefits and side effects of the procedure. Informed written consent was obtained before the initiation of the study. All patients were evaluated as follows:

1. History.
2. General examination
3. Systemic examination
4. Otorhinolaryngological examination
5. Investigations
Complete hemogram
Urine analysis
Blood sugar, urea, serum creatinine
Aural swab culture & sensitivity
X-ray both mastoids
Pure tone audiogram
CT temporal bones.
6. Assessment of the patient under general anaesthesia.

SURGICAL PROTOCOL AND METHODOLOGY

Mastoid cortex exposed and drilled. Cholesteatoma removed and disease clearance given with canal wall up mastoidectomy in 13 cases and with canal wall down mastoidectomy in the rest 19 cases. Post operatively the patients were treated with appropriate antibiotics, analgesic anti-inflammatory drugs and decongestants. Patients were discharged one week postoperatively.

FOLLOW UP:

- Mastoid cavity pack removal on post op day 2.
 - Post auricular wound suture removal on post op day 7.
 - External auditory canal pack removal on post op day 21.
 - Oral antibiotics for 21 days.
 - Antihistaminics for one month.
 - Antibiotic drops for 2 months.
 - Monthly once follow up for a period of 6 months.
1. Symptoms:
Discharge from operated ear
Hearing improvement.
 2. Clinical findings
 3. Otoendoscopic findings
 4. Pure tone audiogram at the end of third month post operatively.

A total of 32 patients -18 males and 14 females were recruited in the study. The patients were divided into two groups- group 1 consisting of 13 patients who were operated by canal wall up technique and group 2 consisting of 19 patients who were operated by canal wall down technique. The data so collected was analysed and the same discussed here.

DISCUSSION:

A similar study titled "Canal wall down mastoidectomy: A long term commitment to the outpatients?" was conducted by Hisham S Khalil and Paul C Windle-Taylor and concluded that Canal Wall Down Mastoidectomy carries an intrinsic morbidity resulting in a long term attendance in the outpatients⁴. The results of this study can be compared with ours which are as follows.

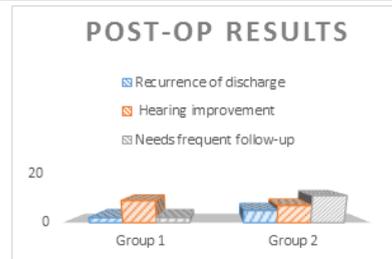
Results of group 1 patients (canal wall up mastoidectomy):

About 85% of cases did not have any postoperative discharge and only about 15% of cases had postoperative ear discharge⁵. About 69% of cases had improvement in hearing post operatively and 31% had no significant improvement and nil patients had deterioration of hearing. About 85% did not require any long term follow up whereas 15% required regular follow up post operatively.

Results of group 2 patients (canal wall down mastoidectomy):

About 74% of cases did not have any ear discharge post operatively and 26% had recurrence of ear discharge. About 37% of cases had improvement in hearing post operatively, 58% had no significant improvement in hearing and 5% had deterioration of hearing. About 68% did not require any long term follow up and 32% required regular follow up post operatively. By Chi-Square test, with regards to postoperative recurrence of ear discharge in both groups of patients, p value is <0.1 and is found to be not significant. With regards to postoperative improvement of hearing in both groups of patients, p value is found to be <0.05 and is found to be significant⁶.

With regards to requirement of follow up in both groups of patients, p value is <0.01 and is found to be significant proving that canal wall up mastoidectomy is better than canal wall down procedure.



CONCLUSION:

In intact canal wall mastoidectomy, since the posterior canal wall is maintained, there is significant improvement in hearing post operatively. In addition there are nil cavity problems. Regular follow up for cavity cleaning is not required. In canal wall down mastoidectomy, a large cavity is created after rendering disease clearance and postoperative improvement in hearing is less when compared with canal wall up procedures. Also there is postoperative cavity problem which necessitates long term follow up of the patients. Hence canal wall up mastoidectomy is better than canal wall down mastoidectomy as there are no cavity problems and post-op hearing is also good.

REFERENCES:

- 1] Merchant SN, Wang P-C, Jang CH, Glynn RJ, Rauch SD, McKenna MJ, Nadol JB., Jr Efficacy of tympanomastoid surgery for control of infection in active chronic otitis media. *Laryngoscope*. 1997;107:872-877. [PubMed]
- 2] Sadé J. Surgical planning of the treatment of cholesteatoma and post-operative follow-up. *Ann Otol Rhinol Laryngol*. 2000;109:372-376. [PubMed]
- 3] Youngs R. Epithelial migration in open mastoidectomy cavities. *J Laryngol Otol*. 1995;109:286-290. [PubMed]
- 4] BMC Ear Nose Throat Disord. 2003; 3: 1. Published online 2003 September 4. doi: Canal wall down mastoidectomy: A long term commitment to the outpatients? Hisham S Khalil and Paul C Windle-Taylor Department of Otolaryngology, Head and Neck Surgery, Derriford Hospital, Plymouth, Devon, U.K.
- 5] Youngs R. The histopathology of mastoidectomy cavities, with particular reference to persistent disease leading to chronic otorrhoea. *Clin Otolaryngol*. 1992;17:505-510. [PubMed]
- 6] Murphy TP, Wallis DL. Hearing results in paediatric patients after canal wall up and canal wall down mastoid surgery. *Otolaryngol Head Neck Surg*. 1998;119:439-443. [PubMed]
- 7] Hulka GF, McElveen JT., Jr A randomised blinded study of canal wall up versus canal wall down mastoidectomy determining the differences in viewing middle ear anatomy and pathology. *Am J Otol*. 1998;19:574-578. [PubMed]
- 8] Rambo JH. Mastoid surgery: effect of retained mucosa on healing. *Ann Otol Rhinol Laryngol*. 1979;88:701-707. [PubMed]
- 9] Harkness P, Brown PM, Fowler SM, Grant HR, Ryan RM, Topham JH. Mastoidectomy audit: results of the Royal College of Surgeons of England comparative audit of ENT surgery. *Clin Otolaryngol*. 1995;20:89-94. [PubMed]