

ORIGINAL ARTICLE

Foreign Body Ingestion among Children of Northern Sarawak: A Retrospective Single Centre Experience

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ABSTRACT

Foreign body ingestion (FBI) is a common problem among children around the world. The management modality may differ according to the materials and clinical presentation. This study aims to assess the clinical, endoscopic, and therapeutic aspects of this FBI among children in a district hospital in northern Sarawak. A single-centre retrospective study was conducted for FBI in children of northern Sarawak from January 2018 until April 2020. A total number of 36 children were admitted during the 28 months duration with a 19:17 ratio of male:female. The children were between the age of 8 months and 10 years old with a median age of 4 ± 0.3 yrs. Coins (52%), fish bones (11%), and batteries (5%) were the most commonly ingested objects. The clinical features included asymptomatic presentation (47%), vomiting (36%), throat pain (8%), and choking sensation (8%). Routine radiological examination ensured the discovery of the FBI in 88% of the cases. Among the 36 children admitted, 19 (52%) children were managed conservatively while 17 (47%) children required endoscopic removal of foreign bodies without operative management. The length of stay in the hospital ranges from 1 day to 9 days (mean 2.52 days). FBI in children is more common at a younger age. Clinical findings depend on the shape of the ingested materials, the patient's age, and the time of referral as they mostly could be managed

conservatively. Upon failure of a conservative approach, a safe and uncomplicated removal should be performed.

INTRODUCTION

Foreign body ingestion (FBI) is a common problem worldwide, most commonly occurring in children after the age of 6 months to preschool age. Various types of foreign bodies can be ingested, which can be divided into sharp-pointed and non-sharp-pointed objects. The most common foreign body ingested is a coin. It has been reported that foreign bodies are usually passed uneventfully in 80 – 90% of patients while 10 – 20% of patients may require endoscopic management for the removal of foreign bodies and 1% of patients may require operative extraction (Diaconescu et al., 2016).

FBI is a common problem around the world, especially among children who presented to the emergency unit (Oobudi et al., 2019; Dipasquale et al., 2022). It commonly occurs in preschool-aged children (mean age 4 years 3 months in our study) which is likely due to the habits of the children who like to explore the environment and insert objects into their mouths. Some of these are inevitably swallowed, especially in infants and toddlers (Khurshid et al., 2019). In this study, we evaluate the clinical, endoscopic, and therapeutic aspects of FBI among children in a district hospital in northern Sarawak.

MATERIAL AND METHODS

A retrospective study was conducted in Miri Hospital, a district hospital with specialist services from January 2018 until April 2020. This study was registered under the National Medical Research Register with an ID number of NMRR-20-2708-54385. All children with documented cases of FBI were included in this study. Patients without complete data in records were excluded from the study. Children's demographics including age, sex, race, ethnicity, type of foreign body, clinical presentation, number of radiological imaging, and length of stay in the ward were collected. Additionally, specific management and outcome of each patient were also reviewed. Data were collected using patients' medical records from Hospital Miri and were tabulated in Microsoft Excel.

RESULTS

A total number of 36 children were encountered in Miri Hospital from January 2018 until April 2020 for FBI. The children aged between 8 months and 10 years old with a median age of 4 ± 0.3 years old were included in the study. Of these 36 children, 19 were boys (52%). Most of the children were of native origin (21, 58%) followed by nine Malays (25%) and six Chinese (16%).

Children with FBI were immediately brought to medical attention after being witnessed by caretakers or with a strong suspicion (75%) or after developing symptoms (25%). The clinical presentations include vomiting (36%), foreign body sensation (8%), and drooling or food refusal (8.3%) (Table 1).

Table 1 Clinical presentation of the children (n = 36)

Clinical presentations	Number of patients	Percentage (%)
Asymptomatic	17	47.2
Vomiting	13	36.1
Foreign body sensation	3	8.3
Drooling and food refusal	3	8.3

A total of 17 children were completely asymptomatic (47%). The length of stay in the hospital ranged from one day to nine days (mean 2 days). Coins (52%) were the most commonly ingested foreign body followed by fishbone (11%), batteries (5%), earrings (5%), plastic toys (5%), thread (2%), beads (2%), building blocks (2.78%), safety pin (2%), ring (2%), peanut (2%), and whelk (2%) (Figure 1).

