

A Prospective Evaluation of Foreign Bodies Presenting to the Ear, Nose and Throat Clinic, Hospital Kuala Lumpur

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Summary

The results of a prospective study of 94 patients with history of ear, nose or aerodigestive tract foreign bodies were analysed. Sixty six to 94% of patients presented within 24 hours to a primary care doctor, 80 to 94% was referred to the ENT Department within 24 hours and 89 to 93% of patients had their foreign bodies removed within 24 hours. Overall, 58% of aural foreign bodies, 67% nasal foreign bodies and 94% of aerodigestive tract foreign bodies were removed within 48 hours of insertion. As a result of the prompt removal of foreign bodies in the majority of patients, no significant complications occurred. Foreign bodies in the aerodigestive tract tend to present earlier and more promptly removed compared with ear and nose foreign bodies. There was a significantly higher proportion of foreign body in the right ear and nostril compared to the left.

Key Words: Ear, Nose, Aerodigestive tract foreign bodies, Clinical presentation

Introduction

Foreign body in the in the ear, nose or aerodigestive tract is a common ENT problem. While most foreign bodies are readily removed in the outpatient clinics, a proportion of them may require removal under general anaesthesia (GA). Cases requiring GA are usually due to uncooperative patient or foreign bodies not readily accessible such as those in the upper oesophagus.

There have been a number of previous studies on the various clinical aspects of ear nose and aerodigestive tract foreign bodies, including the types of foreign bodies, the aetiology, the presenting symptoms, the relevant investigations

and the methods of removal^{1-6,8,11,14,16}. There have also been studies on ways of improving the management outcomes^{7,14,17,22}.

One of the factors which may affect the management process is the time delay between ingestion or insertion of the foreign body to the time of presentation, diagnosis and eventual removal. This potential delay may cause unnecessary distress to patients and may even lead to potentially life threatening complications.

We studied prospectively the pattern of presentation of patients with ear, nose and aerodigestive tract foreign bodies to the ENT Department at Hospital Kuala Lumpur with

specific attentions to the time delay between various stages of presentation and treatment. We also studied the correlation between any delay and the complications that may have arisen as a result of the delay.

Material and Methods

All patients admitted to the ENT Ward with history of ear, nose or aerodigestive tract foreign bodies over a one-year period between April 1999 to April 2000 were included in this study. The sources of referral included direct referrals from casualty officers, general practitioners and also transfer from other nearby hospitals. A specially designed standard questionnaire was used to collect data on each individual patient (Refer Appendix 1). The data collected included demographic information and details of the time relationship from the initial symptom and presentation to a doctor, to referral made to the ENT Department, the ward admission and the eventual removal of the foreign body. The type of foreign body and the presence of any complications, such as otitis media from ear foreign body, airway obstruction from nasal foreign body and mediastinitis from oesophagus perforation, were also recorded.

Results

A total of 97 patients were admitted for removal of ear, nose and aerodigestive tract foreign body under general anaesthesia during the period of study. This represented 9.5% of the total admissions to the ENT ward (1022 patients) in the one-year period. Three patients were excluded from the study due to incomplete data. There were 48 male (51.1%) and 46 female patients (48.9%). The age distribution was between 2 and 74 years, with a mean age of 14.2. Twenty-six patients (27.7%) presented with foreign body in the ear, 12 patients (12.8%) with foreign body in the nose and 56 patients (57.8%) with foreign body in the upper aerodigestive tract.

**Ear Foreign Bodies
Age Distribution**

A total of 26 patients were admitted with ear foreign body. Sixteen (61.5%) were aged 5 or below while 7 (27.0 %) were aged between 6 and 9. The ages of the other three (11.5%) were 13, 22 and 28 respectively.

Site of Enlodgement

Seventeen patients (65.4%) presented with foreign body in the right ear while 9 (34.6%) presented with foreign body in the left ear. Chi-Square Test showed significantly higher proportion of foreign bodies in the right ear compared to the left (P< 0.01).

