

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Foreign body

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Swallowed foreign body

INTRODUCTION

- Foreign bodies (FBs) ingestion is a very common problem in children between 6 months and 3 years of age (25% of them younger than 1 year).
- Frequent cases of FBs ingestion often occur in children with intellectual disability or those with behavioral disorders.



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- FBs ingestion generally does not cause complications and passes through the gastrointestinal tract spontaneously.
 - About 80–90% of FBs pass through the gastrointestinal (GI) tract spontaneously without complications, whereas 10–20% of them are removed endoscopically.
 - Few children (1%) require open surgical removal secondary to complications

Patients with Esophageal foreign bodies:

- 1. Pediatric patients
- 2. Psychiatric patients
- 3. Patients with underlying esophageal disorders like malignancy, strictures, achalasia
- 4. Edentulous patients (elderly)

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- The initial diagnosis is based on sudden onset of symptom coupled by seeing the child putting an item in his/her mouth while playing
 - The assessment and management of FBs ingestion depends on the patient's presentation and physical examination FBs ingestion.
 - morbidity is dependent on the type of FBs ingested; disc batteries lead to esophageal perforation and tracheoesophageal fistula formation with significant morbidity and mortality. Coins and multiple magnet ingestion can require surgery to prevent secondary perforation-related attraction and necrosis of the bowel.

INITIAL ASSESSMENT

- Initial assessment includes a **thorough medical history** should be obtained immediately to determine any medical problem and prompt physical examination should be performed .
- FBs ingestion may be asymptomatic (10–50)% of all cases or symptomatic, depending on the location of the FBs.

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- **In the esophagus**, it may present as dysphagia, refusal of food intake, salivation, pain behind the sternum or respiratory symptoms (wheezing, stridor, frequent pneumonia, weight loss)
 - **In the stomach**, it is usually asymptomatic except large FBs causes obstruction in the outlet of the stomach and appears as non-bilious vomiting and/or refusal to feed

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- FBs in the distal parts of the gastrointestinal tract can cause right lower quadrant pain due to impaction at the level of the terminal ileum and hence mimicking acute appendicitis .
 - The most common clinical symptoms include dysphagia (37%), drooling (31%), choking (17%). Other symptoms included: cough, abdominal pain, chest pain, stridor, vomiting, and refusal to eat .
 - When the FBs is pressing on the trachea, inspiratory stridor or expiratory wheezing can be detected on the chest auscultation .

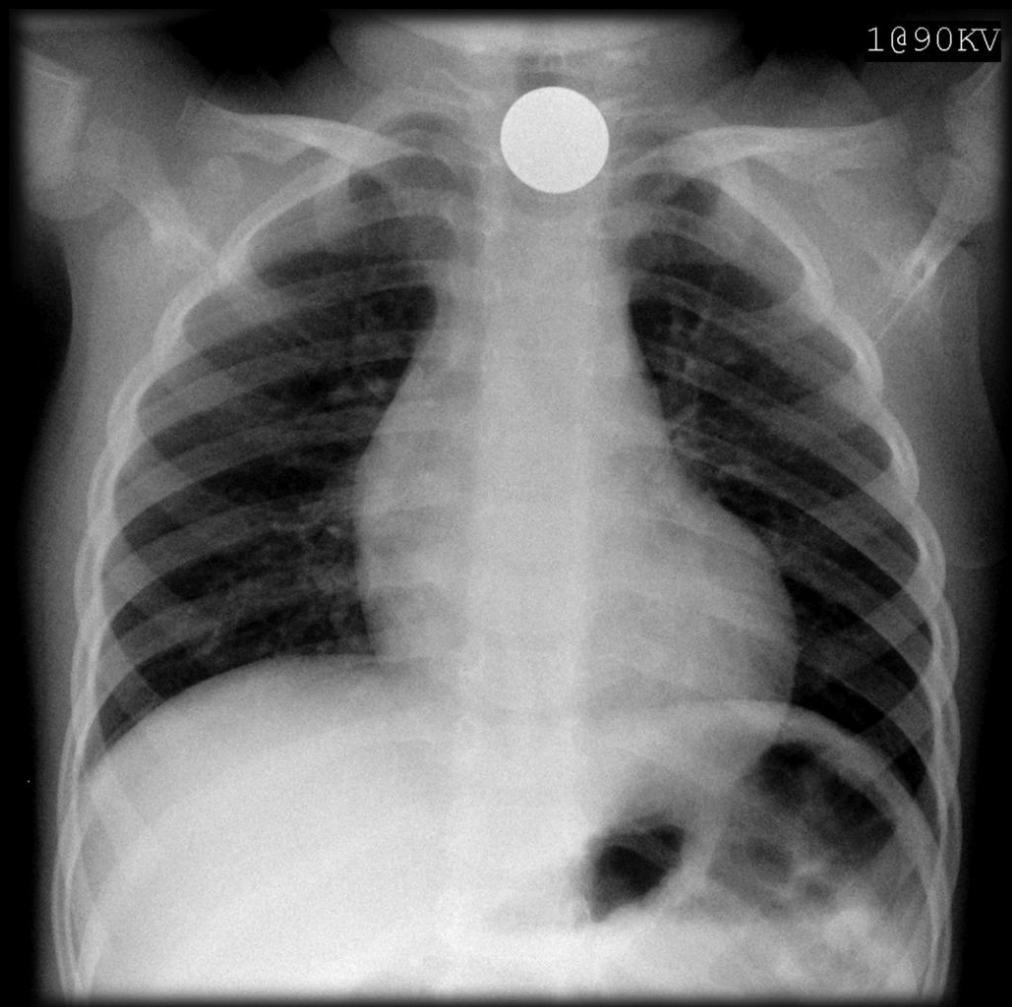
RADIOLOGY EVALUATION

- Diagnosis of FBs confirmed using X-ray, barium swallow, computed tomography (CT) scan or magnetic resonance imaging (MRI).
- **64%** of patient ingested a **radiopaque** object.
- 25–30% of FBs are not visible through X-ray, but in all cases it should be performed to look for signs of obstruction as indicated by **air-fluid levels** or **free air** indicating perforation.
- CT scan may be necessary to characterize the size, shape and anatomic location of the swallowed body .

