Oesophageal foreign Bodies Ingestion: Experience of 109 Cases

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ABSTRACT

Esophageal foreign bodies ingestion is a worldwide surgical issue in pediatric age group while less likely in adults. We estimate endoscopic, clinical and therapeutic sides of this situation in the surgical department in Al-Hussein Teaching Hospital, Karbala city, Iraq and in Al-Sader Medical City, Najaf city, Iraq. The study made to revise our experience for all patients admitted to our hospitals with a diagnosis of oesophageal foreign bodies and their treatments and outcome. The medical registrations resolved concerning demographic information, symptoms presented, investigation and treatments. We revised 109 (61 males and 48 females) patients ranged from 4 months to 65 years with (median age of 2 years). Coins most repeatedly ingested objects (27.5%), miscellaneous metal objects (17.4%), batteries (13.8%) and food (9.2%). The clinical features we encountered vomiting (27.5%), dysphagia (22.9%), asymptomatic (15.6%), drooling and food refusal (12.8 %) and foreign body sensation (8.3%). Usually X-ray screen finding the foreign body in 89(81%) patients. Magill forceps and rigid oesophagoscope performed within six hours from admission under general anaesthesia and from 12-48 from time of ingestion. Foreign body Impaction in the hypopharynx and the upper part of the oesophagus (68.8%) middle part (23%) and the lower part (8.2 %).100(91.7%) patients recovered completely without any complications,9 (18.3%) patient get bleeding, mucosal ulceration and infection which treated successfully.

INTRODUCTION

Foreign body ingestion (FBs) is widespread trouble with further than one hundred thousand cases registered annually in the USA, and eighty per cent of the registered cases happening in pediatrics. (Wylie, 2006) It has reported that 80% to 90% of ingested FBs can be passed easily via the alimentary tract spontaneously. However,10% to 20% of ingested FBs need endoscopic removal, and 1% or less ultimately require surgery. (Panieri and Bass, 1995; Dutta and Barzin, 2008; Velitchkov et al., 1996). In teenagers and adults, the ingestion of FB either accidentally or incidentally or promote doubt of psychiatric pathology or dangerous attitudes, as reported by Klein (2012). Swallowed objects by patients mostly are radiopaque likes coins, screws, toy parts or batteries (Conners, 2018). Many types of ingested oesophageal foreign bodies (EFBs) have reported, these kinds varying due to the culture, state, and medical speciality notifying the ingestion. Solid oesophagoscope and sometime Magill forceps advised as the method of choice to retrieve the FB. This research carried to review our experience in
treating EFBs for all age groups patients, that admitted to the surgical department in our hospitals. We examined FB properties, complexity, management and outcomes.

MATERIALS AND METHODS

A retrospective descriptive research. We included all patients diagnosed with EFBs that admitted to Al-Hussein Teaching Hospital, Karbala city, Iraq and in Al-Sader Medical city, Najaf city, Iraq. The study did over nine years between May 2010 and May 2019. We collected demographics information, symptoms, investigations, treatments, complexity, and outcomes. Magill forceps plus rigid esophagoscopy carried in the theatre under general anaesthesia with or without tracheal intubation. When FBs distinguished, retrieve using special forceps, and the oesophagoscope then inserted again for retained FB checkup and estimated the oesophagus. Our hospitals were a secondary care centre, so we received patients from our emergency department in our hospital where they arrive on their own or referred to us from different primary hospitals without esophagoscopy service. Within the first hour of their admission, all patients subjected to chest-abdominal X-ray, regardless of ingestion time and clinical presentations, after getting the special consent. Patients with radiolucent foreign bodies ingested, sometime esophagoscopy carried even in the condition of X-rays negative.

RESULTS

A total of 109 patients admitted to the surgical department, diagnosed as EFBs. The ages ranged from 4 months to Sixty-five years, and 79 (72.4%) patients were <5 years of age. The distribution is relatively higher in male gender: males: females = 1.27:1 and the most significant incidence is the ages of around two years. Ninety (82.5%) patients arrived within 24 hours of ingestion while more than 24 hours (17.8), a history of witnessed EFB in Seventy-nine patients (72.4%).

