

## Ingestion of button batteries and super-strong magnets

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### Background

- Most ingested foreign bodies are harmless and pass through the GI tract uneventfully
- Radio-opaque foreign bodies such as metal or some types of bone can be visualised on XR
- Most metal objects can be detected by a metal detector.
- Paper / wood / plastic objects may not be visualised

### **Hazardous objects** such as

- Button batteries and other batteries
- Sharp objects, especially if long >6cm or wide >2cm
- Magnets e.g. fake tongue piercings / neodymium magnets
- Very large objects / filled balloons

### Can cause **life-threatening injuries** such as:

1. Obstruction above the gastro-oesophageal junction, the narrowest part of the GI tract
2. Bowel perforation / rupture
3. Erosion from leaked battery contents or electrical currents discharged from button batteries leading to perforation or aorto-oesophageal fistula or trachea-oesophageal fistula.

### Assessment

Symptoms and signs associated with FB in oesophagus:

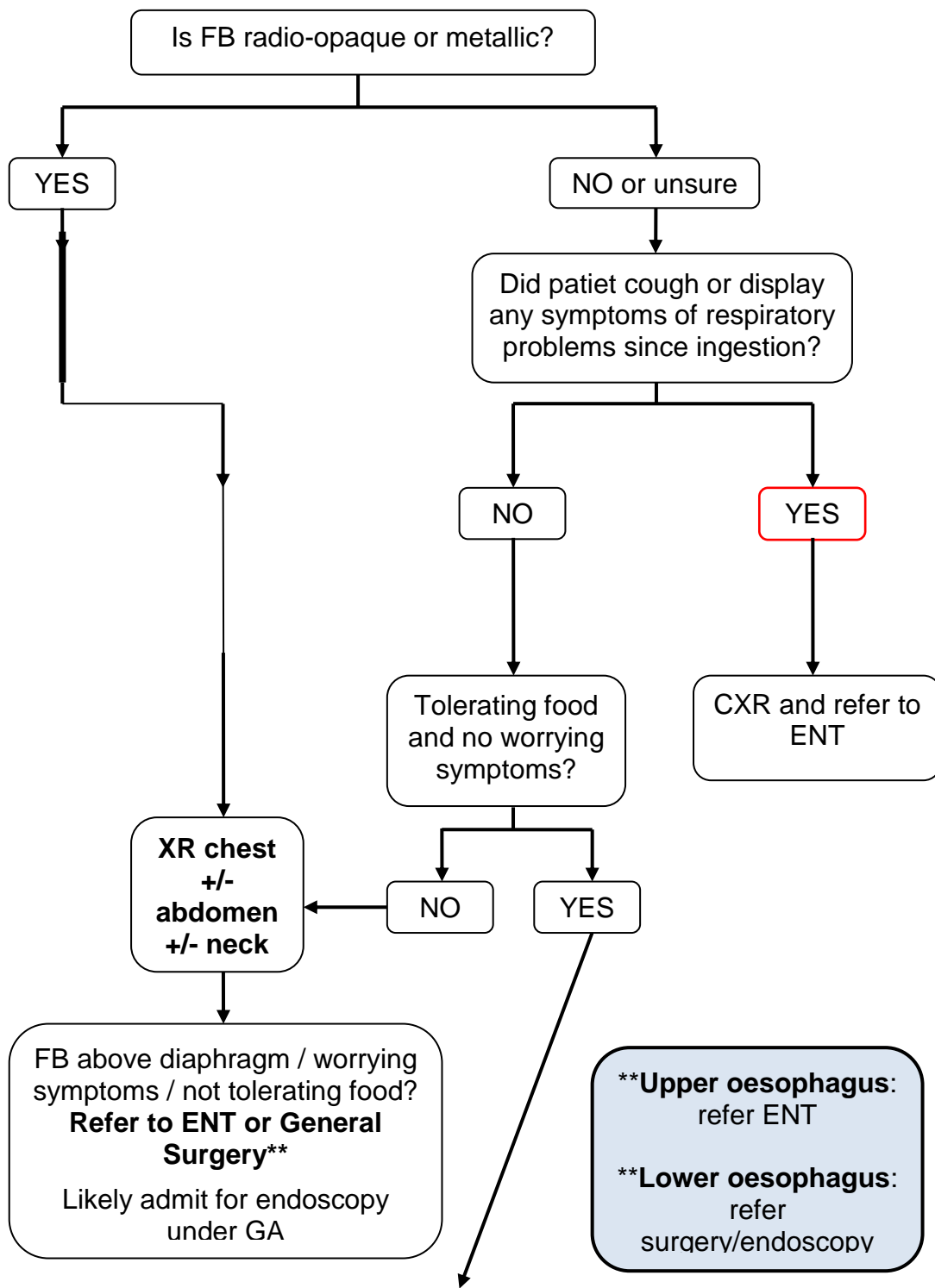
- Dysphagia (difficulty swallowing)
- Food refusal
- Drooling / gagging
- Vomiting / haematemesis
- Sensation of FB / chest pain / sore throat
- Stridor / cough

