

Effectiveness of Same-Day Human Ear Wax Removal as an Office Procedure and Factors associated with its Successful Removal

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ABSTRACT:

Introduction: There are various methods of ear wax extraction and there are no specific guidelines on this subject. Many times we ask patients to instil some wax softening product for a few days and revisit for wax removal. This revisits result in increased cost, discomfort and loss of time. We conducted this study to determine the effectiveness of same-day ear wax removal as an office procedure with one or more techniques. Our secondary objective was to find the association between various factors and successful wax removal. **Methods:** During the study period, all patients with ear wax managed by a single ENT surgeon were included. History and examination were done and findings noted. One or more methods including probe, forceps, hooks, curette, suction, wax softening with wax softening agents, syringing were applied for wax removal. Complete wax removal was noted as success. **Results:** There were a total of 63 cases of ear wax among 34 participants. Wax was successfully removed in 52 (82.5%) cases in the same day. Presence of ear ache, narrow canal, complete obstruction and hard dry wax were adversely associated with successful wax removal. Presence of ear fullness, ear discharge, or use of ear drops in home was not significantly associated with successful ear wax removal. **Conclusion:** We were able to extract wax from a large proportion of patients on the same day of visit, thereby reducing their cost of revisit, however there were 17.5% of cases who could not be treated successfully on the same day.

Keywords: ear wax • cerumen • cerumen removal • suction • syringing

INTRODUCTION:

Ear wax (cerumen) is a common world-wide problem affecting 7.5% of children in Delhi of India,[1] 10% in China,[2] and 27.5% in Italy.[3]

Incidence has been found to be about 33% in geriatric and developmentally delayed populations.[4] Wax has protective functions with anti-bacterial and anti-fungal properties until they become symptomatic. [5] Once symptomatic or when it hampers the visualization of ear canal and tympanic membrane, it is considered as a disorder and has to be treated. Symptoms of wax include pain, itching, sensation of fullness, hearing loss, tinnitus, odor, discharge, and cough.[4,6]

There are several methods and products for wax removal. Methods include irrigation, suctioning, and manual removal with curette, probe, forceps, or hooks.[4,6] Products include acetic acid, triethanolamine, almond oil, camphor oil, glycerol and propylene glycol preparations.[4,7] These products are instilled in the ear canal several times

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How to cite this article:

Acharya A, Singh MM, Pandey BR, Pandit SB. Effectiveness of same-day human ear wax removal as an office procedure and factors associated with its successful removal. Journal of Lumbini Medical College. 2017;5(2):45-48. doi: 10.22502/jlmc.v5i1.148. Epub: 2017 Nov 21.



a day for a few days and then the patient is recalled for removal. There is no consensus on guidelines of the methods of cerumen removal, either as single intervention or combined interventions.[4]

Our hospital is situated in a semi-urban hilly area where patients sometime have to travel a whole day for one-way trip. As such, scheduling a revisit after a few days of installing the wax softening products adds to their discomfort, cost, and loss of time. We have attempted to study the effectiveness of the same-day cerumen removal as an office procedure using one or more methods or products and factors associated with successful removal of ear wax.

METHODS:

This was a prospective, observational, cross-sectional, and analytical study done in the out-patient setting of Lumbini Medical College Teaching Hospital. Study protocol was approved by Institutional Review Committee (IRC) of the Institute. The study was done from 1st of August 2017 to 30th of September 2017. All the cases of ear wax, symptomatic or incidentally found during ear examination by the principal author were included in the study. Children below five years of age were excluded from the study as it was difficult to get co-operation from them during the procedure. Each ear with wax was treated as a case.

Age and sex of the patients were noted. Short history regarding symptoms related to wax, current or recurrent ear discharge, use of any ear drops within last two weeks were taken. Nature of wax i.e. hard or soft, extent of ear canal obstruction i.e. complete or partial, and any narrowing of ear canal were noted. Ear canal narrowing for a given age was decided by the experience of the author as compared to other patients. Circumferential narrowing, significant anterior canal bulge that preclude the view of anterior tympanic membrane, canal osteoma, and exostosis were included as canal narrowing. Attempt of ear wax removal was done by the principal author with probe, forceps, hooks, curette or suction. If removal was not successful, patients were asked whether they had a recent or recurrent ear discharge in the ear with wax. If the answer was affirmative, they were excluded from the study. Rest of the patient were made to install wax softening agent. We used Otorex™ ear drop in all cases because it is widely available in our

place. Otorex™ consists of paradichlorobenzene, benzocaine, chlorbutol, turpentine oil in oil based solution. Patients were made to lie down on with face on one side with the ear with wax upward. Eight drops of Otorex™ was instilled in the ear and gentle massage of ear canal was done with intermittent tragal pressure for 30 minutes. If wax was present in both ears, the procedure was repeated on the next ear for next 30 minutes. Then, attempt for wax removal was done again with one or more methods including probe, forceps, hooks, curette, suction or syringing. If wax was completely removed, it was noted as successful otherwise as unsuccessful.

Data were entered in Microsoft Excel™ 2016 and imported into Statistical Package for the Social Sciences (SPSS™) version 21. Univariate analysis was done with Chi-square test or Fisher Exact test between the independent and dependent variables. *P* value less than 0.05 was considered statistically significant.

