Management of Foreign Bodies in the Gastrointestinal Tract

Objectives

- Timing of endoscopy
- Anatomic location
- High risk objects
- Choosing accessories
- Airway protection

Foreign Bodies in the GI Tract

- 1500 people die annually
- High risk
  - Pediatric age group (80%)
  - Edentulous adults
  - Alcoholics
  - Prisoners
  - Psychiatric patients

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Ingested Foreign Bodies

Outcomes
- Pass spontaneously 80-90%
- Endoscopy 10-20%
- Surgery ~1%

*Always consider the possibility of more than one foreign body*

Commonly Ingested Objects

Children
- Coins
- Toys
- Crayons
- Ball point pen caps
- Batteries

Adults
- Food impaction
  - Meat
  - Bones
  - Dentures

Patient Presentation

- History
  - Odynophagia
  - Dysphagia
  - Abdominal pain
- Infants
  - Sudden refusal to eat
  - Chronic aspiration
Patient Presentation

- Physical examination
  - Subcutaneous emphysema: esophageal perforation
  - Drooling: complete esophageal obstruction
  - Peritoneal signs: gastrointestinal perforation

- Radiologic imaging
  - Subcutaneous air
  - Pneumomediastinum
  - Pleural effusion

Understand Anatomy

- Esophagus
  Foreign bodies impact at physiologic narrowings
  - Cricopharyngeus (15-17 cm)
  - Aortic arch (23 cm)
  - Left main stem bronchus (27 cm)
  - Distal esophagus (36-40 cm)
  - Pathologic narrowings due to strictures

- Pylorus

- Duodenal sweep

- IC valve

Indications for Endoscopic Removal of Foreign Bodies

- Esophageal foreign bodies should be removed within 12-24 hours to prevent complications
  - Airway compromise
  - Perforation
  - Aortic or pulmonary fistula

- Foreign bodies leading with sharp/pointed end

- Objects >5 cm and wider than >2 cm do not (usually) pass through pylorus or IC valve
Indications for Urgent Endoscopy

- Complete esophageal obstruction
  - Unable to handle secretions
- Sharp objects below the UES
  - If above UES = ENT
- Button batteries within reach of gastroscope

Tools of Trade

- Grasping forceps
- Polypectomy snare
- Roth retrieval net

Esophageal Food Bolus Impaction

- Push bolus into stomach – 95% success rate
  - Bypass obstruction with endoscope if possible
  - Assess cause of obstruction and angle at GE junction
  - Reposition endoscope – push food bolus from the right
  - Beware bone spicule within bolus = perforation risk
- Extract food through mouth
  - Overtube to protect airway
  - Forceps, snare, basket
  - Roth net, variceal ligator
Esophageal Food Bolus Impaction

- Avoid Papain (Adolph’s meat tenderizer)
  - Enzymatic digestion of meat
  - Two fatalities
- Glucagon
  - Decreases LES pressure
  - No effect on rings or strictures
  - Low success rate (30%-50%)
- Follow-up EGD to assess/treat strictures

Sharp and Pointed Foreign Bodies

- Toothpicks
- Nails
- Needles
- Razor blades
- Pens
- Safety pins
- Dental appliances

CHEVALIER JACKSON’S AXIOM
“Advancing points puncture, trailing do not”

- Remove sharp and pointed foreign bodies before they pass through stomach
  - Consider overtube
  - 15-35% will perforate intestine, usually near IC valve
  - “Mural withdrawal reflex” turns the object
- If endoscopic retrieval unsuccessful consider surgery if:
  - No movement in 3 days by daily x-ray
  - Object advancing with pointed end
**Button Batteries**

- Hearing aids, calculators, cameras, computers
- Larger batteries (>21 mm in diameter) cause problems
- Rapid injury via direct corrosion, low-voltage burns or pressure necrosis
- Liquefaction necrosis
  - Leakage of alkaline KOH or NaOH in 26-45%

*Esophageal emergency with high potential for esophagotracheal or esophagoaortic fistulas*

**Button Batteries in Esophagus**

- Airway protection
- Roth retrieval net device of choice
- Avoid graspers or forceps which could puncture

**Button Battery in Stomach and Intestine**

- Most pass once in stomach
  - 85% within 72 hours
  - Consider retrieval in stomach with basket or net
- Follow progress with daily x-rays
- No role for ipecac, H₂RAs or laxatives
- Surgery
  - Abdominal pain
  - Failure to evacuate within 72 hours
Summary

- Recognize indications for urgent endoscopy
  - Complete esophageal obstruction, sharp objects in esophagus, button batteries
- Recognize contraindications for endoscopic retrieval
  - Cocaine
  - Perforation
- Plan your strategy before endoscopy
- Be familiar with available equipment
- Protect the airway

Food Impaction – Key Points

- Never let impaction dwell > 24 hours
- Protect the airway
- Push method – success rate 95%
- Extraction through mouth
  - Accessories
  - Overtube if necessary
- Majority (75-100%) have predisposing etiology

Foreign Bodies – Key Points

- 85% pass spontaneously
- Know when to scope
  - Esophagus, sharp, failure to pass
- Secure the airway
- Secure the patient – anesthesia
- Be familiar with available equipment