

CASE REPORT

Lateralization of the Epithelium Due to False Epithelial Migration Within Open Mastoidectomy Cavities*

Salim Dogru, Safter Arif Ulubil, Atila Gungor, Zafer Kucukodaci, Hakan Cincik

Department of Otolaryngology, Haydarpasa Training Hospital, (SD, SAU, AG, HC) Istanbul, Turkey

Department of Pathology, Haydarpasa Training Hospital, (ZK) Istanbul, Turkey

Two patients who had been previously treated with radical mastoidectomy procedure were found to have an abnormal small cavity due to a soft, tumor like tissue obstructing the entrance of mastoidectomy cavity on follow-up examination. These tissues were easily perforated by simple instrumentation and observed to be an epithelium with varying thickness. Histologic examination revealed granulation tissue composed of cholesterol clefts, multinucleated giant cells and lymphocytes beneath keratinized squamous epithelium. Open mastoid cavity remains a problem for some patients due to recurrence of inflammatory processes, persistent ear discharge, wax accumulation, fungal infection and granulation tissue formation, requirement of regular medication. In this report, we describe another open cavity problem, lateralization of epithelium due to false migration which may occur after canal wall down mastoidectomy. It may decrease hearing and misleadingly seem like a tumor or a naturally narrowed cavity. Furthermore, it may hide some pathologies like cholesteatoma recurrence. We think that this problem is the result of false epithelial migration probably over a blood clot which was not cleansed due to poor postoperative care.

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Despite its obvious advantage of better exposure and control of cholesteatoma over intact canal wall techniques, canal wall down mastoidectomy has some major drawbacks like recurrent or persistent aural drainage, the need to employ water precautions, frequent office visits for cavity debridement, and the unappealing cosmetic appearance of a large meatoplasty. In this brief review, our aim is to describe another complication of canal wall down mastoidectomy, which is complete cavity obliteration by lateralized epithelial tissue, and discuss its histology and treatment.

Case Reports

This is a retrospective review of two patients with previous radical mastoidectomies who were operated on for removal of soft tissue obstructing their cavities.

Case 1: The first case was a 28-year-old female patient who had a radical mastoidectomy procedure 2 years ago. Her temporal CT scan obtained before this

procedure revealed soft tissue masses around the ossicles filling the tympanum, antrum and mastoid cells. On follow-up examination, an epithelial-fibrous like soft tissue about a centimeter medial to the entrance of meatoplasty was noted. It obliterated the cavity (Figure 1).

Case 2: The second case was a 21-year-old male patient who had a radical mastoidectomy procedure at another institution 5 years ago. On physical examination, a tumor like tissue 0.5 cm medial to the entrance of meatoplasty was observed (Figure 2).

The surgical record of the first patient revealed that she had undergone radical mastoidectomy for removal of chronic otitis media with cholesteatoma via postauricular incision. A cholesteatoma was encountered in tympanum and antrum. The cholesteatoma and the posterior canal wall were removed. The cavity was progressively enlarged until a smooth mastoidectomy cavity without a significant

Corresponding address:

Salim Dogru

Department of Otolaryngology-Haydarpasa Training Hospital,
34668, Kadikoy-Istanbul, Turkey.

Phone: (216) 542 2020-(216) 366 4268; Fax: (216) 348 7880; E-mail: salimdogru@yahoo.com

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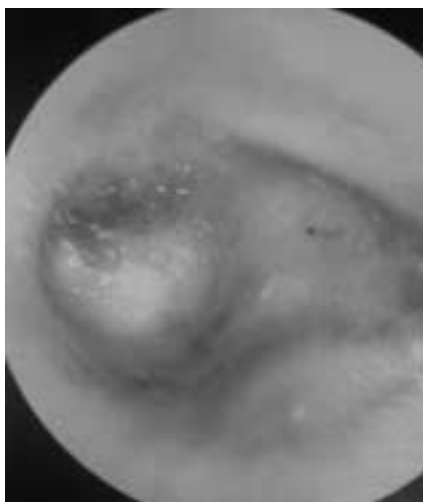


