Tom Mitchell/Jess Hassell/K Stone. Updated Dec 2021. RV Dec 23

Guideline for Ingested and Inhaled Foreign Bodies in Paediatrics

Key Points:

- Most FBs pass spontaneously without harm
- Vigilance is required as FBs can cause airway obstruction or permanent damage to the GI tract
- Sometimes there is no clear history of ingestion or aspiration of a FB, so have a high index of suspicion
- Consider FB in patients with sudden onset dysphagia or respiratory distress
- Consider a chronic FB in less specific features such as weight loss and fever, or features of perforation.
- Remember to use a metal detector initially, this is both sensitive and specific and can help localise a FB to above or below the diaphragm.
- Take extra caution if there is a chance that the FB is a button battery or a magnet

Think of **button batteries** with any new onset of haematemasis, haemoptysis or respiratory distress.

These can be lethal and need removal as an emergency!

'Super-strong' magnets are becoming more common and are often used in toys.

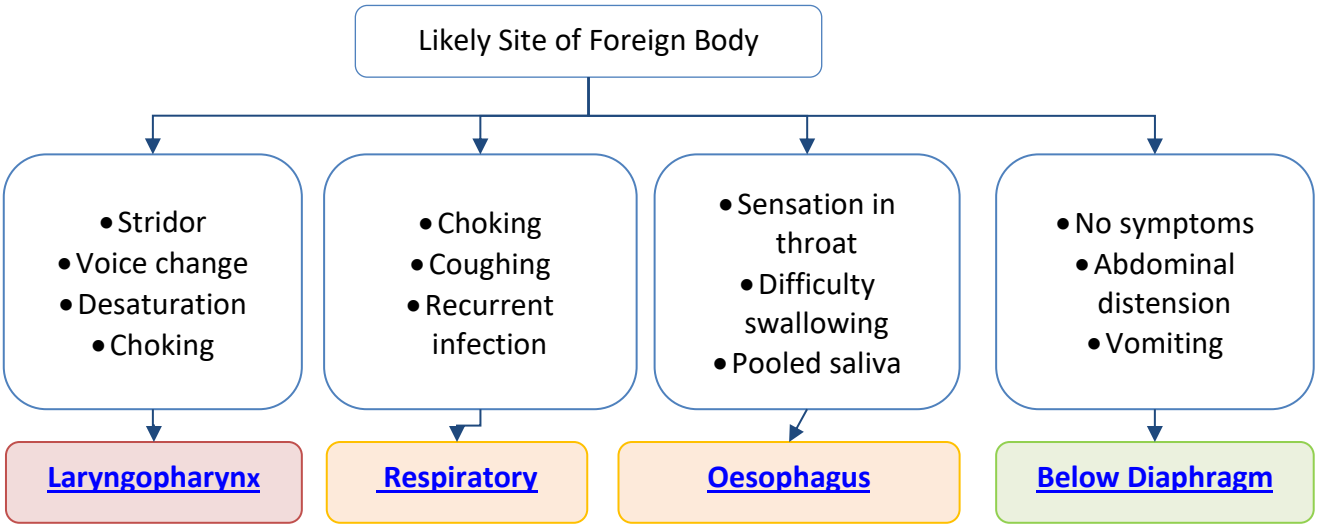
They are often small (so easily swallowed) but are much more powerful than traditional magnets.

If multiple 'super-strong' magnets are swallowed, they can cause compression of the bowel and consequently necrosis or perforation within hours.

Children need to be assessed urgently and have both an AP and lateral AXR and discussed with the surgical team promptly

Initial Assessment

- A good history can often help decipher the likely site of the FB
- Click on the links below for guidance.



Laryngopharynx Foreign Body

Any sign of airway compromise or potential airway compromise?

Stridor, Voice change, Desaturation, Choking

Partial obstruction

- Maintain in sitting / mothers lap / most comfortable position
- Move to resus
- Inform most senior ED doctor in department
- Early call for assistance - Likely to need senior ITU/anaesthetics input & senior ENT
- Lateral neck x-ray may be indicated (consider resus film)

Total obstruction – SENIOR ED / ENT / ANEASTHETICS / ITU / PAEDS

- In event of deterioration use APLS choking algorithm (back slaps, abdominal thrusts).
- In event of cardiac arrest APLS algorithm with early laryngoscopy.
- Consider McGills forceps if FB visible
- Can't intubate & can't ventilate – Needle Cricothyrotomy

Respiratory FB

- If compromised please see treatment algorithm above

Presentation

- Normally aged 6 months to 4yrs
- In around 90% of patients there is an initial episode of choking
- On-going coughing often a feature
- Consider if acute onset of respiratory compromise or wheeze, especially if preceded by choking.
- Patients may present with secondary infection

Examination

- Examination is often normal but they may have stridor, wheeze, decreased breath sounds or asymmetrical chest wall movement

Imaging

- Image all suspected Foreign Body aspirations - PA CXR is the first choice
- Up to 50% of patients who have aspirated will have a normal CXR
- Air trapping from radiolucent foreign bodies can be very subtle –discuss with radiologist if any concerns

On-going care

- If x-ray is abnormal **OR** if continued suspicion of respiratory foreign body then admit patient to paediatrics. It is not unusual to perform fluoroscopy, CT or even bronchoscopy on these patients as retained FB can cause morbidity and mortality.
- Discuss with the paediatric registrar before sending to PAU, particularly in younger children, as they may need to be managed in Bristol if they are likely to require surgical or more specialist care.
- Even if there are no on-going symptoms or signs and x-rays are normal; there is still a chance of FB aspiration. If discharging home then advise to return if any chest infection or worsening symptoms

Ingested FB

Red Flags

- For batteries, objects larger than 2 ½cm, sharp objects (including some fish bones), copper, iron or lead and magnets see special circumstances below

Is the FB Metal?