TYPES OF FBS INGESTION

- **Coins:**

- The **most commonly** ingested FBs in children are coins **(80% of FBs)**. Approximately 30% of them, spontaneously pass through the digestive system without complications depending on its location, age of the child, and the size of the coin .
- Coins measuring more than 23.5 mm in size are more likely to become impacted, particularly in children aged under 5 years, and coins measuring more than 25 mm in diameter are unlikely to pass through the pylorus.
- Children with an ingested coin without any history of esophageal disease or surgery and no respiratory symptoms can be observed over 12–24 hours before performing an invasive procedure (endoscopic or surgical removal)



- **Button batteries (BBs)**

- The frequency of button batteries (BBs) ingestion has increased. Lithium batteries hold enough charge to cause harm even after they are used up .
- The pathogenesis of injury occurs as a result of the powerful electrical current that discharges into the moist tissues and causes hydrolysis and injury.

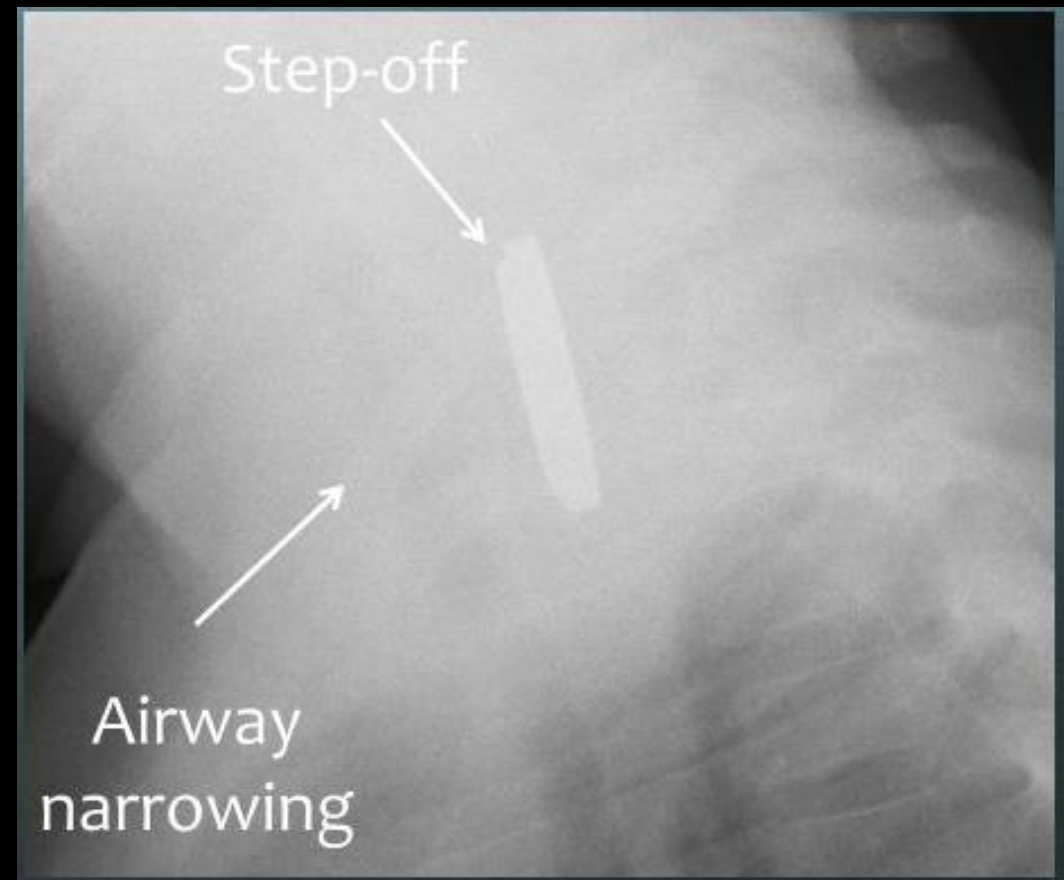
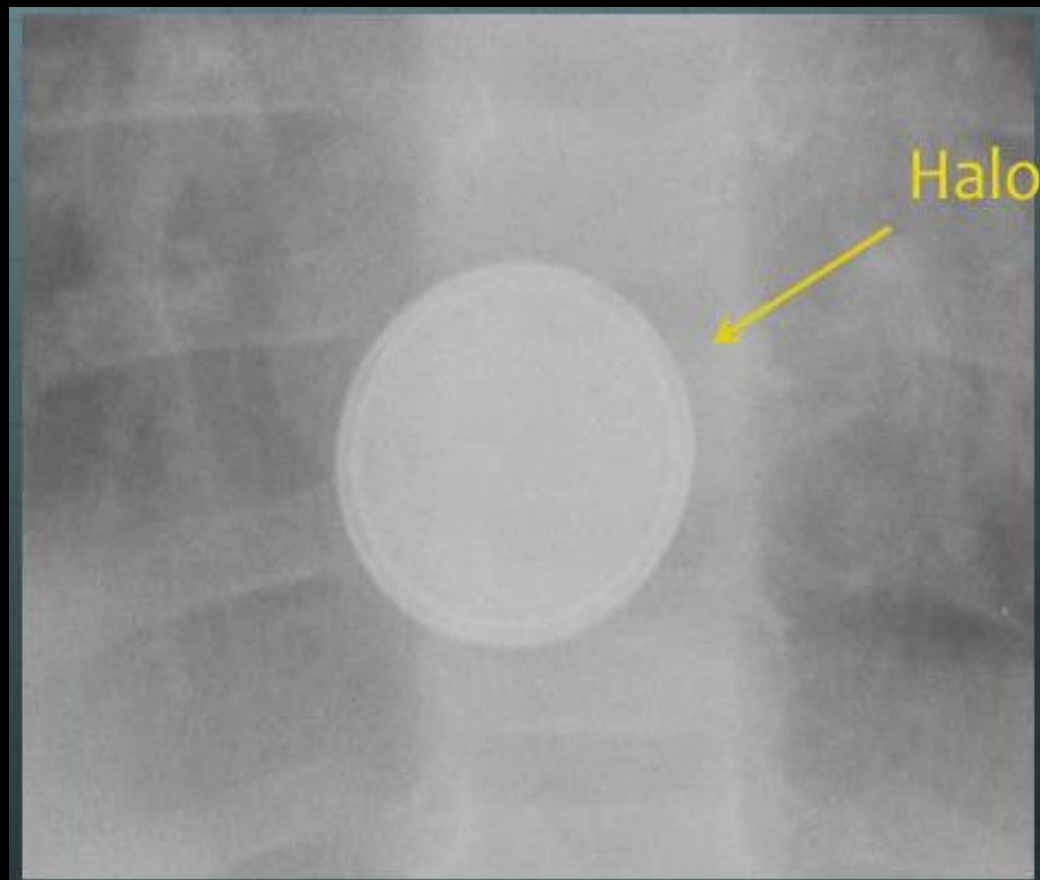
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- The damage can last for days or weeks after the battery is removed, which can lead to death as a result of the formation of an aortic esophageal fistula after about 19 days .
 - The risk of BBs ingestion is greater in
 - children Less than 5 years old
 - who swallow more than 20 mm battery or
 - multiple batteries .

