

ORIGINAL ARTICLE

# Foreign Bodies in the External Auditory Canal: An Evaluation of 95 Cases

## Dış Kulak Yolunda Yabancı Cisimler: 95 Olgunun Değerlendirilmesi

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ABSTRACT

**Objective:** The purpose of this study was to examine the demographic characteristics, form of presentation to hospital, the ear in which foreign bodies were observed, and the features thereof, in cases of foreign body in the external auditory canal (EAC) treated in our clinic.

**Materials and Methods:** Ninety-five patients admitted to our hospital due to foreign body in the EAC and treated in the Ear, Nose, and Throat (ENT) Clinic were included in the study. Patients' medical records were examined, and age, sex, type of presentation to hospital, type of foreign body, and the ear involved were recorded.

**Results:** Sixty-eight (71.5%) of the 95 patients were adults aged 20-85, and 27 (28.5%) were children aged 2-17. Fifty-two (54.7%) patients were male and 43 (45.3%) were female. The foreign body was located in the right ear in 47 (49.5%) cases, the left ear in 45 (47.3%), and in both ears in three (3.2%). Twenty-seven (27.6%) of the foreign bodies consisted of cotton swabs, 14 (14.3%) of insects, 13 (13.2%) of beads, 11 (11.2%) of grass pieces.

**Conclusion:** Foreign bodies in the EAC are a frequent problem in ENT practice. In order to avoid complications, foreign bodies should be removed using appropriate techniques and equipment by professional ENT physicians.

**Keywords:** Adult, ENT specialist, external auditory canal, foreign body

ÖZ

**Amaç:** Yabancı cisimlerin en sık görüldüğü kulak burun boğaz (KBB) bölgesi dış kulak yolu (DKY)'dur. Bu çalışmanın amacı DKY'nda yabancı cisim nedeniyle kliniğimizde tedavi edilen olguların demografik özelliklerinin, hastaneye başvuru şeklinin, yabancı cisimlerin hangi kulakta görüldüğünün ve özelliklerinin incelenmesidir.

**Gereç ve Yöntemler:** Çalışmaya Eylül 2019-Eylül 2021 tarihlerinde DKY'nda yabancı cisim nedeniyle hastanemiz acil servisine veya KBB Polikliniği'ne başvuran ve KBB Kliniği'nde tedavi edilen 95 hasta dahil edildi. Hastaların tıbbi kayıtları incelenerek yaş, cinsiyet, hastaneye başvuru şekli, yabancı cismin türü ve hangi kulakta olduğu kaydedildi.

**Bulgular:** Çalışmaya dahil edilen 95 hastanın 68 (%71.5)'i yaşları 20-85 arasında değişen erişkin, 27 (%28.5)'si yaşları 2-17 arasında değişen çocuktu. Hastaların 52 (%54.7)'si erkek, 43 (%45.3)'ü kadındı. 46 (%48.4) hastada acil servise 49 (%51.6) hastada ise KBB Polikliniği'ne başvuru görüldü. 47 (%49.5) hastada sağ kulakta, 45 (%47.3) hastada sol kulakta ve 3 (%3.2) hastada da her iki kulakta yabancı cisim izlendi. Yabancı cisimlerden 27 (%27.6) tanesi pamuk, 14 (%14.3) tanesi böcek, 13 (%13.2) tanesi boncuk, 11 (%11.2) tanesi ot, 5 (%5.1) tanesi sarımsak, 5 (%5.1) tanesi kene, 4 (%4.1) tanesi çeşitli yiyecek maddeleri, 3 (%3.1) tanesi taş, 3 (%3.1) tanesi işitme cihazı parçası, 2 (%2) tanesi kulaklık parçası idi. Geriye kalan 10 (%11.2) hastada ise 1'er adet oyun hamuru, peçete, plastik vs. maddeler mevcuttu.

**Sonuç:** DKY'nda yabancı cisim KBB pratiğinde sık karşılaşılan problemlerendir. Bu çalışmada da olduğu gibi erişkinlerde daha sık görülebilmektedir. Herhangi bir komplikasyonla karşılaşmamak için yabancı cisimler uygun teknik ve aletlerle profesyonel KBB hekimleri tarafından çıkarılmalıdır.

**Anahtar Kelimeler:** Dış kulak yolu, KBB uzmanı, erişkin, yabancı cisim

### Introduction

Foreign bodies are a frequent and important ear, nose, and throat (ENT) emergency (1,2). The ENT region where foreign bodies are most frequently seen is the external auditory canal (EAC) (3). Foreign bodies may be animate or inanimate, hard or soft (1,2). Foreign bodies in the EAC generally cause no symptom and are detected incidentally. However, symptoms such as pain, hearing loss, and ear fullness may occur (1). Live insects cause severe discomfort due to their noise and movement (4).

