

## The medical education of internship in surgery and otolaryngology in competence of recovery of deafness caused by cerumen

A educação médica no internato de cirurgia e otolaringologia e sua influência na competência da recuperação de surdez causada por cerume

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### ABSTRACT

The update of the Undergraduate Medicine National Curriculum Guidelines approaches the need of trainees to able doctors to remove foreign bodies and ears irrigation. In The Federal University of Rio Grande do Norte, this training occurs during surgery internship at the Clinical Skills Laboratory. The importance of this is evident when they learn the consequences of the permanence of these materials in the external auditory meatus, such as deafness, ear infections, dizziness, tinnitus, among others. To remove these, there are various techniques and variables protocols between services.

**Keywords:** *Cerumen, Deafness, Medical education, Internship, Surgery.*

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### RESUMO

A atualização das Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina aborda a necessidade em habilitar os médicos formandos para remover corpos estranhos e realizar lavagem do conduto auditivo. Na Universidade Federal do Rio Grande do Norte, essa capacitação ocorre durante o internato de cirurgia, no Laboratório de Habilidades Clínicas. A importância desta se faz evidente à medida que são conhecidas as consequências da permanência desses materiais no conduto auditivo externo, como por exemplo, a surdez, otite, tontura, zumbido, dentre outros. Para remoção destes, existem várias técnicas e protocolos variáveis entre os serviços.

**Descritores:** Cerumen. Surdez. Educação médica. Internato. Cirurgia.

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## **INTRODUCTION**

With the updates of the Undergraduate Medicine National Curriculum Guidelines , it was necessary to include the training of doctors in training during the internship in surgery and removal of foreign body and ears irrigation. Part of these abilities, in the Federal University of Rio Grande do Norte, is performed in the Laboratory of Clinical Skills by Division of Otorhinolaryngology. The development of these skills becomes important due to subsequent condition of permanency of this material on the external auditory canal, as will be discussed in this article.

Deafness or hearing loss generates many damage, one well established, is social isolation. The accumulation of cerumen, and the presence of a foreign body in the external ear may be responsible for the hearing loss of the patient, therefore, their social isolation, thus limiting their quality of life.

The cerumen is a hydrophobic substance commonly found in the external auditory canal. Normally, there is spontaneous elimination of this substance, but this mechanism might fail, resulting in the accumulation of earwax. This is one of the main responsible for seeking medical attention for otologic causes<sup>1,2</sup>, having as frequent clinical symptoms, ear pain, hearing loss, tinnitus and dizziness .

The removal of excess earwax can be obtained by irrigation of the external ear in the simplest cases, but in some patients this procedure may not be successful, than treatment is necessary.

## **SURGICAL ANATOMY AND PHYSIOLOGY OF THE EXTERNAL EAR**

On the side wall of the external auditory canal there are hair, sebaceous glands and specialized sweat glands, the ceruminous glands. The cerumen is the result of the mixture of these glands secretion, associated with epidermal desquamation, that occurs in medio-lateral direction (inside-out).

It is produced a hydrophobic substance and lubricant containing lysozyme and immunoglobulins, whose pH is acidic and is responsible for a natural barrier protecting the external ear<sup>3</sup>. The production of earwax appears to be similar between the sexes. There are several studies suggesting differences between the cerumen of adults , children and races.

There are also evidence of the genetic polymorphism reflecting the function and structure of the ceruminous glands and therefore the phenotype of earwax, differentiated into two types: dry and wet. The last is characterized by high concentration of lipid and pigment granules. The dry one, on the other hand, has lower concentration of these componentes<sup>4</sup>.

Earwax cleans and lubricates the external auditory canal, acting as a barrier that prevents water accumulation and make difficult the penetration of foreign bodies such as insects.

## **TEACHING AND LEARNING ABOUT THE PROBLEM IN THE AREA OF SURGERY**

A failure in removing earwax produced is the best explanation for the accumulation of earwax, it is secondary to anatomical changes, epithelial migration or excessive bristle<sup>5</sup>. But there is a relationship between the use of disposable cotton tipped swabs, also associated with the deepest position of cerumen in external auditory canal<sup>5,6</sup>. The use of stethoscopes for professionals in the health, prosthesis and shields, also results the accumulation of cerúmen<sup>5,7</sup>.

