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FOREIGN BODY IN THE EAR, NOSE AND THROAT: RETRIEVAL UNDER GENERAL ANAESTHESIA

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ABSTRACT

Background: Foreign body (FB) in the ear, nose or throat is a common emergency in otolaryngology practice. Majority of cases are managed by awake-procedures in the clinic setting. Surgical removal under general anaesthesia is commonly used for foreign body in the aero-digestive tracts and may be indicated for foreign body in other regions when patient fails to cooperate for awake removal, especially where complications have set in from previous failed attempts at removal.

Aim: To audit the indications, route of anaesthesia, outcome and challenges of retrieval of foreign body in the ear, nose and throat under general anaesthesia in our practice.

Methodology: We conducted a retrospective review of all cases of foreign body retrieved under general anaesthesia with the aim of auditing the indication, location of FB, route of anaesthesia, and outcome of surgical management.

Result: A total of 109 patients had foreign body retrieval under general anaesthesia. The most common foreign bodies were toys of various shapes and sizes in 29(26.0%) cases. Foreign bodies in the oesophagus 65(59.6%) constituted the most common indication for retrieval under general anaesthesia, while FB in the larynx 3(2.8%) was the least common location. All the 23(21.1%) patients with FB in the external auditory canal (EAC) presented with complications from pre-hospital failed attempts at removal. Post-operative ICU admission rate was 1.9%, while mortality rate was 0.95%.

Conclusion: Retrieval of foreign bodies in the ear, nose and throat under general anaesthesia is not without risks, though the benefits outweigh the risks. Surgeons should be mindful of the remote risk of surgical and anaesthetic complications and even mortality.

Keywords: Foreign body, Ear, nose and throat, Endoscopic retrieval, General anaesthesia, Audit.

INTRODUCTION

A Foreign Body (FB) is an object alien to the part of the body where it is found. It constitutes a significant part of Ear, Nose and Throat emergencies and clinic presentations all over the world¹. The incidence is higher among children than adults with the under-fives constituting the age group commonly at risk^{1,2}.

The symptoms and signs produced by FB depend on the nature, size, location and time

since lodgement of the FB³. A wide spectrum of clinical presentations range from FB in the aero-digestive tract which often elicit acute onset respiratory distress and life threatening sequelae to the other extreme of a completely asymptomatic presence of inert FB in the external auditory canal (EAC) which may go unnoticed for several weeks, or even years^{1,3}. Hence, a high index of suspicion is required in all cases of FB particularly when the event is not witnessed by any adult⁴.

Generally, patients with FB need proper clinical assessment and the removal of such FB requires knowledge of anatomy, surgical skills and anaesthetic techniques depending on the location of the foreign body^{5,6}.

The choice between spontaneous or controlled breathing and anaesthetic drugs used are still subjects of debate^{7,8}. Moreover, collaboration between the anaesthetist and the surgeon is important in planning the method of removal and choosing the best route of general anaesthesia (G.A). This study describes our experience with endoscopic and oto-microscopic procedures under G.A for the removal of FB in the ear, nose, throat and laryngotracheal lumen with a review of pertinent literature.

PATIENTS AND METHODS

This was a 6-year retrospective study of clinical records of all patients diagnosed with FB in the ear, nose or throat and retrieved under GA between January 2008 and December 2013. From the medical records, the demographics, clinical presentation relevant investigations, type and location of the foreign bodies, type of anaesthesia, method of retrieval and outcome were extracted. Only 109 patient case notes were included for analysis out of the 115 retrieved for this study. Six files were excluded due to improper documentation and lack of important data. Data collected were analysed using a 2011 IBM SPSS (Statistical Product and Service Solution) software for windows, version 20; Armonk, NY. Results were presented in simple charts and tables utilising descriptive statistics of frequency and percentages and Microsoft excelTM software for graphical presentations.

