

# To Swab or Not to Swab: Appropriate Medical Advice Regarding Self-Ear-Cleaning

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## ABSTRACT

**Aim:** We seek to review the medical literature and explore the cultural practices and lore of self-ear-cleaning to arrive at appropriate medical advice for our patients.

**Background:** The medical consensus recommends against the practice of self-ear-cleaning as it may lead to complications or injury. There is a wide gap between the recommendations of the medical community and the general public's perception about ear-cleaning habits. Despite ample advice, the practice of ear cleaning with swabs is pervasive.

**Review results:** A review of the available medical literature reveals a few articles that associate self-ear-cleaning with injury. Even fewer articles provide data as to the prevalence of self-ear-cleaning making the relative risk of such a practice difficult to ascertain. Despite this scarcity of data, most authors continue to advocate for avoiding the practice of self-ear-cleaning.

**Clinical significance:** In light of the ubiquitous use of cotton tip swabs, the practice of self-ear-cleaning deserves additional medical evaluation to identify safe and acceptable procedures regarding contemporary hygiene of the ear. It appears likely that medical advice for self-ear-cleaning has been disproportionately influenced by the unusual adverse outcomes that are possible rather than evidence-based guidelines.

**Keywords:** Cerumen, Cotton buds, Cotton tip swab, Ear cleaning, Earwax, Impaction.

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## INTRODUCTION

Can cotton tip swabs be safely used to clean inside the ear? Should it be a routine part of personal hygiene, or is it too risky? The medical consensus recommends against this practice as it may lead to complications or injury.

What's striking is the schism that exists between the recommendations of the medical community and the general public's perception about ear-cleaning habits (as well as grandmothers far and wide). Despite ample advice, the practice of ear cleaning with swabs is pervasive.

Why swab the ear? The inclination to clean the ear canal appears to be primal. For some, the physical stimulation of the ear canal skin can be highly pleasurable (one might call this an 'eargasm'). 'Cleaning' of one's ear dates back to ancient Egypt when suppurating ears were syringed with Olive oil, Frankincense and salt as cited by Sharp et al.<sup>1</sup> Ear cleaning methods were described in the first century medical text *De Medicina* written by Aulus Cornelius Celsus.<sup>2</sup>

Modern medical advice is unequivocally opposed to self-ear-cleaning habits. But this advice is highly anecdotal; as stated in the American Academy of Otolaryngology-Head and Neck Surgery Foundation guidelines: 'Expert opinion recommends against the use of cotton-tip swabs to remove cerumen from the ear canal, although the evidence against it is sparse'.<sup>3</sup>

Most otolaryngologists have seen injuries caused by ear canal swabs. Injuries typically arise when accidental force is placed on a swab, which impales the ear during routine cleaning. As such, it is not the careful use of a cotton tip swab, but the mishap that occurs during cleaning that generates the injury. So, is careful cleaning safe? Should it be condemned, condoned or perhaps taught?

We seek to review the medical literature, and explore the cultural practices and lore of self-ear-cleaning to arrive at appropriate medical advice for our patients.

## BACKGROUND

Cerumen is composed of exfoliated keratin, and secretions from the glands associated with the apopilosebaceous units (follicular canals) of the ear canal.<sup>4</sup> It is felt to play a role in transporting desquamated keratin from the ear canal skin.<sup>5</sup> Cerumen also traps dirt and protects the deeper ear canal from potential invasion. As a hydrophobic barrier, it protects the skin of the ear canal from infection derived from water retention and penetration in the ear.

Cerumen production and accumulation generally causes few if any symptoms. In some, however, this

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production and accumulation over time can lead to varied symptoms including itch, irritation, and foreign body sensation. Furthermore, the impaction of cerumen has been associated with hearing loss, pain, tinnitus, dizziness and increased risk of infection.<sup>5</sup> The desire to self-clean the ear is a natural reaction to these symptoms.

