



Review Article

Oral ingestion of foreign body in neonates and infants: A review

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ABSTRACT

Foreign body (FB) ingestion in adult and children population is not uncommon but accidental. Same is rare in neonates and infants. Many of FB ingestion go unnoticed or unexpressed if baby is preverbal. Most of the foreign bodies pass spontaneously per anal. Only the larger size or sharp FBs get stuck in places of gastro intestinal tract and presented on emergency Department. Similarly corrosive and toxic FB also invites immediate attention. Literature on the clinical aspects of the foreign body ingestion among neonates and infants was searched electronically through PubMed and individual study. Relevant articles were reviewed thoroughly and summarized. Instances of foreign body ingestion (FBI) in neonate and adult are in ascending trend over last several years. Imaging and identification of radiolucent FBs become challenging for surgeons. Conservative treatment for spontaneous evacuation, endoscopic retrieval and surgical removal are the modalities for FBI management. Two relevant rare reports are appended as the case study. Where the reported FBs are gold fingering and sharp open safety pin in infants. One was managed conservatively for per anal evacuation and other needed endoscopic retrieval with general anesthesia.

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1. Introduction

Children like to explore almost everything by putting into their mouth, hence ingestion of foreign body is often reported in children. Many of the FBs are ingested and passed out unnoticed. Over eighty percent of the ingested FB is reported in young children including neonates and infants.¹ A great chunk of known ingested FBs is passed per-anal asymptotically and 10-20% FBs stuck in GI tract. Many of them need endoscopic interventions for their retrieval. Hardly 1-2% require the laparotomy removal.^{2,3} Based on shape FBs are classified as round-blunt or elongated- sharp bodies. Radiolucent and radio opaque property also classify FBs in the context of imaging.⁴⁻⁶

Most common ingested FBs in infant and young children are button battery, small toys, coins, jewelry, nail, screw, pin, beads plastics and stone pieces.^{7,8} Esophagus is the narrowest part of the GI tract. Particularly thoracic inlet, aortic arch constriction, gastro esophageal junction. Relatively bigger size FBs or sharp edge FBs are generally trapped in esophagus.^{8,9} Infants with anatomical disorders in esophagus like fistula and stenosing lesions may develop challenging complication with FBI.^{10,11} 'U' curved of duodenum and coil small bowel is also the sites for the sharp and elongated FB impaction.¹² Severe impinge or impaction of FB may lead to morbidity, mortality or sever damage to air way or gastro intestinal tracts.

Incidences FBs and health hazard substances ingestion among young children are being reported in ascending trend. This draws the attention of surgeon and healthcare

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workers those who look forward for novel standardized treatment approach to reduce and overcome the serious complication.^{7,13} Treatment for caustic lesion of corrosive FBI indicates conservative management to mild injuries and patients with severe injuries may endure for surgical exploration.¹⁴ Several reviews of such incidents and their post incident management are available in the subject. Imaging diagnosis, endoscopic and other befitting retrieval techniques and laparotomy interventions are the standard sequential procedures to locate, identify and manage the FBs. Advent of radio imaging and fiber optic endoscope assure quick relief and healing for preverbal neonates and infants.^{15,16}

2. Materials and Methods

The literatures of several foreign body ingestions in neonates and infant were searched electronically through PubMed, and through individual study of cross references and related textbooks. Various keywords and their combinations were used for electronic literature search like foreign body ingestion (FBI), neonates, infants, radio imaging of FBs, radiodensity of FBs, endoscopic retrieval of FBs, management and treatment of FBI etc. Criteria included in this review are epidemiology, FBs detection, diagnosis, pathology, retrieval, treatment and management in neonates and infants. Mostly review works cohort studies and case reports of the last 10 years were included in the present study. The search leads to 62 related publications amongst which 45 were incorporated in this clinical review. This study is appended with two rare case reports of the subject on focus.

3. Results

Incidences of FBI in neonates to toddler have been increasing consistently. There are many novel techniques and technology available to locate, diagnose, remove, treat and manage the FBI crisis. The present publication is focused on the modern approaches for classification, pathology, clinical manifestation, imaging, retrieval devices, treatment and management of ingested FBs in neonates and infants. Two relevant but rare case reports are also placed in this study.

3.1. Types of foreign bodies

For all the practical purposes FBs can be classified as organic and inorganic, soft and hard, metallic and nonmetallic, blunt-smooth and sharp-elongated, corrosive & non-corrosive, radiolucent & radio-opaque.⁵⁻⁷ Some of the common and frequently ingested FBs were shown in Table 1.