- There is a metal detector in GRH (minor injuries unit) and CGH (triage room)
- Strip the child of all metal. If you detect a foreign body below the level of the diaphragm (xiphisternum), the child is well and there are no red flags* then no further imaging required.
- However, all batteries require an x-ray.

Is the FB Radio-opaque?

- If the foreign body does not show up on x-rays then imaging will not change your management.
    a. Decide if the foreign body can be differentiated from soft tissues on an x-ray– whilst metal and stone are often easily visible, plastics, glass and bones can be difficult or impossible to see. Wood and food boluses normally cannot be differentiated from soft tissues.
    b. If you are unsure if an object is radio-opaque the default position is to perform an x-ray.

X-ray choice:

- PA chest x-ray - Standard view showing oropharynx to the base of the stomach
- Lateral neck soft tissue - In radiolucent objects thought to be lodged in the throat or upper oesophagus this view may be obtained in addition to or instead of the above film.
- Abdominal x-ray - If acute obstruction suspected. For monitoring passage of batteries.

FB in Oesophagus: Refer

- Typical clinical presentation is the acute onset of dysphagia or complete inability to swallow saliva
- For batteries, objects larger than 2 ½cm, sharp objects (including some fish bones), copper iron or lead and magnets see special circumstances below
- X-ray may be useful if object clearly radiolucent but if any doubts treat on clinical suspicion.
- Refer to ENT and to paediatrics team. See timings of endoscopy below.
- Food Bolus: If airway not compromised and patient otherwise well a trial of a small cup of fizzy drink and jumping up and down may be beneficial.

FB below diaphragm: Discharge

- Unless they fall into the special circumstances category, generally these will pass harmlessly in 4-6 days.
- Return if increased pain, abdominal swelling, melaena or vomiting
- No check x-ray. *No need to check stools.*

Red Flags

Batteries

- Button batteries usually contain lithium and can cause serious harm and even death in a matter of hours. There may even be delayed serious injury.
- Look for a 'double-ring' on XR in any ?coin ingestion as this is the radiographic appearance of a button battery.
- Any button battery in the oesophagus should be removed as an emergency. This is also true for batteries in the nose or the ear.
- Any button battery which has passed into the stomach should still be admitted for observation and consideration of endoscopy.

Please see Toxbase for more information – search for 'button battery' or follow link: https://www.toxbase.org/Poisons-Index-A-Z/B-Products/Button-battery/ Login: H105, password JAY448.

Large foreign body

- For objects with a **diameter >2.5cm** or **length >6cm** refer to paediatrics for gastroenterology review and possible endoscopy. Otherwise manage as Ingested FB

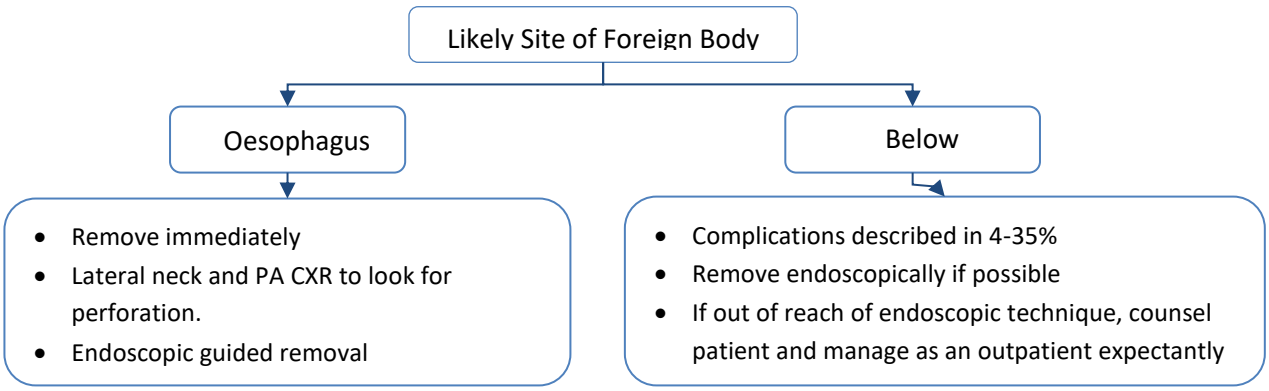
Magnets

- If more than one magnet has been ingested or if a magnet plus a piece of ferrous metal has been ingested then refer for urgent endoscopy.
- Consider super-strong magnets, these can cause rapid compression of the bowel and can lead to necrosis or perforation. Urgent surgical referral is required.
- If single magnet, advise to wear clothing with no metal and treat as standard Ingested Foreign Body.

Copper, Iron or Lead

Can lead to systemic Toxicity. Refer to TOXBASE.

Sharp objects (such as metal wire, glass, some fish bones)



Timing of Endoscopy for Ingested FB's

Emergent endoscopy:

- Oesophageal obstruction (evidenced by an inability to handle oral secretions)
- **Button batteries** in the oesophagus
- **Sharp-pointed** objects in the oesophagus

Urgent endoscopy within 12-24 hours:

- Oesophageal foreign objects that are not sharp-pointed
- Oesophageal food impaction without complete obstruction
- **Sharp-pointed objected** in the stomach or duodenum
- **Objects >6 cm in length** at or above the proximal duodenum
- **Magnets** within endoscopic reach

Non-urgent endoscopy:

- Blunt objects in the stomach that are **>2.5 cm in diameter**
- All **batteries** that are in the stomach in patients without signs of GI injury may be observed for up to 48 hours