The most frequent foreign bodies are single objects such as parts of plastic toys, cotton swabs from ear buds, insects, and beads (1). Objects such as cotton swabs or matchsticks used to scratch or clean the EAC are frequently observed in adults (4). The removal of

foreign objects from the EAC is generally more difficult than it appears (2). The EAC consists of cartilage and bone, and the osseous part in particular is covered with a thin periosteum. Due to the sensitivity of this area, foreign body removal can be painful.

If efforts to remove the body are unsuccessful, patients are generally referred to an ENT specialist (1). Sufficient visibility and equipment, a cooperative patient, and a skilled ENT practitioner are the keys to successful foreign body removal (4). The removal technique depends on the type of object, its position, patient cooperation, and the experience of the physician (1,2,4). The most widely employed method is aspiration, and the most frequently used surgical tools are alligator forceps. In the absence of an obstacle such as tympanic membrane perforation

or otitis externa, live insects are neutralized with the application of alcohol to the EAC and subsequently extracted. Treatment is generally completed under clinical conditions (1). General anesthesia and rarely surgical procedures such as endaural incision may be required in 10% of cases (3). Complications such as otitis externa, suppurative otitis media, vertigo, nausea, vomiting, loss of hearing, laceration of the EAC, tympanic membrane perforation, and ossicular chain disruption may develop, depending on the type of foreign body, although none is life-threatening (1,3,5).

The purpose of this study was to examine the demographic characteristics, form of presentation to hospital, the ear in which foreign bodies were seen, and the features thereof, in cases of foreign body in the EAC treated in our clinic.

### Materials and Methods

Approval for this retrospective study was granted by the Kastamonu University (decision no. 2020-KAEK-143-113, dated. 08.09.2021). The study was conducted in compliance with the principles of the Declaration of Helsinki. Ninety-five patients admitted to the Kastamonu University, Faculty of Medicine, Emergency Department or ENT Clinic with foreign body in the ear between September 2019 and September 2021 and treated in the ENT Clinic were included. Patients' age, sex, type of presentation to hospital, type of foreign body, and the ear involved were recorded from the medical records. Patients with insufficient data during our scan of the files or referred to our clinic with suspected foreign body but with no such object observed at otoscopic examination were excluded.

All foreign bodies were removed with the assistance of a 0-degree otoendoscope by one of the three ENT specialists responsible for the study. Various tools and techniques were employed, depending on the patient's cooperation and the type of foreign body. Alligator forceps or a curette were generally used during the procedures. Foreign bodies were extracted using aspiration in some cases. When a live insect was observed, this was immobilized by applying alcohol to the EAC and subsequently removed. Patients with findings of otitis externa following foreign body removal received medical treatment (local ciprofloxacin + local dexamethasone).

Statistical analysis was performed using SPSS Statistics Version 23.0 (IBM Corporation, Armonk, NY, USA). The data obtained were subjected to statistical analysis. Categorical variables were expressed as number and percentage.

### Results

Sixty-eight (71.5%) of the 95 patients were adults aged 20-85, and 27 (28.5%) were children aged 2-17. The adult patients consisted of 40 (58.8%) men and 28

(41.2%) women, and 12 (44.4%) of the children were boys and 15 (55.6%) were girls (Table 1). Forty-six patients, 29 adults and 17 children (48.4%) presented to our hospital emergency department and were consulted by us. Forty-nine patients, 39 adults and 10 children (51.6%) presented directly to the ENT Clinic.

Foreign bodies in the EAC were in the right ear in 47 (49.5%) patients, in the left ear in 45 (47.3%), and in both ears in three (3.2%) cases. Since foreign bodies were present in both ears in three cases, the total number of objects involved was 98. Twenty-seven (27.6%) of the foreign bodies were cotton swabs, while insects represented 14 (14.3%), beads 13 (13.2%), grass pieces 11 (11.2%), garlicks five (5.1%), ticks five (5.1%), various foodstuffs four (4.1%), stones three (3.1%), hearing device components three (3.1%), and headphone components two (2%). Objects such as modeling play dough, napkins, plastic objects etc. were present in one of each the remaining patients (11.2%) (Table 2) (Figure 1).



**Figure 1.** Sample foreign body figures. **A)** Cotton swab, **B)** Garlic, **C)** Piece of grass, **D)** Bead.

The most common foreign bodies in adult patients were cotton swabs, seen in 27 (39.7%), and insects, seen in 11 (16.1%). The most common foreign bodies in children were beads, in 11 (40.7%). Procedures were completed under clinical conditions in 94 cases. In the case of one child who was uncooperative and refused intervention, the foreign body was removed under sedation in the operating room. Ear drops containing antibiotics (ciprofloxacin) and steroid (dexamethasone) were given to 11 patients with otitis externa findings after foreign body removal. These patients were invited to follow-up after one week, by which time all otitis externa symptoms had resolved. No complications other than otitis externa developed in any patient.