Leo Gerstenzang invented the cotton swab in 1923 as a safer method for ear cleaning after observing his wife clean his baby's ears using a toothpick wrapped with cotton.<sup>6</sup> Originally coined Q-tip Baby Gays (Q for quality), the Q-tip survives to this day and is a commonly used term for all cotton swabs; other common terms include cotton tipped applicators or ear buds. Despite manufacturer's advice against inserting the cotton-tip swab into the ear canal, this prohibition is largely ignored.

## PREVALENCE

Accurate data on the practice of self-ear-cleaning is lacking. In 1994 investigators from the Cleveland Clinic studying all patients presenting to the Department of Pediatrics, found 62% of 651 respondents reported using cotton tip swabs to clean the ear.<sup>7</sup> In a 2005 study from the United Kingdom, Hobson et al surveyed all-comers to an ear, nose and throat (ENT) urgent care clinic; 53% of 325 respondents indicated that they used cotton swabs to clean their ears.<sup>8</sup> A 2014 study that surveyed educated young adults in Nigeria reported the prevalence of ear cleaning with swabs to be 85%.<sup>9</sup> In this study, the mean age of 'first insertion' was 7.6 years highlighting the role of childhood conditioning as an important factor in the development of this habit.

These papers did not identify a significant rate of injury, yet strongly advocated for warning patients against self-ear-cleaning with cotton tip swabs. In the Hobson study, the authors conclude: 'We have to admit that a large number of people use cotton buds without coming to harm and the actual risk remains to be elucidated.' But in the next sentence: 'Cotton bud manufactures are explicit in their warnings against use in the ear, but on the evidence of this survey, these warnings need to be stronger.'<sup>7</sup>

Similarly, the study from Nigeria found near universal practice of self-ear-cleaning with no reported data on complications associated with cleaning. And yet the authors opine, 'a large proportion of the population is at risk of possible harmful effects' and suggest that the notion that self-ear-cleaning is beneficial is an 'erroneous perception.'<sup>9</sup>

A recent survey conducted by one of the authors (William M Portnoy) of 100 consecutive adult patients attending a general Otolaryngology practice in New York City demonstrated a prevalence of cotton tip swab use to be 77%. Of this population, approximately 45% were

swabbing the ear canals on a daily basis. Of those who swab, 60% reported doing so for hygienic purposes, 53% to prevent wax accumulation, 45% to dry the ear and 32% indicated that it feels good. Of the 4 patients reporting complications of swabbing, 3 cited wax impaction and 1 a nonspecified ear injury (Unpublished data).

## RISK OF INJURY

The medical literature records the potential consequences from the misuse of cotton swabs.<sup>10,11</sup> Most typically this has included ear canal injury, otitis externa and tympanic membrane perforation. More severe injuries are possible including ossicular damage, facial nerve injury and inner ear penetration. Other swab-related sequela may include chronic ear canal inflammation, stenosis, external ear cholesteatoma, foreign body and secondary infections.<sup>12</sup>

How do we assess the true or relative risk of self-ear-cleaning? Limited data is available. Swab use has been shown to be a risk factor in the development of Otitis Externa. In a 2004 study from Schneider Children's Hospital of Israel, 70.1% of 87 children diagnosed with otitis externa had used cotton swabs to clean in the ear within 10 days of presentation, compared to 34% of 90 children without otitis externa presenting to the same hospital for other reasons.<sup>10</sup>

In a study of tympanic membrane perforation etiology, self-ear-cleaning with swabs was shown to be the etiology of 3.5% of the 1540 tympanic membrane perforations presenting to the Henry Ford Hospital System over a 9 years period.<sup>11</sup>

Macknin et al from the Cleveland clinic found that higher levels of cerumen occlusion were noted in patients that reported use of cotton swabs in the past 2 months. But this was only statistically significant in the left ear, not the right. And they found that 44% of those patients still using swabs only used them external to the ear canal. The authors concluded that a cause and effect relationship between swab use and cerumen accumulation is not possible.<sup>8</sup>

The published research to date does not appear to provide strong support for the outright condemnation of self-ear-cleaning. In light of the vast prevalence of self-ear-cleaning habits, the actual risk may be very low.