Figure 1. An epithelial-fibrous like soft tissue at meatoplasty region obliterating the cavity.

facial ridge was obtained. A temporalis fascia was placed over promontorium. No alloplastic materials or bone dust had been used. An adequate meatoplasty was created with a wide removal of scaphoid fossa cartilage. At the end of the procedure a series of packs of ribbon gauze impregnated with an antibacterial pomade were inserted. There was no detailed surgical record of the second case.

In order to achieve a healthy mastoid cavity and to obtain a tissue diagnosis to exclude the possibility of a tumor, both patients underwent surgery under local anesthesia. During both procedures, the soft tissue was perforated and excised easily by the aid of a sharp surgical instrument. In the first case, three different foci of recurrent cholesteatoma sacs were observed within cavity in close proximity to the promontorium. These were excised carefully, and a revision meatoplasty was performed. In the second case, mastoidectomy cavity was observed to be intact behind the excised epithelial layer. The histopathological examination of the excised tissues revealed granulation tissue composed of cholesterol clefts, multinucleated giant cells and lymphocytes beneath keratinized squamous epithelium. Behind the epidermis, a cystic region surrounded by non-stratified, non-keratinized squamous epithelium and mild fibrosis with chronic inflammation and neovascularization were also observed (Figure 3). The



Figure 2. A tumor like tissue 0.5 cm medial to the entrance of meatoplasty.

excised sacs of the first case were reported to be cholesteatoma. There was no postoperative complication in second case. However, the first patient had to have another meatoplasty due to recurrent epithelial obliteration of the cavity. CT scan obtained before the second revision of this case revealed a thin soft tissue lining over an air space obliterating the mastoid cavity (Figure 4).

Discussion

Open mastoid cavity remains a problem for some patients due to recurrence of inflammatory processes, persistent ear discharge, wax accumulation, fungal infection and granulation tissue formation, requirement of regular medication^[1]. In this report, we describe another open cavity problem; lateralization of epithelium due to false migration which may occur after canal wall down tympanoplasty. Since the cavity may be fully obliterated with this tissue, hearing loss may occur, and on physical examination it may misleadingly seem like a tumor or a naturally narrowed cavity. Furthermore, it may hide some pathologies like cholesteatoma recurrence. We think that this problem is the result of false epithelial migration probably over a blood clot which was not cleansed due to poor postoperative care. As the cavity heals after surgery, the relatively narrow lateral dimension of the meatoplasty region may increase the likelihood of blood clot with subsequent

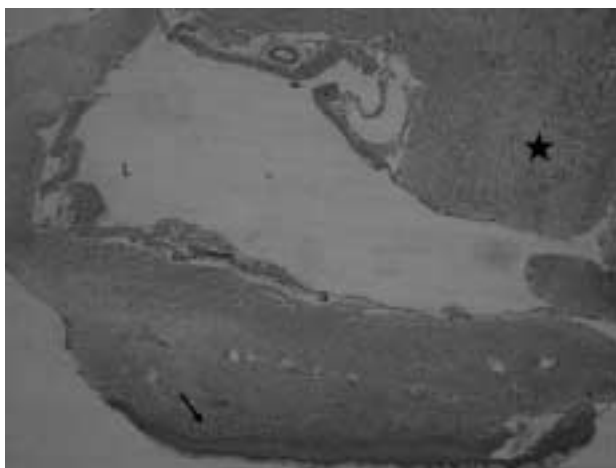


Figure 3. Histopathological examination revealed granulation tissue (star) composed of cholesterol clefts, multinucleated giant cells and lymphocytes beneath keratinized squamous epithelium (arrow)

