

FB in ENT

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Nature of FB may pose direct threat to tissue (Battery ingestion)

Definition

Foreign body is defined as an object/substance that is inappropriately situated in a particular anatomical location

Young children have a tendency to explore using their mouth predisposing FB in aerodigestive tract

Children commonly present with FB in ear/nose/throat



What type of children are prone?

1. Child with impaired behavioral development
2. Child with attention deficit
3. Child with hyperactive disorder
4. Child abuse / neglect

In adults the following conditions predispose:

1. Poor dentition
2. Alcohol ingestion
3. Psychological disorders
4. Oesophageal malignancy
5. Chance

Classification

1. Location – Airway foreign bodies are life threatening
2. Type – Organic / Inorganic

Incidence

Number of FB incidents in EU in children aged 0-14 years is 50,000 per annum with 1% fatality

Susy safe project is the largest active registry of non-food F.B. Incidents

Self insertion of FB is more frequent in children with attention deficit / hyperactivity disorders



22% of these children reintroduce FB once again. Preventive education plays a vital role in avoiding this scenario

Incidence of FB is higher in ear and nose when compared to thorax

10,000 of these FB are inorganic and 2000 of this number involve toys

Ear Foreign Bodies

Inert FB
could be
incidental
finding

Right handed
children insert FB
into their right ear
and left handed
children into their left
ear



Many aural FB
migrate
spontaneously
out of the ear

FB like button
batteries should
be removed
immediately as
they are
corrosive

Isthmus the
narrowest portion of
external canal is
where impaction of
FB commonly occurs

Management of Aural FB

Irrigation is safe if ear drum is intact

Potentially corrosive FB should be removed as an emergency

Adults are more prone to have insect FB in their ears



Irrigation could make an organic FB like a seed swell up making removal still more difficult

Smooth non graspable FB like Beads are better removed by otolaryngologists than staff of emergency department

Technique used

Ideal technique is determined by the characteristics of FB (size, shape and consistency), position and cooperation of the patient.

Impacted FB may have to be removed via post aural incision which exposes the external canal

Co-operation of child is a must. General anesthesia may be required

Methods

1. Microsuction
2. Use of wax hook
3. Aural syringing

Nasal Foreign Bodies

Rhinolith can occur over impacted FB due to formation of granulation tissue

Common in a child between 2-4 years of age

Should be considered in a child with unilateral foul smelling nasal discharge

Inert FB stay in the nose for years together

In the case of Button battery cell discharge is immediate

Requires a minimum of 4 days for nasal discharge to occur after impaction of FB

Long standing FB inside the nose can cause hypoplasia of Inferior turbinate



Rhinolith

Rhinoliths consist of salts of calcium, magnesium phosphate and carbonate. Rhinoliths are radio-opaque.

Management of Nasal FB

If the FB moves backwards then there is a risk of aspiration

Placement of a hook or Jobson Horne probe over and behind the FB and then pull it forward



If the FB is large then it can be broken down into bits so that it become manageable

Balloon catheters (Fogarty) have been used. It is placed behind the FB, then partially inflated and pulled out of the nose bringing out the FB in front of it.

Mother's Kiss:
There is mouth to mouth gentle blowing into the child's mouth while keeping the uninvolved nose occluded. FB from the other nose would be extruded. This method works in 60% of the time.

Removal under Expert hands

It is certainly safe to leave nasal fb in neurologically normal children for operative removal during normal working hours. Only the Nickel cadmium battery FB is an emergency

Inhaled FB

In a child younger than 3 years FB is organic

Most of these FB occur in under 3 years old male children

Mortality from inhaled FB is around 1%

In children older than 5 years they are inorganic



Lack of molar teeth is one of the reasons of organic FB

FB in tracheobronchial system cause more complications than FB elsewhere

Young children have a tendency to put things into their mouth

85% of inhaled FB are cleared before medical help could be reached

Why inhaled FB is common?

The ability to clear airway is not fully developed in young children under the age of 3

Inhaled FB Clinical Features

Clinical Features

Presentation could vary depending upon the exact site of obstruction with the airway.

Children have been erroneously treated for asthma because of the presence of wheeze

Witnessed FB in the mouth. This History is vital

Symptoms

1. Chocking
2. Coughing
3. Hoarseness of voice
4. Shortness of breath
5. Wheeze
6. Increased work of breathing
7. Cyanosis
8. Asphyxiation
9. Death

Longer the duration of FB greater is the incidence of complications

Laryngeal FB

Can present with partial/
complete airway
blockage

Relatively rare
(2-12%)

Delay in
diagnosis may
cause
extensive
granulation
tissue at the
level of vocal
folds



Sharp
metallic FB
are
challenging
to remove

Clinical features

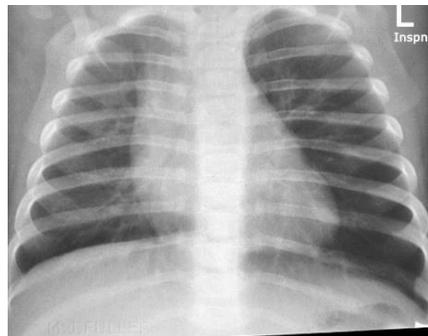
1. Hoarseness of voice
2. Stridor
3. Dyspnoea
4. Prolonged atypical croup
5. Odynophagia

