

PICO SEARCH ASSIGNMENT WORKSHEET

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Brief description of patient problem/setting (summarize the case very briefly)

A 3-year-old male presents to the pediatric emergency department after reportedly swallowing a coin one day prior. Initial chest and abdominal radiographs demonstrated the coin had passed through the esophagus and was located in the stomach. The patient was asymptomatic, tolerating oral intake, and had no respiratory distress, vomiting, abdominal pain, or signs of gastrointestinal obstruction. Pediatric gastroenterology recommended expectant management with a high-fiber diet, stool monitoring, and outpatient follow-up. One week later, the patient returns for reevaluation, and the clinical team must determine whether repeat radiographic imaging is necessary or whether continued observation is appropriate given concerns about cumulative radiation exposure from serial imaging.

Search Question: In pediatric patients with suspected ingested esophageal foreign bodies, does a symptom-guided observation approach compared with routine serial radiographs reduce radiation exposure without increasing complications or delayed intervention?

Question Type: What kind of question is this? (boxes now checkable in Word)

☐ Prevalence

☐ Screening

☐ Diagnosis

☐ Prognosis

☒ **Treatment**

☒ **Harms**

Assuming that the highest level of evidence to answer your question will be meta-analysis or systematic review, what other types of study might you include if these are not available (or if there is a much more current study of another type)?

Please explain your choices

If a meta-analysis or systematic review is not available, prospective cohort studies would be an appropriate alternative because they can follow pediatric patients with ingested foreign bodies managed with observation versus routine serial radiographs and assess outcomes such as spontaneous passage, complications, need for intervention, and radiation exposure. Retrospective cohort studies may also be useful because foreign body ingestion is common in pediatric emergency departments, allowing researchers to analyze large numbers of patients and evaluate the safety and effectiveness of different follow-up strategies. Additionally, clinical practice guidelines and expert consensus statements from pediatric gastroenterology and emergency medicine organizations may provide valuable evidence when high-level studies are limited. These sources can help guide decision-making regarding the timing of repeat imaging, indications for intervention, and safe observation practices while minimizing unnecessary radiation exposure in children.

PICO search terms:

P	I	C	O
Pediatric patient	Observation	Serial radiographs	Radiation exposure
Child	Conservative management	Repeat imaging	Complications
Foreign body ingestion	Symptom-guided follow-up	Routine X-rays	Delayed intervention
Coin ingestion	Watchful waiting	Surveillance imaging	Spontaneous passage

Search tools and strategy used:

Please indicate what databases/tools you used, provide a list of the terms you searched together in each tool, and how many articles were returned using those terms and filters.

Explain how you narrowed your choices to the few selected articles. For example, if your search returned 25 articles among the several databases used, what was the process used to determine which four articles to use?

Database	Search Term Used	# of Results	Filters/Limiters Applied	Notes/Observations
PubMed	(child OR children OR pediatric) AND ("coin ingestion" OR "foreign body ingestion") AND (radiography OR imaging OR observation)	3 results	Last 5-10 years, Free full text, English, Meta-analysis, Systematic review, Observational studies, Practice Guidelines, Guidelines, RCT, Clinical trials	PubMed returned 3 results after applying the selected filters. After reviewing the titles and abstracts, one clinical practice guideline was selected because it directly addressed the management of pediatric foreign body ingestion, including observation, follow-up imaging, and indications for intervention. The remaining articles were excluded because they focused on specific foreign bodies or did not directly address the clinical question.
Wiley Online Library	(children OR pediatric) AND ("foreign body ingestion" OR "coin ingestion")	322 results	Last 10 years, English, Medical articles	Wiley Online Library returned 322 results after applying the selected filters. After reviewing titles and abstracts, two articles were selected because they were the most relevant to the PICO question. One article evaluated the management and outcomes of pediatric foreign body ingestion, while the second examined the role of imaging in identifying retained foreign bodies. Most other articles were excluded because they focused on button batteries, magnets, intentional ingestion, epidemiologic trends, or isolated case reports that did not directly address observation, follow-up imaging, or management of pediatric coin ingestion.
Science Direct	(children OR pediatric) AND ("foreign body ingestion" OR "coin ingestion")	262 results	2016-2026, Journals, English Open access	ScienceDirect returned 262 results after applying the selected filters. After reviewing titles and abstracts, one research article was selected because it evaluated factors associated with intervention and outcomes in pediatric foreign body ingestion. Most other articles were excluded because they were case reports, focused on unusual complications, or did not address observation and follow-up management of coin ingestion.