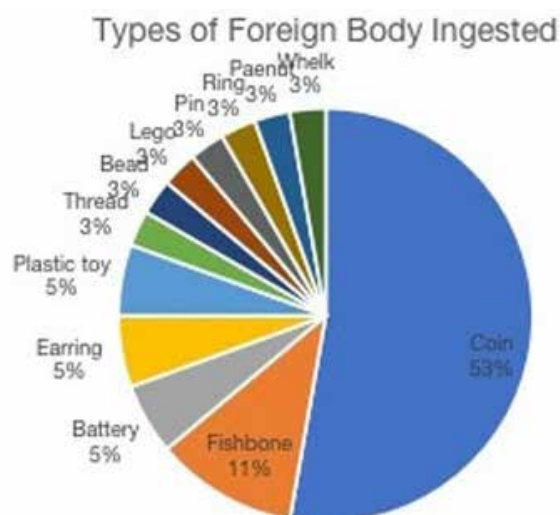


Figure 1 Types of foreign bodies ingested by the children

Routine radiograph examination confirmed the finding of foreign bodies in 88% of the cases. The number of serial radiographs ranged from 1 – 4 with a mean of 2.2. Out of the 36 children admitted, 19 (52%) were managed conservatively whereby 11 children (57%) passed the foreign bodies spontaneously within admission and eight patients (42%) passed the foreign bodies uneventfully after being discharged. A total of 17 children (47%) required endoscopic removal of foreign bodies without operative extraction.

DISCUSSION

Most children were brought to medical attention due to being witnessed or strong suspicion of the FBI by the caretakers. Most of them were asymptomatic. Symptoms may vary depending on the type and size of the foreign body, the age of the patient, and the location of the foreign body lodged (Yalçin et al., 2007). Upon the history of the FBI, the patient should be examined thoroughly. Children are prone to ingestion of multiple objects. The search must be continued even if one has been found.

Attending physicians also should identify high-risk children such as those with pre-existing gastrointestinal tract abnormalities namely congenital malformations and neuromuscular disease. In neuromuscular disease patients, due to impaired dynamics of swallowing, the foreign bodies might lodge in the upper oesophagus or into the airway. Abdul Wahab et al. reported an incident in a congenital myopathy child with a foreign body dislodged in the cervical oesophagus which was successfully removed by direct laryngoscope (Abdul Wahab et al., 2017).

According to Lee, the most commonly ingested foreign body in literature is coins (Lee, 2018). While the most unique FBI in our institution was whelk. Whelk is a type of sea snail that contains high vitamin B12. The shell is usually digestible by enzymes along the gastrointestinal tract, but the side effect of tetraamine is what we need to watch out for. Our patient was observed in the ward for two days following the accidental ingestion and discharged well after being noted to pass out digested shell remnants in the faeces. There are no previous reports on accidental

whelk ingestion in children based on English literature. A few foreign bodies are classified as high risk because of the management complexity. The high-risk foreign bodies include button batteries, large objects (>6 cm long or >2 cm wide), and more than one magnet and lead-based objects (Lee, 2018). Button batteries need immediate removal if lodged in the oesophagus because of the high risk of perforation.

The length of hospital stay in our study ranges from 1 – 9 days with a mean duration of 2.5 days. Most of our patients were from rural areas with medical centres without radiological services. Despite a large number of our patients being managed conservatively, only 60% of them passed foreign bodies spontaneously during a ward stay. This similar rate was reported in many reports due to the inability to determine the transit times of foreign bodies in the gastrointestinal tract (Macgregor et al., 1998). This is one of the disadvantages of conservative management. MacGregor et al. also highlighted that transit time appears to increase with age and it was suggested that oral Cisapride can increase gastric motility after prolonged retention in the stomach (Macgregor et al., 1998).

A single plain radiograph is a useful initial tool in all patients because it can detect foreign bodies even in the asymptomatic child. It can locate the object and characterise its size and shape. Our study managed to get a similar radiograph identification rate from 64% to 96% as reported by Litovitz et al. and Shastri et al. (Litovitz et al., 2010; Shastri et al., 2011). A plain radiograph of the chest should be done in both posterior-anterior and lateral views to well delineate the location of the foreign bodies. Coins that appear “en face” on the PA view are usually lodged in the oesophagus while coins only showing the edge alone is lodged in the trachea. An interval radiograph should be minimised to avoid excessive radiation exposure.

The management of foreign bodies varies according to the severity of clinical presentation, type, and localisation of the foreign bodies. According to the literature, 60 – 70% of ingested foreign bodies passed without any intervention, 20 – 30% would require endoscopic intervention, and approximately 1% would need a retrieval operation (Diaconescu et al., 2016; Guelfguat et al., 2014; Wu et al., 2017). In our study, 52% of the patients passed foreign bodies with conservative therapy (either by close monitoring or prescribed syrup lactulose), 47% patients required endoscopic removal, and none required surgery for retrieval of the foreign bodies. Diaconescu et al. reported higher unsuccessful attempts with endoscopy (Diaconescu et al., 2016). In our study, we overcome this by choosing appropriate endoscopic retrieval devices for the respective objects. Most of the foreign bodies were retrieved using a Dormia basket and Roth net.