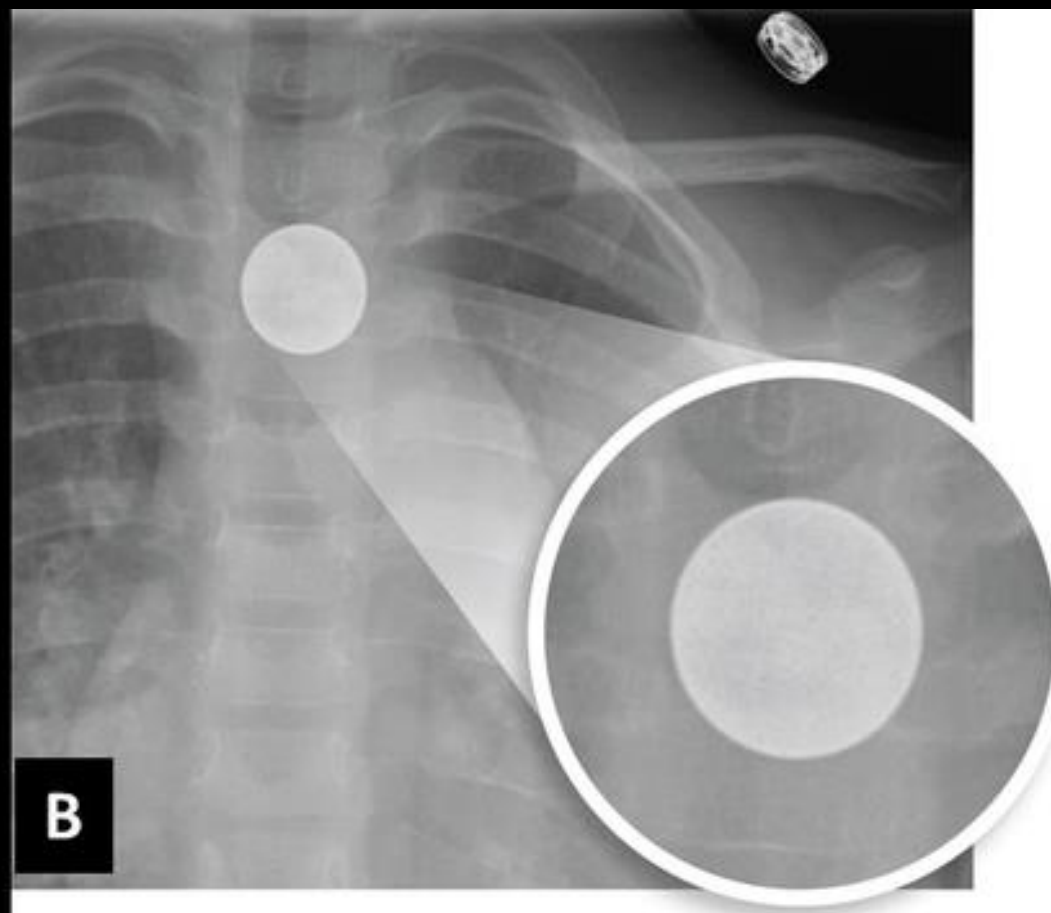
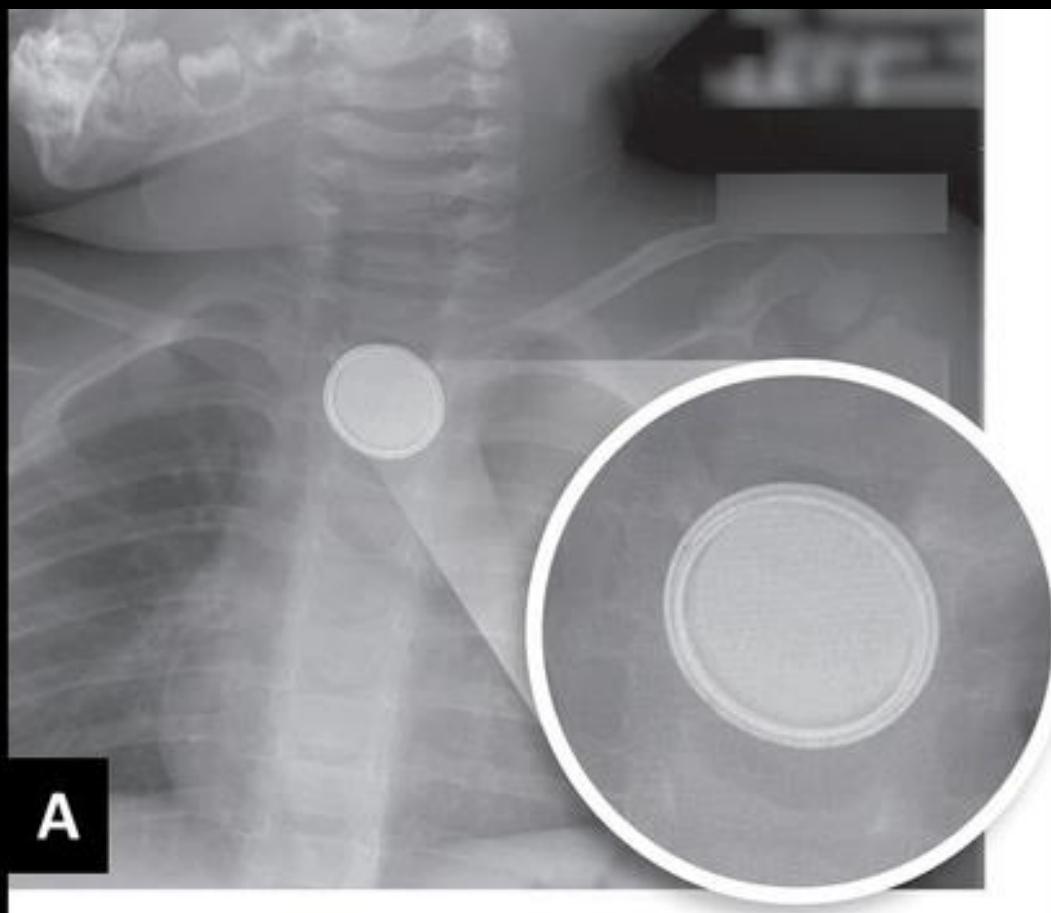


