



UPPER GASTROINTESTINAL FOREIGN BODIES IN CHILDREN: AN AUDIT OF ONE YEAR

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ABSTRACT

Foreign body ingestion in children is quite often a challenging clinical scenario. There are no standard clinical guidelines available as on date to tackle such children due to variety of factors. Indications and timing of intervention is decided by the size of the patient, type of object, time since the ingestion, location of the ingested object, clinical symptoms etc. Availability of the expertise, instruments and the endoscopic techniques do play a role. In the present study, we have under taken a retrospective chart review of 57 children presenting to our tertiary healthcare centre over last one year. Management of these patients, challenges faced and limitations experienced by us, has been discussed vis-a-vis current understanding and suggested guidelines by the NASPGHAN endoscopy committee.

KEYWORDS : Upper gastrointestinal foreign body, NASPGHAN endoscopy committee, children.

INTRODUCTION

Foreign body (FB) ingestion is commonly observed emergency situation in young children. Most children of this age group try to explore their world via oral route and tend to put everything in to their mouth. According to the American Association of Poison control centres 75% of more than 116,000 ingestions reported were in children below 5 years of age¹. Unlike in adults 98% of the Foreign Body ingestions in children are accidental and involve the common objects found in the home environment such as coins, small toys, jewellery, magnets and button batteries (BB), food impaction etc². Button batteries and sharp foreign bodies need special attention because of their propensity of causing severe mucosal damage and perforation if not attended to on time. Dysphagia, odynophagia, drooling of saliva and fussiness are the usual symptoms in cases of foreign body impaction in the oesophagus. However, they may be brought by parents or caretaker with the history of witnessed ingestion but without overt symptoms. On the other hand, many- a-times there is no witnessed event and the children are brought to Emergency with the symptoms. Absence of molar teeth in young children makes them unable to chew properly thus make them vulnerable to impaction in the oesophagus. Quite often, elder siblings tend to place the food or objects in the mouth of younger ones, thus resulting in FB ingestion and impaction.

As regards the management of these patients, there are no firm guidelines available as on date, due to the variability in Paediatric patient size. However, European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) and North American Society for Paediatric Gastroenterology Hepatology and Nutrition (NASPGHAN) have jointly come up with certain practical clinical approaches to the paediatric patients with variety of foreign body ingestions. Thus, plan of treatment may be individualised for each child as regard the type of foreign body, prevailing clinical practice and the availability of new technology.

When a child is brought to the hospital with the suspicion or history of ingestion of foreign body, an X-Ray examination is recommended especially in case of a radio opaque material. In case of coin and button batteries both antero-posterior and lateral views of x-ray is helpful. Removal of the foreign bodies in children is recommended with either rigid or flexible endoscopy under general anaesthesia.

AIMS AND OBJECTIVES

Being at a Tertiary Care Centre, we get to see good number of

children with foreign body ingestion and so, the aim and objective of this study is to:

- 1) Determine the prevalence and characteristics of foreign body ingestion in the specific region.
- 2) Formulate an action plan for treatment and prevention of such episodes.

MATERIAL AND METHOD

The present study is a retrospective data review of last one year (May 2016 to May 2017) at a Tertiary Health Care Centre of the state. Hospital documents of all the paediatric patients diagnosed to have foreign body ingestion were reviewed and chart analysed.

RESULT

A total of 57 patients were included for the study with male to female ratio of 4:1. Maximum number of foreign body ingestion was observed around 1 year (n=24) with age ranging from 6 months to 12 years. The objective break-up of the foreign bodies was as follows (Table 1):

Table 1: Types of foreign body

Type of foreign body	Number
Coins	47(82%)
Safety Pin	04(7%)
Button Battery	04(7%)
Hair Clutcher	01(2%)
Key with Ring	01(2%)

Average time of presentation to our hospital was within 24 hours after ingestion of the foreign body.