RESULTS

A total of 109 patients had FB removed under GA during the study period. There was a preponderance of the female gender 66 (60.6%) with a male to female ratio of 1:1.5. (Table I). Age of subjects ranged between 3 months to 71 years with a median of 7 years; inter-quarter range of 50 years and modal age group of 0-5 years in 48 (44.0%), followed by age-group 6-10 years with 19 (17.4%) and the young adults (21-30 years) with 12 (11.0%) (Table I). Oesophagus was the

most common location of FB 65 (59.6%) followed by EAC 23 (21.0%) (Figure I). Toys and toy parts 29(26.0%) form the most common type of FB removed under G.A; followed by coins 29(26.0), nails and pins 29(26.0%) and seeds and grains 10(9.0%). (Table II). Almost a quarter of the patients 26 (23.4%) have had attempt(s) at removal of FB by unskilled persons or overzealous parents before hospital presentation with attendant pain or bleeding from the site of FB (Table III). No pre-hospital attempt at removal was made in all the cases with FB in the throat, while failed attempt at removal was reported in all 23(100%) cases of FB in the ear and the 3 cases of FB in the nose (Table III). General anaesthesia via endotracheal intubation was the method adopted in majority of cases 78 (71.6%), followed by spontaneous breathing technique 23 (21.1%). Tracheostomy was indicated in 4 patients, while 3 patients had venturi jet. Nasotracheal intubation was utilized in 1 patient (Table IV). Majority of the patients 105 (96.0%) required no post-operative ICU care while the final outcome was fatal in a patient; 1 among the 4 that required post-operative critical care (Table I); giving overall mortality rate of 0.9%

DISCUSSION

The under-fives constituted the most frequent age group in this series. This may be explained by the habitual curiosity of children and exploration of body orifices with objects which put them at higher risk of FB in the Ear, Nose and Throat region. This finding is similar to that reported by previous workers^{5,9,11}. Gender distribution was in favour of the female with a male to female ratio of 1: 1.4. This is a reversal of that (M: F = 1.5:1) reported in a study in North West Nigeria⁵ and also at variance with result from other centers^{2,12}. Earlier studies in Ilorin on subjects presenting to the out-patient clinic for awake-removal of FB from ear and nasal cavities also recorded male preponderance^{2,13}.



In our study, clotted blood was seen in one of the cases and pus was observed in another. These findings were most likely to be signs of previous attempts at removal based on mere suspicion of FB by parent or untrained professionals with attendant injury to surrounding structures and subsequent infection. There is also a possibility of further migration of FB from its initial location before surgical intervention. In a similar study of 36 patients with FB in the oesophagus, Revadi et al¹⁴ recorded no FB in 33.3% of the patients. Alabi et al¹⁵ in Ilorin earlier reported migration of a sharp object from the oesophagus to the rectum over 6 days.

Similarly, Olajide et al¹² recorded 26.9% of nasal FB having been attempted before hospital presentation with evidence of nasal bleed seen in 23.1% of them¹². The experience in this study with almost a quarter of the patients 26 (23.4%) with history of previous attempt(s) at removal of FB by unskilled persons reflects the general perception of hospital as the last point of call in this part of the world; patients present in the hospital only when it becomes inevitable⁶. FB lodged in the oesophagus was the most common indication for retrieval under general anaesthesia. Such patients often present relatively early to the hospital and are unlikely to tolerate any pre-hospital attempts at removal because of the attendant respiratory and swallowing discomfort and potential threat to life.

The most common FB retrieved under anaesthesia was toy and toy parts of various shapes and sizes, followed by coins. This is a deviation from findings of coin as the most common in earlier study in our centre¹⁶. Sky rocketing inflation in the country has depreciated coin to a point of worthlessness. The finding in this study depicts the departure of coin from the pockets and purses of Nigerians as it can hardly buy anything in our markets nowadays; it is even less available for children to play with. On the other hand, children in many homes continue to have better access to toys as objects of play as it is being popularised by western civilization. Although FB ingestion in adults is often an accidental occurrence; in our setting, impacted Kolanut in the oesophagus is often

seen among adults who deliberately swallow whole Kolanut for ritual purposes^{17, 18}. (Table 2, Fig. II a&b). Ibekwe et al¹⁰ found ornamental bead as the commonest FB, both in the ear and the nose while fish bone constituted the highest FB in the laryngotracheobronchial tree and the oesophagus. Revadi et al¹⁴. Also found fishbone as the commonest FB; accounting for 13 of the 24 FBs detected under oesophagoscopy. Similar studies demonstrated other foreign bodies like, magnets, batteries, safety pins, screws, marbles, bones and food boluses¹⁹. Agricultural seeds and grains were the commonest FB in the ear (15%) in other studies in North West and North Central Nigeria^{5, 20}. Dentures were the most common FB retrieved from adult oesophagus under anaesthesia in a similar study in Port Harcourt¹⁹.

