CASE REPORT

# Meatal obstruction following canal wall down mastoidectomy

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## Abstract

Chronic otitis media (COM) is completely treated with a single procedure in most patients but may require multiple surgeries in some cases. The main goals of open cavity mastoidectomy are to completely eradicate the disease, create a large enough meatus for examination and mastoid air cells, and provide a self-cleaning epithelized dry cavity, and achieve maximum hearing. In this report, we present a very rare case of COM who underwent revision mastoidectomy in our clinic due to meatal obstruction in the right ear, total sensorineural hearing loss, and pain and tenderness in the postauricular region.

**Keywords:** Chronic Otitis Media, Mastoidectomy, Meatal Obstruction.

## Introduction

The goals of cholesteatoma surgery are to completely remove cholesteatoma, create a safe and dry ear, and to achieve better hearing outcomes.[1] Of these, the most important goal is to achieve complete eradication of the cholesteatoma. Tympanomastoidectomy (open technique) is the primary method of choice in the treatment of cholesteatoma. The main goals of this technique are to completely eradicate the disease, create a large enough meatus for examination and mastoid air cells, and provide a self-cleaning epithelized dry cavity, and achieve maximum hearing.[2,3] A large enough meatus promotes rapid epithelization of the mastoid cavity and facilitates debridement and postoperative evaluation of the cavity. Inadequate meatoplasty may lead to cholesteatoma formation, chronic secretion, and postoperative canal stenosis.[4] In this study, we present a very rare case who presented with meatal obstruction associated with the previous surgeries.

## Case Report

The 32-year-old male patient presented to us at the Yuzuncu Yil University Hospital, Van, Turkey in January 2014 with hearing loss in the right ear, swelling in the back of the ear, and pain and tenderness on palpation. Prior to presentation, the patient had undergone 6 surgeries at varying times. In the last surgery which was performed approximately 4 years prior to presentation, the patient underwent right radical mastoidectomy due to recurrent cholesteatoma. The patient had no specific medical history. Physical examination revealed complete obstruction of the meatal cavity in the right ear (Figure: A). Facial nerve examination was normal. Pure tone audiometry showed total sensorineural hearing loss in the right ear. A computed tomography (CT) examination of the temporal bone showed that the right mastoid area, the middle ear cavity, and the external ear canal were completely obstructed by soft tissue and bone defect and erosion of ossicles were present in the posterior of the mastoid bone (Figure: B). Depending on these findings, the patient was operated under emergency conditions. Intraoperatively, the right middle ear, the mastoid bone, the sigmoid sinus, and the bulbus venae jugularis were completely obstructed by cholesteatoma, causing a bone defect in the sigmoid sinus, and the facial nerve was completely open in the tympanic and mastoid segments (Figure: C). Radical mastoidectomy was performed and a

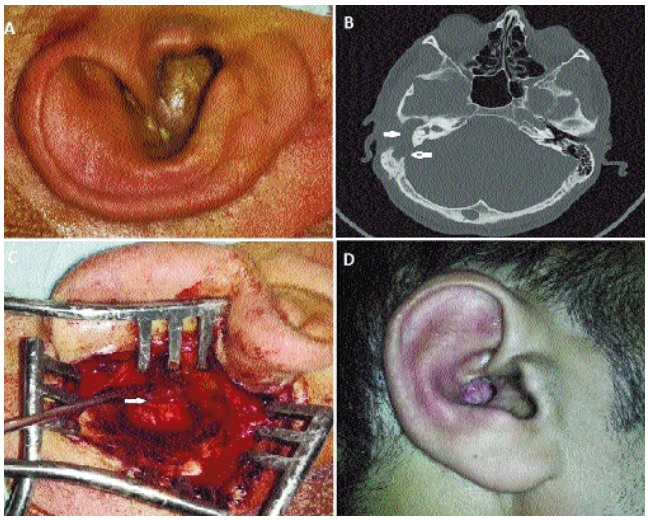


**Figure:** (A) Preoperative appearance of the completely obstructed meatus. (B) A CT image showing the cavity filled with cholesteatoma and the defect in the posterior of the mastoid bone (white arrows). (C) Intraoperative appearance of the completely open facial nerve (white arrow). (D) 3-month postoperative appearance of the patient.

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large meatus was created by placing the temporalis fascia graft on the exposed facial nerve. The patient was uneventfully discharged and no postoperative complication occurred in the follow-up period (Figure: D).

## Discussion

Chronic otitis media (COM) remains a common ear disease. Unless diagnosed and treated at early stages, simple ear infections may become complex diseases over time. Although their incidence has decreased, the complications associated with COM remain serious problems in terms of morbidity and mortality.

The goals of modern otologic surgery in the management of COM are to completely eradicate the disease in the middle ear and the mastoid cavity, provide a dry and safe ear, and achieve maximum hearing. However, the COM patients that require a revision surgery often have a hearing loss of over 50 dB. This situation has negative effects on the restoration of hearing. Today, COM is completely treated in 95% of the patients by medical and surgical methods but may require multiple surgeries in some cases.[5] Our patient was present with hearing loss and had undergone 6 surgeries prior to presentation. The patient history revealed that his hearing loss might have deteriorated secondary to a labyrinthine or perilymph fistula.

The indications of failure of mastoidectomy include persistent drainage, recurrent infection, and progressive hearing loss. The method of closed mastoidectomy requires less postoperative care and preservation of the cavity compared to the open technique. Nevertheless, the closed technique may also lead to recurrence. In the patients requiring a revision surgery, there are several factors leading to increased risk of complications, including limited knowledge of the clinical history of the patient and the lack of surgical experience.[6] In our patient, we were informed about the previous open cavity mastoidectomy but we had only limited information about the procedure. Therefore, we performed a CT of the temporal bone to evaluate the disease.

Studies have shown that a meticulous analysis of the mastoid cavities that require a revision surgery often indicates that some surgical areas have undergone inadequate surgery. In such areas, the disease may persist or it may be difficult for the cavity to perform self-cleaning, and thus the mastoid cavity may be filled with debris. The cavity created by the open technique should be a smooth mastoid cavity with round edges.[6] In our patient, the mastoid cavity was filled with cholesteatoma, a bone defect was present in the posterior and middle fossa, and the facial nerve was completely open in the tympanic and mastoid segments. We consider that these severe outcomes resulted from the inadequate surgeries which the patient had undergone prior to presentation.

An ideal meatoplasty procedure should provide a widened external meatus that is cosmetically acceptable and exposed to no caloric effect.[7] Our patient presented with meatal obstruction caused by previous inadequate surgeries, which is an extremely rare case.

In conclusion, in the rural areas of Turkey where the socioeconomic levels are highly low, the patients with COM are usually treated with radical surgeries since the patients often present with cholesteatomas that cannot be treated with simple surgeries and severe destructive otogenic disorders. In the patients undergoing mastoidectomy due to COM, care should be taken to open all the cells, allow adequate air for the cavity, and provide a meatus wide enough for self-cleaning. Inadequate surgeries may lead to more severe complications.

**Conflict of Interest:** The authors declare no competing interest. No financial support was received for this paper. Authors indicate that they do not have a financial relationship with the organization that sponsored the research.

**Ethical Approval:** An ethical approval was obtained from the Local Ethics Committee.

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