- The most important complications of BBs ingestion are :

- necrosis,
- perforation,
- esophagotracheal fistula,
- cervical abscess,
- and stenosis of the esophagus.

- An AP, and lateral x-ray of the neck, chest, and abdomen should be performed which shows a **double-ring sign or double halo signs** in an **AP** imaging (circle-within-a-circle appearance) and **step-off mark** in **lateral** appearance (characteristic two-layer appearance)





- ***Sharp or pointed foreign bodies:***

- Sharp or pointed foreign bodies ingestion (such as Pins, needles, bones, etc.....) is associated with high morbidity and mortality .
- It can cause serious complications such as perforation (15–35)%, abscess formation, trachea-esophageal fistula, aortic esophageal fistula, peritonitis, and even death . Therefore, it is preferable to remove pointed and sharp bodies from the esophagus or stomach whenever possible to reduce the incidence of adverse events.
- X-ray examination is necessary to diagnose radiopaque objects (as needles, pins, etc....), while radiolucent FBs such as plastic, glass, or wood cannot be identified. Therefore, an emergency endoscopy is recommended when high index of suspicion exists for ingestion of sharp FBs even with a negative X-ray.



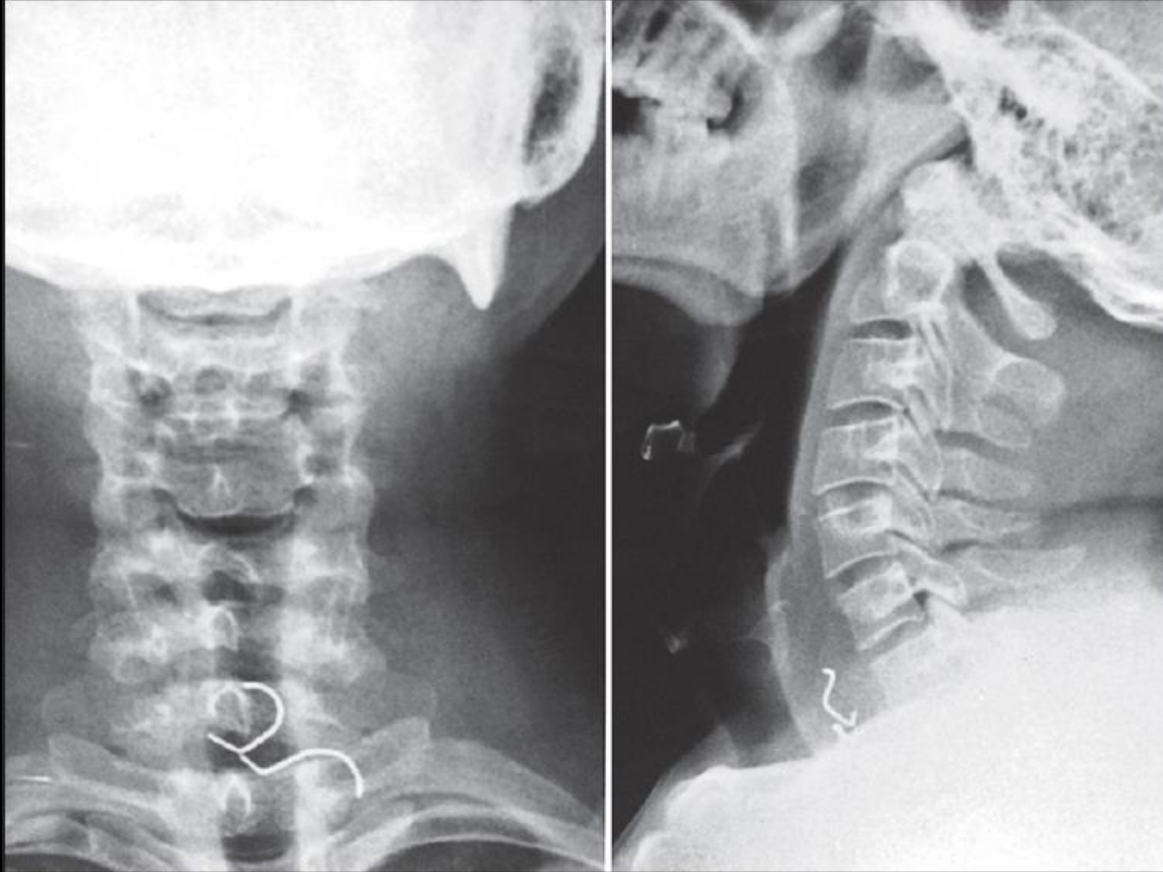


Figure 3a: X-ray showing foreign body in cricopharynx (denture)



Figure 3b: Retrieved foreign body

- **caustic or corrosive substance :**

- A *caustic* or *corrosive* substance is a dry or liquid chemical agent that may induce injury on contact with living tissue.

- **CORROSIVES:**

- Common corrosives that may cause damage to the esophagus and stomach include acids ($\text{pH} < 7$) such as sulfuric, hydrochloric, and nitric acids. Some concentrated weaker acids may also cause injury, including formic and acetic acids. Typical products are battery fluids, swimming pool and toilet bowl cleaners, and rust removers.
- Ingestion of corrosives causes coagulation necrosis, a protein denaturation that leads to formation of a gel-like substance called the *coagulum*. This coagulum on the mucosa surface usually limits deep penetration and absorption in the esophagus. Therefore acid ingestion has the potential for greater injury to the stomach, in which the increase in pH may result in deeper penetration, which leads to perforation or stricture formation

- **CAUSTICS :**

- Common caustics (bases or alkalis with $\text{pH} > 7$) include oven, drain, and laundry cleaners; hair relaxers; and dish detergents. Lye, or sodium hydroxide—often called *caustic soda*—and potassium hydroxide are the most common chemical agents.
- The severity of tissue injury depends on the pH concentration, contact time, and nature of the ingested material.

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- One of the potentially confusing aspects of management of corrosive or caustic ingestion is the discordance between symptoms and severity of injury.
 - The most common symptoms are drooling, dysphagia, oral pain, odynophagia, chest pain, and abdominal pain. Fever, chest pain, abdominal pain, and hypotension may indicate esophageal or gastric perforation. An increased number of symptoms may correlate with greater likelihood of injury. Severe complications include hemolysis, disseminated intravascular coagulation, renal failure, peritonitis, mediastinitis, and death.⁴¹ Ingestion of industrial grade hydrofluoric acid may be rapidly fatal

Box 207-2. STAGING ESOPHAGEAL BURNS

Grade 0: No injury

Grade I: Mucosal edema and hyperemia

Grade IIa: Superficial, noncircumferential, whitish membranes, shallow ulcers, hemorrhage, friable exudates

Grade IIb: Deep, circumferential lesions with stricture formation

Grade IIIa: Small, scattered areas of necrosis

Grade IIIb: Extensive necrosis

Grade IV: Perforation

MANAGEMENT

- There are many factors to consider when determining how to decrease the foreign bodies ingestion, especially in the extremely young. Certain object characteristics such as size, shape, and material must keep away from children. Education for parents should continue to be prioritized when possible. This can be through positions such as pediatricians, and school teachers as well as media advertisements and printed materials.

- **Coins:**

- Esophageal coins must be removed within 24 hours to reduce the incidence of complications .
- Asymptomatic children with ingested coins in the stomach should be monitored closely and the stool examined to check for the passage of the coin, and serial X-rays should be obtained every 1 or 2 weeks until the passage of the coin has been confirmed. The coin that remains in the stomach after 2–4 weeks should be endoscopically removed . Patient with asymptomatic small bowel coins should be clinically observed. While children with symptoms of bowel obstruction or perforation require, surgical removal .

- **Button batteries (BBs):**

- Batteries in the stomach often passed without complications. The American Society for Gastrointestinal Endoscopy (ACGE) recommendations is to extract the BBs in the stomach if the diameter is greater than 20 mm and has remained for more than 48 hours after radiological investigation . The probability of the battery being expelled out of the body is 85% when it passes the duodenum within 72 hours . Recent research recommends performing esophageal endoscopy in all BBs ingestion, even if they are in the stomach to evaluate the esophageal mucosa before the battery is transferred to the stomach.

- ***Sharp or pointed foreign bodies:***

- Gastrointestinal endoscopic removal is necessary for sharp or pointed FBs, large and wide objects (more than 2.5 cm diameter in older children, more than 2 cm diameter in infants and young children), or long objects (more than 6–10 cm diameter in older children, more than 4–5 cm diameter in infants and young children) that are located in the stomach .