The most prevalent symptoms were vomiting in 30 (27.5%) patients, followed by dysphagia in 25 (22.9%) patients, drooling and food refusal 15 (13.7%) patients, foreign body sensation 9 (8.2%) patients, odynophagia 8 (7.3 %) patients. Seventeen (15.5%) patients without symptoms but presented with witnessed FB ingestion (Table 1 and Figure 1). Neck and chest radiographs performed in all patients, and FBs founded out in 102 (93.5%) patients. When a highly suspected FBs was doubtful and not visualized on a chest radiograph, other radiological modalities, investigations like abdom-
Table 1: Presenting symptoms of esophageal foreign bodies ingestion

| Symptoms                              | No. of patients | Percentage % |
|---------------------------------------|-----------------|--------------|
| Vomiting                              | 30              | 27.5         |
| Dysphagia                             | 25              | 22.9         |
| Asymptomatic                          | 17              | 15.6         |
| Drooling and food refusal             | 15              | 13.0         |
| Foreign body sensation                | 9               | 8.2          |
| Odynophagia                           | 8               | 7.3          |
| Hematemesis                           | 3               | 2.8          |
| Chest pain                            | 2               | 1.8          |
| Stridor and cough                     | 1               | 0.9          |

Table 2: Esophageal foreign bodies types inpatient series

| Types                              | No. of patients | Percentage % |
|------------------------------------|-----------------|--------------|
| Coins                              | 30              | 27.5         |
| Batteries                          | 19              | 17.4         |
| Miscellaneous metallic objects     | 19              | 17.4         |
| Nuts                               | 10              | 9.2          |
| Safety pins                        | 7               | 6.4          |
| Medal                              | 6               | 5.5          |
| Bones                              | 4               | 3.7          |
| Stones                             | 3               | 2.8          |
| Dental bridge                      | 2               | 1.8          |
| Ballet                             | 2               | 1.8          |
| Watch                              | 2               | 1.8          |
| Bottoms                            | 2               | 1.8          |
| Battery base                       | 2               | 1.8          |
| Metallic spanner                   | 1               | 0.9          |

Figure 5: Key medial heart shape esophageal foreign body in children

Figure 6: Foreign bodies retrieved in the patient series

Inal radiographs, neck imaging, contrast study, or CT scan. EFBs presented in the upper portion of the oesophagus and the hypopharynx 75 (68.8%) patients, 25 (23%) patients FB impacted in the middle portion of the oesophagus, nine patients (8.2%) FB impacted in the lower portion of the oesophagus (Table 3). Different kinds of FBs retrieved. The most common FBs coined 30 (27.5%) patients, miscellaneous metallic objects 19 (17.4) patients, batteries 15 (13.8%) patients, food 10 (9.2%) safety pin 7 (6.4%) patients, key metal 6 (5.5%) patients, bottoms 5 (4.6%) patients, bones 5 (4.6%) patients, nuts 3 (2.8%) Other types of less common type objects
Table 3: Anatomical, gender distribution, intervals, radiological and complications of esophageal foreign bodies

| Anatomical position     | No. of patients | Percentage % |
|-------------------------|-----------------|--------------|
| Upper esophagus         | 75              | 69           |
| Middle esophagus        | 25              | 23           |
| Lower Esophagus         | 9               | 8            |

| Sex distributions       | No. of patients | Percentage % |
|-------------------------|-----------------|--------------|
| Male                    | 61              | 66           |
| Female                  | 48              | 44           |

| Complications           | No. of patients | Percentage % |
|-------------------------|-----------------|--------------|
| Non-complicated recovery| 100             | 91.7         |
| Complication post endoscopy | 9             | 8.3          |

The time intervals from ingestion of the FB to presentation

| No. of patients | Percentage % |
|-----------------|--------------|
| less than 24 hr. | 90           | 82.5         |
| 24-48           | 15           | 13.7         |
| More than 3 days | 4            | 3.8          |

