EVALUATION OF MASTOID CAVITIES AFTER CANAL WALL DOWN MASTOIDECTOMY

Amir Ali Khan, *Tahir Manzoor, *Amanat Ali Shah, *Zeeshan Ayub
5 (1) Field Ambulance, *Combined Military Hospital Rawalpindi

ABSTRACT

Objectives: To evaluate mastoid cavities after canal wall down procedures in terms of: achieving a dry mastoid cavity, presence of residual or recurrent disease (Granulations and cholesteatoma).

Study Design: Quasi-experimental study.

Place and Duration of Study: The study was done in the ENT Department, CMH Rawalpindi Study was done in fourteen months from Nov 2006 to Jan 2008.

Patients and Method: Fifty patients undergoing canal wall down mastoidectomy were included. Their mastoid cavities were evaluated for persistence of discharge and recurrence of granulations and cholesteatoma after the surgery.

Results: After follow up period of 3 months, 8% patients had mild discharge, 12% had granulation and 2% patients had recurrence of cholesteatoma.

Conclusion: Canal wall down mastoidectomies are very effective in controlling the recurrence of cholesteatoma, granulations formation and otorrhoea to a greater extent.

Keyword: Chronic suppurative otitis media, modified radical mastoidectomy, atticoantrostomy.

INTRODUCTION

Chronic suppurative otitis media (CSOM) is defined as chronic otorrhoea through a perforated tympanic membrane [1]. It can occur with or without cholesteatoma, and the clinical history of both conditions can be very similar. The treatment plan for atticoantral type of chronic suppurative otitis media almost always includes tympanomastoid surgery with medical treatment as an adjunct [2,3]. Different procedures have been evolved but canal wall down procedures, which includes radical mastoidectomy, modified radical mastoidectomy, atticotomy and atticoantrostomy are recommended to eradicate the disease and avoid the recurrence. This study was conducted with the purpose to evaluate the mastoid cavities after canal wall down procedure in terms of presence or absence of otorrhoea, granulations and cholesteatoma in fifty cases.

PATIENTS AND METHODS

This quasi-experimental study was conducted in ENT department CMH, Rawalpindi from Nov 2006 to Jan 2008. Fifty patients of either sex between 15 and 60 years with diagnosed atticoantral disease were included and undergone canal wall down mastoidectomy. While Patients having diabetes mellitus and who had undergone ear surgery in the past were excluded as diabetes is a chronic illness increasing healing time and in repeat surgery surgical expertise of the two surgeons varies. Permission was obtained from hospital ethical committee. The patients who met the inclusion criteria and gave consent were explained in detail about their disease, its treatment and aims of this study. These surgeries were performed by two surgeons on the post of consultant in the ENT department. Thirteen patients underwent atticoantrostomy and thirty-seven underwent modified radical mastoidectomy. Before surgery all patients underwent clinical examination (otoscopic and under the microscope) and after surgery they were examined on fortnightly basis for one month and then on monthly basis for two months. Their mastoid cavities were evaluated for the presence of discharge and recurrent or residual disease in terms of presence of granulations and cholesteatoma. All of the above mentioned informations were recorded in the carefully structured proforma. Mc Nemar's test was applied for every variable at each visit.

Data was analyzed using SPSS version 11. Frequency and percentages were used to

Correspondence: Major Amir Ali Khan, 5 (1) Field Ambulance, Jhelum
Received: 10 March 2008; Accepted: 12 Dec 2008

describe the data. [Cochran's Q test was used to compare the study variables at different follow-ups]. P-value <0.05 was considered as significant.

RESULTS

Out of the fifty patients there were 30 (60%) males and 20 (40%) females. The age of patients varied from 15 to 60 years. The mean age was 29.8 years (SD=10.4).

Discharge

Two weeks after surgery 34 (68%) patients had discharge while 16 (32%) patients developed dry cavity. Among these seven underwent atticoantrostomy and twenty-seven underwent modified radical mastoidectomy. One month after surgery 26 (52%) patients had discharge while 24 (48%) patients developed dry cavity. Two months after surgery 10 (20%) patients had discharge while 40 (86%) patients developed dry cavity. Three months after surgery only 4 patients had mild discharge and in rest of 46 (92%) patients there was no discharge and patients developed dry mastoid cavity. P value was <0.01.

Granulations

Granulations were categorized as either being present or absent. Two weeks after surgery 20 (40%) patients had granulations (among these three underwent atticoantrostomy and seventeen underwent modified radical mastoidectomy), after 4 weeks 12 (24%) had granulations, after 2 months 8 (16%) had granulations and on completion of three months only 6 (12%) patients had granulations that is 88% patients were free of granulations. Granulations encountered during the follow-ups were removed using cup forceps and patients prescribed ciprofloxacin 3% drops. P value was found to be <0.05.

Cholesteatoma

Cholesteatoma was also categorized as present or absent. Three months after surgery only one patient had recurrence of cholesteatoma that is 98% patients were disease free. The procedure done in case of this one recurrence was modified radical mastoidectomy.

DISCUSSION

Atticoantral or tympanomastoid type of CSOM involves predominantly the attic and antral region of the middle ear cleft [4,5]. It is usually associated with serious complications and considered as a dangerous disease [6]. The disease is often associated with a bone eroding process i.e. by cholesteatoma, granulations or osteitis [7]. Otorrhoea is usually scanty and foul smelling [8]. Canal wall down mastoidectomy is usually recommended and has comparatively high success rate than canal wall up procedures.

Follow up among army personnel is poor due to, frequent postings and busy personnel schedule. Therefore the treatment afforded should be one, which makes the ear safe rather than catering for hearing ability.

