Available online at www.ajcr.sinaweb.net

Apadana Journal of Clinical Research

Case Report

Case Report of Unusual complications after hearing aid fitting that required surgical management

Nader Saki [1,2,*], Soheila Nikaghlagh[1,2], Majid Karimi[2] , Azar Borjsefidi[2]

1. *Associated professor of Otolaryngology, Head and Neck Surgery. Hearing & Speech Research Center, Ahwaz Jundishapur University of Medical Sciences, Ahvaz, Iran*
2. *Audiologist, Apadana Clinical Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran*

Received 10 Sep 2011; received in revised form 22 Sep 2011; accepted 28 Sep 2011

Abstract

The making of ear mould for hearing aids is generally considered to be a safe process. However, there are a few reported cases of complications caused during mould making. We report the case of a man with 69 years age, where the process of making the mould for a hearing aid led to the perforation of the tympanic membrane and pouring of mould material into the middle ear, necessitating surgical intervention. Proper fitting of hearing aids performed by well-trained medical professional those results in a very low incidence of significant complications. Perforation of the tympanic membrane with impaction of earmold material in the middle ear or mastoid bowl may occur and can be successfully managed by standard otology surgical techniques.

Key words: hearing aid; otology; tympanic membrane

Introduction

Standard procedures for hearing aid fitting performed in accordance with established guidelines are well tolerated, safe, and effective. In this article, we present unusual complications after hearing aid fitting that required surgical management. The magnitude of hearing loss in Iran is enormous. One percent of the population in Iran suffers from some form of hearing impairment[1]. Many of them are unable to afford surgical procedures and resort to the use of cheap hearing aids fitted by untrained individuals or people lacking the required expertise. This predisposes the patients with significant complications during a process that is otherwise considered safe[2].

Case report

A 69 year old man was brought to us by his family for hearing problem. There was no history of infections. Clinical examination revealed intact tympanic membranes on both sides.

Audiometry showed bilateral severe sensorineural hearing loss. The man was offered a hearing aid and was advised to follow up. Silicone base ear mould material was injected into his ear to make an impression for ear canal following which he developed bleeding from his right ear .The process of making the mould for a hearing aid led to the perforation of the tympanic membrane and pouring of mould material into the middle ear, necessitating surgical intervention. a bluish adherent material was seen to fill the whole ear canal and middle ear, attic, aditus and Eustachian tube orifice (Figures1 and 2). This was found to be the hearing aid impression material (silicone) that had entered the middle ear following the perforation of the tympanic membrane

[*]**Corresponding Author:** Nader Saki, Department of ENT, Imam Hospital, Ahvaz Jundishapur University of Medical Sciences, Ahvaz Iran. Tel: +986133775001. E-mail: nsaki_Ir@yahoo.com

during the process of mould making. Hence by postauricular approach this impression material was completely removed from the external canal, middle ear and mastoid cavity. The earmold cast was successfully removed by means of a tympanomastoidectomy (Figure 3).

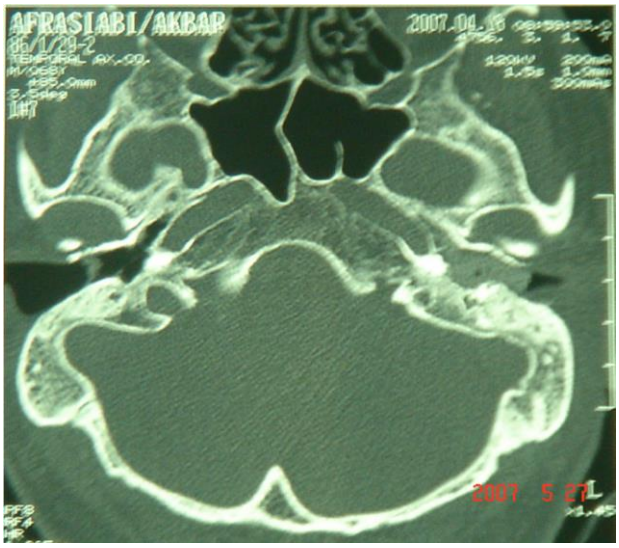

Figure 1. Computed tomography (CT) detected earmold material in the left external auditory canal and middle ear (Axial view)

