

Five Years Follow up of Canal Wall down Mastoidectomy for Cholesteatoma

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ABSTRACT

Aim: To examine 5 year results of canal wall down mastoidectomy surgery for cholesteatoma.

Methods: It was a retrospective study, performed by reviewing medical records of 53 patients with cholesteatoma who had undergone Canal Wall Down Mastoidectomy in ENT department, Lahore Medical & Dental College Lahore/Ghurki trust Teaching Hospital Lahore with a minimum follow-up of 5 years.

Results: During follow-up, 3(5.6%) of the patients had undergone one revision surgery and 2 (3.7%) patients had two revision surgeries done. The recurrence rate of cholesteatoma was 9.4%. Five years after Canal wall down mastoidectomy, 94.3% of the operated ears were dry, 3.7% moist, and one ear (1.8%) was discharging.

Conclusion: It is concluded that the surgical technique of Canal wall down mastoidectomy is a preferred option for the treatment of cholesteatoma.

Keywords: Chronic Otitis media, cholesteatoma, mastoidectomy,

INTRODUCTION

Chronic suppurative otitis media is commonly encountered in our everyday ENT practice. Chronic suppurative otitis media can occur with or without cholesteatoma. Wikipedia defines cholesteatoma as a destructive and expanding growth consisting of keratinizing squamous epithelium in the middle ear and/ or mastoid. In Mosby's Medical Dictionary it is defined as a cystic mass composed of epithelial cells and cholesterol that is found in middle ear and occurs as a congenital defect or a serious complication of chronic otitis media. Cholesteatoma is a benign disease histologically but is aggressive due to local expansion and destruction it causes. It causes bone destruction in middle ear and mastoid which can lead to extra cranial complications and life threatening intracranial complications like cerebral abscess, cerebellar abscess and meningitis etc. *Duvernoy* was the first to describe cholesteatoma in 1683 as a carries of the bone accompanied with bad smell but *Müller* in 1838 coined the term cholesteatoma¹. The only way to treat cholesteatoma is via surgical removal. Throughout the early half of the 20th century, cholesteatoma was managed by exteriorization of mastoid cavity. The mastoid air cells were exenterated, the posterior external auditory canal wall removed, and the ear canal opening into the resulting cavity enlarged to ensure adequate air exchange and to make visual inspection simple². This was called a mastoidectomy operation. This was a

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radical, destructive procedure which is now known as Radical mastoidectomy operation and is defined as an operation to eradicate or exteriorize extensive middle ear disease by removing the posterior bony canal wall to open the middle ear and mastoid into one cavity. In doing so, remnants of the tympanic membrane and ossicles are removed except only the remaining portions of the stapes. The TM is not reconstructed, and the Eustachian tube may be left open or permanently blocked. Later a modification of the radical mastoidectomy procedure, a more conservative one came into practice. This is known as Modified radical mastoidectomy which differs from a radical mastoidectomy in that all effort is made to preserve or reconstruct the middle ear. The remnants of TM and ossicles not involved by the disease are preserved³. A skin graft can be placed in the middle ear to reduce the risk of mucosalization and otorrhea^{4,5}.

PATIENTS AND METHODS

It was a retrospective review of records of patients undergoing canal wall down mastoidectomy for cholesteatoma. A minimum of five years of follow-up was available in 67 patients who underwent Canal wall down mastoidectomy procedure in ENT and Head & Neck Surgery Department of Ghurki Trust Teaching Hospital Lahore from 1st January 2001 to 31st December 2008. All patients were evaluated through, detailed history, clinical examination, EUM (examination under microscope), X-Ray of Mastoid Lateral view and PTA (pure tone audiogram). CT scan was ordered only in those patients in whom

complications were suspected. 14 patients were excluded from the study because they were lost in the follow-up. Thus 53 patients were available for study.

All patients underwent single stage Canal Wall down mastoidectomy. The surgery was performed through post auricular incision, the posterior canal wall and the lateral wall of the attic were removed, and then the cholesteatoma, diseased mucosa and granulation tissue were exenterated. Patients were put on injectable antibiotics for 24 hours. Most of the patients stayed in hospital for 24 hours after surgery. Patients were discharged on oral antibiotics and pain killers for one week. First follow-up was carried out after one week where the stitches and pack were removed. Second follow-up was after another one week, third follow-up visit after fifteen days of second visit, and fourth visit was after one month of previous visit. After wards 3 monthly follow-up for one year, and then 6 monthly for rest of life was advised. Patients were informed to report in case of any unusual occurrence.

At every follow-up visit patients were examined through history and detailed examination including EUM and all the findings in history and examination was recorded.