Castrillon et al [9] in a retrospective study evaluated the anatomical and functional long-term results of canal wall down mastoidectomy by analyzing the results of 259 primary, one stage canal wall down mastoidectomies performed between 1974 and 1998, confirmed that 95% of the ears showed a dry, self-cleaning cavity and were disease-free. These results are similar to our study where 92% of patients developed dry cavity and 88% were free of granulations after canal wall down mastoidectomy.

In another retrospective study Vartiainen et al [10] examined results of canal wall down mastoidectomy for acquired cholesteatoma of 136 patients who have undergone canal wall down mastoidectomy and showed that 98% of the operated ears were dry, 1% moist, and one ear (0.7%) was discharging These results show mastoidectomy to be an effective treatment from chronically draining ears and validates our results where we achieved 98% cholesteatoma free ears 3 months after surgery.

Paparella et al [11] reviewed long-term results of 375 primary mastoidectomy operations for chronic otitis media and chronic mastoiditis. Cholesteatoma was present in 125 patients and granulation tissue in 250 patients. One third of the patients

underwent canal wall up and two-thirds canal wall down mastoidectomies. He recommended that one-stage canal wall down mastoidectomy is better than multiple planned procedures to reduce unnecessary hospitalization and expenses. This aspect is important in our society where patients are lost to follow-up.

Hirsch et al [12] retrospectively reviewed 164 cases with cholesteatoma surgically managed from 1980 through 1986. In 81 cases modified radical mastoidectomies, and in 36 radical mastoidectomies were performed compared with 47 canal wall up mastoidectomies, concluded that single-stage management of cholesteatoma with modified radical mastoidectomy (canal wall-down) required fewer revisions for recidivistic cholesteatoma. This confirms that the only sure way of dealing with cholesteatoma is surgery and that to with a radical approach [13].

Roden et al [14] in a 12 years retrospective review of mastoid surgery for cholesteatoma included 97 mastoid procedures, He concluded that while canal-wall-down mastoidectomy provides a lower residual disease rate with equal hearing outcome, the role of intact wall mastoidectomy remains a viable choice in certain clinical situations.

Review of literature has shown that nowadays most authors prefer canal wall up procedure i.e. combined approach mastoidectomy due to function preservation. But in our setup canal wall down mastoidectomy is preferred because of the reason that the patient follow-up is poor. There is upto a 40% chance of recurrence or persistence of the cholesteatoma in case of canal wall up procedure [15]. Syms et al [1] reported a 31.5% failure rate with canal wall up mastoidectomies with 27% of patients having residual cholesteatoma. We had a recurrence rate of 12% with granulations and 2% cholesteatoma.

When this study was carried out we faced a lot of difficulties in this regard and used to remind the patients on telephone to come for follow-ups. Keeping in view the above results it is evident that canal wall down procedures are very effective in controlling the disease especially it eradicate cholesteatoma, decrease granulations formation and controls otorrhoea to a greater extent. We have not compared different types of canal wall down procedures, as this was not the objective of our study.

CONCLUSION

Canal-wall-down technique with wide meatoplasty is recommended to ensure a best possible one-time treatment in patients with cholesteatomatous or long-term "dangerous" chronic suppurative otitis media with or without complications.

REFERENCES

1. Syms MJ, Luxford WM. Management of cholesteatoma: status of canal wall. J Laryngoscope. 2003; 113: 443-8.
2. Kos MI, Castrillon R, Montandon P, Guyot JP. Anatomic and functional long-term results of canal wall-down mastoidectomy. Ann Otol Rhinol Laryngol 2004; 113: 872-6.
3. Rashid D et al. Otitis media with effusion – cost effective option. J Coll Physician Surg Pak 2002; 12: 274- 6.
4. Gantz BJ, Wilkinson EP, Hansen MR. Canal wall reconstruction tympanomastoidectomy with mastoid obliteration. Laryngoscope. 2005; 115: 1734-40.
5. Berrettini S, Ravecca F, de Vito A, Forli F, Valori S, Franceschini SS. Modified Bondy radical mastoidectomy, long-term personal experience. J Laryngol Otol. 2004; 118: 333-7.
6. Garap JP, Dubey SP. Canal-down mastoidectomy: experience in 81 cases Otol Neurotol. 2001; 22: 451-6.
7. Akhtar MR, Ahmed T, Ahmed B. Complication of cholesteatoma. J Coll Physician Surg Pak. 2002; 12: 324.
8. Mc Elveen JT Jr, Chung AT. Reversible canal wall down mastoidectomy for acquired cholesteatoma: Preliminary results. J Laryngoscope. 2003; 113: 1027-33.
9. Castrillion R, Kos I, Montandon P, Guyot JP. Long-term results of canal wall down mastoidectomy: Schweiz Med Wochenschr. 2000; 125 (Suppl): 58S-65S.
10. Vartiainen E. Ten-year results of canal wall down mastoidectomy for acquired cholesteatoma: Auris Nasus Larynx. 200l; 27: 227-9.
11. Paparella MM, Kim CS. Mastoidectomy update. Laryngoscope. 1977; 87: 1977-88.
12. Hirsch BE, Kamerer DB, Doshi S. Single-stage management of cholesteatoma. Otolaryngol Head Neck Surg. 1992; 106: 351-4.
13. David Parry, MD et al. Middle Ear, Chronic Suppurative Otitis, Medical Treatment. Medicine. 2006.
14. Roden D, Honrubia VF, Wiet R. Outcome of residual cholesteatoma and hearing in mastoid surgery. J Otolaryngol. 1996; 25: 178-81.
15. Brown OE, Meyerhoff WL. Complications and Sequelae of Chronic Suppurative Otitis Media. Ann Otol Rhinol Laryngol. 1988; 97: 131 (Suppl): 38-40.