Quest Journals
Journal of Medical and Dental Science Research
Volume 9~ Issue 3 (2022) pp: 50-61
ISSN(Online) : 2394-076X ISSN (Print):2394-0751
www.questjournals.org

Research Paper

Foreign Body esophagus; masquerades and lessons to learn

1st author, Corresponding author-Dr Archana Shah(archanashah01@rediffmail.com) M.S ENT

2nd author- Dr Divya Gupta(**Divya.dx3@gmail.com) MS ENT**

3rd author-Dr Siddhartha Hanjura(siddharthahanjura@gmail.com) MD ANAESTHESIA

ABSTRACT
Introduction: Foreign bodies in the upper digestive tract are commonly managed in E.N.T emergency.
Objectives: The study was carried out to assess the clinical presentation and outcome of the patients with foreign body in the upper digestive tract (with a special mention to unusual clinical presentations observed).
Methods: The study was a retrospective study including a study period of one year. Patients included in the study were those reporting with a positive history, symptoms of foreign body ingestion. Relevant E.N.T examination and radiologic assessment was done. Cases where the foreign body was documented to have passed beyond the lower esophageal sphincter were excluded and referred to gastroenterology department for appropriate management.
Results: Out of 121 patients included in the study, 69 were males and 52 patients were females. Youngest patient was 5months old whereas 84year old was the eldest. Children (81) outnumbered adults (40) in the study population. The most commonly ingested FB in case of children was coin (83.9%) whereas adults usually presented with impacted meat bone/bolus FB (37.5%). Pain and dysphagia were the most frequently observed complaints. Two post laryngectomy patients were also included in the study. The most common site of FB impaction was at the level or just below the Cricopharynx. Majority of the patients reported within 6 hours of FB ingestion and no cases of longstanding FB were observed in present study. No complications were reported in our study.
Conclusion: Foreign bodies in upper digestive tract should be managed on an urgent basis to prevent catastrophic complications. While managing such patients, a high degree of suspicion for atypical presentation should be maintained especially in case of infants where many a times history itself is not definitive and clinical picture may not give a clear distinction between foreign body aspiration and ingestion.Rigid esophagoscopy is a time-tested method, still relevant for retrieval of foreign bodies in upper digestive tract.
Keywords:*Foreign body; Rigid esophagoscopy; Masquerade*

R*eceived 08 Mar, 2022;* ***R****evised 20 Mar, 2022;* ***A****ccepted 24 Mar, 2022 © The author(s) 2022.*
P*ublished with open access at* ***www.questjournals.org***

I. Introduction:

Foreign body (FB) ingestion is a common clinical scenario that every E.N.T surgeon comes across. Cases of FB ingestion have been documented in literature as old as 500 B.C.[1]Most of the times history, examination and basic radiological investigations are enough to confirm definitive FB ingestion, however, you need to keep your clinical instincts at a high to avoid being taken by a surprise by an unusual/ atypical presentation, especially, in the extremes of age.[2]Timely recognition and clinical intervention are of utmost importance to prevent many sinister complications that are completely avoidable, if the FB is removed at the earliest.[3] The aim of this retrospective study is to assess the clinical presentation, the various masquerades and the outcome of the patients with FB in the upper digestive tract with a special mention to unusual presentations that we encountered.

II. Material &Method:

The present study was retrospectively carried out at the Department of Otorhinolaryngology, at a tertiary hospital on patients who attended the hospital from February, 2019 to March, 2020 with a history of FB ingestion. A total of 121 patients were included in the study, excluding 11 patients whose records were not complete. A thorough review of the documented history and relevant clinical examination was followed by review of requisite radiological and other basic investigations done before FB removal was undertaken. In selected cases where history and clinical examination were not conclusive, findings of additional relevant investigations including indirect/ direct/ fibre-optic laryngoscopy (I/L, D/L, F.O.L), hypopharyngoscopy and nasal endoscopy were taken into consideration. Each procedure of FB removal was followed by a check esophagoscopy to rule out presence of more than one FB, mucosal injuries etc. The patients and parents/ guardians (in case of children/mentally subnormal patients) had signed informed consents for no objection for use in academic pursuits.

Inclusion criteria:

1) Patients with definite history of FB ingestion.
2) Symptomatic patients with/ without any definite history.
3) Patients referred after failed upper GI endoscopic removal of impacted FB.

Exclusion criteria:

1) Asymptomatic and apprehensive patients with doubtful history and negative radiology.
2) Patients who refused to undergo esophagoscopy under general anaesthesia (GA) and high-risk patients for GA.
3) Patients whose FB was documented to have crossed the lower end of the esophagus. (All such patients were referred to the gastro department for endoscopic assessment and management).

III. Results:

In our study, there were 69 male and 42 female patients. FB ingestion was most commonly observed in case of children and more so in the age group of 0-5 years (60.3%). The youngest patient was 5 months old and the eldest patient reported was 84 years old. Coins were observed to be the most commonly ingested FB in case of children (83.9%) whereas adults usually presented with impacted meat bone/ bolus as FB (37.5%). Pain and dysphagia were the most frequently observed complaints. The most usual site of FB impaction was at the level of the Cricopharynx or just below it. Majority of the patients reported within 6 hours of FB ingestion and the longest duration was that of three days. Two post total laryngectomy patients who came up with a history of FB ingestion were also a part of the study. One of these patients had a mid-esophagus food bolus impaction with no obvious underlying lesion on check esophagoscopy. In case of the second patient, impacted food bolus was removed and an underlying stenosed neo-pharynx was observed for which he was sent for endoscopic dilatations. No procedural complications were observed in the study.