COIN INGESTION

Of the 47 coin ingestions, 2 of them had reached in to the stomach and remained in the stomach. They needed Upper Gastro Intestinal Endoscopy (UGIE) and the coins were removed with flexible foreign body forceps. One of these patients had foreign body progression beyond duodenum, which was managed expectantly with laxatives and the boy passed off the coin along with the stool. Rest of the coins impacted in the oesophagus had to be removed by rigid oesophagoscopy with optical alligator jaw forceps.

No significant oesophageal or stomach mucosal damage was noticed endoscopically in all the above cases. Oral feeds were

started within 04 hours of anaesthesia and as such no complications were observed.

BUTTON BATTERY INGESTION

The clinical presentation of patients with Button Battery ingestion is presented in tabular format:

Table 2: Details of button battery ingestion

Time of Report	No.	Status of Esophageal Mucosa	Remarks
Within 2 hours	01	No damage	-----
< 24 hours	02	Minimal Mucosal Damage	Required 24 hours observation prior to orals
>1 week	01	Mucosal necrosis noted	No perforation. Managed with PPI & Sucralfate. Remained asymptomatic so far (1Month)

PPI: Proton pump inhibitor

The patient presenting after one week, had no witnessed ingestion. Parents brought the baby with history of noisy breathing and difficulty in swallowing. X - Ray examination could not be done pre-operatively due to reluctance of the parents. It was a surprise finding at rigid oesophagoscopy and a button battery was removed using optical alligator forceps.

SAFETY PIN INGESTION

Four out of 57 patients had ingested safety pins. Two of them had opened up sharp end. One pin with open end had been lodged in the stomach, which was removed by UGIE with flexible foreign body forceps with the help of an over tube. Another patient with opened up sharp end pin had lodged in the region of mid oesophagus. Contrast oesophagogram showed sharp tip of the pin outside the limits of oesophageal wall, thus perforation was established (Figure 1). This patient had undergone right thoracotomy and retrieval of the pin. Oesophagotomy rent was repaired over a Ryles tube and oral feeding started on fifth post-operative day. This boy made an uneventful recovery and discharged on eighth post-operative day.

HAIR CLUTCHER INGESTION

One of the patients had ingested a large hair clutcher (Figure 2), which was stuck in the cricopharynx; could be removed only after inspecting another similar clip thereafter using Rigid Oesophagoscope with foreign body forceps.

Figure 1: Safety pin piercing oesophageal wall



Figure 2: Hair clutcher



KEY WITH RING INGESTION

This 9 months boy was rushed in to emergency room by parents with the history of sudden onset respiratory distress while playing at home. Attendants had no idea about the type of foreign body. As the patient was quickly sinking in the Emergency Room, direct Laryngoscopy was performed with the intention of tracheal intubation. There we could visualise a metallic object in the laryngopharynx, which was extracted with a Magill Forceps and the boy was relieved instantaneously. The offending foreign body in this case was a key with the ring.

DISCUSSION

Foreign body ingestion in children is challenging to manage most of the time. Unlike in adult foreign body ingestion, there is no firm protocol for the management of ingested foreign body in children. Timing of intervention has to be decided depending on the patient size, type of object ingested, location of impaction in the GI tract, clinical symptoms, time since ingestion and the nil per os (NPO) status. Though urgency needs to be observed in case of button batteries and sharp objects as per the guidelines of NASPGHAN. In general, timing of intervention may be categorised as Emergent (< 2 hours from presentation, regardless of NPO status), Urgent (< 24 hours from presentation, following usual NPO guidelines) and Elective (>24 hours from presentation, following usual NPO guidelines)³.

As observed world over, coins are the commonest objects ingested in our study, 82 % of the total FB ingestions. While dealing with coins, certain observations reported earlier, need to be kept in mind. Spontaneous clearance of ingested coin can occur in up to 30% of cases and 60% coins in the distal oesophagus tend to clear off prior to endoscopy⁴. So, it is mandatory to have a radiography just before the intervention, in case of oesophageal coin ingestion. An object with diameter > 25 mm is unlikely to cross the pylorus and a long blunt object, >6 cm is equally unlikely to clear the duodenal sweep and if does, it is unlikely to cross the ileocaecal valve⁵. For these reasons, large and long objects should be removed from the stomach using alligator jaw forceps. Foley catheter has been used to “sweep” out the oesophageal coins, preferably under fluoroscopic guidance⁶. However, it is operator dependent and concerns have been raised about possibilities of perforation, aspiration and acute airway obstruction.