In a study of children undergoing rigid bronchoscopy for FB removal, anaesthesia with spontaneous ventilation was characterized by a high incidence of bucking as compared with the controlled ventilation group which offers better depth of anaesthesia⁸. However, it was found useful in 23(21.1%) of patients in this study when the FB was already visualised in the nasal cavity or EAC. Per-oral and per-nasal endotracheal intubation, tracheostomy and venturi jet was found useful in 78(79.6%) and 1(0.9%) patients, 4(3.7%) and 3(2.7%) respectively.

The mortality recorded in this study was due to an unusual FB impacted in the laryngotrachea causing difficult intubation and precluding tracheostomy with attendant vagal reflex stimulation and cardiac arrest (earlier reported).⁶ The mortality rate of 0.9% in this series is less than 8.3% death recorded in a study of rigid endoscopic removal of oesophageal FB¹⁴. The difference may be due to the fact that oesophageal FB is generally prone to complications than other ENT regions; this study reported mortality in operative FB removal in all ENT regions put together. Besides, 33% of patients in the oesophageal FB study had co-morbidities like hypertension, diabetes, ischaemic heart disease and bronchial asthma which might have contributed to the high mortality. Higher mortality was similarly recorded in studies in America.²¹⁻²⁴

Generally, in sub-Saharan Africa, mortality from FB retrieval from the aerodigestive tract is variable with majority probably under reported as most die before getting to the point of definitive care².

CONCLUSION AND RECOMMENDATION

Retrieval of foreign bodies in the ear, nose and throat under general anaesthesia is not without risks, though the benefits outweigh the risks. Surgeons should be mindful of the remote risk of surgical and anaesthetic complications and even mortality.

REFERENCE

1. Simon AC, Nimesh P, Ray C. Foreign bodies in the ear and in aerodigestive tracts in children in Ray C (Ed.) Paediatric Otorhinolaryngology; Scott-Brown's Otorhinolaryngology, Head and Neck Surgery. 7th edition. Hodder Arnold publisher Ltd. 2008 London. 1185-1193.
2. Ahmed AO, Shuiabu IY. Inhaled foreign bodies in a paediatric population at AKTH Kano-Nigeria. Niger Med J. 2014; 55:77-82.
3. Bist SS, Saurabh V, Rajesh K, Saxera PK: Neglected bronchial foreign body in an adult: a case report. JK Science. 2006; 8(4):222-224.
4. Louie JP, Aipern ER, Windreich RM. Witnessed and unwitnessed oesophageal foreign bodies in children. Pediatr Emerg Care 2005; 21:582-5.
5. Iseh KR, Yahaya M. Ear Foreign Bodies: Observations on the Clinical Profile in Sokoto, Nigeria. Annals of African Medicine, 2008; 7(1):18-23.
6. Omokanye HK, Alabi BS, Ige OA, Afolabi OA, Omotoso W, Iyanda NO, Ologe FE. Vagal reflex stimulation complicating retrieval of an unusual foreign body from the laryngotracheal lumen: Case report. Egyptian Journal of Anaesthesia; 2015; 32: 237-240.
7. Pinzoni F, Boniotti C, Molinaro SM, Baraldi A, Berlucchi M. Inhaled foreign bodies in paediatric patients: review of personal experience. Int J Pediatr Otorhinolaryngol 2007; 71:1897-903.
8. Soodan A, Pawar D, Subramaniam R. Anesthesia for removal of inhaled foreign bodies in children. Paediatr Anaesth. 2004; 14(11):947-52.
9. Umana A, Offiong M, Kuni J, Akpan U, Adekanye A, Mgbe A et al. Esophagopleural Fistula In A 3 Year Old Child Following Disk Battery Ingestion. The Internet Journal of Otorhinolaryngology. 2010; 13 (2): accessed 16th May 2015.
10. Ibekwe MU, Ontai LO, Otaigbe B. Foreign body in the ear, nose and throat in children: A five year review in Niger delta. African Journal of Paediatric Surgery 2012; 9(1):3-7.
11. Alabi BS, Oyinloye OI, Omokanye HK, Aremu SK, Dunmade AD, Akande HJ. Foreign body in the upper Aerodigestive tract of Nigerian Children. Nigerian Journal of Surgery 2011; 17(2):78-81.
12. Olajide TG, Ologe FE, Arigbede OO. Management of foreign bodies in the ear: a retrospective review of 123 cases in Nigeria. Ear Nose Throat J. 2011; 90(11):16-9.
13. Afolabi OA, Suleiman AO, Aremu SK, Eletta AP, Alabi BS, Segun-Busari S, Dunmade AD, Ologe FE. An audit of paediatric nasal foreign bodies in Ilorin, Nigeria. SAJCH 2009; 3(2):64-67.
14. Revadi G, Philip R, Gurdeep S. Removal of foreign-bodies under general anaesthesia. A review of rigid endoscopy for foreign-bodies of the hypopharynx and oesophagus. Med J Malaysia. 2010; 65(2):143-5.
15. Alabi BS, Dunmade AD, Suleiman AO, Adebola SO. Migrating Superglue Pin In The Gastro-Intestinal Tract Of An Adult Nigerian Male-The Need For Caution. Tropical Journal of Health Sciences 2008; 15:28-30.
16. Afolabi, O, Okhakhu, A, Adeosun, A. Re-Emergence Of Coin In Nigerian Currency: Implication In Medical Practice. The Internet Journal of Otorhinolaryngology. 2008; 9(1). Accessed 16th May 2015.
17. Akenroye MI, Osukoya AT. Uncommon, undeclared oesophageal foreign bodies. Nigerian Journal of Clinical Practice. 2012; 15(2):244-246
18. Lawani I, Gbessi DG, Kpossou AR, Souaibu YI, Gnanngnon FHR, Dossou FM, Mehinto DK, Olory-Togbe JL Voluntary Ingestion of a Cola Nut Stuck into the Esophagus: An Unusual Foreign Body (FB). Surgical Science, 2016, 7, 239-243.
19. Nwogbo AC, Eke N. Oesophageal foreign