### Management

1. Non-hazardous, ingested foreign bodies
2. Hazardous, ingested foreign bodies

### Non-hazardous ingested foreign bodies

Radio-opaque fish bones:  
Cod, haddock, cole, gurnard, lemon sole, monk fish, grey mullet, red snapper



Discharge home with reassurance and leaflet.

DO NOT instruct to inspect faeces for FB  
Clinical / radiological review if becomes symptomatic

Safety net:

1. Vomiting or haematemesis
2. Abdominal pain
3. PR bleeding

Do not send home a patient who is coughing, choking or refusing to eat / drink after a suspected ingestion

## Hazardous ingested foreign bodies

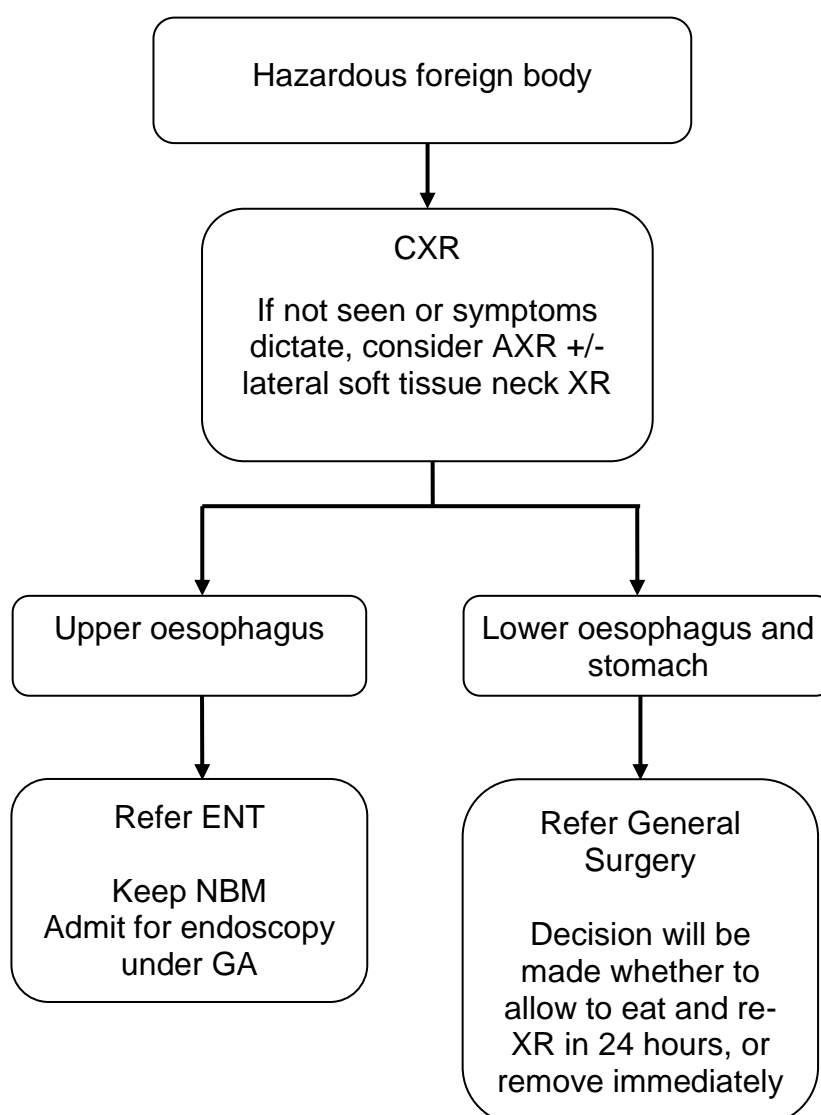
Do not use metal detector for hazardous FB – the patient will usually require x-rays