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- The esophagus has several areas of physiologic narrowing, where a foreign body may become impacted:
 - the UES,
 - the level of the aortic arch,
 - and the diaphragmatic hiatus/LES.
 - The key to the management of foreign bodies is the understanding that different foreign bodies require different interventions; therefore it is important to distinguish a true foreign body from a food impaction.

- **caustic or corrosive substance :**

- Although endoscopy is the gold standard to stage the extent of injury, many authors have debated which patients need endoscopy following caustic ingestion.
- For those who require endoscopy, when is the optimal timing of endoscopy to assess an evolving lesion while minimizing risk of perforation as a result of the procedure? Some authors recommend endoscopy in all patients.
- Most authors agree that endoscopy should be considered if the patient has oral lesions, symptoms, or suicidal caustic ingestion.

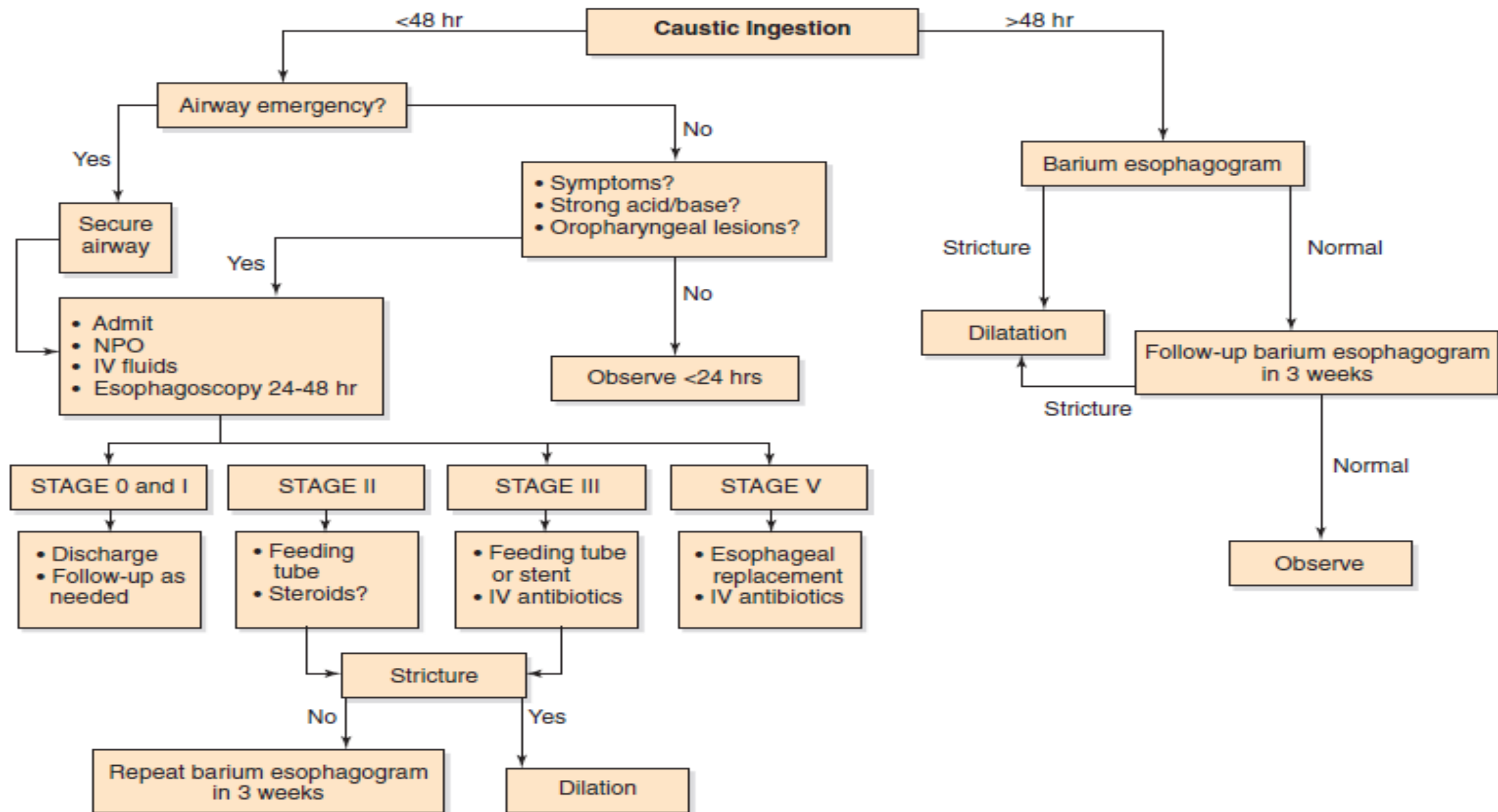
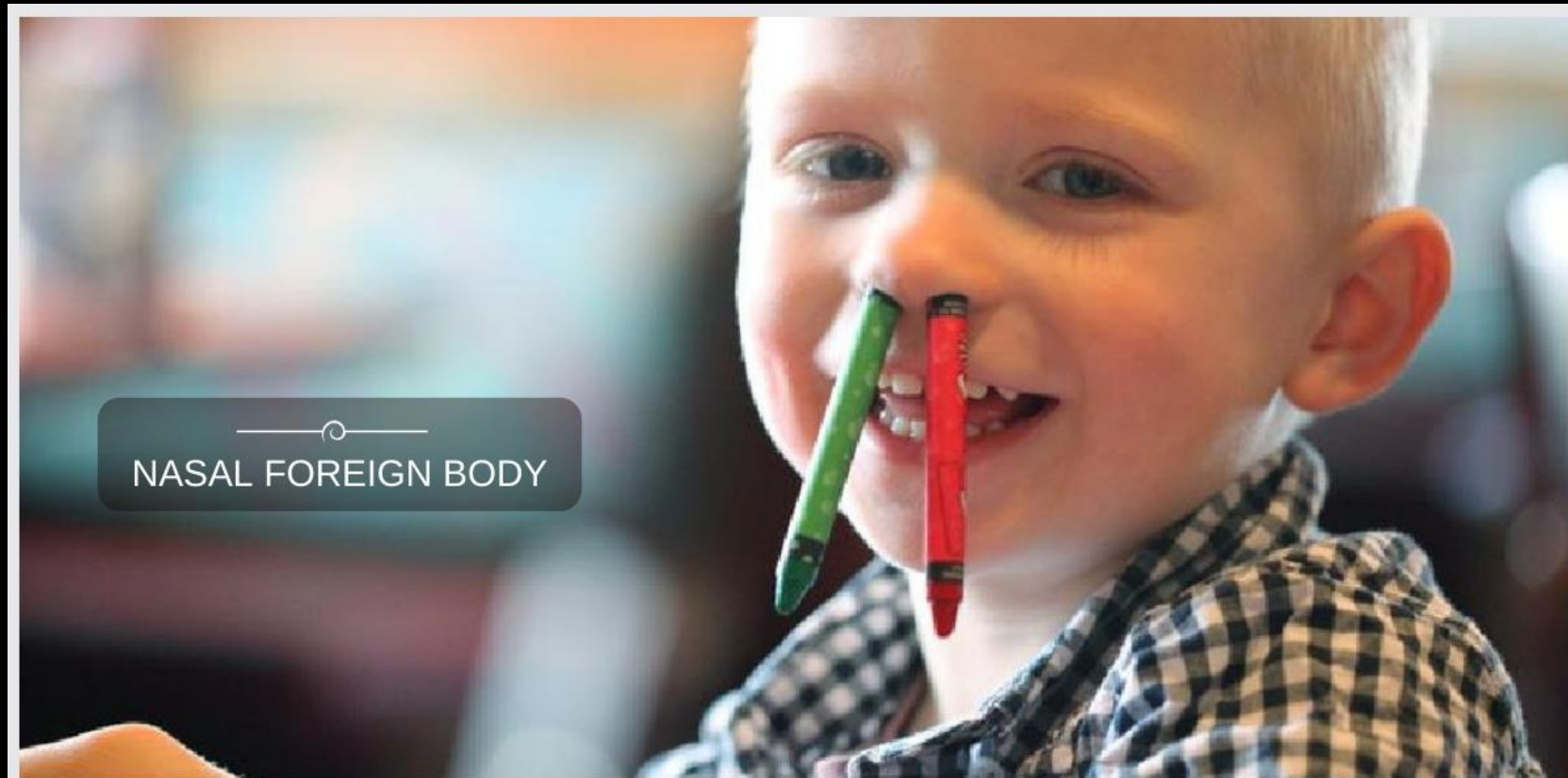


