''But What's Wrong With Q-Tips®?''

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Editor's Note: This article is provided as a handout for your patients. Special thanks to Dr. Max Chartrand for his excellent work. Please feel free to download, print and distribute. Please maintain all credits on the handouts! If you have similar materials you'd like to share with the online hearing healthcare community, please forward them to me. Thanks very much. ---Douglas L. Beck Au.D., Editor-In-Chief. editor@audiologyonline.com.

An oft-repeated caution given in the doctor's office to patients goes something like this: *"Put nothing smaller than your elbow in your ears."*

Predictably, the refrain from the patient ensues *"But, doctor, how do I keep my ears clean?"*
The answer to that simple query is, of course, *"You don't--- the ears are self-cleaning if you allow natural processes to do their work."*

Our purpose here is to explain the process of epithelial migration and desquamation of tissue, which is unique to the external ear canal and the resulting self-cleaning and protective properties of the normal, healthy ear. Furthermore, we'll discuss what happens when one takes matters into their own hands and tries to foil Mother Nature!

Conveyor belt-like action:

To illustrate the natural movement of debris and foreign objects from the ear canal, imagine if we placed a piece of sand at the umbo (center) of the eardrum and watched it travel at the rate of just under 1mm per day. After about 3 months, one could reach up with fingertip at the opening of the ear canal and remove that same piece of sand. It makes no difference whether the object is earwax, discarded hair, household dust, insect dander, dried mold spores or fungi, dead bacteria or pseudomonae, dead skin cells or soap residue. In a healthy ear, migration away from the eardrum occurs along the *stratum corneum* or the keratin layer of the ear canal. These items (i.e., foreign objects) move as if they were on a conveyor belt, being transported outward.

If this were not so, for most of mankind's history we would have had a relatively deaf (and unsurvivable) human species long before the invention of modern otoscopy (ear

microscopes) and mechanisms for clinical removal of impacted earwax. In fact, historically, impacted earwax appears to be a uniquely modern phenomenon, coinciding with the invention of another modern invention, the common cotton swab!

Cerumen and sebaceous secretions combine to make "earwax." However, earwax is only produced in the outer 1/3 of the ear canal. Yet, in years of practice with thousands of patients, this author notes a relatively high incidence of impacted earwax in the inner 2/3 of the ear canal! Of course, it's no mystery how it got there.

"But," goes the protest, *"Isn't it healthy to keep my ears clean?"* The answer comes with the resounding refrain, *"Not really. An overly clean ear can be an unhealthy ear."*

Self Removal of Impacted Wax

Let's talk about the potential dangers of attempts at self-removal of earwax in terms of impacting the wax deeper into the ear canal, sometimes occluding the ear for months or years at a time before anything is done about it. In doing so, we will recite below some of the consequences, from trivial and aggravating to the most serious (and potentially fatal) possibilities, as well:

- Impacted earwax more often than not is caused by one attempting to remove wax mechanically with a cotton swab, matchstick, hairpin, or any variety of other blunt objects. Deeper and deeper into the canal goes the wax intended for removal, scraping of the stratum corneum (or keratin) along the way, so that the wax couldn't come out on its own if wanted to!
- Over time, earwax dries out; debris and dead skin tissue collect into a hard mass that would almost require a chisel to break it up! As debris continues to gather and impact over time, one may develop a hacking cough, because of pressure on the vagus nerve (Arnold's Reflex). In some cases, this can be quite serious, and secondarily cause upper respiratory problems, as well.
- A conductive hearing loss of about 30-40 decibels or more can develop. In essence, an isolating sound barrier (earwax) can be created between the sufferer and the sounds of life around them. Many patients describe this sensation as "being deaf." Although, if their hearing is otherwise normal, the condition is a far cry from truly debilitating deafness. On the other hand, if they also suffer from a sensorineural (nerve) loss, this additional sound barrier, due to wax impaction, could cause them to indeed experience "deafness".
- The sufferer will generally speak so softly that others must strain to hear them. This is because of the occlusion effect, increasing their own voice internally about 15-20 decibels. Children who talk softly should always be suspected of middle ear infection, wax impaction, or undiscovered hearing loss!
- In some cases, long-standing and untreated earwax impaction can actually turn septic, and cause serious health consequences. Over many years of practice, the author has seen at least a half dozen patients who were hospitalized for this very reason, and in most cases the cause of the problem not discovered until weeks or

months following vigorous medical treatment. In other words, untreated impaction can be potentially life threatening!
- Even a small piece of wax pushed up onto the eardrum can cause an interaural attenuation (reduction of hearing sensitivity on the opposing ear) of as much as 20 decibels!
- That same tiny piece of wax on the eardrum can also cause the tensor tympani muscle to go into spasm, causing a "roaring" or "buzzing" tinnitus.

Successful Self-Cleaning?

Let's say one was actually successful in mechanically cleaning their ears on a frequent or daily basis, without impacting their ears. What are the consequences?

- For one thing, there will be little or no protective keratin layer on the ear canal, leaving the ear open for trauma and infection.
- Without keratin the ear cannot maintain surface pH and fungus, yeast, bacteria and pseudomonas begin to grow, causing chronic itching in most cases, and almost incurable chronic external otitis in some cases.
- The simple act of making an ear impression on such an ear can be an excruciating and uncomfortable experience.
- The outer ear can bleed easily with the lightest touch as millions of tiny, thin-walled capillaries are exposed to the surface of the epithelium. This is especially true in cases of certain medications (cumadin, aspirin, high doses of Vitamin E or anticoagulants), or if the patient has varicose veins, vascular disease, or diabetes mellitus II. Ears cleaned at the medical clinic sometimes come out bleeding and in serious need of epithelial repair!
- Another phenomenon is increased sensitivity of the neuroreflexes of the external ear canal. These reflexes fall into two basic categories 1) biological monitoring of one's own voice, and 2) to cause physical changes for protecting the eardrum from mechanical or vibratory invasion. This problem has been discussed at length in other forums, but is important to mention here, because this little known problem is the root cause of many unnecessary remakes, credit returns, and trial failures in hearing aid. Hence, without a thick layer of keratin and the natural insulation it provides, these neurological trip switches are set off as sure as the most sophisticated security system today!

In fact, the above phenomena are the root cause of more than a few failed hearing aid trials, self-inflicted external otitis (outer ear infection), and ongoing - yet resolvable - speech defects.

Answers?

The following represents simple rules for external ear care that are good for everyone:

1. Never use boric acid, hydrogen peroxide or other harsh solutions in the ear. Mineral oil based solutions can cause dermatitis and make the ear otherwise

unhealthy. A gentle botanical solution that has been proven safe for use in the ear canals may be a better choice.
2. Avoid using mechanical items (i.e., cotton swabs, keys, paper clips etc) to clean your ears.
3. Have your ears examined by a qualified ear professional and follow their specific instructions regarding your personal cerumen management!

And, oh yes, nothing smaller than your elbow goes into your ears, right?

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