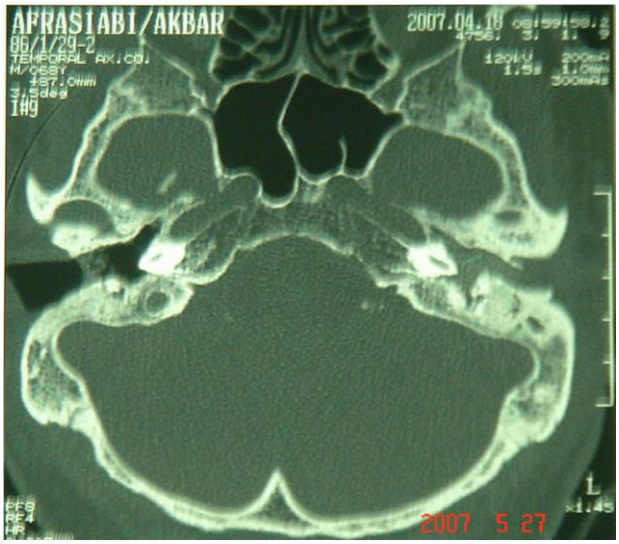

Figure 2. Computed tomography (CT) detected earmold material in the left middle ear and mastoid (Axial view)

Figure 3. Earmold material extracted from the ear canal and middle ear

Discussion

Proper fitting of hearing aids performed by well-trained medical professionals results in a very low incidence of significant complications. Perforation of the tympanic membrane with impaction of earmold material in the middle ear or mastoid bowl may occur and can be successfully managed by standard otologic surgical techniques. The making of ear mould for hearing aids is generally considered to be a safe process. However, there are a few reported cases of complications caused during mould making. One centre from Netherlands reported accidental pouring of mould making material into the middle ear through a pre-existing perforation of the tympanic membrane, necessitating tympanotomy for its removal[2]. Another case is reported of iatrogenic perforation of the tympanic membrane by the mould material[3]. This case required surgical intervention for removal of material by employing mastoidectomy with a facial recess approach to the middle ear. In this instance the hearing mechanism of the ear was compromised leading to further hearing impairment. One case report from USA and another from Poland also exemplify similar iatrogenic middle ear trauma resulting from ear impressions, and necessitating subsequent surgery[4-5]. Our case is also an example of iatrogenic perforation of the tympanic membrane and resultant pouring of the mould material into the middle ear cavity as well as mastoid. In this case we were able to remove the material completely from the middle ear, our case highlights some important points for consideration. Mould making by untrained hands can result in significant complications leading to further hearing impairment and disability. An appropriate material should be chosen for the mould and care should be taken not to push it in the ear canal with too much pressure. The ear canal should not be sealed off by the piston so that if the pressure rises in the ear canal, the material has spaces from which to flow out instead of causing trauma to the tympanic membrane[2,6]. Furthermore, there needs to be a close liaison between the Otolaryngologist and the audiologist/Vendor of the hearing aid and any incident of such nature warrants immediate referral to a tertiary care center for further management. We also suggest the registration of all hearing aid centers with a central licensure authority to ensure that they meet a minimum standard in expertise and equipment[7].

We conclude that the ear mold injection for impression of the ear canal for hearing aids can result in disastrous consequences when performed by poorly trained individuals. Such cases are likely to be more frequent, but remain highly under reported. Although the majority of patients who have ear canal impressions taken experience no adverse outcomes, hearing aid dispensers should perform a thorough history-taking and physical examination to discern those with abnormal anatomy at risk for complications. These patients may benefit from evaluation in conjunction with an otolaryngologist.

References

1. Elahi MM, Elahi F, Elahi A, Elahi SB. Paediatric hearing loss in rural Pakistan. J Otolaryngol 1998; 27(6): 348-53.
2. Hof JR, Kremer B, Manni JJ. Mould constituents in the middle ear, a hearing-aid complication. J Laryngol Otol 2000; 114(1): 50-2.
3. Kiskaddon RM, Sasaki CT. Middle ear foreign body. A hearing aid complication. Arch Otolaryngol 1983; 109(11): 778-9.
4. Awan MS, Iqbal M, Sardar ZI. Iatrogenic insertion of impression mould into middle ear and mastoid and its retrieval after 9 years: a case report. J Med Case Rep 2007 Feb; 2:1-3.
5. Wynne MK, Kahn JM, Abel DJ, Allen RL. External and middle ear trauma resulting from ear impressions. J Am Acad Audiol 2000; 11(7): 351-60.
6. Rydzewski B, Krokowicz, A. Iatrogenic foreign bodies found in the middle ear as a result of prosthetic management. Otolaryngol Pol 2002; 56(4): 493-9.
7. Kohan D, Sorin A, Marra S, Gottlieb M, Hoffman R. Surgical management of complications after hearing aid fitting. Laryngoscope 2004; 114(2): 317-22.