3.2. Pathology and vulnerable site for FB obstruction

The foremost common complication of FB ingestion in infant is partial or total obstruction of airway and food way. The lodged FB may lead to high-risk retention, pressure necrosis, perforation and migration across the organs. Along the GI tracts there are several susceptible sites for FBs impediment, impaction or perforation. Vulnerable areas, in this context are focused as the narrower or curved anatomical structures. Upper esophageal sphincter (cricopharyngeus), aortic crossover (mid esophagus), lower esophageal sphincter, pylorus, duodenal curve, jejunum, ileocecal valve, cecum, rectosigmoid colon etc. are the common site of FB stuck.⁹

3.3. Clinical Manifestation of FBs ingestion

Many FBs are innocuous and can pass through the GI tract without any squeal, are referred as asymptomatic. Symptoms arise when the grievous FBs are lodged or impacted with trivial and fatal complications. Neonates and infants with smaller anatomy show the signs for esophageal FBs impaction or abrasion as emesis, gagging, blood stain saliva, anterior hypersialorrhoea/ptyalism, drooling, breathless and feeding refusal. In addition, young children express the symptoms as pricking sensation, dysphagia, odynophagia, retrosternal pain. Neck crepitus, edematous neck and pneumomediastinum, change in voice are some of the symptoms for perforated esophagus. Traumatic epiglottitis may also be a sign of FB ingestion. Hematemesis, abdominal pain, guarding, tenderness and rebound tenderness are some of the expressions given for FBs impaction in stomach, duodenum, jejunum, ileocecal valve or elsewhere in the system. As neonates and infants are preverbal babies, only clinical manifestations and evidential history help to diagnose and treat FBI.^{5,6} Solid or liquid corrosive agents starts its clinical manifestation soon after ingestion and cause acute burn, perforation, tissue inflammation, tissue liquefactive necrosis vascular thrombosis, coagulative necrosis.^{3,7} Some of the clinical manifestations and symptoms of evident and non-evident FBI ingestion are shown in Table 2.

3.4. Diagnosis and localization

Clinical examination based on witness statement, radiological investigation (neck chest and abdomen X-Ray), endoscopic findings. 3D CT for radiolucent and MRI for nonmetallic FBs are the tools to diagnose and locate FBs. Biplane (Posterior -anterior and lateral) X-Ray from pharynx to rectum may be enough to locate and assess the radiopaque ingested FBs in infants. Clear visibility, poor visibility and invisibility of FBs in radiograph depend not only on the radiopacity but also surrounding, overlaying and underlaying anatomic structure.^{14,17} Therefore, the radiographic visibility of a FB may differ in

different anatomic location. The lead glass or crystal glass (Refractive index $n = 1.7$ or more) are more radiopaque on radiograph than the normal glass (Refractive index $n = 1.5$). So almost all glass FBs are radio radiopaque of different degree of radiodensity.¹⁸

The radiolucent FBs such as fish and chicken bone, plastic and wood pieces, thin aluminum foil and tabs are not clearly visible in X-Ray radiograph and indicate for CT and MRI imaging and ultrasonography evaluation. Water ball, hydrogel, crystal gel, jelly beads, orbeez etc. are the product of superabsorbent polymers which are radiolucent. As ingested FBs it is difficult to be located by X-Ray imaging, so it indicates CT, MRI and ultra-sonography.^{14,18} Fluoroscopy can be used to evaluate the esophageal motility and dysphagia in the cases of foreign body ingestion.