Types of Foreign Bodies

The types of foreign bodies removed are listed in Table I

Time delay

Of the 26 patients, 19 (73.1 %) presented to a doctor within 24 hours of insertion of the foreign body as noticed by an adult or as reported by the child himself. Four patients (15.4 %) presented between 24 hours and 1 week and 3 patients (11.5 %) presented after 1 week, 3 weeks and 4 weeks respectively.

**Table I
Types of Foreign Bodies Lodged in the Ear**

ORGANIC:		
Vegetative:	Wooden bead	10 (38.5%)
	Seed	2 (7.7 %)
	Flower	1 (3.8%)
	Paper	1 (3.8%)
Non-vegetative:	Insect	4 (15.4%)
NON-ORGANIC:		
	Rubber	4 (15.4%)
	Stone	3 (11.6%)
	Metal	1 (3.8%)
TOTAL		26 (100%)

Following presentation to the first doctor, 21 patients (80.8%) were referred to the ENT Clinic within 24 hours. Four patients (15.4%) were referred between 24 hours and 1 week. One patient (3.8%) was referred 1 week following initial presentation.

After presenting to the ENT Clinic, 23 patients (88.6%) had the foreign body removed within 24 hours. Two patients (7.6%) had the foreign body removed between 24 hours and 1 week. One patient (3.8%) had it removed after 2 weeks.

Overall, 15 patients (57.7%) had the foreign body removed within 48 hours of insertion.

Nasal Foreign Bodies

Age distribution

A total of 12 patients were admitted with foreign body in the nose. Eleven patients (91.7%) were aged 5 and below. The other patient (8.3%) was 8 years old.

Site of Enlodgement

Eight patients (66.7%) presented with foreign body in the right nasal cavity while the other 4 patients (33.3%) presented with foreign body in the left nasal cavity. Chi-Square Test showed significantly higher proportion of foreign bodies in the right nasal cavity compared to the left ($P < 0.01$).

Types of Foreign Bodies

The types of foreign bodies removed are listed in Table II.

Time delay

Eight (66.6%) of the 12 patients presented to a doctor within 24 hours of foreign body insertion while 2 patients (16.7%) presented between 24 hours and 1 week. The remaining 2 patients (16.7%) presented after 1 week.

Table II

Types of Foreign Bodies Lodged in the Nose

ORGANIC:	
Seed	4 (33.3%)
Wooden bead	2 (16.7%)
NON-ORGANIC:	
Metal object	4 (33.3%)
Plastic object	2 (16.7%)
TOTAL	12 (100%)

Following presentation to the first doctor, 10 patients (83.3%) were referred to the ENT Clinic within 24 hours. Two (16.7%) were referred after 4 and 6 days respectively.

Following admission to the ENT ward, eleven (91.7%) of the 12 patients had the foreign bodies removed within 24 hours. The remaining patient (8.3%) had the foreign body removed after 4 days.

Overall, 8 patients (66.7%) had the foreign bodies removed within 48 hours of insertion.

Aerodigestive Tract Foreign Bodies

Age distribution

A total of 56 patients were admitted with a history of foreign body of the upper aerodigestive tract, including the pharynx, the oesophagus and the bronchus. Twenty-two patients (39.3%) were aged 5 and below, 8 (14.3%) were between 5 to 12 years and 26 (46.4%) were above the age of 12.

Types of Foreign Bodies

Of the 56 patients who underwent examination under anaesthesia, 52 patients were found to have foreign bodies. In the other 4 patients, no foreign bodies were found. The types of foreign bodies removed are listed in Table III.

Table III
Types of Foreign Bodies Lodged in the Aerodigestive Tract

Foreign Body	12 years old & below			Above 12 years old	Total
	1 - 2 years old	2 - 5 years old	5 - 12 years old		
Coins					
1-cent	2	-	-	-	
5-cent	1	-	-	-	
10-cent	5	3	-	-	
20-cent	-	3	4	-	
RM 1	-	1	-	-	
Total	8	7	4	-	19 (36.5 %)
Fish bone	-	1	3	10	14 (26.9 %)
Chicken bone	2	-	2	7	11 (21.1 %)
Meat bolus	-	-	-	3	3 (5.8 %)
Denture	-	-	-	2	2 (3.8 %)
Nut	-	-	-	1	1 (1.9 %)
Chewing gum	-	-	1	-	1 (1.9 %)
Fruit-	-	-	-	1	1 (1.9 %)
TOTAL	10	8	10	24	52 (100 %)

Time delay

Of the 56 patients, 24 (42.9%) presented to a doctor within 1 hour of ingestion of the foreign body while 29 (51.8%) presented between 1 and 24 hours. The other 3 patients (5.3%) presented after 1, 2 and 3 days respectively.

