

## Silicone impression material foreign body in the middle ear: Two case reports and literature review



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### ABSTRACT

We report two cases of impression material foreign body in the middle ear. The first case had been affected with chronic otitis media. The silicone flowed into the middle ear through a tympanic membrane perforation during the process of making an ear mold. About 4 years and 8 months after, the patient had severe vertigo and deafness. We found bone erosion of the prominence of the lateral semicircular canal and diagnosed labyrinthitis caused by silicone impression material. In the second case silicone flowed into the canal wall down mastoid cavity. Both cases required surgery to remove the foreign body. The clinical courses in such cases are variable and timing of surgery is sometimes difficult. In addition to reporting these two cases, we present here a review of the literature regarding impression material foreign bodies.

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## 1. Introduction

Hearing aids for severe to profound hearing loss require ear molds to be made and the provision of such molds has greatly increased. Making these ear molds is a rather simple and routinely performed procedure. However, it should be noted that there are certain high risk patients, such as those with perforations of the tympanic membrane, retraction pockets, tympanostomy tubes, and canal wall down mastoid cavities [1].

The silicone used to make ear molds is known to be a harmless material to the biological body, but if the middle ear is filled with silicone for a long period it will lead to severe middle and inner ear inflammation.

We have experienced two cases of silicone impression material foreign bodies. Together with our case reports, we present here our review of the literature regarding such cases.

## 2. Case reports

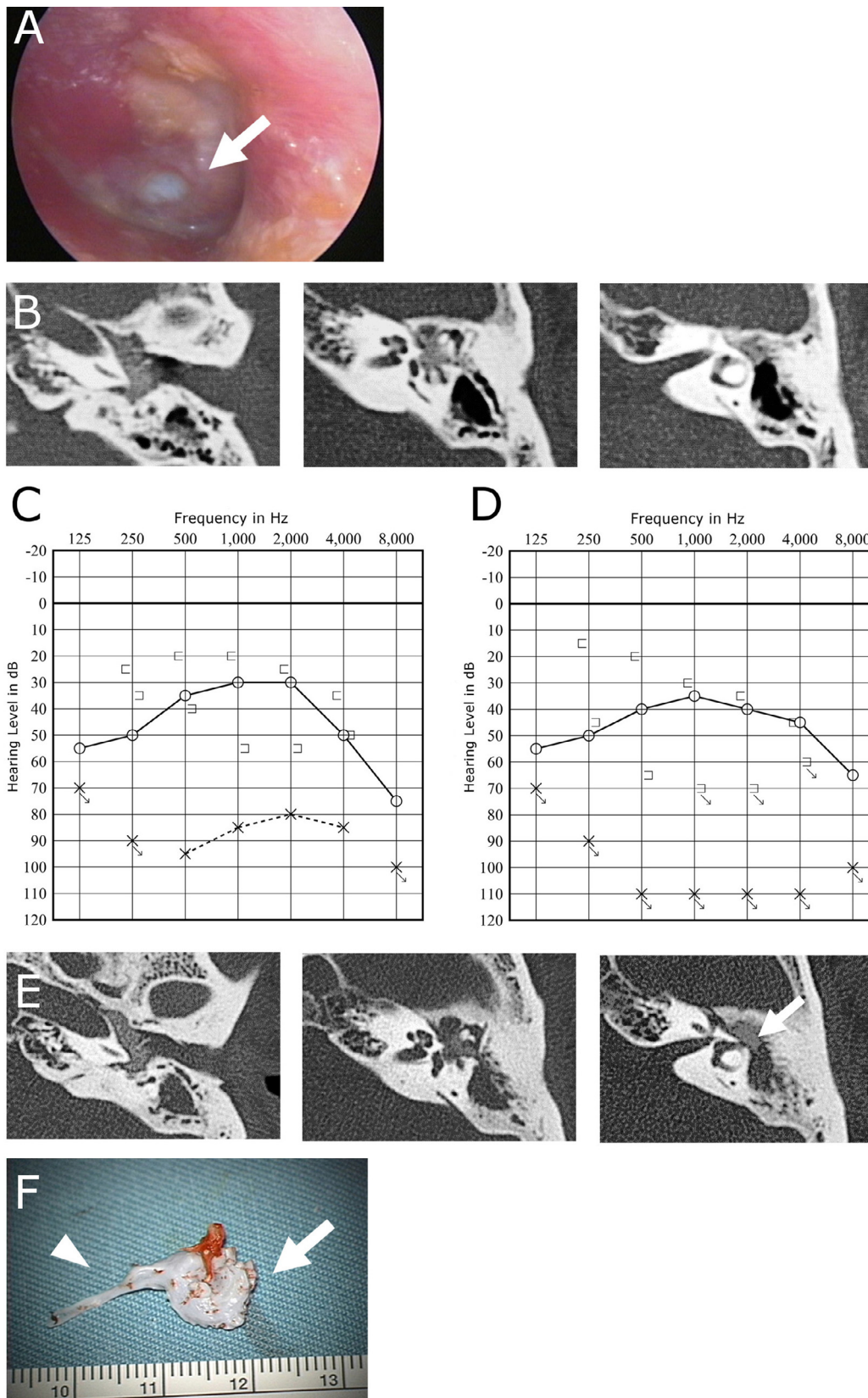
### 2.1. Case 1

A 65-year-old man with chronic otitis media had experienced bilateral otorrhea for several years and become aware of hearing

loss. In August 2001, he visited a shop to purchase a hearing aid. Silicone impression material was introduced into his left ear canal with a manual impression gun and the patient immediately felt vertigo. Upon removal of the silicone, the apex of the impression broke off and remained in the external canal. The patient was referred to an ENT clinic where an otolaryngologist removed the silicone from the external canal but recognized that it had also flowed into the middle ear. Therefore, a high-resolution computed tomography (CT) scan was performed at a general hospital showing that the silicone impression material filled the middle ear space. The patient was then referred to our hospital. We found that the tympanic membrane was perforated and that the bluish silicone could be visualized through the perforation (Fig. 1A). The patient had left-pointing gaze nystagmus and it was assumed that a left side perilymph fistula occurred because of his vertigo. This was indeed confirmed by the CT findings, which showed the silicone protruded into the middle ear, encased the auditory ossicles and the stapes, extended into the hypotympanum, and even protruded into the Eustachian tube orifice (Fig. 1B). We explained the possible risk of severe hearing impairment caused by removal of the silicone and the patient denied surgery. According to his decision, together with the safety assurances provided by the silicone manufacturer, we performed only careful follow-up of his hearing. Intravenous steroid treatment resulted in an improvement in his vertigo and there was no noticeable progression of sensorineural hearing loss. He was discharged after 18 days of

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**Fig. 1.** Case 1. (A) The external canal and tympanic membrane at the patient's initial visit to our hospital. The external canal was inflamed. There was a small perforation in the tympanic membrane and the pale blue silicone can be seen through it (arrow) (August 2001). (B) CT scan taken at the referring hospital showing the impression material protruding into the middle ear, encasing the auditory ossicles, extending into the hypotympanum, and further protruding into the Eustachian tube orifice (August 2001). (C) Audiogram at the patient's initial visit (August 2001). (D) Audiogram in June 2006. (E) CT scan taken immediately prior to surgical removal of the silicone had demonstrated that incus was destroyed and a part of the prominence of the lateral semicircular canal had a fistula (June 2006). (F) The largest portion of the silicone impression after we removed it (arrowhead, the part that had protruded into the Eustachian tube; arrow, the part that had filled the middle ear). We were unable to remove the silicone as one piece and had to cut and remove it in stages (June 2006).

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