From the three databases, 587 articles were initially identified. After applying filters and reviewing titles and abstracts for relevance, four articles were selected. Preference was given to higher levels of evidence, including a clinical practice guideline and observational studies involving large pediatric populations. Articles were chosen because they specifically addressed the evaluation and management of pediatric foreign body ingestion, including observation, imaging, follow-up, and indications for endoscopic or surgical intervention. The selected studies examined clinically relevant outcomes such as spontaneous passage of foreign bodies, need for intervention, predictors of complications, and the role of imaging in management decisions. These findings were directly applicable to the clinical question regarding whether symptom-guided observation can safely reduce unnecessary repeat radiographs in children with coin ingestion.

Results found:

1. Pediatric gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) and European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) Guideline Executive summary

Citation: Tringali A, Thomson M, Dumonceau JM, Tavares M, Tabbers MM, Furlano R, Spaander M, Hassan C, Tzvinikos C, Ijsselstijn H, Viala J, Dall'Oglio L, Benninga M, Orel R, Vandenplas Y, Keil R, Romano C, Brownstone E, Hlava Š, Gerner P, Dolak W, Landi R, Huber WD, Everett S, Vecsei A, Aabakken L, Amil-Dias J, Zambelli A. Pediatric gastrointestinal endoscopy: European Society of Gastrointestinal Endoscopy (ESGE) and European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) Guideline Executive summary. *Endoscopy*. 2017 Jan;49(1):83-91. doi: 10.1055/s-0042-111002. Epub 2016 Sep 12. PMID: 27617420.

Article Type: Guidelines

ABSTRACT

This Executive summary of the Guideline on pediatric gastrointestinal endoscopy from the European Society of Gastrointestinal Endoscopy (ESGE) and the European Society for Paediatric Gastroenterology Hepatology and Nutrition (ESPGHAN) refers to infants, children, and adolescents aged 0 – 18 years. The areas covered include: indications for diagnostic and therapeutic esophagogastroduodenoscopy and ileocolonoscopy; endoscopy for foreign body ingestion; endoscopic management of corrosive ingestion and stricture/stenosis; upper and lower gastrointestinal bleeding; endoscopic retrograde cholangiopancreatography, and endoscopic ultrasonography. Percutaneous endoscopic gastrostomy and endoscopy specific to inflammatory bowel disease (IBD) have been dealt with in other Guidelines and are therefore not mentioned in this Guideline. Training and ongoing skill maintenance will be addressed in an imminent sister publication.

Important Findings:

- All children with suspected foreign body ingestion should undergo initial X-ray evaluation, even if asymptomatic.
- Coins and other blunt foreign bodies that have passed into the stomach can generally be managed conservatively if the child remains asymptomatic.
- Gastric coins do not require immediate removal unless symptoms develop or the object fails to pass spontaneously.
- The guideline recommends follow-up and monitoring rather than routine intervention for most asymptomatic gastric coin ingestions.
- Blunt foreign bodies in the stomach should be retrieved only if they cause symptoms or do not pass after several weeks.

I chose this article because it is an evidence-based clinical practice guideline developed by ESGE and ESPGHAN that specifically addresses the management of pediatric foreign body ingestion. The guideline directly relates to my PICO question because it discusses observation, follow-up imaging, spontaneous passage of gastric coins, and indications for intervention. The recommendations support a symptom-guided approach for asymptomatic children with gastric foreign bodies and provide guidance regarding when repeat radiographs or endoscopic removal may be necessary. This article represents a high level of evidence and is highly applicable to the management of pediatric patients presenting with coin ingestion.

Cultural Context:

This guideline was developed by experts from multiple European countries. Cultural beliefs are unlikely to significantly affect the management of pediatric coin ingestion because recommendations are based primarily on objective clinical findings and procedural indications.

Social Context:

Healthcare delivery and follow-up practices may vary among European countries and compared with the United States. However, the management of asymptomatic gastric coin ingestion is generally similar across developed healthcare systems.

Economic Context:

Many participating countries have universal healthcare systems, which may influence access to specialist consultation and follow-up imaging. Despite these differences, the recommendations remain applicable to pediatric emergency care in the United States.

Language:

The guideline was published in English; therefore, translation issues are unlikely to affect interpretation of the findings.

2. Inpatient Pediatric Foreign Body Ingestion

Citation: Wood, M.L., Potnuru, P.P. and Nair, S. (2021), Inpatient Pediatric Foreign Body Ingestion. Journal of Pediatric Gastroenterology and Nutrition, 73: 37-41.