FIGURE 207-6. Caustic ingestion algorithm. IV, intravenous; NPO, nothing by mouth.

FOREIGN BODIES IN THE NOSE





Foreign bodies are found in **children** in most cases and may have been retained for a very long time . They include coins, metal fragments, peas, etc.

Clinical Features.

These include **unilateral nasal obstruction**, worsening **chronic purulent rhinitis** or sinusitis, **unilateral fetid secretions**, and **formation of a rhinolith** due to deposition of calcium and magnesium salts around the foreign body.

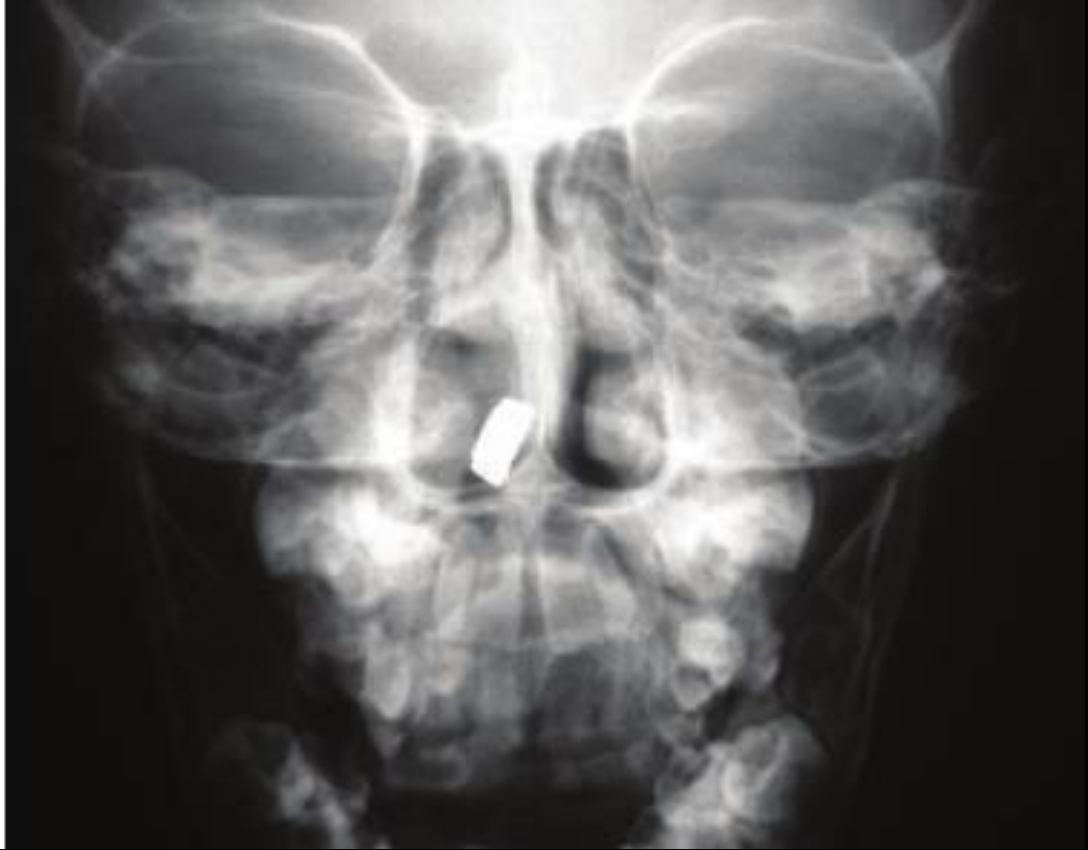
Nasal foreign bodies can be found in any portion of the nasal cavity, although they are typically discovered around the floor of the nose just below the inferior turbinate. Another common location is immediately anterior to the middle turbinate.