RESULTS

Of the 53 patients available for study there were 34(64.2%) male and 19(35.8%) female patients. Age and sex distribution of patients is shown in Table I and II. All the patients (100%) were discharging at the time of surgery. Fifty two patients (98.1%) had marginal or attic perforation. One patient had central perforation with cholesteatoma and mastoid abscess. Complications caused by the disease included two cases of facial paralysis and three cases of mastoid abscess. During follow-up, cholesteatoma recurred in 5 patients (9.43%) and after revision surgery the cholesteatoma recurred again in two patients (3.77% of the total series). A total of 3 patients (7.5%) underwent one revision operation and two patients (3.77%) underwent two revisions. Of those patients who had disease recurrence, 3 patients were less than 11 years of age. One of the patient having two revision surgeries was less than 5 years at the time of second surgery. 5.6 % patients had wet cavity without evidence of granulations/ cholesteatoma at last follow up. Reasons for revision surgeries are shown in Table III. In patients with follow-up, the cholesteatoma recurrence rate was 9.43% (5 out of 53).

There were no major surgical complications in our patients. Sensory neural hearing loss was not reported in any case. Perilymph leak occurred in one

case during revision, which was successfully managed by placing graft and gel foam on this area. We encountered minor complications like crusting, wax, discharge and fungal infection in follow up cases. These complications were successfully managed by suction, clearance and medical treatment. Fungal infection was a problem in rainy season which was successfully treated with suction clearance and local antifungal solution or ointments.

Table I: Age of the patients

| | |
|-------------|---------|
| Minimum age | 2 years |
| Maximum age | 65years |
| Mean age | 30years |

Table II: Sex of the patients

| Sex | n | %age |
|--------|----|------|
| Male | 34 | 64.2 |
| Female | 19 | 35.8 |

Table III: Causes of revision surgery

| Reasons for revision | n | %age |
|------------------------|---|------|
| Inadequate meatoplasty | 2 | 3.8 |
| High Facial ridge | 3 | 5.7 |

DISCUSSION

This study was performed to evaluate the long term results of one of the treatment options for cholesteatoma i.e., Canal Wall Down Mastoidectomy and precisely the Modified radical mastoidectomy. Cholesteatoma is a dangerous disease, although benign histologically cholesteatoma has a tendency to expand locally and can result in various serious complications. The options for management of cholesteatoma include canal wall up and canal wall down Mastoidectomy. Canal wall down Mastoidectomy is considered as gold standard and ideal treatment for cholesteatoma^{6,7}. Discharging mastoid cavity after canal wall down mastoidectomy is one of the common complications of surgery. The presence of mechanical factors which influence the dryness of the open mastoid cavity include, the size of cavity, the height of facial ridge, the adequacy of meatal opening and the presence of air in the cavity⁸. Secondary infection of the open mastoid cavity occurs either through Eustachian tube due to Upper Respiratory tract infection or through the external auditory meatus as result of entrance of microorganism with water⁹.

The results of our study were comparable with other studies or even better than some studies. According to results from a previous study in which 90 patients who underwent canal wall down mastoidectomy for cholesteatoma were evaluated, a recurrence rate of 25% was reported¹⁰. Asma et al had achieved dry ears in 78% patients with 3%

recurrence rate. In conclusion the study showed that the proper canal wall down mastoidectomy gave high percentage of dry ear¹¹. Ajalloueyan showed 7% cholesteatoma recurrence¹². In a retrospective study of 345 patients with middle ear cholesteatoma operated, the overall 5-year recurrence rate was 11.8%¹³. In a different study with a mean follow-up period of 7.3 years, the recurrence rate was 12.3%, with the recurrence rate being higher in children than in adults¹⁴. In one study Hisham et al showed a recurrence rate of 18.8%¹⁵ and in another study 6.1% recurrence was noted by Kos MI et al, which is comparable with our study¹⁶. In another study 21% recurrence was noted by Eero Vartiainen¹⁷. There is no doubt about the fact that canal wall down surgery is still gold standard for the treatment of cholesteatoma. Newer techniques and tools are being developed such as angled endoscopes which help in diagnosing recurrences at a very early stage but these are expensive and in a country like ours an important step is long term follow up at regular intervals in order to detect and treat recurrences early.

CONCLUSION

It is concluded that the surgical technique of Canal wall down mastoidectomy is a preferred option for the treatment of cholesteatoma because it gives high rate of dry ears and we can detect recurrence of disease at very early stage. Another aspect of this procedure that needs serious consideration is increased number of follow-up visits before the cavity becomes dry and self cleaning.

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