<https://doi-org.york.ezproxy.cuny.edu/10.1097/MPG.0000000000003143>

ABSTRACT

Objective: We generated national estimates of patient and hospitalization characteristics for pediatric inpatient admissions for foreign body ingestion (FBI) and compared these to admissions for other reasons. We further identified characteristics that were independently associated with length of stay (LOS). Finally, we hypothesized that endoscopy within 24 hours of admission was independently associated with a shorter LOS in patients admitted for FBI.

Methods: In this retrospective study, we used data from the Kids' Inpatient Database for 2016. Admissions for FBI were identified and national estimates of patient and hospitalization characteristics were generated. Patients admitted for FBI were compared to patients admitted for other causes. Data were analyzed for independent associations with LOS. Subgroup analysis was performed to determine whether early endoscopy was associated with a shorter LOS.

Results: A total of 2464 admissions for FBI were identified in the database. The median (interquartile range) patient age was 4 (1–11) years with a slight male predominance. Most patients (82.6%) had an endoscopy performed during admission. Independent factors associated with increased LOS included: airway procedures, intra-abdominal surgery, psychiatric diagnosis, esophageal disorder, and developmental delay. Among patients who required endoscopy, 56.7% were performed early (within 24 hours). Early endoscopy was independently associated with a 35% shorter LOS (incidence rate ratio = 0.65, 95% confidence interval 0.54–0.80; $P=0.009$).

Conclusions: Inpatient admissions for FBI frequently require endoscopy and have a short LOS. In patients who require endoscopy during the admission, early endoscopy (within 24 hours of admission) may be associated with a shorter LOS.

Key Words: children, endoscopy, Kids' Inpatient Database database

(*JPGN* 2021;73: 37–41)

Article Type: Observational Study (Retrospective Study)

Important Findings:

- A total of 2,464 pediatric inpatient admissions for foreign body ingestion were identified.
- The median age of patients was 4 years, with most cases occurring in young children.
- Most patients had a short hospital stay, with a median length of stay of 1 day.
- NASPGHAN guidelines recommend urgent or emergent removal for symptomatic foreign bodies or objects lodged in the esophagus.
- Early endoscopy (within 24 hours) was associated with a 35% shorter hospital length of stay.

I selected this article because it evaluated the management and outcomes of pediatric patients hospitalized for foreign body ingestion. The study provided information regarding current management practices, timing of intervention, and clinical outcomes in children with ingested foreign bodies. These findings were relevant to my PICO question because they help inform decision-making regarding observation, follow-up, and indications for intervention in pediatric foreign body ingestion.

3. Role of Nose to Pelvis Imaging in the Evaluation of Foreign Body Ingestion: A Case of Magnet Ingestion in a 2-Year-Old

Citation: Johnson, G.R., Ullah, I. and Abell, R. (2022), Role of Nose to Pelvis Imaging in the Evaluation of Foreign Body Ingestion. JPGN Reports, 3: e221.

<https://doi-org.york.ezproxy.cuny.edu/10.1097/PG9.0000000000000221>

Abstract: Foreign body ingestion (FBI) of small-rare-earth-magnets (SREM) sets are associated with high morbidity and mortality, as these tend to cause significant mucosal injury. Current clinical guidelines for the evaluation of FBI do not include imaging of the nose and neck. A 2-year-old patient presented with known SREM ingestion, with location confirmed in the right lower quadrant on imaging at the time of initial evaluation. Subsequent imaging involving the neck revealed additional magnets lodged in the patient's hypopharynx, which were missed on initial evaluation. This case highlights the importance of considering advanced imaging of the nose and neck to uncover extraintestinal foreign bodies.

Key Words: foreign body ingestion, high powered magnets, imaging, guidelines

Article Type: Case Report

Important Findings:

- Current foreign body ingestion guidelines typically focus on chest and abdominal imaging.
- Additional imaging of the nose and neck identified foreign bodies that were missed on initial evaluation.
- The case demonstrated that foreign bodies may be present outside the gastrointestinal tract despite initial imaging findings.
- The authors suggest that expanded imaging may improve detection of foreign bodies and prevent complications.

I chose this article because it discusses the role of imaging in pediatric foreign body ingestion. Although the case involved magnet ingestion rather than coin ingestion, it highlights the importance of appropriate radiographic evaluation and how imaging findings can impact management decisions. The article was relevant to my PICO question because it addresses the use of imaging in children with foreign body ingestion and provides insight into situations where additional imaging may be necessary to prevent complications.