Table 1. Age and gender-wise distribution of patients (N=121)

Age in years	Total No. of patients	%	No. of Male patients	%	Total No. of Female patients	%
0-10	79	65.3	43	35.5	36	29.8
11-20	7	5.8	4	3.3	3	2.5
21-30	3	2.5	2	1.7	1	0.8
31-40	5	4.1	3	2.5	2	1.6
41-50	8	6.6	6	5.0	2	1.6
51-60	8	6.6	4	3.3	4	3.3
>60	11	9.1	7	5.8	4	3.3
	121	100	69	57.1	52	42.9

Table 2. Type of foreign bodies removed

Foreign Body	Number of cases (adults, n=40)	Number of cases (children, n=81)
Coin	3	68
Denture (with/without wire)	8	
Metallic Wire	1	
Fruit Seeds(Loquat, Mango)	3	
Food bolus	5	

Meat bone	15	2
Button battery		2
Toy parts		3
Wheat grain husk		1
Onion slice		1
Hair clutcher spring		1
Safety pin	1	
Fish Bone	4	
Eraser		1
Metallic Locket		2

CASE 1: 65year old hypertensive male with history of being treated for Tubercular meningitis 1 year prior, presented to the Neurology OPD with dysarthria, dysphagia, noisy breathing and diminished level of alertness for 2 days. He was referred to us from neurology O.P.D due to stridor. On I/L glottic chink could not be visualized due to slough and pooling of secretions. I/L examination did not make us any wiser and hence F.O.L examination was done to assess the airway better. On F.O.L the mass was pale and looked like some debris of soft food particles in a pool of secretions which were obscuring the view of the upper aerodigestive tract. Removal of FB was attempted with standby arrangements for a possible emergency bronchoscopy/ tracheostomy just in case of disintegration and dislodgement of the friable debris into the airway. Direct laryngoscopy was done, FB was grasped and removed with McGill forceps.[4,5] It turned out to be a denture of the upper alveolus along with the teeth. This horse shoe shaped denture was hooked on to the inter-arytenoid area with one arm impacted into the cricopharyngeal area and the other arm held up occupying the supraglottis. The teeth attached to the palatal mould had been looking like food debris/ mass with white slough. The postprocedural phase was uneventful and neurology evaluation revealed that the patient had suffered a minor ischemic stroke leading to fresh onset slurred speech and decreased alertness with accidental FB ingestion and impaction of the denture obscuring the upper aerodigestive tract.

Moral - FB may camouflage.