A loose foreign object in the postnasal space can accidentally be aspirated or pushed back in an attempt at removal and may result in acute respiratory obstruction



Diagnosis. This is based on ***anterior rhinoscopy, nasal endoscopy,*** and ***radiology***. A foreign body is often an incidental finding. The nose is inspected and probed using an endoscope after decongestion and induction of local anesthesia.

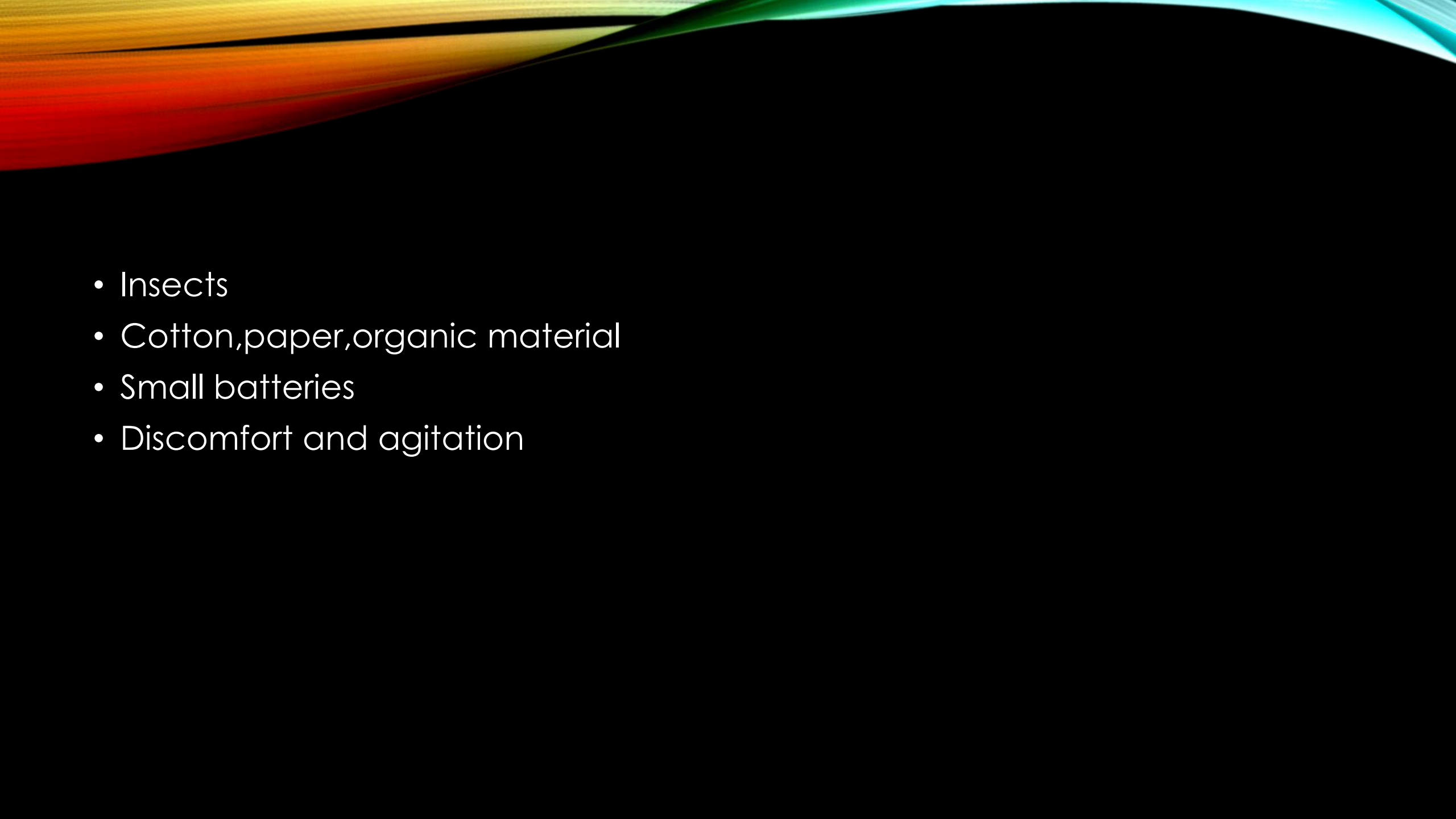






Treatment. The foreign body is removed instrumentally, if necessary under brief general anesthesia, as foreign bodies that have been present for a prolonged period are often firmly attached and provoke brisk bleeding when mobilized.

[illegible]

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- Insects
 - Cotton,paper,organic material
 - Small batteries
 - Discomfort and agitation



FORIGN BODIES

Living Foreign body

- Causes Pain and intense Irritation
- First insect should be killed by household remedy like instilling oil or chloroform water or spirit

No attempt should made to catch insect alive and removal