Following presentation to the first doctor, 53 patients (94.6%) were referred to the ENT Clinic within 24 hours. Two patients (3.6%) were referred after 2 days and one patient (1.8%) was referred after 4 days.

Following admission to the ENT ward, 52 patients (92.9%) underwent foreign body removal within 24 hours. Three (5.3%) had the foreign body removed after 2 days. In the remaining patient (1.8%), the foreign body was removed after 4 days.

Overall, 53 patients (94.6%) had the foreign body removed within 48 hours of ingestion.

Complications

All patients with ear, nose or aerodigestive tract foreign bodies were discharged between 1 to 3 days of admission and no significant complications were recorded pre-operatively, peri-operatively or post-operatively.

Discussion

Ear, nose and throat foreign bodies may be complicated by serious complications such as mediastinitis from oesophageal perforation and airway obstruction from inhalation of a nasal foreign body amongst others^{10,24}. One of our main aims in conducting this study was to determine the patterns of delay in patients with ear, nose and aerodigestive tract foreign bodies and to ascertain if any complications arose as a direct result of the delay. Our results showed that the great majority of the patients (66% to 94%) presented promptly, i.e. within 24 hours, to a primary-care doctor. Likewise, following presentation to the first doctor,

A PROSPECTIVE EVALUATION OF FOREIGN BODIES PRESENTING TO THE EAR, NOSE AND THROAT CLINIC

the great majority (80% to 94%) was referred to the ENT Clinic without any undue delay. It also followed that very little delay occurred in the admission of the patients and in the removal of the foreign bodies. Consequently, no significant complications occurred in our patients.

Further detailed analysis of the results revealed that patients with aerodigestive tract foreign bodies tended to present earlier than those with ear or nose foreign bodies. Ninety four percent of patients with throat foreign bodies presented within 24 hours of ingestion of the foreign body, compared with 73% for ear and 63% for nose foreign bodies. In addition, 43% of the patients with aerodigestive tract foreign presented within one hour of ingestion. These are not unexpected findings as aerodigestive tract foreign bodies generally tend to cause more discomfort and inflict more pain on the patients than ear or nose foreign bodies.

Removal of foreign bodies from the ear, nose or aerodigestive tract can be technically challenging. It often requires the use of specialised equipment such as microscopes, endoscopes and a range of specialised forceps, which are usually only available in the ENT clinics. Inappropriate instrumentation and unfamiliarity with the techniques can frequently result in more damage to the patients⁶. We strongly recommend that removal of ear, nose or aerodigestive tract foreign bodies in the clinic by an ENT medical personnel, unless it can be readily removed without the risks of causing injury or inflicting pain to the patient.

It is our common practice to list all cases of foreign bodies that require removal under general anaesthesia on the emergency list. Hence, 88% of the ear foreign bodies and more than 90% of the nose and aerodigestive tract foreign bodies were removed within 24 hours of admission. Overall, 58% of the foreign body in the ear, 67% in the nose and 94% in the aerodigestive tract were removed within 48 hours of insertion. In our opinion, prompt diagnosis and early removal of

foreign bodies especially those in the aerodigestive tract were both important contributory factors in the avoidance of complications in our series of patients.

Foreign bodies in the aerodigestive tract constituted the majority of the ENT foreign bodies in our study while less than a third were ear foreign bodies and only 13% were nose foreign bodies. This finding was in keeping with many previous reports^{12,13}. However, this was not a true reflection of the distribution of patients with the respective foreign bodies presenting to our clinic as most of the ear and nose foreign bodies were readily removed in the outpatients clinic without requiring a general anesthesia. Bronchial foreign body is not a common condition and in our study, there was only one such case. In the previous study over a 4-year period in our institution, there was only an average of 4 cases of bronchial foreign body per year¹⁸.