Case1: FB denture

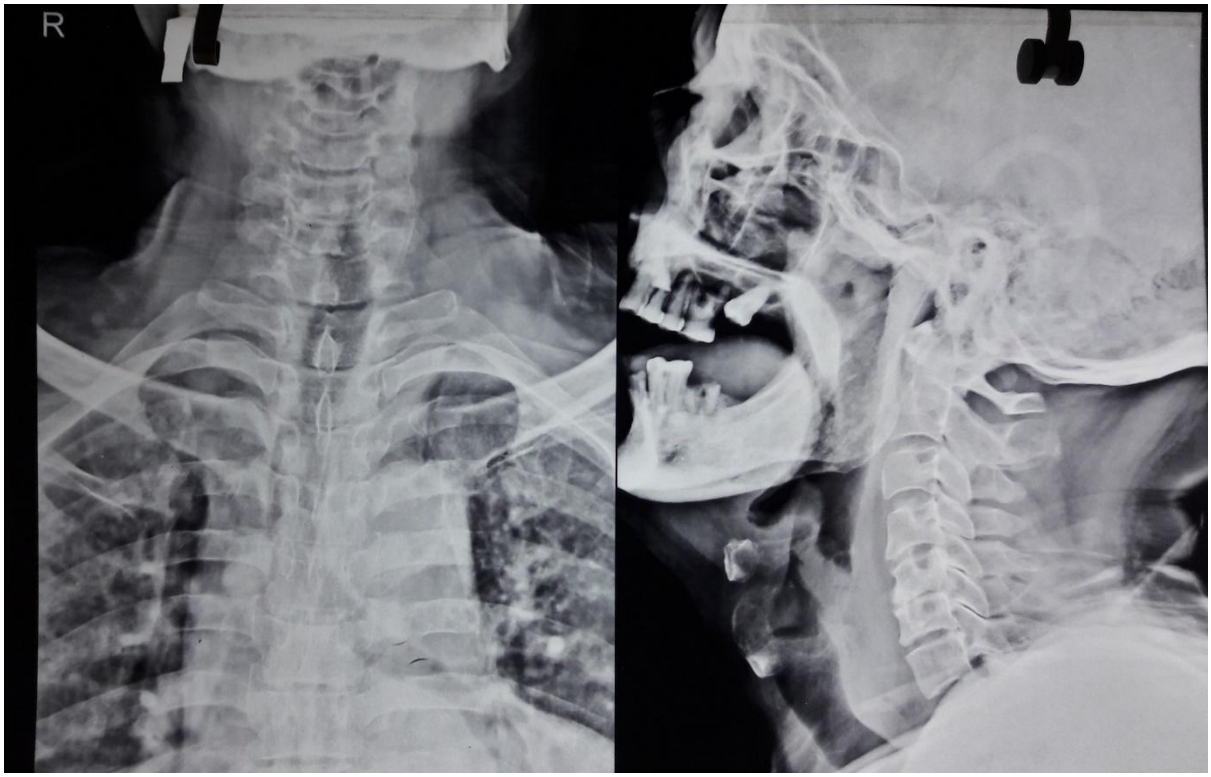

Fig 1.(a) X-Ray neck (including chest), AP andLateral view Fig 1.

(b) Lengthwise dimension

Fig 1. (c) Width-wise dimension

CASE 2: A 58 year old male had come to E.N.T O.P.D for complaints of incessant attacks of cough with mild throat pain since 1 day. I/L examination revealed an FB (thin wire) with one end impacted in the right aryepiglottic fold and the other end piercing the laryngeal surface of epiglottis and impacted there. The patient had no respiratory distress. An X-ray STN documented the same and gave an idea about the approximate shape of the FB. F.O.L revealed no wire, albeit a small black dot could be seen on the right arytenoid mucosa. Possible differentials considered were that the FB had either migrated into the airway or soft tissue or it had been coughed out. While the arrangements were being made for FB removal, the patient kept having bouts of coughing. A repeat F.O.L made it apparent that the wire had migrated deep into the substance of the mucosa of the aryepiglottic fold. It gave a momentary glimpse during coughing and disappeared again. The wire was removed with a large artery forceps under Direct Laryngoscopic guidance with the patient conscious sedated.

Moral - Complete examination is necessary to avoid missing FBs playing hide and seek.
Case 2: Migrating FB (wire)

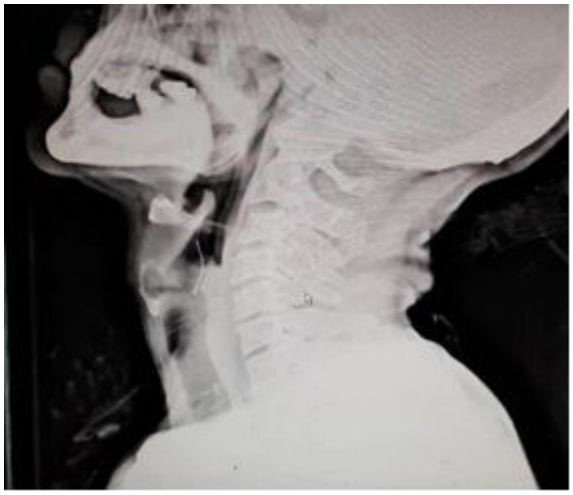

Fig 2. (a) FB (wire) with one end stuck up in the mucosa overlying the arytenoid and the other end impacted into the laryngeal surface of epiglottis.

Fig 2. (b) FB (wire) migrated into the substance of aryepiglottic fold mucosa, free from laryngeal surface of epiglottis

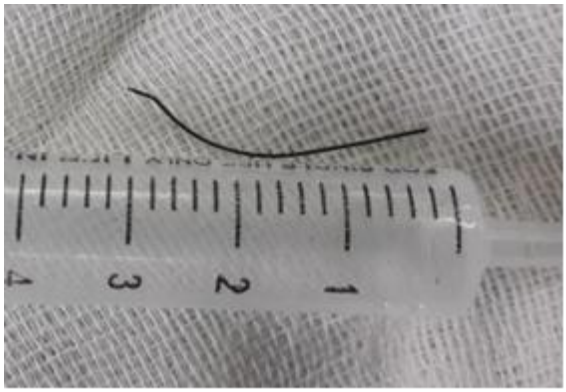

Fig 2. (c) FB wire

Fig 2. (d) Post procedure, raw areas at the site of impaction (right side)

CASE 3: A child was brought to the emergency with a suspected FB ingestion in a brief moment of mother's lapse of attention while she was overlooking the child. She had no clue of the possible FB and the child was asymptomatic. X-ray neck, chest and abdomen were apparently normal. Due to the mother's unrelenting suspicion, the patient was taken up for esophagoscopy but no FB visualized. A relook at the X-rays triggered a diagnostic nasal endoscopy and a small metallic spring of a hair clutcher was removed from the nasopharynx.Possibly, post-ingestion the FB was dislodged and got impacted into the nasopharynx during the blind finger manipulation by mother and the resistance offered by the child.

Moral -Trust the parental apprehension. Look again!