The radiological finding of foreign bodies

| No. of patients | Percentage % |
|-----------------|--------------|
| Radiopaque      | 102          | 93.5         |
| Radiolucent     | 17           | 15.5         |

ballet, bottoms, dental bridge, spanner and watch as in (Table 2 and Figure 2, Figure 3, Figure 4, Figure 5, Figure 6). All patients remain in the hospital for 1 to 3 day of admittance, and follow-up time from two weeks to 6 months. One hundred patients had full recovery without complexity. Nine cases get complications associated with foreign body removal included, bleeding 4 (3.6 %) patients, mucosal laceration 3(2.7 %) patients and infection 2(1.8 %) patients. All patients with complications treated successfully conservatively.

DISCUSSION

Ingestions of FBs are a public health problem due to their high incidence, especially in pediatrics and another age group. The preponderance of ingested FBs passes spontaneously through the alimentary canal without leading to patient harm; yet, according to Louie and Bradin (2009) 10–20% will demand without surgical intervention, and less than 1%will need surgical intervention. (Lai et al., 2003) Discussions point out that the high spread of FBs ingestions in younger children is due to the exploratory habits of these children.

The sex distribution did not consider in this pathology. Utmost swallowed FBs harmlessly crossing through the alimentary canal. (Orji et al., 2012) Age distribution state in many kinds of research showed comparable outcomes, with the patient majority <5 years of age. (Higo et al., 2003; Pak et al., 2001) In our research, we had 72% of patients <5 years of age. A history of witnessed EFB ingestion is significant for reaching a specific and rapid diagnosis. (Louie et al., 2005) The study issued of 255 children, the witnessed history of ingestion of FBs get the majority of patients. In our research, a history of witnessed of EFB ingestion founded in 88 (80.7%) patients. The superior oesophagus is the narrowest part of the gastrointestinal canal. It is, thus, the most common location for lodging FBs. (Little et al., 2006) Like the previous researches, the majority of FBs in our research existed in the upper oesophagus. In our research, (69)75% of patients had stick FBs in the upper oesophagus.

Globally, patients present with an enormous set of symptoms and signs relying on the nature of the object, age of the patients, anatomical location implicated, and the ingestion time length. (Lin et al., 2007) The most popular presenting symptoms in several kinds of research were vomiting, dysphagia, drooling of saliva, and respiratory symptoms. (Saki et al., 2007; Lai et al., 2003) In our population, vomiting was the most common presenting symptoms, followed by dysphagia and drooling and food...
refusal.

The kinds of FBs ingested vary among regions according to cultural features, habits of feeding, social and cultural properties. (Kamath et al., 2006; Gregori et al., 2010) Several kinds of research found that the most frequently chance FB ingestion in different people were coined. (Orji et al., 2012) We advertised that coins were the most common kind of EFB. In other areas, such as eastern people, fish bones were the most common kinds of ingested FB. (Higo et al., 2003; Pak et al., 2001) Food particle as FB noticed more in patients with a pre-existing oesophageal abnormality. (Zhang et al., 2010) Oesophageal FB impaction is frequently associated with pre-existing oesophageal diseases, like atresia, stricture, or dysmotility. (Zhang et al., 2010; Lin et al., 2007) Three patients with already pre-existing oesophageal problems before FBI and esophagoscope intervention. First one 12 years old boy with a history of cerebral palsy who is already had oesophageal stenosis and adapt liquid diet, presented with repeated vomiting. When esophagoscope is did, there was orange nut obstruct the small passage of oesophagus at the middle part. The second and third patients who are 4 and 6 years old presented with repeated vomiting and past surgical history reveal tracheoesophageal fistulae corrected in the neonatal period.