When there is excess earwax in the ear canal, the patient is symptomatic and complains of hearing loss, ear fullness, itching, pain, tinnitus, vertigo, chronic cough, and may also result in external otitis<sup>8</sup>. Obliterans keratosis is characterized by a compact material consisting of keratinized epithelial cells that remains firmly adhered to the external auditory meatus, similar to excess earwax. Although rare, there is the report of the occurrence of pseudo simulating dementia secondary to occlusion of the external auditory canal (EAC) caused by bilateral excess of earwax<sup>9</sup>.

This accumulation also impedes the examination of the external auditory canal and tympanic membrane visualization. The gradual decrease in hearing sensitivity is secondary to the severity of EAC obstruction, being more intense in high frequencies only up to 95% obstruction and affects all frequencies in 100%<sup>10</sup>, which may result in communication difficulties and social isolation.

## **EPIDEMIOLOGY**

Over 6 % of the world population is affected by secondary symptoms of earwax excess<sup>11</sup>, but in patients with mental retardation this value may be even higher. Assessing the variation between age groups is evident that 1 in 10 children suffers from accumulation of earwax, while 1 in 20 adults and 1 in every 3 of elderly patients are affected by this pathology<sup>4,12</sup>. Approximately 4% of individuals seeking primary care health by this reason<sup>1</sup>. This is also a reason for the frequent visits of high complexity hospital because of failures of basic care or the lack of cooperation of some patients, such as children and patients with neurological deficit.

In otolaryngology service at University Hospital Onofre Lopes, in 2013, 1000 elective patients were seen and referred by the primary care physician. Being necessary in 19.6 % of these, earwax removal in symptomatic patients, by medical specialist.

## **THE TEACHING ON THE ABILITY TO RESOLVE THE CONDITION**

Concerning the Undergraduate Medicine National Curriculum Guidelines<sup>13</sup>, during the surgery internship, Students are trained in Laboratory Skills regarding the treatment and removal of ear wax, and receives the following informations. Removing earwax becomes essential as this excess is responsible for clinical symptoms or prevents the physical examination of the patient. There are protocols for this procedure to be successful, with variations between the services<sup>10</sup>.

The procedure should be preceded by the patient's clinical history, still questioning him about diseases like AIDS, diabetes and comorbidities, such as skin, ear and previous surgeries. The presence of comorbidities such as diabetes and AIDS contraindicates the use of irrigation for removal of excess earwax due to the risk of developing malignant external otitis<sup>10</sup>; the medial or external otitis, like as, acute or chronic otitis also contraindicate the use of irrigation for earwax removal due to high risk of complications of these diseases.

Then, the clinical examination should be performed, seeking to inspect the external auditory canal and tympanic membrane, is necessary to evaluate the existence of infection, perforation, stenosis of the duct, the presence and characteristics of earwax.

There are several therapeutic options for removing earwax, like irrigation, aspiration, ceruminolytic use (products that flows earwax) or manually through the use of hooks or currettes under direct vision. The management of these requires skill of the person performing the procedure, otherwise, some complications can occur frequently, such as pain, tympanic membrane perforation, exacerbation of chronic middle ear diseases, damage to the ossicular chain, vertigo, tinnitus, risk of infection and hemorrhage secondary to laceration of the external ear canal<sup>5,10,12</sup>. The ceruminolytic, on the other hand, may be responsible for allergic reaction, external otitis, ear pain, ear fullness, dizziness and deafness<sup>10</sup>.

As a preventive act for the accumulation of cerumen should discourage the use of tipped swabs of cotton in order to clean the external auditory meatus, because, as previously mentioned, this habit has consequences, for example, difficult to remove the cerumen.

## **CONCLUSION**

During her internship in surgery, specifically during at least two meetings of 4 hours each, should be taught to medical students the technique of the earwax resolution in outpatients. In UFRN this starts with training in the skills lab. Technical, human, critical and reflexive view are emphasized.

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