Case3: FB spring (Hair clutcher)

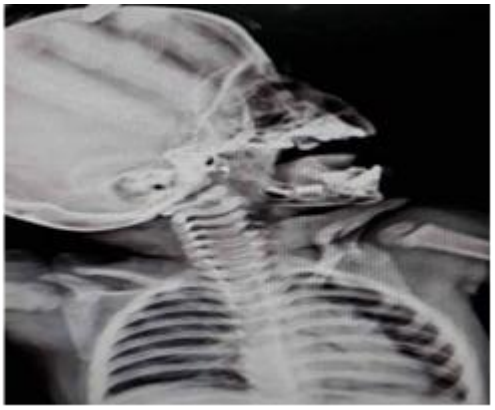

Fig 3. X ray (a) A/P and (b) lateral view (including neck, chest and abdomen)

CASE 4: 8 months old infant had been brought to the ER with a suspected FB ingestion although parents were not sure of the nature of FB. X-ray examination revealed no radio-dense FB. On examination of the oral cavity some thick secretions were noticed behind the uvula and artery forceps were used to dislodge/ loosen the same. A slice of an onion peel was removed which was hanging in the nasopharynx reaching upto the tip of the uvula mimicking thick secretions.

Moral - Thorough local examination is a must especially in case of radiolucent FBs.

Case 4: Onion peel slice

Fig 4. (a) FB onion peel

Fig 4. (b) No obvious positive finding except relative obscuring of the nasopharyngeal airway

CASE 5: A 2year old child was referred from Paediatric emergency for history of FB ingestion (chicken bone) a few hours back and presence of radio-dense FB on X Ray. Since the FB wasapparently high up in the X Ray a D/L scopy was done, FB visualized and removed with artery forceps.

Moral -Laryngoscope assisted removal is possible in FBs placed high up in the aerodigestive tract and may avoid need for GA and the consequent waiting period.

Case 5: FB chicken bone

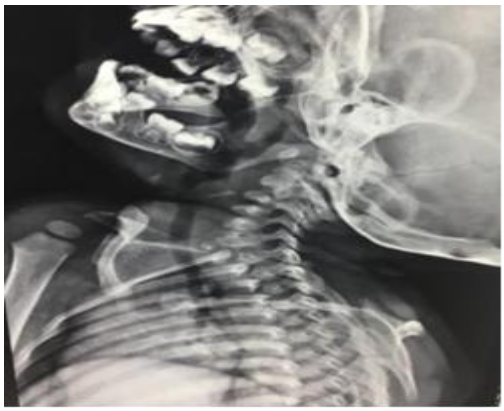

Fig 5. (a) FB chicken bone in 2year old child

Fig 5. (b) FB after removal

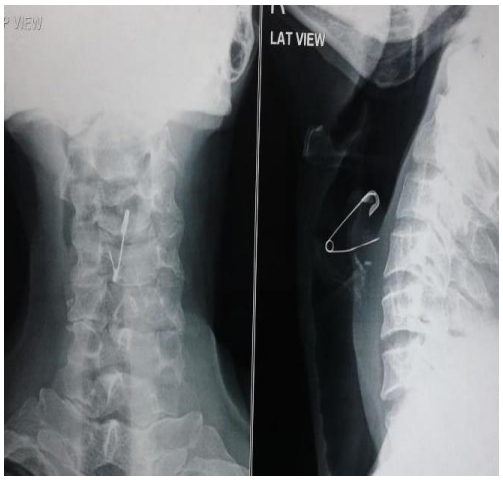

Fig 6. FB open safety pin in a 68year old male with odynophagia as the only complaint.

Fig 7. History of FB (chicken bone) with straightening of cervical spine in a 54year old

Case 8:

Fig8. FB Floral shaped locket in a 9year old boy (a) A/P and (b) Lateral views (neck, chest of the same patient)

Case 9:

Fig 9. FB denture (without wire) in a 63year old male

Case 10:

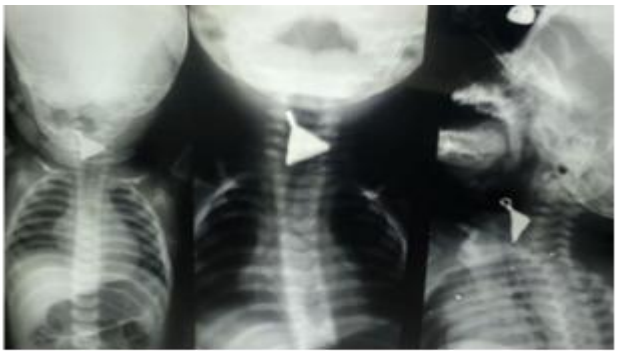

Fig 10. FB triangular locket in a 9month old infant

Case 11:

Fig 11a) FB chicken bone

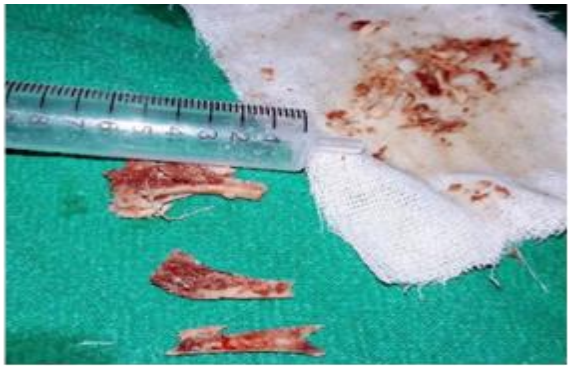

Fig 11b) FB after removal with no complications

Case 13:

Fig 13. 2year old boy with double coin ingestion

Case 14:

Case 15:

Fig 15. (a) Fig 15. (b)

20 mm diameter button battery (ingested 3 days back) removed from mid esophagus along with the slough in a 4year old boy (a) Non corroded side- positive (b) Corroded side- negative terminal

Case 16:

Fig 16. FB coin impacted in a paediatric patient with scoliosis

Case 17:

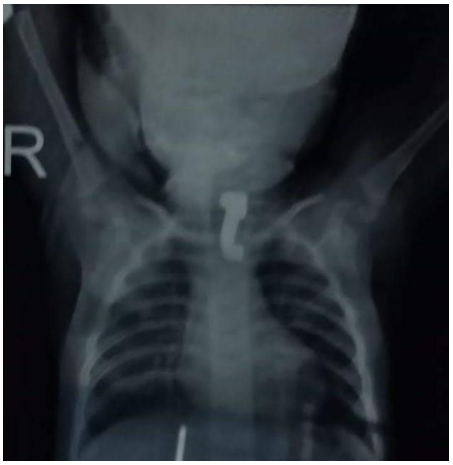

Fig 17. FB plumbing part impacted in aninfant 5 months old, courtesy 4year old sibling

IV. Discussion:

FB is defined as an endogenous or exogenous substance incongruous with the anatomy of the site where it is found.[6]FBs in upper aerodigestive tract are encountered across a wide spectrum of age, although children (especially 6 months to 6 years) have greater chances of FB ingestion for various reasons.[7,8] Inherent inquisitiveness to explore the world around them, new found independence once they are ambulatory after 6 months of age (particularly if unsupervised),[9] immaturity to differentiate edible from non-edible, natural tendency to explore by putting things into the mouth, poor mastication due to incomplete dentition, hasty eating, unfamiliarity to handle non-liquid foods are some of the reasons ascribed.[10,11] This is rare in infants less than 6

months of age who present with FB ingestion mostly due to manipulation done by a young sibling and literature reports infants as young as3 weeks with FB ingestion.[12]Among the adults, FB ingestion is more common in the older age group. Age related functional impairment in terms of poor vision, dementia, dysphagia after stroke, sensory abnormalities in the oral cavity, food adulteration and pathological conditionsof the aerodigestive tract including esophageal strictures, carcinoma etc. contribute to themajority of cases in the elderly. On one hand, the artificial dentures (especially the full upper denture) impair the tactile sensation in the roof of the mouth and result in the bones and other sharp objects entering the oropharynx unnoticed. On the other hand, edentulous status resultsin inadequate mastication. Both contribute to a higher percentage of FB impaction in the elderly.[13,14] Another FB that deserves a special mention is that of Disk or Button battery (Case:15).[4] It should be treated as an absolute emergency because of its potential to cause morbidity and mortality. When the disk battery is lodged in the esophagus, it causes direct pressure, leakage of alkali, and generation of an electrical current leading to liquefaction necrosis and perforation within a short span. Accidental FB ingestion due to inebriated states related to alcoholism and drug addiction, mental impairment, psychiatric problems and deliberate FB consumption in case of prisoners and smugglers have also been documented.[5] In our study, among the patients reporting to the emergency for FB ingestion, the males outnumbered the females, which could be attributed to higher alcohol consumption and outgoing lifestyle practices in men in our setup. This was in contrast to Kamath et al[6] who reported no gender predisposition and in agreement with Chaturvedi et al.[7] who reported a male preponderance with a ratio of 2:1. Impaction of a foreign body usually tends to occur at the sites of four physiologic constrictions within the esophagus. These are a) the cricopharyngeal narrowing (C6), 15 cm from the incisor teeth; b) at the level of aortic arch (T4), 22.5cm from the incisor teeth; c) crossing of the left main bronchus (T6), 27.5 cm from incisors; and d) the hiatal narrowing where esophagus traverses the diaphragm (T10/T11), 40 cm from the incisors.[15] Although most FBs in the digestive tract pass spontaneously, 10%-20% of these patients need treatment, and approximately, 1% need surgical management. The pharyngeal constrictors are usually strong enough to propel an object through the cricopharyngeal sphincter but the esophageal peristalsis is relatively weaker at pushing it downwards. Hence most of the foreign bodies (approx. 80%) are reported to get impacted at or just below the cricopharyngeal sphincter[10] As most common FBs in upper and mid esophagus are less likely to pass spontaneously they need immediate instrumentation for retrieval.[16] Our study reported coins as the most common FB encountered in children, usually found impacted at or just below the cricopharynx.[17,18] Adults usually presented with impacted meat bones with/ without food bolus, most commonly found impacted at the mid/lower esophagus which is in agreement with various other authors.[18,19]We also observed that apart from positive history of FB ingestion, while pain and new onset dysphagia were common presentations in case of the adults, the children usually came with parental apprehension of FB ingestion and drooling of saliva. In general, the presenting features were noticed to be dependent upon various factors like duration of ingestion; type, size, nature and number of FBs; and the degree of functional impairment caused. The commonly encountered symptoms include[13]:

1)Pain- usually immediate, moderate type and may be localizing especially with sharp FBs. However, in case of smooth, small, round objects pain may not be pronounced.