Since that time they have oesophageal stenosis, and dysphagia and endoscopy reveal food particle obstruct the narrow lumen oesophagus. FB diagnosis based on three essential elements: X-ray, eye-witness accounts and endoscopic findings. Many types of research documented the practical use of an imaging study in the diagnosis of FB ingestion. (Pak et al., 2001; Luk et al., 2009) Although negative imaging findings could not eliminate ingested FB, radiological imaging should perform for any patient, especially children who suspected of EFB ingestion. Abdominal/ chest X-rays are the most common imaging method utilized. (Orji et al., 2012; Luk et al., 2009) Another research review by Luk et al. (2009) The specificity of CT scans 96% and have high negative predictive value when negative endoscopy in the FB ingestion diagnosis. Computed tomography scans are helpful if negative endoscopy present, and the patient still has persistent symptoms associated with ingested EFB. (Shinhar et al., 2003) In our research, many procedures, diagnostic imaging used according to the presentation and the kind of EFB. Routine, X-ray was the initial modality, and other radiological modalities used in many cases. Several procedures have described in the literature for the retrieve of FBs. Like balloon extraction, the advancement of a bougie, and flexible and rigid scopes. The choice of procedure depends on the availability of instruments and the experience of the surgeon. (Orji et al., 2012) We prefer rigid oesophagoscope to retrieve FBs, and this procedure was effective in 91% of cases, remain cases retrieved by Magill forceps. A review by Waltzman (2005) notified that (25% -30%) of oesophageal coins in children would pass spontaneously without complexity. The management of these patients might rationally include a time of monitoring, in the range of eight to sixteen hours, particularly among older children and those with distally located coins. (Lin et al., 2007; Kamath et al., 2006) FBs ingested noted that should be removed immediately, with lateness in the diagnosis and treatments potency leading to complications may be life-threatening. Similarly, we recommend FBs removal as early as possible without delay. FB ingestion complications are uncommon, but the correlated morbidity might be dangerous and life-threatening. (Lai et al., 2003) There was a higher incidence of complications in long retained FBs, include perforation of oesophageal, mediastinitis, neck abscess, peritonitis, and formation of a fistula. (Kamath et al., 2006; Saki et al., 2007) Issued a review of 240 pediatric with oesophageal FBs, with 10% having complexities secondary to oesophageal FBs, mainly oesophageal perforation, and none of the complications associated with long-term morbidity.

The characteristics and type of EFB play a separated part in the results. (Kamath et al., 2006) Organic FBs are associated more with complications as compared with inorganic. (Gregori et al., 2010) Timely diagnosis and treatments are obligatory to stop these complexities. Oesophageal FBs are comparatively common health trouble in children, and the presence of predisposing factors to oesophageal FB impaction is not uncommon. Long-retained oesophageal FBs correlated with more scope of complexity. Rigid oesophagoscope was effective in extracting most of the oesophageal FBs and evident to be an effective and safe method. The late presentations, along with the absence of early oesophagoscope, play an essential part in successive complexity and in the failure to find foreign objects. Esophageal button batteries need urgent retrieved regardless of the presence of symptoms because they can cause dangerous complexity. Parameters that required to deemed considering the endoscopic timing removal FBs ingested in children are the age of the children or weight, the presenting features, the lapse time since ingestion, the last mealtime, kind as well as size and shape of the FB, and its current location in the oesophagus. Most foreign bodies were removed successfully by endoscopy without complexity. Still, the long period from ingested
time to esophagoscope removal lead to mucosal injury where there were more risk factors of sequels. Patients with these risk factors require more careful management.

**CONCLUSION**

Foreign body ingestion cases put in 4 categories, either symptomatic cases with radiological finding, or asymptomatic cases with radiological finding, or asymptomatic cases without a radiological finding. The first three types of patients need urgent oesophagoscope intervention. In contrast, the fourth type of patient who gave history, or there is the witness of foreign body ingestion usually need close observation and further investigation. FBI is one of the top emergency that needs emergent measures, therefore; endoscopic setting and well trained personal and assistant should be available not only in tertiary hospital or in gastroenterologist centres but also secondary and primary hospitals, therefore; more lives saved, and more complications avoided. Another factor which also crucial that not only thoracic surgeon trained for esophagoscopy and FB removal as usually done but also otolaryngologist surgeon, pediatric surgeon and gastroenterologist should be training for esophagoscope removal of FB and deal with any complications that might happen during or after esophagoscopy.

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**Conflict of Interest**
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