4. Foreign body ingestion in children: Definition of a nomogram to predict surgical or endoscopic intervention

Citation: Mantegazza C, Ferraro S, Biganzoli D, et al. Foreign body ingestion in children: Definition of a nomogram to predict surgical or endoscopic intervention. Digestive and Liver Disease. 2024;56(3):312-321.

A B S T R A C T

Background and aims: Foreign body ingestion (FBI) in children requires early identification to prevent adverse outcomes and may necessitate endoscopic or surgical intervention. This study aims to develop a nomogram that identifies children who require urgent surgical or endoscopic intervention by using the patient's medical history and clinical parameters collected at admission.

Methods: This study is a retrospective review (01/2015–12/2020) of a multicenter case series of children admitted for FBI. Data from 5864 records from 24 hospitals in Italy were analyzed. Logistic regression models were used to establish the probability of requiring surgical or endoscopic intervention based on patient history and clinical characteristics. The nomogram representing the results from the multivariable model was reported to examine the propensity for surgery/endoscopy.

Results: The study identified a significant association between intervention and various factors, including type of foreign body (blunt: reference category, disk battery (odds ratio OR:4.89), food bolus (OR:1.88), magnets (OR:2.61), sharp-pointed (OR:1.65), unknown (OR:1.02)), pre-existing diseases or conditions (OR 3.42), drooling (OR 10.91), dysphagia (OR 5.58), vomiting (OR 3.30), retrosternal pain (OR 5.59), abdominal pain (OR 1.58), hematemesis (OR 2.82), food refusal/poor feeding (OR 2.99), and unexplained crying (OR 2.01). The multivariable regression model showed good calibration and discrimination ability, with an area under the ROC curve of 0.77.

Conclusions: This study developed the first nomogram to predict the probability of the need for surgical or endoscopic intervention in children with FBI, based on the information collected at admission. The nomogram will aid clinicians in identifying children who require early intervention to prevent adverse outcomes.

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Article Type: Observational Study / Retrospective Multicenter Study

Important Findings:

- The study reviewed 5,864 pediatric foreign body ingestion cases from 24 hospitals.
- Most children (75.5%) did not require surgical or endoscopic intervention.
- Blunt foreign bodies, such as coins, were the most commonly ingested objects and were often managed conservatively.
- Children with symptoms such as drooling, dysphagia, vomiting, or abdominal pain were more likely to require intervention.
- The authors developed a nomogram to help predict which children may need endoscopic or surgical removal based on clinical findings at presentation.
- The findings support observation in many asymptomatic children while helping identify patients who require more urgent management.

I chose this article because it directly supports my PICO question by helping determine which pediatric patients with foreign body ingestion may need intervention versus observation. Since my patient was asymptomatic and had a blunt foreign body already located in the stomach, this study is useful because it supports risk stratification rather than automatically using repeated imaging or intervention for every child. The article is also stronger than a case report because it includes a large multicenter pediatric population and focuses on management decisions, outcomes, and predictors for intervention.

Cultural Context:

The study was conducted in Italy. Cultural factors are unlikely to have significantly influenced the results because foreign body ingestion management is based largely on clinical presentation and objective outcomes.

Social Context:

Differences in healthcare utilization, referral patterns, and demographics may exist between Italy and the United States. However, the study population consisted primarily of children with common foreign body ingestions, making the findings broadly applicable.

Economic Context:

Italy's publicly funded healthcare system may affect access to specialty care and timing of intervention. Nevertheless, the predictors of intervention identified in the study are clinically relevant regardless of healthcare system differences.

Language:

The article was published in English, minimizing concerns regarding translation or interpretation.

What is the clinical "bottom line" derived from these articles in answer to your question?

The evidence supports continued observation rather than routine serial radiographs for asymptomatic pediatric patients with coin ingestion after the coin has passed into the stomach. Current clinical practice guidelines recommend conservative management with monitoring because most gastric coins pass spontaneously without intervention. Large observational studies further support that most children with blunt foreign body ingestion do not require endoscopic or surgical removal and can be managed safely with follow-up. Repeat imaging or intervention should be reserved for children who develop symptoms such as vomiting, abdominal pain, dysphagia, inability to tolerate oral intake, or signs of gastrointestinal obstruction, or when the object fails to progress after an appropriate observation period. This approach minimizes unnecessary radiation exposure while maintaining patient safety. Limitations of the available evidence include the lack of randomized controlled trials comparing observation with routine serial imaging, reliance on retrospective studies, and limited research specifically evaluating asymptomatic gastric coin ingestion in children.