Passage of hazardous FB into the stomach is NOT an indication that the patient will not suffer any complications.

### 1. Hazardous foreign body (Not button battery or super strong magnet)

#### Management pathway

See separate pathways for Button batteries and super strong magnets



### 2. Button batteries

**XR is needed for all battery ingestions** as the battery may be missed on a metal detector test

- Ingestion of button batteries can cause serious harm and death.

- Severe tissue damage results from a build-up of sodium hydroxide as a result of the electrical current discharged from the battery (not leaking of contents as is often thought).
- Tissue burns, often in the oesophagus, can cause fistulisation into major blood vessels, resulting in catastrophic haemorrhage.
- Symptoms suggestive include haematemesis, haemoptysis, and respiratory difficulties.
- Can manifest up to 28 days after ingestion.

Urgent referral to ENT or Surgery is mandated if button battery ingestion has occurred or is **suspected**. Consider this in all children presenting with haematemesis.

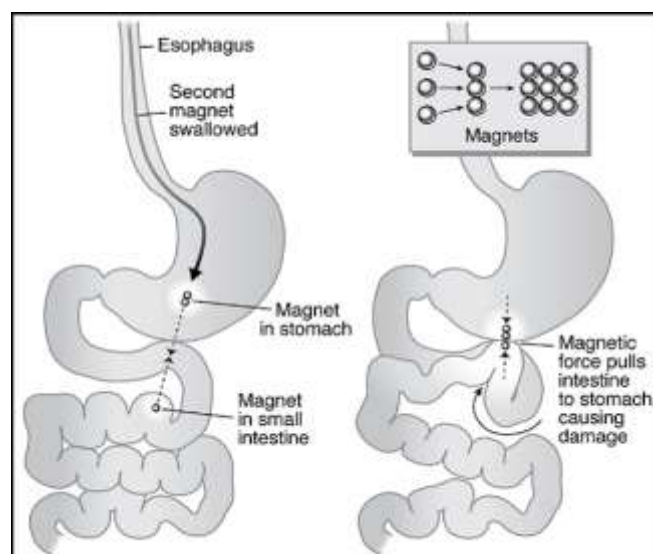
**Other types of batteries** are less dangerous than button batteries but may leak from dissolution of seal in gastric acid. They can also attach to intestinal mucosa and cause erosion and perforation.

### 3. Neodymium or 'super strong' rare earth magnets

Extremely powerful magnetic attractions, widely available as toys, decorative items or fake e.g. tongue piercings.




- Usually small in size and round in shape. Brand names include BuckyBalls™ and Neocube™
- When more than one magnet, or a magnet with a metallic object is swallowed, the magnetic force can bring two pieces of intestine tightly together, leading to ischaemia and pressure necrosis, the consequence of which can include:

ulceration, necrosis, perforation, rupture, stricture, fistula, haemorrhage, mediastinitis, gastric outlet or bowel obstruction, volvulus, sepsis



URGENT assessment and treatment is vital as although abdominal symptoms may not manifest for weeks after ingestion of magnets, **intestinal injury can occur early**, within 8-24 hours following ingestion, **despite the patient often remaining well**