3.5. Treatment approaches

FBs can be removed from pharynx and esophagus by flexible or rigid GI pediatric endoscopy. This may be done by single piece (en bloc) or by broken piece (piecemeal) approach. McGill forceps, Foley catheters and bougie dilation devices, retrieval net can also be used for tricky retrieval. Sometimes pushed down approach is helpful to pass the soft FB down to stomach. GI region specific rigid and flexible optical fiber endoscopes are the surgeons choice of equipment.^{1,3} Several grasping devices are used for easy retrieval for a wide range of FBs. Most common forceps used are rat tooth, alligator tooth or shark tooth for hard and rigid objects. Retrieval forceps of 2-5 prongs are suitable for soft object removal. Similarly different biopsy forceps can also be used to clear the soft body obstruction. Smooth round or blunt hard objects like metallic balls, coin, disc batteries, or magnets can be harvested from their stuck site with the help of Dormia baskets, Bougie dilator.¹⁹ Alternative to endoscope a Foley catheter is the next option for smooth removal of coin, disc battery or other non-sharp FBs from esophageal site. Similarly, magnet-attached Levin tube can retrieve metallic FBs with magnetic affinity from esophagus, stomach and upper proximal duodenum in infants.²⁰ When any sharp/pointed FB is lodged in esophagus emergency endoscopic retrieval is indicated. FBs of stomach or duodenum can be best withdrawn by flexible or rigid endoscope. Deeply Impacted or obstructive beyond duodenum may need laparotomy for retrieval. The European Society of Gastrointestinal Endoscopy and the European Society for Pediatric Gastroenterology Hepatology and Nutrition (ESPGHN) recommend flexible endoscopy using rat-tooth forceps, polypectomy snares, and retrieval nets as the innocuous and promising tools for the removal of FBs from GI tract of young children. The Society further emphasized to use general anesthesia for safe retrieval of FB, where endotracheal intubation is a part of the procedure in the infants and toddlers.^{1,20}

Infants and neonates those who ingest corrosive and caustics material must be treated in emergency department with consultation of gastroenterologists and toxicologist. As primary precaution patient should not be given chance for vomiting or vomiting maneuvers. This prevent recontact of caustics to the esophagus, pharynx and oral cavity.^{3,7}

3.6. FB retrieval management and treatment

Known evident or suspected FBI if become symptomatic, need treatment and or management. Based on the nature of FB and its radiopacity, recommended diagnosis procedure helps to locate the FB, which may aids for prompt removal. Magil forceps is proved enough to remove the lodged FB from oropharynx. Laryngoscopy is helpful for FBs lodged at or above the cricopharyngeus.

FBs beyond cricopharyngeus are best manipulated by flexible endoscope. One of the most important factors to choose the gastroscope is size and body weight of the neonates and infants. When baby is less than 5 kg only selected options are left. However, a 6 mm gastroscope with 2mm channel can house 20 mm diameter Polypectomy retrieval nets, Polypectomy snares or Dormia basket devices. Selected suitable small forceps can also fit in to the above system. Polypectomy snares are the appropriate device to manipulate the sharp object for easy removal. It can close the open end of safety pins. When the sharp end is in cephalic orientation at esophagus it is wise to push into the stomach for caudal reorientation before retrieval.⁵ A common consensus of three step management of FBs for neonates and infants are shown in Table 3.

About 10 % total incidences of FBI in children is attributed to neonates and infants. Out come and Prognosis of FBI in these young children is fairly good with very low morbidity and mortality. Medicinal treatment for FBI is not much recommended except some systemic manifestation associated with allergen and toxic materials. Drugs of emetics, muscle relaxant and meat tenderizer are not much recommended due to their adverse effect.²¹ Use of glucagon for the treatment of esophageal foreign body and food impaction is not essentially effective.^{22,23} Laxatives for easy evacuation may be recommended for fast moving of FBs in GI tract. Post retrieval complications if any are to be addressed meticulously.

4. Case Capsule: Report-1

100 days she baby presented to a health center with complaint of oral ingestion of FB (Figure 1 A). The FB was told to be a gold finger-ring. Parent described the incident that the baby completed 100 days of age for which a family ceremony was arranged. A gold ring was put on to her mid finger. The baby soon aspirated the object through mouth. The baby felt uncomfortable for a while, coughed for a couple of minutes and then started crying. On examination patient's

weight was 5.5kg, pulse rate 170/min respiratory rate 40 /min oxygen saturation 97%, bilateral air entry was normal and equal. Physically the patient found asymptomatic. She was advised to have radiographic pictures (frontal and lateral view x-ray) of neck, chest and abdomen to confirm the FB ingestion and to ascertain the position of the object if any. Radiograph of neck and chest was clear (Figure 1B) but confirmed a finger ring, lodged in the stomach (Figure 1C). While examining the image surgeon opined that the FB has no sharp edge for any hospital emergency. The mid finger perimeter of the baby was measured to 7.8 cm and the diameter of the ring was assessed within 1.5 cm. Considering the shape and size of the FB no intervention was suggested at once for removal of the object. Further, there was no sign of clinical and radiological perforation so a non-operative expectant management and conservative treatment was recommended. Parents were warned not to give any scope to the baby for crying or reflux. It was expected that the FB would pass per-anal within a week or else the patient would be subjected for imaging to find out the changed location of the FB. Every day her stool was searched for the ring. On the 8th day after ingestion, the ring was passed in the fecal matter. The size of the ring was measured to 1.3 cm as the greater outer diameter (Figure 1D) for record.

