

Facial nerve palsy as a complication of ear syringing

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Abstract

Introduction: Syringing of the ear is one of the most common procedures performed for cleaning cerumen from the external auditory canal. Common complications following syringing are pain, external auditory canal trauma and otitis externa. Hearing and vestibular loss have also been reported as complications. However, we are unaware of any report of facial nerve palsy as a complication of ear syringing. Such a case is reported.

Case presentation: We describe a case of facial nerve palsy as a complication of syringing, which demonstrates the dramatic presentation of this condition and emphasises the need for great care while syringing the ears.

Conclusion: It is important to be aware of this unusual complication with its distinctive presentation. Surgical intervention should be undertaken at the earliest opportunity, for favourable results. A risk-minimising strategy for ear syringing is recommended.

Key words: Facial Palsy; Cerumen; Otological Surgical Procedures; Therapeutic Irrigation; External Auditory Canal; Complications

Introduction

Cerumen impaction is a frequent problem both in general practice and in community-based ENT surgeries. It has been estimated that cerumen impaction is present in approximately 10 per cent of children, 5 per cent of healthy adults, up to 57 per cent of older patients in nursing homes, and 36 per cent of patients with an intellectual disability. Impacted cerumen can cause unpleasant symptoms, including itching, pain, tinnitus and dizziness. It is occasionally associated with serious sequelae, including hearing loss, perforated tympanic membrane, social withdrawal and poor work function.¹

Syringing to remove impacted cerumen is the procedure of first choice for the majority of general practitioners and ENT surgeons. Syringing seems to result in a greater number of complications than mechanical removal using a curette. Common complications following syringing are pain, external auditory canal trauma and otitis externa. Hearing and vestibular loss have also been described as complications.

Complications of ear syringing have been found to be more prevalent than previously assumed. However, none of the publications on this topic had initially been intended to detect adverse events. Controlled studies addressing the complications of ear wax removal are lacking in the literature, and absolute risks are unreported.²

We describe a case of facial nerve palsy as a complication of ear syringing. To our best knowledge, such a case has not previously been reported. This case demonstrates the dramatic presentation of facial nerve palsy, and emphasises the need to check equipment and to take great care while syringing.

Case presentation

A 14-year-old boy presented to the ENT out-patient clinic with left ear pain, hearing loss and ear blockage. He was found to have impacted ear wax.

He underwent syringing twice at weekly intervals, in spite of which the ear wax could be only partially removed.

During a third attempt at syringing, the nozzle of the metal ear syringe suddenly dislodged and hit the external auditory canal, with the wax and debris still inside the canal. The boy started to cry with pain, and we immediately noticed a left facial paresis. There was minimal bleeding from the ear. The patient also reported mild vertigo and vomited twice. The procedure was abandoned.

The patient was assessed clinically and his facial palsy graded as House–Brackmann grade three. No nystagmus was observed. Tuning fork tests revealed a left conductive hearing loss. The patient was given analgesia and intravenous steroids, and was advised that immediate hospital admission was needed for observation, assessment (via audiography and high resolution computed tomography of the temporal bone) and exploration of the ear under general anaesthesia at the earliest opportunity.

The patient refused admission, but came back the next day. At this stage, an audiogram revealed a moderate to severe conductive hearing loss with an air–bone gap of 40 dB.

The patient underwent surgery on the second day after the incident. During surgery, the remaining ear wax and debris were removed, and the external auditory canal was found to be wide and the canal skin thin and friable. The tympanic membrane had a traumatic perforation. The middle ear was

accessed via a post-auricular approach. The ossicular chain was found to be disrupted, with the malleus displaced anteriorly, the incudostapedial joint dislocated and the long process of the incus lying broken. The stapes was intact. The incus was removed to approach the facial canal. The scutum was curetted out. The horizontal facial nerve was partly dehiscent and the thin, bony facial canal wall was fractured, with spicules of bone impinging on the facial nerve. The nerve was intact except for blunt trauma near the second genu. The horizontal part of the facial nerve canal was completely decompressed and the sheath incised. Gelfoam soaked in steroid ear drops was applied over the decompressed nerve. Ossiculoplasty was performed using preserved homograft septal cartilage. An inlay temporalis fascia graft and tragal cartilage perichondrium graft were used to reinforce the posterior superior quadrant of the tympanic membrane, to prevent development of a retraction pocket.

There was minimal improvement in facial nerve function immediately after surgery. Steroids and physiotherapy were continued for two weeks. Nerve conduction studies indicated a favourable prognosis.

The patient was followed up for one year, over which time his facial palsy completely recovered. A second audiogram revealed minimal hearing loss, with good air–bone gap closure.

Discussion

Ear syringing is an extremely common procedure. Grossan suggested that approximately 150 000 ears are irrigated each week in the US, and approximately 40 000 per week in the UK.³ Sharp *et al.* place this figure much higher, estimating that approximately 7000 ears are syringed per 100 000 population per annum.⁴

Syringing may be done by an ENT practitioner, general practitioner or nurse practitioner. A survey of British general practitioners found that only 19 per cent always performed cerumen removal themselves; many delegated the task to practice nurses, some of whom had received no instruction.⁵ This can be problematic as the removal of cerumen is not without risk.