Button battery (BB) ingestion is known to result in the severe complications, so special attention is needed in dealing with them. These lithium cells generate free hydroxide radicals in the mucosa resulting in caustic injury from high pH (up to 13)⁷. New batteries have more than 3 folds greater risk of injury than the used up batteries⁸. Complications like, tracheo-oesophageal fistula (47.5%), oesophageal perforation (23.3%), oesophageal stricture (38.4%), vocal cord paralysis from recurrent laryngeal nerve injury (9.6%), mediastinitis, pneumothorax and aorto-enteric fistula have been recorded in past⁷. Children below 5 years, battery size > 20 mm and

multiple batteries are at greater risk⁹. Recommendation is to try and remove BB on emergent basis within 2 hours of presentation without considering NPO status, so as to avoid aforesaid complications. In unwitnessed ingestions, radiographical features differentiate BB from coin. "Double halo" on anteroposterior view and "step off" (between two poles) sign on lateral view is characteristic of a button battery. Removal forceps with "rat tooth" design (Raptor forceps, US Endoscopy) and retrieval net (Roth Net, US Endoscopy) are the appropriate instruments for removal of these button batteries³. It is pertinent to note that even in case the battery has progressed to stomach, one must look for the possible oesophageal damage. Further, these patients must be kept under surveillance to look for the late complications of damage. Since button batteries cause such a grave damage, preventive measures need to be exercised. Regulations must be enforced to ban such toys which use button batteries and when in use these should be concealed.

Sharp foreign body ingestions also need to be discussed because of their propensity of complications. Many pointed objects follow the Jackson's axiom: "advancing points puncture, trailing do not"¹⁰. According to the aforesaid statement, usually heavier blunt end of an object is the advancing end and thus pass through the gut uneventfully¹¹. This has led to the opinion by some, that such objects may be managed expectantly. However, higher morbidity (35%) and mortality (26%)¹² has been reported prior to the era of modern surgical and endoscopic facilities for removal of such objects. At the current time, a sharp object in the oesophagus is a medical emergency because of the high risk of perforation and migration. So, it should be removed even if the patient is not appropriately fasting. Respiratory distress, neck swelling, crepitus or peritonitis, are the indicators of complication and must be managed accordingly³. The best grasping tools for sharp objects are rat tooth forceps, Roth net and polypectomy snare¹³. Overtube is a very useful protective device for the retrieval of sharp objects¹⁴, which is slid over the fibro-optic endoscope prior to insertion. The overtube is slid down the scope, simultaneously while foreign body is being pulled up in to the overtube and the everything is extracted as a unit, thus avoiding the oesophageal injury. If the sharp end of the object is facing cephalad, it must be pushed down into the stomach first, sharp end rotated caudally and removed in that position³.

In cases of old ingested foreign bodies, we undertake contrast gastrogram study to locate the same in the stomach or beyond. Any object which has crossed the ligament of Treitz, enteroscopy or surgery should be contemplated¹⁵. Average transit time for the ingested foreign body is 3.6 days in children and the mean time for ingestion of a sharp object to perforation has been reported to be 10.4 days^{16,17}. So, if the ingested foreign body is non-progressive on imaging in 3 days or the patient becomes symptomatic, surgical removal must be considered³.

CONCLUSION

In absence of firm guidelines regarding the management of foreign body ingestions in paediatric patients, each case needs to be individualised, keeping in view the type of foreign body, duration of ingestion, appropriate mode of treatment and available technologies in hand. The NASPGHAN guidelines do not mandate the strict protocol compliance and they do not consider it to be a legal standard of care. As regard the preventive measures, consumer product safety norms must be ensured by the manufacturers of products and toys using button batteries for power. At home, it is the duty of the parents and caretakers to keep all such objects out of reach of children especially below 3 years of age.

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