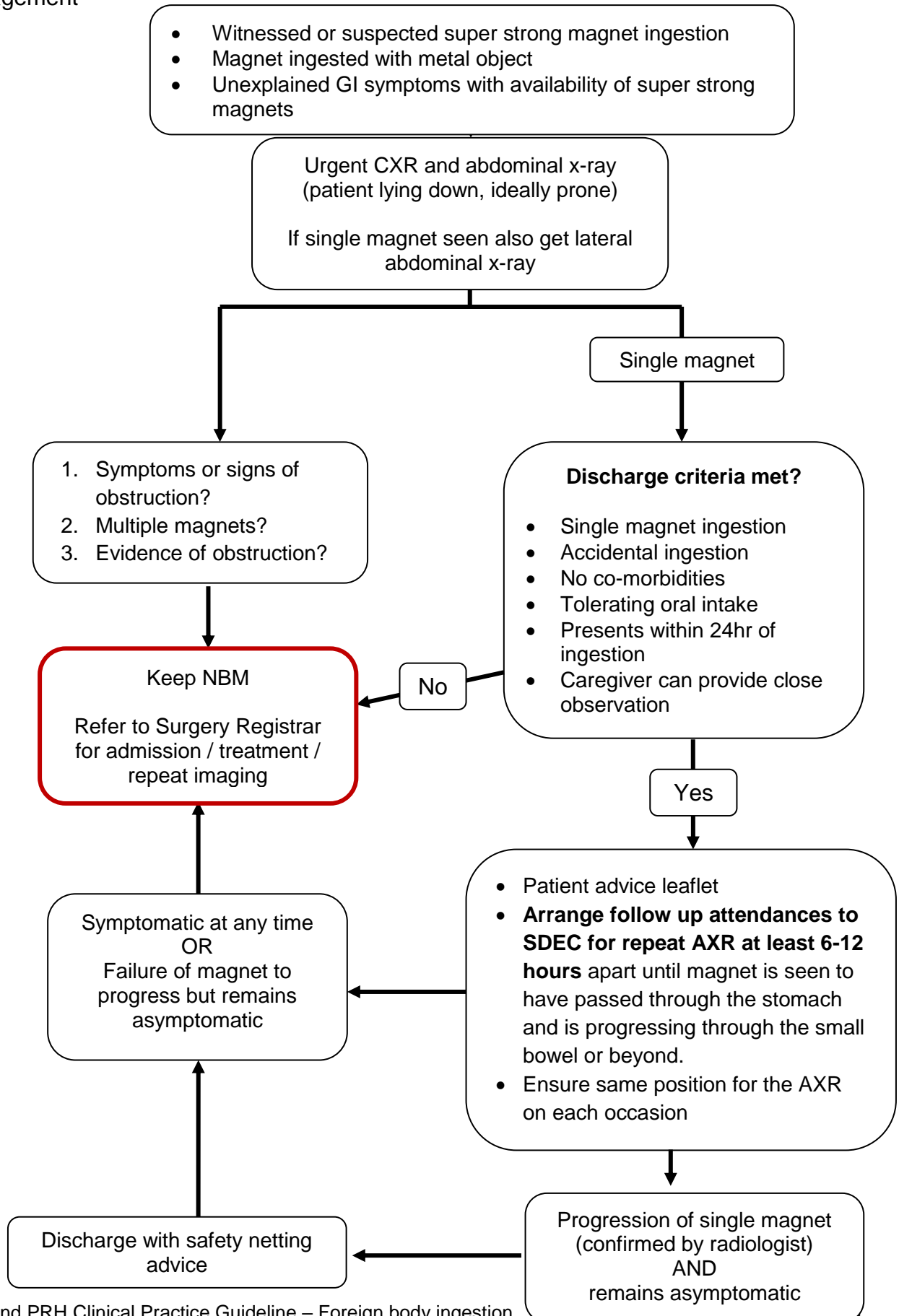
**Consider the possibility of rare earth magnet ingestion** or aspiration in patients with:

-  stridor, wheezing or other noisy breathing;
-  drooling; difficulty swallowing;
-  coughing, choking or gagging when eating or drinking;



- vomiting; chest pain or discomfort;
- abdominal pain; decreased appetite or refusal to eat.

## Management



British Society of Gastroenterology guidance for oesophageal obstruction