bodies in Port Harcourt. Port Harcourt Medical Journal. Open Access 2012; 6(2). accessed 16th May 2015.

20. Ologe FE, Dunmade A.D, Afolabi OA. Aural Foreign Bodies in Children Indian Journal of Pediatrics, 2007; 74: 5-8.

21. Yardeni D, Yardeni H, Coran AG, Golladay ES. Severe esophageal damage due to button battery ingestion: can it be prevented? *Pediatr Surg Int* 2004; 20:496.

22. Oburra HO, Ngumi ZW, Mugwe P, Masinde PW, Maina AW, Irungu C. Bronchoscopy for removal of aspirated tracheobronchial foreign bodies at Kenyatta National Hospital, in Kenya. *East Cent Afr J Surg* 2013; 18:48-57.

23. Falase B, Sanusi M, Majekodunmi A, Ajose I, Oke D. Preliminary experience in the management of tracheobronchial foreign

bodies in Lagos, Nigeria. *Pan Afr Med J* 2013; 15:31.

24. Gilyoma J, Chalya P. Endoscopic procedures for removal of foreign bodies of the aerodigestive tract: The Bugando Medical Centre experience. *BMC Ear Nose Throat Disord* 2011; 11:1-5.

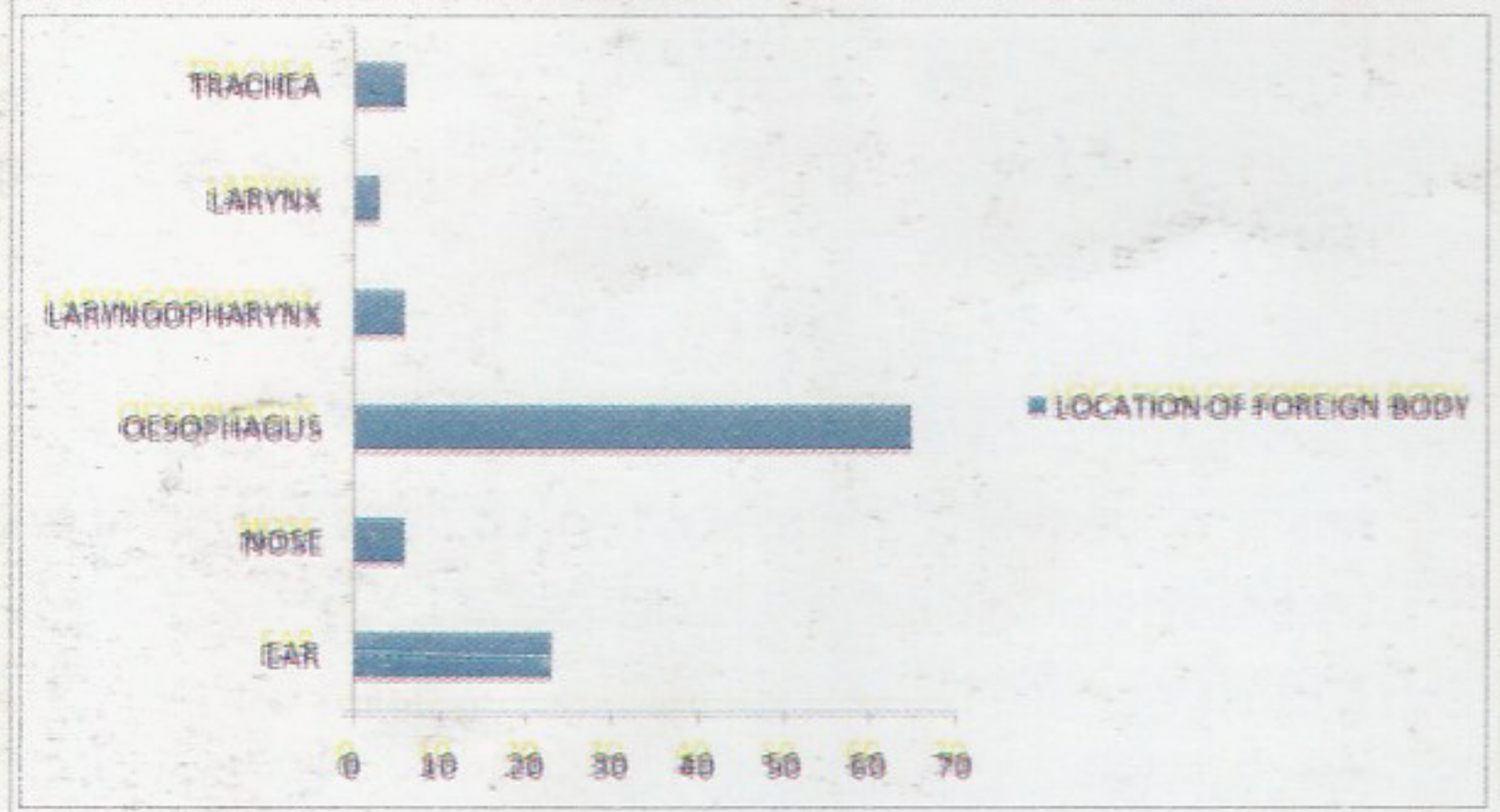
Table III: Pre-hospital attempt at removal by location of Foreign body

Pre-hospital attempt at removal	Location of FB n=109			X ²	p-value
	Ear n(%)	Nose n(%)	Throat n(%)		
Yes	23(100)	3(50)	0(0)	100.742	0.000
No	0(0)	3(50)	80(100)		
Total	23(100)	6(100)	80(100)		