## DISCUSSION

The external auditory canal is a unique anatomic structure as the only cul-de-sac of stratum corneum epithelium in the human body<sup>5</sup>. Many issues regarding the production of earwax and proper maintenance of the ear canal remain controversial. Questions endure and accepted 'principles' and cultural mores may need to be challenged. Is it reasonable, or even practical to



delegate cleaning of the ears to others, being physicians, paramedical professionals or other 'expert' wax disimpactors.<sup>13</sup>

The principal of 'preventive maintenance' by regularly swabbing the ear canal is arguably a safe and low risk practice for cleaning the ear. Should accepted hygienic practices, such as regular bathing, brushing the teeth or trimming one's fingernails be applied to the ear as well? Gentle, skillful and careful swabbing of the canal can help maintain the ears in a clean and dry state. This concept is self-evident, instinctive and extensively practiced-yet not medically supported. One must distinguish the daily or regular swabbing of the ear canal for maintenance purposes from that of an isolated or infrequent attempt to disimpact cerumen. Unquestionably this strategy can lead to complications such as advancing impacted cerumen deeper into the canal and the associated sequelae.

Different types and even subtypes of cerumen production exist; should those who produce sticky, soft wax be advised to swab the ear more regularly as opposed to those who produce dry, flaky wax? Does cerumen production really play any significant role in protecting the external ear or does it serve merely as a vehicle to assist in the removal of desquamated debris?

To date, no prospective, double blind study has been performed looking at the benefit of regular self-ear-cleaning *vs* no ear cleaning at all. Perhaps there are too many variables to even consider a study of this magnitude. What constitutes regular self-cleaning of the ears? Is it daily swabbing, weekly swabbing or something in between or beyond? How far is it reasonable to advance the cotton swab into the canal: Just to the meatus or the length of the ear canal?

There is no doubt that inserting any foreign body into the ear canal for cleaning purposes carries with it a risk of trauma to the ear canal and possible devastating injury to the vestibuloauditory system. It is the level of risk that has yet to be determined. Still, these extraordinary injuries have led to strong opinions and recommendations that have been put forth, at times, lacking supporting scientific data or sound clinical research. In light of the ubiquitous use of cotton swabs, the practice of self-ear-cleaning deserves additional medical evaluation so as to identify safe and acceptable procedures regarding contemporary hygiene of the ear.

## CONCLUSION

As practitioners, we advocate for the prevention of disease and injury. In so doing, we strive to provide sound medical advice to our patients. Dictums related to proper ear hygiene have evolved and been propagated

by our specialty based on limited data reporting injury from the use of cotton swabs in the ear canal. And yet, it is recognized that a large percent of the population (including many otolaryngologists) use cotton swabs in the ear with no adverse effect. Is this a reckless act of unknowing masses or is it a rational act of hygiene with minimal and acceptable risk if done properly? Perhaps the role of the otolaryngologist is to educate patients in the 'safe' method of using swabs and to tailor our recommendations to the individual based on the cerumen production, characteristics and retention unique to any given patient.

## ACKNOWLEDGMENT

It is a pleasure to contribute to this issue honoring our mentor, teacher and friend Dr Frank Lucente. We are grateful recipients of his leadership as our chairman during the impressionable residency training years. And he has remained a beacon of knowledge, wisdom and inspiration to us.

Frank Lucente taught us to not overlook the everyday, the mundane, the taken-for-granted aspects of medical care. It is precisely in the everyday activities that opportunity exists for learning and advancement. It is with this spirit that we chose to explore cerumen hygiene where we feel there is a significant opportunity to challenge the status quo, for advancement in our medical specialty and to the betterment of our patients. We are grateful to Dr Lucente for his tutelage and inspiration.

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