RESULTS:

There were a total of 63 cases of ear wax among 34 participants. Five (14.7%) had unilateral and the rest 29 (89.3%) had bilateral wax. There were 15 (44.1%) male and 19 (55.9%) female. Considering equal proportion of gender coming to our centre, this difference in gender was not statistically significant ($X^2[N=34, df=1] = 0.47, p = 0.49$). Among all (63) ears, wax was successfully removed in 52 (82.5%) cases. Wax removal was unsuccessful in the remaining 11 (17.5%) cases.

Relationship between various variables and outcome (success or failure in wax removal) is shown in Table 1. It shows that successful wax removal was significantly associated with ear ache, narrow canal, complete obstruction and hard dry wax. Presence of any of these factors reduced the probability of successful wax removal. Successful outcome was not significantly associated with presence of ear fullness, ear discharge, or use of ear drops in home.

DISCUSSION:

We conducted this study to find the effectiveness of the same-day ear wax removal as an office procedure and factors associated with successful wax removal. Same-day ear wax removal was successful in majority but not all of the cases. Wax removal was likely to be unsuccessful in presence of ear ache, narrow canal, complete

Table 1: Relationship between outcome (successful or unsuccessful) and various factors. (N = 63)

Variables		Successful n (%)	Un- successful n (%)	Statistics
Ear fullness	Present	7 (63.6)	4 (36.4)	P = 0.9 Fisher Exact
	Absent	45 (86.5)	7 (13.5)	
Ear discharge	Present	3 (75)	1 (25)	P = 0.55 Fisher Exact
	Absent	49 (83.1)	10 (16.9)	
Using ear drops	Present	12 (80)	3 (20)	P = 0.71 Fisher Exact
	Absent	40 (83.3)	8 (16.7)	
Ear ache	Present	4 (44.4)	5 (55.6)	P = 0.006 Fisher Exact
	Absent	48 (88.9)	6 (11.1)	
Narrow canal	Present	4 (50)	4 (50)	P = 0.03 Fisher Exact
	Absent	48 (87.3)	7 (12.7)	
Complete Obstruction	Present	12 (54.5)	10 (45.5)	P < 0.001 Fisher Exact
	Absent	40 (97.6)	1 (2.4)	
Hard dry	Present	17 (68)	8 (32)	P = 0.02 Fisher Exact
	Absent	35 (92.1)	3 (7.9)	

obstruction and hard dry wax.

Ear wax removal using one or more methods on the same day as an office procedure was successful in 52 (82.5%) of cases. Many patients travel a whole day to come to our hospital due to difficult geography. It would add to their cost, discomfort and time to repeatedly visit hospital. We expected to be more successful than what we found in this study so that there would be no need for most of the patients to re-visit hospital for their wax problem. In a study in UK, 91% of the cases of ear wax were successfully treated with the use of microscope.[8] Though we did not have microscope in our office setting, our rate of success was not different than that in that study ($X^2[N=63, df=1] = 0.0001, p = 0.9$).

Wax was present bilaterally in 89.3% of the cases. This can be explained by symmetric anatomy on both sides in most of people and similar activity of ceruminous glands and self-cleaning mechanism of external ear canal. Wax was present in both the ears in 91.2% of cases in a study in Nigeria,[9] 68.3% in Delhi,[1] more than 60% in China,[2] and 75.8% in Turkey.[10] There was no difference in gender among patients with ear wax ($p = 0.49$). Similar results were found in other studies.[11,12] This fact implies that the gender based hormones may not be responsible in determining the amount and quality of the secretions of ceruminous glands.

Presence of ear ache, narrow canal, complete obstruction, and hard dry wax significantly reduced

the probability of successful wax removal. We can understand that patient with ear ache may not allow adequate manipulation in the canal for wax removal. Moreover, ache may be a result of inflammation which narrows the canal. These factors in presence of pain may result in lower chances of successful wax removal. With narrow canal, manipulation of wax becomes difficult. If narrowing is localized, size of wax formed medial to this part is bigger than the calibre of ear canal at narrowed part. In already narrow canal, even mild inflammation may lead to further narrowing. All these factors may lessen the chance of successful removal of wax when there is narrow canal. When obstruction with wax is complete, it would be difficult or sometime impossible to pass instruments beyond wax. Complete obstruction may also not allow passage of ceruminolytic agents deeper. These factors, in presence of complete obstruction, may be responsible for lower success in complete wax removal. Hard wax is non pliable, so it may cause injury to the skin of canal during removal. Thirty minutes of time may not be adequate to soften hard wax. These may be the reason why hard wax is less likely to be successfully removed on the same day.

Instillation of any ear drop in home was not significantly associated with successful wax removal. A probable explanation for this could be that patients were not instructed properly by local health centre or pharmacy on how to instil drops. On the other hand, patients might have not used medicine as instructed and instilled them less frequently. We routinely advise patients to install four drops into each ear and apply intermittent tragal pressure for at least three minutes.

We could remove ear wax in most of the patient on the same day they visited the clinic. Still, we could not remove in 17.5% of the cases and they had to revisit clinic later. We are looking for novel material and techniques that may help us to remove wax in almost all patients on the same day as office procedure.

CONCLUSION:

Removal of ear wax on the same day as an office procedure was successful in majority (82.5%) of the cases though 17.5% required revisit to the hospital for successful removal. Successful removal was adversely affected by presence of ear ache, narrow canal, dry hard wax, and complete obstruction.

Conflict of interest:

Principal author did not take part in any editorial decision.

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