CONCLUSION

FBI in children is more common in a younger age group. Clinical findings depend on the shape of the ingested materials, the patient’s age, and the time of referral as they mostly could be managed conservatively. Upon failure of a conservative approach, a safe and uncomplicated removal should be attempted by an experienced endoscopist with appropriate ancillary endoscopic equipment.

CONFLICT OF INTEREST

The authors declared no potential conflicts of interest concerning the research, authorship, and/or publication of this article.

FINANCIAL DISCLOSURE

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REFERENCES

- Abdul Wahab, A., Kammouh, H., & Aljbawi, W. A. (2017). Upper oesophageal foreign body with acute drooling in a child with congenital hypotonia. *Journal of Case Reports and Studies*, 5 (5), 505. <https://doi.org/10.15744/2348-9820.5.505>
- Diaconescu, S., Gimiga, N., Sarbu, I., Stefanescu, G., Olaru, C., Ioniuc, I., Ciongradi, I., & Burlea, M. (2016). Foreign bodies ingestion in children: Experience of 61 cases in a pediatric gastroenterology unit from Romania. *Gastroenterology Research and Practice*, 2016, 1982567. <https://doi.org/10.1155/2016/1982567>
- Dipasquale, V., Romano, C., Iannelli, M., Tortora, A., Melita, G., Ventimiglia, M., & Pallio, S. (2022). Managing pediatric foreign body ingestions: A 10-year experience. *Pediatric Emergency Care*, 38 (1), e268 – e271. <https://doi.org/10.1097/PEC.0000000000002245>
- Guelfguat, M., Kaplinskiy, V., Reddy, S. H., & DiPoce, J. (2014). Clinical guidelines for imaging and reporting ingested foreign bodies. *AMR American Journal of Roentgenology*, 203 (1), 37 – 53. <https://doi.org/10.2214/AJR.13.12185>
- Khurshid, Z., Elsayed Ali, A., Abdul Aziz Al Hamid, S., & Ibrahim Alnafisah, T. (2019). Foreign body ingestion in children: A hospital based experience in Riyadh. *Acta Scientific Paediatrics*, 2 (10), 13 – 19. <https://doi.org/10.31080/ASPE.2019.02.0141>
- Lee, J. H. (2018). Foreign body ingestion in children. *Clinical Endoscopy*, 51 (2), 129 – 136. <https://doi.org/10.5946/ce.2018.039>
- Litovitz, T., Whitaker, N., & Clark, L. (2010). Preventing battery ingestions: An analysis of 8648 cases. *Pediatrics*, 125 (6), 1178 – 1183. <https://doi.org/10.1542/peds.2009-3038>
- Macgregor, D., & Ferguson, J. (1998). Foreign body ingestion in children: An audit of transit time. *Journal of Accident & Emergency Medicine*, 15 (6), 371 – 373. <https://doi.org/10.1136/emj.15.6.371>
- Oobudi, R., Moghtaderi, M., Salarian, L., & Agahi, M. (2019). Foreign body ingestion and aspiration in Iranian children: Experience of 369 cases in a pediatric unit. *International Journal of Pediatrics*, 7 (6), 9567 – 9576. <https://doi.org/10.22038/IJP.2019.39254.3343>
- Shastri, N., Leys, C., Fowler, M., & Conners, G. P. (2011). Pediatric button battery and small magnet coingestion: two cases with different outcomes. *Pediatric Emergency Care*, 27 (7), 642 – 644. <https://doi.org/10.1097/PEC.0b013e3182225691>
- Wu, W., Lv, Z., Xu, W., Liu, J., & Sheng, Q. (2017). An analysis of foreign body ingestion treatment below the pylorus in children. *Medicine (Baltimore)*, 96 (38), e8095. <https://doi.org/10.1097/MD.0000000000008095>
- Yalçın, Ş., Karnak, I., Ciftci, A. O., Şenocak, M. E., Tanyel, F. C., & Büyükpamukçu, N. (2007). Foreign body ingestion in children: An analysis of pediatric surgical practice. *Pediatric Surgery International*, 23 (8), 755 – 761. <https://doi.org/10.1007/s00383-007-1958-y>