5. Case Capsule: Report-2

A boy below one year presented to ENT department of a hospital within few hours of orally ingested foreign body. The FB told to be a safety pin. The patient was symptomatic. Drooling and food refusal with a sensation of sharp object in esophagus was the clinical manifestation. The patient was advised for radio imaging (frontal and lateral X- Ray) of neck, chest and abdomen. X-Ray imaging conformed an entrenched open safety pin (Figure 2E). 3D CT scan imaging provided more detail diagnostic information regarding location and perforation in the esophagus (Figure 2F). The open sharp end of the FB was found lodged in the cricopharynx near the left carotid sheath (Figure 2G). A prompt decision for endoscopic removal of FB was the easiest and appropriate intervention. The FB was in inverted position measuring 2.8 cm (Figure 2H) and could be retrieved by the help of a rat tooth forceps under general anesthesia. The patient was discharged with post retrieval medication after few hours.

6. Discussion

As mentioned above, 80-90% orally ingested FBs pass through GI tract and get evacuated asymptotically. About 10-20% of FBs remain trapped in different narrow lumen such as upper oesophagus, pyloric region, ileocecal junction and rectosigmoid colon.³ These trapped FBs are mostly removed endoscopically. Aihole²⁴ reported spontaneous



Figure 1: Case-1- A: 100 days baby victim for finger ring foreign body, B: X-Ray imaging of throat and chest without any foreign body, C: X-Ray imaging showing a finger ring lodged in abdomen, D: evacuated gold ring.



Figure 2: Case- 2- E and F: X-Ray and 3D detection of safety-pin, G: CT scan showing piercing pin, H: retrieved FB)

evacuation of an ingested hair pin in an infant of 7 months. Often small anatomy of neonates, infants and toddlers retain some of the ingested FBs which lead to many pathological conditions. Amini-Ranjbar et al.²⁵ in a prospective study found that the instances of corrosives (disk batteries) and sharp FBs retention in infants at 37% and 31% respectively. These FBs are stuck in sub-glottis area (7%), oesophagus (7%) stomach and intestine (86%). They added that young toddlers are more prone to oral ingestion of FBs than early infants. Similarly in another recent study Dörterler and Gunendi³ recorded the childhood localisation of FBs in oropharynx (10%), esophagus (20%) stomach and pylorus

Table 1: Types of foreign bodies orally ingested by neonates and infants

Types	Name	Risk factors and management
Metallic	Coin, magnet, metallic ball Jewelry, button battery,	May obstruct the aerodigestive system, esophagus, pylorus based on their size. Many of them pass asymptomatic except multiple magnets and dead battery. They need endoscopic retrieval intervention.
Non-metallic	Plastic, food bolus Stone, seed, rubber, Buttons, Wood piece, glass piece	May obstruct anywhere in GI tract, organic FBs are comparatively less risky if not in oropharynx. Stone rubber, plastic and wood need retrieval intervention if stuck.
Sharp & elongate	Nail, screw, pins, needle, safety pin, hair pin, hair clip, tooth pick, Razor, glass piece, Fish bone,	There is every chance of impaction and perforation in any part of GI tract mostly upper GI tract. It is a medical emergency need imaging, retrieval/laparotomy
Corrosive	Live battery, soap, domestic chemicals, cleanser thermometer mercury,	Acute burn, perforation, tissue inflammation, tissue liquefactive necrosis vascular thrombosis, Coagulative necrosis
Radioopaque	Metallic objects, crystal glass, stone seed, rubber	It is easy to locate and assess by X-ray imaging
Radiolucent	Wood, thin fine glass, plastic, Superabsorbent polymers, aluminum pop tab	Non visible by radiograph, barium application is contraindicated in perforated patient. Must be evaluated endoscopically, CT, MRI, USG
Intermediate lucency	Foodstuff, fish bone, fine thin glass	Poorly visible or nonvisible in radio imaging. Must be confirmed by ultrasonography/ MRI