A postal survey of 312 Edinburgh general practitioners found that ear syringing problems were reported by 38 per cent of respondents, and included failure of wax removal (29 per cent), otitis externa, tympanic membrane perforation, damage to the external auditory meatus, pain, vertigo, and otitis media due to water entering the middle ear in the presence of a previous perforation.⁴

In a study in Australia, adverse events due to ear syringing included otitis externa (17 per cent), tympanic membrane perforation (15 per cent) and external auditory canal damage (12 per cent). Pain, vertigo and otitis media each accounted for fewer than 10 per cent of complications.¹

It is estimated that major complications occur in approximately one in every 1000 ears syringed.⁴ Recurrent vertigo is one such serious complication. Dinsdale *et al.* have reported perforation of the tympanic membrane plus ossicular disruption, round and oval window fistulae, and disruption of the stapedial footplate.⁶ Invasive otitis externa has been reported following irrigation under pressure.⁷ The most common organism is *Pseudomonas aeruginosa*, and the infection involves the external auditory canal and the deep peri-auricular tissues. Such infection may progress to skull base osteomyelitis, cranial nerve paralysis, meningitis and death, and almost

always occurs in people who are elderly, diabetic or immunocompromised. The onset of chronic tinnitus following ear wax removal has been reported by 0.46 per cent of consecutive patients visiting a tinnitus clinic.⁸ Finally, cardiac arrest has been found to be associated with ear syringing; this is presumably due to stimulation of the vagus nerve (which supplies the external auditory meatus, the tympanic membrane and the heart).⁹

- **Ear syringing is common**
- **Minor complications are not uncommon**
- **In the reported case, a metal syringe nozzle dislodged during syringing, injuring the ear canal, with immediate left facial paresis**
- **Surgical exploration, facial nerve decompression, ossicular chain reconstruction and tympanoplasty were performed**

We are unaware of any previously reported cases of facial nerve palsy following ear syringing.

Claims arising from ear syringing mishaps have been reported to account for approximately 25 per cent of the total claims received by the ENT medical misadventure committee of the New Zealand Accident Compensation Corporation. While this figure is high it is not surprising, as ear syringing is a common procedure. In Australia, medical negligence claims and complaints against general practitioners and their staff arising out of ear syringing are not uncommon; underlying reasons include poor technique (43 per cent of claims), faulty equipment (26 per cent), excessive pressure (26 per cent) and failure to examine the ear before syringing (5 per cent).¹

Conclusion

Ear syringing is a very common out-patient procedure performed by general practitioners, nurses and ENT practitioners, but it is not without its complications, which are sometimes serious as demonstrated in our case report. In 2008, new guidelines were issued by the American Academy of Otolaryngology discouraging ear wax removal unless excess ear wax was causing health problems or removal was required for tympanic membrane visualisation.¹⁰

Firstly, in order to reduce the possibility of an adverse event, complaint or legal claim arising out of ear syringing, a risk-minimising strategy is recommended, as follows.

It should be ensured that the procedure is indicated, and that there are no contra-indications such as tympanic membrane perforation (past or present), ear infection, presence of a grommet, history of ear surgery, young child who is uncooperative, or only hearing ear.¹

Written consent should be obtained for the procedure; the consent form should state the potential complications and their reported prevalence in the current setting

The person performing the ear syringing should be fully trained, and should carefully examine the external auditory canal; wax softening agents should be recommended if required.

The equipment should be correctly assembled. If the nozzle of the syringe is not properly secured, it may become detached and cause damage, not only to the external auditory canal and/or the tympanic membrane but also to the ossicles and facial nerve, as seen in our case. A plastic,

50–100 ml syringe may be a better option, as the nozzle is fixed.

Ear syringing techniques are described in great detail by Wilson and Roeser¹¹ and Blake *et al.*,¹² who advise pulling the external ear up and back, and aiming the nozzle at the superoposterior part of the ear canal. Failure to do this may result in the pressure in the external canal rising to a dangerous level. Using the advised technique, water flows as a cascade along the roof of the canal and flows out of the canal along its floor, taking wax and debris with it. For children, the rate and speed should be reduced. After irrigating, the head should be tipped to allow the water to drain. Irrigation may need to be repeated several times. If the water stream hurts, then the flow rate should be reduced. It is better to irrigate too gently for a long period than to irrigate too forcefully in an attempt to remove wax quickly.

The solution used to irrigate the ear canal is usually warm water,¹³ normal saline, sodium bicarbonate solution, or a solution of water and vinegar to help prevent secondary infection.¹³ Patients generally prefer the irrigation solution to be warmed to body temperature, as dizziness is a common side effect of syringing with fluids that are colder or warmer than body temperature. Sharp *et al.*⁴ have recommended 37°C, while Blake *et al.*¹² have recommended using water at 38°C, one degree above body temperature, and have stressed that this should be checked with a thermometer.

Following the completion of syringing, the external canal should be examined. In addition, the procedure, and subsequent examination, should be documented in the patient's medical records.

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