2) Dysphagia: acute onset; may be absolute (due to total obstruction by a large FB andaccompanied by drooling in children) or partial in case the lumen is not obliterated fully.Absence of dysphagia may be misleading in case of infants as their diet is primarily liquid based[10]Absolute dysphagia is more worrisome because pooling of secretions and chances of aspiration and respiratory embarrassment increase unless the FB is removed immediately.

3)Odynophagia: It is more common with sharp and impacted FBs especially in mobile areaslike the tongue and aggravates with every swallowing movement. Sometimes it might be the only presenting complaint. (Case:6)

4)Vomiting: It is more prominent with meat FB.

5)Haemoptysis and Hematemesis: May be insignificant (occur due to finger manipulation or minor lacerations caused by sharp FB) or catastrophic (occur due to migration of sharp FB and rupture of vital vascular structures or perforations of GI tract). Any local point tenderness or signs of respiratory distress or surgical emphysema need to bespecifically looked for to rule out any impending complications and segregate such patientswho need immediate intensive care, supportive measures and definitive management as a priority.[12,13,20,21] Besides these usual presentations, diagnosing a foreignbody may be tricky, especially, in case of infants and elderly who do present with paradoxical features referred tothe tracheobronchial tree(as was seen in Case 1) and could be explained by the following reasons:**7,9,12,22**

*Spill-over and aspiration of fluids causing bronchitis, bronchopneumonia.

* The foreign body presses on the posterior tracheal wall causing irritation of respiratory tract, oedema, narrowing and subsequent stridor (Case 4).

* Peri-esophageal reaction and oedema of the laryngeal inlet.

* Pushing forward of the soft cricoid lamina in neonates, leading to respiratory obstruction.

Patients with foreign body ingestion of longer duration may not have any definite history of ingestion and may present with one or more of the following complaints: dysphagia and vomiting, a cough that gets aggravated by eating, noisy breathing, and fever. (Case:6) In our study, basic radiological investigations like X-ray neck, chest and abdomen were conducted as warranted by the history and examination and these helped to confirm the presence of FB, know the nature (radio-dense/ radiolucent) and number of FBs, margins (smooth/ sharp), level of impaction, and to make a rough estimate of its size. Such simple methods may also indicate any pre-procedural complication or provide indirect leads regarding the presence of obscure FBs e.g. prevertebral widening, air shadow in prevertebral space, pneumomediastinum, straightening of the cervical spine (Case7). They also serve the purpose of documentation of antecedent findings for post-procedural comparison. Though there are a number of methods being used world-wide for removal of FBs from the upper aerodigestive tract,[16,19,23,24,25,26] including Foley's/ balloon catheter, bougienage, carbonated fluid or Papain, glucagon therapy,[27] we perform rigid esophagoscopy under GA. There are various reasons for this procedural preference:**19,28,29,30,31,32,33,34,35**

*it enables a direct examination of the upper GI tract and hence rules out any omissionof radiolucent FB or unexpected multiple FBs and also enables a post-procedure examination of the possible mucosal injuries in the same sitting.

*it ensures securing of the airway and avoids any complications due to spill-over of retained secretions into the larynx especially in case of a large FB causing absolute dysphagia.

*it enables the removal of sharp, impacted FBs safely as they are threaded into the rigidesophagoscope lumen without damaging the mucosal wall.

*majority of the cases in our study belonged to the paediatric age group, especially,below 6 years of age. This is self-explanatory, knowing the unending curiosity of children to explore the world around them. Their curiosity merits an unblinking alert watch over to prevent incidents of FB ingestion.

There are several well-known FB related complications and, since times immemorial, these have been broadly classified as: [21, 36, 37]

1.Vascular complications (aorto-esophageal fistula, innominate-esophageal fistula, carotid rupture) with the highest reported overall mortality.

2.Diffuse suppurative processes (retropharyngeal abscess, mediastinitis, pericarditis). 3.Miscellaneous (anaesthetic complications; necrosis due to chemically active FB likebutton batteries; mucosal ischemia resulting from prolonged impaction.

4.Iatrogenic.

With the advent of newer and more sophisticated modes of FB removal like flexibleendoscopes, refined anaesthesia techniques and good antibiotic cover, complications have been significantly reduced, though they do happen on a much smaller scale. Complications have been reported more commonly in adults than in children. This is mainly attributed to the underlying diseases and co-morbid conditions in most patients of the adult age group.[19] Retropharyngeal abscess in adults are commonly reported due to sharp foreign bodies like fish bone[23] Pulmonary complications followed by retropharyngeal abscess and local infectiouscomplications were observed most frequently in a study by Singh et al.,[3] however, no such complications were encountered in our study and this is in agreement with various other authors like Chaturvedi et al., Murty et al., Adhikari et al.[7,10,19]

The limitation of our study is its retrospective nature. Further refinement can be achieved by conducting prospective studies with a comparison of multiple methods of FB removal like rigid esophagoscopy versus flexible endoscopy procedure. Availability of fluoroscopy and well laid out guidelines for use of LA and GA in case specific situations and constituting a multidisciplinary team (otorhinolaryngologist, gastroenterologist, paediatric surgeons) can contribute to devising the line of best possible care.