Table 2: Symptoms of oral ingested FB in preverbal babies

Location	Symptom	Complicacy
Oro-pharyngeal	blood stain saliva, drooling hypersialorrhoea/ptyalism, / pooling secretions, coughing / choking, grunting, stridor, respiratory distress, tachypnea /dyspnea cyanotic episode	Scratches/ lacerations / perforation. Retro-pharyngeal abscess, soft-tissue abscess/infection
Esophageal	Dysphagia/odynophagia, Gagging/ vomiting, wheezing, food refusal / poor feeding,	lacerations /abrasion of mucosa Oesophageal necrosis Retropharyngeal abscess Oesophageal obstruction/ subsequent paraoesophageal abscess Mediastinitis, organ perforation, extraluminal migration, penetration to heart and lungs, tracheoesophageal /aorto-esophageal fistula
Abdominal	Gastrointestinal bleeding, melena vomiting/ regurgitation/ gastroesophageal reflux, hematemesis/ hematochezia/ bilious emesis, Distention of stomach and bowel obstruction,	Entrapment of object within Meckel's diverticulum, penetration to liver and left lungs, perforation leads to peritonitis and advanced sepsis, acute or sub-acute bowel obstruction

Table 3: Three step managements of FBs in neonates and infants

Step	Criteria and conditions	Management
Need no imaging	Asymptomatic, normal in clinical examination, no known gastrointestinal abnormalities, known history of small noncorrosive, non-heavy metal blunt FBs, passed through pharynx and esophagus	Access the oral cavity and observe the oropharynx by illumination. Wait and watch for easy per anal evacuation.
Imaging needed (No emergency)	Round, blunt, smooth metal and nonmetal medium size FBs. Passed through pharynx and esophagus asymptomatic. X- Ray, CT, MRI as per the radio density of the object	Assertion the inflammation, bleeding and obstruction in upper GIT if any. Follow the movement of FB with conservative treatment such as laxatives and fibrous food, confirm per anal evacuation.
Need imaging and immediate retrieval (Emergency)	Elongated sharp objects, disc battery corrosive/caustic agent, stuck at oropharynx, oesophagus, stomach, small bowel with or without symptoms	Based on radiolucency/radio opacity of FB plan for X-Ray imaging /contrast CT/MRI/USG, endoscopic retrieval/ removal with Dromia baskets/ laparotomy/open surgery. Emetics, muscle relaxants, and meat tenderizers are typically ineffective,

(30%) and 10 % in rest of the GI tract. The trapped FBs in upper GI tract are mostly removed endoscopically. In neonates and infants, it is safe to retrieve the lodged FBs under general anaesthesia. A case of stone retrieval by rigid esophagoscope in a two-month-old infant was claimed under general anaesthesia by Yadab et al.²⁶ Like adults and children, neonates and infants also ingest a wide range of FBs orally. Collins¹² reported a case of coin ingestion and its spontaneous per anal evacuation in one year old infant with conservative treatment. An impacted bone removal from cervical oesophagus of a 25 days old neonate by open esophagostomy is in record.²⁷ Alabkary et al.²⁸ claimed a laparoscopically removal of a metallic FB from the terminal ileum of a young toddler. Lee and Kim²⁹ reported a rare case of lead ball ingestion by an infant and its interventional retrieval. They retrieved the balls by laparoscopic appendectomy. Wu et al.¹³ reported three cases of FBs (melon seed, dates seed and magnet) lodgment in the terminal ileum and their surgical removal in three infants. They took the conservative therapy of air enema to remove a pen cap on 4th day of lodgment in a 13 month infant. Lone et al.³⁰ located and retrieved an impacted gold earring jewelry from upper esophagus of a two- month-old infant. Orsagh-Yentis et al.³¹ in a cohort study found the significant ascending trend of jewelry ingestion over the years. They added that neonates and infants accounted for 46.8% of jewelry ingestions incidences in their study. In the present case capsule a 100 days old infant ingested a gold finger ring and evacuated spontaneously with conservative treatment and observation. In this case calculated ring size was less than the expected pylorus diameter of the baby. Spontaneous removal of any blunt FB from stomach through lower gastric tract depends open the pyloric diameter of the infant. Said et al.³² in an ultrasonic measurement study reported the normal pyloric diameter of 17 weeks infant is more than 1.5 cm. This is the reason for anticipatory conservative treatment for spontaneous evacuation of gold finger ring in the present case study 1.