There was a clear difference in the age distribution of patients with ear or nose foreign bodies and those with foreign bodies in aerodigestive tract. The former occurred predominantly in children. More than 90% of the nose foreign bodies occurred in children under the age of five while nearly 90% of the ear foreign bodies occurred in children under the age of nine. Similar observations were reported in previous studies by Das³, Francios *et al*⁹ and Tong *et al*¹⁰. However, for foreign bodies in aerodigestive tract only 53% of children were under the age of 12.

It has been proposed that pre-existing nose diseases such as rhinitis and vestibulitis and ear diseases such as chronic otitis externa, chronic suppurative otitis media or the presence of wax are major aetiological factors in ear and nose foreign bodies³. None of our patients showed evidence of underlying ear or nose diseases. It was our impression that fun making, boredom, curiosity and experimentation were the more likely causes in most of our patients.

The significantly higher proportion of foreign bodies in the right nostril and also in the right ear compared with the left was an interesting finding. Francois et al had also made similar observation in their study of 72 nasal foreign bodies. We postulate that right-handedness maybe the contributing factor to this observation.

The commonest foreign bodies found in the ears were beads. This may have been due to the fact that spherical objects are technically more difficult to remove especially in uncooperative children who thus required admission for removal under anaesthesia¹⁹. About 15% of the ear foreign bodies in our study were insects compared to a study by Bressler and Shelton which showed a high incidence (44%) of cockroaches in their series of patients with ear foreign bodies. They put this down to the squalid living conditions of the population that they studied. Our patients were mainly from urban population, hence common household objects were the most common foreign body.

There was an interesting correlation between the type of aerodigestive foreign bodies and the age group of the patients. For children under the age of 12, especially the age group of under 5, coins were the commonest foreign bodies in keeping with previous reports by Kpemissi *et al*¹⁴ and Kruk *et al*¹⁵. As for patients above the age of 12, the foreign bodies were predominantly fish bones and chicken bones.

The key to the management of oesophageal foreign bodies, especially those with sharp edges, is early removal to avoid serious complications such as perforation^{19,20,23}. Hence, prompt admission and early removal is essential^{14,17,21}. Diagnosis of impacted foreign body in the oesophagus is based on a thorough history and examination of the patient. Indirect laryngoscopy have been shown to

improve the detection rate of throat foreign bodies^{5,17}. Radiological investigation are helpful in supporting the diagnosis and more accurately locate the foreign body^{12,18}. However, in some cases, the diagnosis may still be unclear even after full investigations in a proportion of cases. This is particularly true of those patients who complain of residual discomfort in the throat after the foreign body has passed beyond the oesophagus. In 7% of our patients, no foreign bodies were found at the time of oesophagoscopy. In these patients, we assumed that the foreign bodies had passed spontaneously either before or during the time of anaesthesia. We feel that a 7% negative exploration rate is acceptable to avoid missing any foreign body that might result in potentially more serious complications.

Conclusion

Our study showed that complication from retained foreign bodies of the ear, nose and throat can be avoided by early presentation, effective referral and prompt removal. Aerodigestive tract foreign bodies present earlier as it causes more discomfort to the patients. Coins were the commonest foreign bodies in the aerodigestive tract amongst children while in adults it was fish and chicken bones. Ear and nose foreign bodies are predominantly found in children. There is a significantly higher proportion of foreign bodies in the right nostril and in the right ear compared to the left.

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Appendix 1
QUESTIONNAIRE FOR ENT FOREIGN BODY

Demographic Information

Date:

Name:

Age:

Sex: M / F

Address and telephone number:

Registration number:

I/C number:

Consultation Information

Events	Date	Time
First noted symptom		
Consultation with first doctor		
Consultation with HKL doctor <i>(if different from above)</i>		
Referred to ENT doctor		
First seen by ENT doctor		
Removal of foreign body		

Data on foreign body

Region: Ear / nose / throat

Site: left / right (for ear or nose only)

Single / Multiple

Data on operation

Type of anaesthesia:

Type of operation:

Data on discharge

Date of discharge:

Medications on discharge:

Complication (please state)

Presence of any complications pre-, peri- and postoperatively:

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