**Table 1.** Age and sex distribution

Age	Males	Females	Total
2-17	12	15	27
20-85	40	28	68
<b>Total</b>	52	43	95

**Table 2.** Distribution of foreign objects.

Origin	n
Cotton swabs	27 (27.6%)
Insects	14 (14.3%)
Beads	13 (13.2%)
Grass pieces	11 (11.2%)
Garlics	5 (5.1%)
Ticks	5 (5.1%)
Foodstuffs	4 (4.1%)
Stones	3 (3.1%)
Hearing device components	3 (3.1%)
Headphone components	2 (2%)
Others	11 (11.2%)
<b>Total</b>	<b>98 (100%)</b>

## Discussion

Foreign bodies in the EAC are a problem frequently encountered in the emergency department and ENT Clinic (1,3). Patients generally present with symptoms such as pain in the ear and loss of hearing (1). The causes of inappropriate entry of foreign objects into the ear include curiosity and the discovery impulse in children during play, and itching in the ear and subsequent attempts to eliminate this (3). The contralateral ear and the bilateral nasal cavities must also be checked when a foreign body is encountered in the EAC in children (1). Similar to children, foreign bodies in the EAC are also widely seen in adults (6). While these are not life-threatening, they can lead to complications such as otitis externa, otitis media, and tympanic membrane perforation (1).

Foreign bodies in the EAC have been reported in all age groups, but particularly among children (2,7). One study reported the highest incidence in children under five (4). Another study reported that 40.5% of patients were adults (3). Sixty-eight (71.5%) patients in the present study were adults, a considerably higher figure than in other studies in the literature. This may be associated with the high incidence of cotton swabs and insects in adults.

Some studies have reported that foreign bodies in the EAC are more common in women (8). However, another study reported male dominance, with 56.25%. Similarly in the present study, foreign bodies were observed in 52 (54.7%) males and 43 (45.3%) females. Other studies have reported a similar incidence between the sexes (3).

Presentation to the ENT Clinic was more common among adults in the present study, while presentation to the emergency department was more frequent

among children. This may be due to the variation in foreign bodies in the EAC between adults and children. Children may present more frequently to the emergency department due to emergency situations and parental anxiety. Studies in the literature show that complications and general anesthesia requirements decrease if foreign bodies in the EAC are removed by an ENT specialist (5). No complications developed since intervention in the present study was performed by ENT specialists, and sedation was required by only one pediatric patient. Differing general anesthesia requirement rates, of 8.6%, 17.3%, and 30%, have been reported in the literature (3).

Foreign bodies in the EAC were more common, at 49.5%, in the right ear in the present study. Previous studies have also reported a greater incidence in the right ear (4,9). This may be attributed to more predominant use of the right hand, especially for foreign bodies such as beads and cotton swabs. However, another study reported an equal number of foreign bodies in the right and left ears (6). Foreign bodies were observed in both ears in three (3.2%) of our patients. Another study reported a similar figure of 3.1%.

The most common foreign body in the present study was cotton swabs (39.7%). All these cases involved were adult patients. Another study determined a rate of 71.4%. Adults frequently use cotton buds to clean the EAC (1). They therefore frequently present to hospital due to conductive hearing loss associated with cerumen impaction or the cotton bud tip being left behind (10). This also applied in our cases. Since our hospital frequently receives presentations from rural districts, the second most common foreign bodies were insects. Another similar study reported insects in 50.27% of adult patients (3). Ticks could cause Crimean Congo Hemorrhagic Fever, especially in endemic areas. In these patients, liver enzymes measurements including alanine aminotransferase, aspartate aminotransferase, creatine kinase and lactate dehydrogenase and complete blood count should be performed and patients should be followed up with clinical and laboratory findings for 14 days (11). Another previous study reported that, consistent with the present research, cotton swabs and insects were most frequently detected in adults, and beads in children (12). In contrast to the literature, garlic was removed from the EAC in five of our adult cases. This may result from the belief in our region that garlic is beneficial in conditions such as earache or infection.

The easy removal of foreign bodies from the EAC depends on the use of an appropriate technique and tools (3,13). Patients, especially children, subjected to efforts to remove foreign bodies from the EAC other than in the emergency department or clinics other than the ENT department may become agitated after failed attempts. Complications may also develop in association with unsuccessful attempts. This in turn complicates the work of the ENT specialist. Studies have recommended that patients be referred to

an ENT specialist if a foreign body cannot be easily removed by a primary physician (5). Parents, relatives, and health personnel without training in this area must not attempt to remove foreign bodies from the EAC. The EAC narrows at the cartilage-bone junction. If a foreign body is pushed still further inside as a result of failed attempts, removal becomes more difficult, and the membrane may be damaged (1). Patients with foreign bodies in the ENT can wait for referral to an ENT specialist, except in the case of infection or an object such as batteries being involved (due to the risk of liquefactive necrosis) (5).

The principal limitation of the present study is the low number of patients, especially children, and therefore the frequency of foreign bodies in different age groups can not be examined. Large-scale studies can be done on this subject.

### Conclusion

Foreign bodies in the EAC are frequently seen in ENT practice. They may be more common in adults, as in the present study. Foreign bodies must be removed by professional ENT physicians using an appropriate technique and implements in order to avoid complications.

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