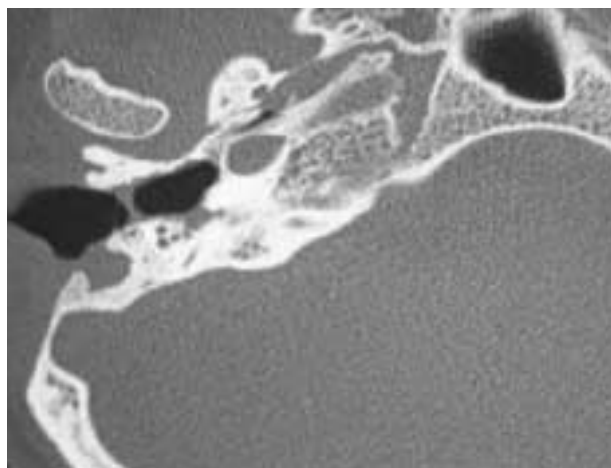


Figure 4. A thin soft tissue lining over an air space obliterating the mastoid cavity on CT scan.

epithelialization and fibrosis, which leads to obstruction of the mastoid cavity. There are limited studies in the literature about epithelial migration in mastoid cavities. Two studies show that epithelial migration in open mastoidectomy cavities starts at third week postoperatively ^[2,3]. Epithelial migration in open mastoidectomy cavities occurs in a medial to lateral direction, towards the exterior ^[2]. Ong et al reported a mean rate of migration of 0.10 mm/day^[3]. Bonding and Charabi observed that the rate of migration in the cavities was between 0.02 and 0.45 mm/day. They also observed that the pattern of migration in cavity ears was centrifugal ^[4]. Animal studies by Johnson and Hawke indicated that migration in normal tympanic membrane and ear canal probably occurs in the deeper layers of the epidermis, and that it stops at the junction of the deep and superficial parts of the ear canal ^[5]. However, it should be remembered that these studies were performed either on normal ears or on well epithelialized mastoidectomy cavities. In our cases, we named false epithelial migration because the epithelialization takes place over an air space within mastoidectomy cavity rather than the sculptured bone. Large air space behind the false epithelialization was visible on CT scan (Figure 4) and also confirmed during revision surgeries of both patients. We believe that the definition “false epithelialization” should not be used to describe a timely epidermization developing

over the pathologies (fibrosis, granulation tissue, recurrent cholesteatoma, tumor, etc) but to describe epithelial shortcuts which developed in close proximity to the meatoplasty region prematurely. In the latter situation, a rooflike covering is formed over the cavity and may hide the aforementioned pathologies which may develop later.

In both cases, we observed nicely sculptured mastoidectomy cavities without the need for any bony revision after the excision of the epithelial fibrous tissue. Therefore, we think that false epithelialization may occur despite how well a cavity is fashioned. We suggest that, in similar cases, imaging techniques should be used to check the existence of underlying diseases before any revision is planned. Some patients may be prone to false epithelialization as in our first case. Open mastoidectomy cavities require a high degree of outpatient care, especially in the early postoperative period, in order to prevent false epithelial migration within the cavity and ensure proper epidermization. Patient should be discharged if the cavity is entirely trouble-free and self-cleaning over a number of consecutive visits.

References

1. Khalil HS, Windle-Taylor PC. Canal wall down mastoidectomy: A long term commitment to the outpatients? *BMC Ear Nose Throat Disord* 2003; 3:1

2. Youngs R. Epithelial migration in open mastoidectomy cavities. *J Laryngol Otol* 1995; 109:286-90.
3. Ong CA, Prepageran N, Godbole S, Raman R. Epithelial migration in open mastoidectomy cavities. *Asian J Surg* 2007; 30:57-59.
4. Bonding P, Charabi S. Epithelial migration in mastoid cavities. *Clin Otolaryngol Allied Sci* 1994; 19:306-309.
5. Johnson A, Hawke WM. An ink impregnation study of the migratory skin in the external auditory canal of the guinea pig. *Acta Otolaryngol* 1986; 101:269-77.