V. **Conclusion:**

FB ingestion is a commonly dealt with emergency in ENT.Although no age is exempt, FB ingestion is more commonly seen in extremes of age and that too with atypical presentations. A high level of clinical suspicion is always going to be rewarding. Timely diagnosis and management can avert complications and prevent potential morbidity and mortality.

Points to remember:

1)Patients who complain that a foreign body is present are right unless and until proven otherwise.

2)Negative radiological evidence does not rule out a foreign body. Radiolucency is a thug.

3)While inserting the tip of the esophagoscope, pause for a moment to allow thecricopharyngeus muscle to relax and the esophagus to open rather than forcing the instrument through.

4)Care should be taken not to override the foreign body especially coins, sharp neglected FB with mucosal impaction.

5)Local anaesthesia can be used for adults and is particularly advisable when the comorbidities are expected to predispose to complications during general anaesthesia.
6)Sharp objects or objects with corrosive capacity (e.g. batteries) should be removed urgently.
7)Persistent FB sensation with dysphagia, several hours after the FB has passed and mimickingFB impaction warrants an esophago/gastroduodenoscopy since the distinction based on clinical grounds is not authentic. Confirmation of the diagnosis and ruling out foreign body ingestion/impaction is anytime more acceptable rather than omission.

References:

[1]. Jackson CL. Ancient foreign body cases. Laryngoscope.1917;27(7):583-4.https://doi.org/10.1288/00005537-191707000-00009
[2]. Sardana P, Bais AS, Singh VP, Arora M. Unusual foreign bodies of the aerodigestivetract. IndianJ Otolaryngol Head Neck Surg. 2002;54(2):123-6. https://doi.org/10.1007/BF02968730
[3]. Singh B, Har-El G, Kantu M, Lucente FE. Complications associated with 327 foreign bodies of the pharynx, larynx, and esophagus. Ann Otol Rhinol Laryngol.1997Apr;106(4):301-4.https://doi.org/10.1177/000348949710600407
[4]. Ginsberg GG. Management of ingested foreign objects and food bolus impactions. Gastrointest Endosc.1995Jan; 41(1):33-8.https://doi.org/10.1016/S00165107(95)70273-3
[5]. Ambe P, Weber SA, Schauer M, Knoefel WT. Swallowed foreign bodies in adults. Dtsch Arztebl Int. 2012 Dec;109(50):869-75. DOI: 10.3238/arztebl.2012.0869
[6]. Kamath P, Bhojwani KM, Prasannaraj T, Abhijith K. Foreign bodies in the aerodigestive tract—a clinical study of cases in the coastal belt of South India. Am J Otolaryngol. 2006 Nov;27(6):373-7.https://doi.org/10.1016/j.amjoto.2005.11.011
[7]. Chaturvedi VN, Raizada RM, Jain SK, Lochab JP, Nagpure P. Foreign bodies in aerodigestive tract. Indian J Otolaryngol. 1988 Dec ;40(4):152-4. https://doi.org/10.1007/BF02992607
[8]. Mangussi-Gomes J, Andrade JS, Matos RC, Kosugi EM, Penido Nde O. ENT foreign 13 bodies: profile of the cases seen at a tertiary hospital emergency care unit. Braz J 14 Otorhinolaryngol. 2013;79(6):699-703.https://doi.org/10.5935/1808-8694.20130128
[9]. Friedman EM. Foreign bodies in the pediatric aerodigestive tract. Pediatr Ann.1988 Oct;17(10):640-7.https://doi.org/10.3928/0090-4481-19881001-09
[10]. Murty P, Ingle VS, Ramakrishna S, Shah FA, Varghese P. Foreign bodies in the upper aero-digestive tract. J Sci Res Med Sci. 2001 Oct;3(2):117-20.
[11]. Gupta R, Agrawal V, Gupta S, Gupta S. Unusual foreign body in oropharynx: a case report. Int J Res Med Sci.2015 Mar;3(3):800-1. DOI: 10.5455/2320-6012.ijrms20150355
[12]. Chowdhury C, Bricknell M., & MacIver D. Oesophageal foreign body: An unusual causeof respiratory symptoms in a three-week-old baby. J Laryngol Otol.1992 Jun;106(6):55628 7.https://doi.org/10.1017/S0022215100120134.
[13]. Lawson VG, Middleton WG. Foreign bodies in the aerodigestive tract. Can Fam Physician.1986; 32:811-4.
[14]. .Jackson CL. Foreign bodies in the esophagus. Am J Surg. 1957Feb;93(2):308-12. doi:10.1016/0002-9610(57)90783-3.
[15]. Williams PL, Warwick R, Dyson M, Bannister LH. The tongue, pharynx and oesophagus(splanchnology). In: Gray's Anatomy. 37th edition. London: Churchill Livingstone; 1989. p.1331
[16]. Aihole JS, Kumar P. Uncommon presentation of an unusual foreign body. Indian J Crit Care Med.2017; 21:460-2. DOI:10.4103/ijccm.IJCCM_436_16
[17]. Hawkins DB. Removal of blunt foreign bodies from the esophagus. Ann Otol Rhinol Laryngol.1990Dec;99(12):935-40.https://doi.org/10.1177/000348949009901201
[18]. McNeill MB, Sperry SL, Crockett SD, Miller CB, Shaheen NJ, Dellon ES. Epidemiology and management of oesophageal coin impaction in children. Dig Liver Dis.2012Jun; 44(6):482-6.10.1016/j.dld.2012.01.001
[19]. Adhikari P, Shrestha BL, Baskota DK, Sinha BK. Accidental foreign body ingestion: analysis of 163 cases. Int Arch Otorhinolaryngol. 2007;11(3):267-70
[20]. Baraka A, Bikhazi G. Oesophageal foreign bodies. Br Med J. 1975;1(5957):561-3.https://doi.org/10.1136/bmj.1.5957.561
[21]. Triadafilopoulos G, Roorda A, Akiyama J. Update on foreign bodies in the esophagus: diagnosis and management. Curr Gastroenterol Rep 2013 Apr;15(4):317.https://doi.org/10.1007/s11894-013-0317-5
[22]. Ellis PD, Ardran GM. Oesophageal foreign body in an infant. J Laryngol Otol.1973;87(7):691-3. doi:10.1017/s0022215100077495.
[23]. Shivakumar AM, Naik AS, Prashanth KB, Hongal GF, Chaturvedy G. Foreign bodies in upper digestive tract.Indian J Otolaryngol Head Neck Surg.2006; 58, 63-8 https://doi.org/10.1007/BF02907744
[24]. Muhammad R, Khan Z, Jamil A, Malik S. Frequency of esophageal foreign bodies and their site of impaction in patients presenting with foreign body aerodigestive tract.Eur Sci J 2013;9(21):152-60.
[25]. Dereci S, Koca T, Serdaroğlu F, Akçam M. Foreign body ingestion in children. Turk PediatriArs. 2015 Dec ;50(4):234-40. doi: 10.5152/TurkPediatriArs.2015.3164. PMID: 26884693; PMCID: PMC4743866.
[26]. Michaud L, Bellaïche M, Olives JP.Groupe francophone d'hépatologie, gastroentérologie etnutrition pédiatriques (GFHGNP). [Ingestion of foreign bodies in children. Recommendations of the French-Speaking Group of Pediatric Hepatology, Gastroenterology and Nutrition]. Arch Pediatr.2009Jan;16(1):54-61. DOI: 10.1016/j.arcped.2008.10.018.
[27]. Tibbling L, Stenquist M. Foreign bodies in the esophagus. A study of causative factors. Dysphagia. 1991;6(4):224-7.https://doi.org/10.1007/BF02493532.
[28]. Elaprolu S, Marimuthu G, Sekar R, & Saxena S. Unusual foreign body in the upper digestivetract: case report. Int J Otorhinolaryngol Head Neck Surg. 2018; 4(3), 850-2. Doi:http://dx.doi.org/10.18203/issn.2454-5929.ijohns20181885
[29]. Pino Rivero V, Trinidad Ruiz G, Marcos García M, Pardo Romero G, González Palomino A, Blasco Huelva A. Esophagoscopy in adults. our experience and literature review. Acta Otorrinolaringol Esp. 2003;54(9):642-5.https://doi.org/10.1016/S00016519(03)78461-1
[30]. Macpherson RI, Hill JG, Othersen HB, Tagge EP, Smith CD. Esophageal foreign bodies in children: diagnosis, treatment, and complications. AJR Am J Roentgenol. 1996 Apr;166(4):919-24. doi:10.2214/ajr.166.4.8610574
[31]. Wright CC, Closson FT. Updates in pediatric gastrointestinal foreign bodies. Pediatr Clin North Am. 2013 Oct 1;60(5):1221-39. DOI: 10.1016/j.pcl.2013.06.007.