Table II: Type of Foreign Body

TYPE OF FOREIGN BODY	Frequency N=109 n (%)
Plastic toy	29(26.0)
Coin	14(13.0)
Nails and Pins	11(10.0)
Seed and grains	10(9.0)
Denture	9(8.0)
Fish bone	9(8.0)
Bead	7(6.0)
Cola nut	4(4.0)
Stone	4(4.0)
Meat bolus	3(3.0)
button battery	3(3.0)
Metal ball	3(3.0)
No FB seen (Pus or caked blood)	2(2.0)
Stent	1(1.0)

Figure I: Location of Foreign Body



Results

Table I: Demographic Distribution of Subjects N=109

Variables	Frequency (%)
Age Group	
<5	48(44)
6-10	19(17.4)
11-20	9(8.3)
21-30	12(11.0)
31-40	6(5.5)
41-50	6(5.5)
51-60	5(4.8)
61-70	2(1.8)
71-80	2(1.8)
Gender	
Female	66(60.6)
Male	43(39.4)
ICU Care	
Yes	4(4.0)
No	105(96.0)
Outcome	
Discharged	108(99.1)
Dead	1(0.9)

Table IV: Type of Anaesthesia Technique employed

ROUTE OF ANAESTHESIA	Frequency N=109 n (%)
Endotracheal intubation	78(79.6)
Nasotracheal intubation	1(0.9)
Spontaneous breathing technique	23(21.1)
Tracheostomy	4(3.7)
Jet ventilation via Venturi device	3(2.7)



Fig. IIa: Plain radiographs of soft tissue neck showing prevertebral widening and air entrapment sign (arrow) at the level of impaction of a cola nut the patient intentionally swallowed for ritual purpose.

Fig. IIb: Specimen of FB (impacted ritual cola nut) removed in piece meal by rigid-oesophagoscopy on the same patient