Srinath et al.¹⁶ reported FBs in the esophagus of two neonates. One was a radiolucent plastic dropper and other was radiopaque hangout of an anklet. Both the FBs detected in esophagus by CT and X- ray imaging respectively. Objects were retrieved by video-flexible endoscope using rath tooth forceps under sedation. Ishak et al.³³ detected a piece of phone screen protector, suspended at the vallecular region of an eight-month infant. The FB as a radiolucent object could not be tressed by X-Ray imaging. It was removed using forceps via direct laryngoscopy under general anesthesia. Quick retrieval of sharp FBs is indicated infants to overcome oesophageal ulceration, perforation, tracheal fistula, and aorto-oesophageal fistula which may prove fatal.² It is wise to remove the sharp objects before it moves beyond the beyond duodenal curve.²¹ Kamran et al.^{34,35} reported that a metallic spring passed through

ileocecal junction and got struck in lateral wall of cecum causing erosion and perforation in a neonate. The FB was retrieved by proximal ileostomy. Gatto et al.³² located two metallic nails of 4 cm (approx.) at duodenojejunal flexure of a toddler and a non-operative expectant management was followed for evacuation. In the present case study (report -2) an infant orally ingested an open pointed safety-pin which was lodged in esophagus. The FB could be retrieved successfully with the help of endoscope and rat tooth forceps under general anaesthesia.

Disc battery ingestion is a rare occurrence in neonates and infants. Battery mostly contains corrosive chemicals like hydroxide of sodium or potassium, oxides of silver or mercuric and heavy metals like zinc or lithium. Initial tissue injury may be caused by electrical current, electrolyte spillage. It may also lead to pressure necrosis if stuck for more time. If battery is retained and broken in GI tract it may lead to heavy metal poisoning. An oesophageal lodged button battery must be removed within 2 hours to overcome the hydroxide action on mucosa and caustic injury manifestation.² Kramer et al.⁵ cross referred some fatal cases of aortoesophageal fistula due to prolong impaction of button battery in oesophagus. Among all the button batteries lithium batteries are more corrosive and leads to fatal complication.¹⁹ Generally, button battery looks like metallic coin on radiograph but BBs' lateral view radiograph shows two peripheral concentric rings or "step off" sign as an identified mark.⁵ Singh et al.³⁶ could locate an impact metallic disc battery in the upper esophagus and retrieved by esophagoscopy in a neonate. Pizzol et al.³⁷ reported dramatic increase in button batteries ingestion in children including infants during COVID -19 pandemic. This they attributed for enhanced playing activity with electronic toy and gazettes during the pandemic period. Varga et al.³⁸ in their review reported button battery ingestion in a four month baby and described the harmful effect of lithium and mercuric metal batteries.

Once a blunt FB pass beyond the esophagus hopefully it traverses the GI tract without any complication. But it is not true in case of superabsorbent polymer objects.¹¹ Bradford et al.¹⁷ presented a case study of an infant where a radiolucent smooth spherical object could traverse through esophagus, pylorus but stuck in jejunal lumen, caused serious clinical manifestation and indicated enterotomy. Hydrated superabsorbent polymer balls can increase 30-60 times of their dry volume but they are radiolucent, invisible on radiograph.^{5,39,40} These balls can be retrieved by retrieval net or wire basket or polyp snare as per the shape or size of the FB. Mirzaand Sheikh⁴¹ reported a case of crystal gel balls ingestion in a six-month-old infant. Swollen crystal gel was removed by enterotomy but patient succumbed due to anastomotic leak. Patcharu et al.⁴² reported a case of radiolucent raisin obstruction of small bowel in 2 days old neonate removed by enterotomy.

Ingestion of caustic substances is often seen in infant below three years age and instances are more in male child. Strong alkaline substances as FB (pH> 11.5) are more detrimental as that quickly promote the saponification and liquification necrosis. Oral ingested of caustic substances is observed to produce lesions in digestive, respiratory, and ENT tracts. Common sequelae are stricture formation in esophagus, stomach, pylorus, duodenum and small bowel, perforation along the GI tract, and hemorrhage. Retrosternal pain, gastro-esophageal reflux and melena are some of the common clinical manifestations seen in neonates and infants.^{3,43} Accidental oral infestation of sulphuric acid (strong acid) in a 6-hour neonate and drain opener (a strong alkaline) in an infant were reported from medical emergency departments.^{44,45}

7. Conclusion

Unlike children, neonates and infants show variable size of small GI anatomy. There are flexible guidelines available for retrieval management of bulk, sharp and corrosive FBs. However, lodgment type, lodgment site and clinical manifestation can prompt for emergency intervention or conservative approach of management.

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None.

9. Conflict of Interest

None.

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