[32]. Ferrari D, Aiolfi A, Bonitta G, Riva CG, Rausa E, Siboni S, et al. Flexible versus rigid endoscopy in the management of esophageal foreign body impaction: systematic review and meta-analysis. World J Emerg Surg.2018;13, 42.https://doi.org/10.1186/s13017-0180203-4
[33]. Gustafson LM, Tami TA. Flexible versus rigid esophagoscopy: a practical comparison for otolaryngologists. Curr Opin Otolaryngol Head Neck Surg.2000;8(3):227-31. doi:10.1097/00020840-200006000-00018
[34]. Michel L, Grillo HC, Malt RA. Esophageal perforation.Ann Thorac Surg.1982;33(2):203s10. doi:10.1016/s0003-4975(10)61912-1
[35]. Bacon CK, Hendrix RA. Open tube versus flexible esophagoscopy in adult head and neck endoscopy. Ann Otol Rhinol Laryngol.1992;101(2 Pt 1):147-55.https://doi.org/10.1177/000348949210100208
[36]. Remsen K, Biller HF, Lawson W, Som ML. Unusual presentations of penetrating foreign bodies of the upper aerodigestive tract. Ann Otol Rhinol Laryngol Suppl. 1983 Jul;92(4_suppl):32-44. https://doi.org/10.1177/00034894830920sS403
[37]. Sung SH, Jeon SW, Son HS, Kim SK, Jung MK, Cho CM, et al. Factors predictive of risk for complications in patients with oesophageal foreign bodies. Dig Liver Dis. 2011;43(8):632–5. https://doi.org/10.1016/j.dld.2011.02.018.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.