Radiographic features of Airway FB

Atelectasis
Hyperinflation
Mediastinal shift
Pneumonia
Pneumothorax

Chest films
normal in
nearly
quarter of
these
patients

Radio
opaque FB
if present
could be
clearly seen



Hyperinflation is
common in the
lung on the side
of FB due to ball
valve effect

CT & virtual
bronchoscopy is
highly sensitive in
identifying airway
FB

Chest radiograph
is just an aid and
should not
replace
bronchoscopy

Inhaled FB Management

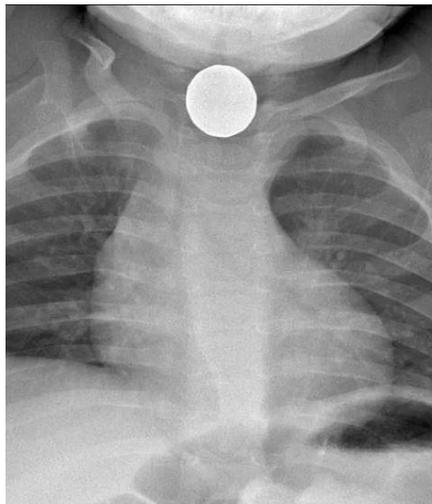
1. Some surgeons advocate flexible bronchoscopy via laryngeal mask or endotracheal tube to diagnose and remove FB.
2. Flexible bronchoscopes are so flexible that they can be used to approach the bronchus from different angle.
3. Flexible bronchoscopy does not ventilate the patient and hence carries a significant risk
4. Rigid bronchoscopy combined with jet ventilation is ideal and safer in removing airway F.B
5. Use of topical anesthetic on the larynx prevents laryngospasm during introduction of bronchoscope
6. Topical adrenaline can be used to decongest the mucosa around the FB. This is rather helpful in the presence of granulation tissue.
7. There is a 4% risk of life threatening complications following endoscopic removal of FB
8. Steroid can be administered to reduce oedema following the procedure
9. Incidence of hypoxia during FB removal is increased in the presence of Pneumonia and if the FB is organic in nature (seed).
10. If airway obstruction is too severe then ECMO can be used to oxygenate the patient during removal of FB

Ingested FB

Coin is the most common FB

Peak incidence is in children less than 4 years of age

FB like chicken and fish bones may stick to tonsil, tongue base, and pharyngeal wall



Small blunt FB may pass through unhindered if it crosses the cricopharynx which is the narrowest part of digestive tract

Symptoms

1. Drooling
2. Odynophagia
3. Dysphagia

Larger FB could be lodged in the cricopharynx or upper oesophagus above the aortic arch

Malignant growth oesophagus may cause impaction of food simulating a FB

Ingested FB Management

1. For food related impaction a trial of medical management is advisable. Agents like Hyoscine and diazepam can be administered in order to release the cricopharynx facilitating easy passage of FB. Calmose is the most preferred drug.
2. Administration of effervescent fluids may help
3. Food bolus impaction is rather rare in children and should raise suspicion of eosinophilic oesophagitis
4. If food bolus is found in a child then the surgeon should take three biopsies from the lower oesophagus for histology with specific request to look out for eosinophils
5. Flexible nasal endoscopy can be used to identify the FB. Presence of pooling in Pyriform fossa indicates presence of FB
6. Rigid endoscopy should be used to remove larger FB like coin
7. Early intervention reduces complications particularly if FB happens to be sharp ones like safety pins

Complications:

1. Perforation
2. Mediastinitis
3. Retropharyngeal abscess
4. Oesophageal stenosis

Delaying intervention beyond 24 hours may increase the duration of therapeutic endoscopy

Ingested FB Special considerations

Batteries when present as FB should be given special consideration because of higher incidence of complications if left unremoved. The incidence of batteries as FB is on the rise because of their presence in various equipment including toys.

There is a clear male preponderance for this type of FB.

Harmful effects:

1. Soft tissue damage can occur due to the formation of electrical circuit between the sides of the button battery. This causes tissue hydrolysis by forming hydroxide at then negative terminal.
2. Leakage of alkaline from the battery when in a saline environment
3. Pressure necrosis could occur if compressed at a particular site
4. Release of toxic components like mercury can cause systemic toxicity
5. The size of the battery is an important determinant for complications. The highest risk is a 20 mm battery in a child under the age of 4.
6. Battery cause rise in temperature and pH when ingested. Burns occur within 3 hours of ingestion.
7. In X-rays batteries appear as double contour shadow
8. Batteries are known to cause oesophageal perforation
9. Even if the battery has managed to cross the stomach serial radiographs should be taken

Ingestion of Caustic Agents

1. Ingestion of caustic agents is common in young children because these liquids have typically no flavor / odor.
2. Strong alkalis cause tissue injury by tissue liquifaction and necrosis
3. They also cause thrombosis of supplying blood vessels resulting in a reduced blood flow thereby hampering healing
4. Caustic injury to oesophagus can be graded 1-4 based on the depth of injury.

Grade I – Erythema and oedema. This can be managed conservatively

Grade IV – Is perforation and carries a poor prognosis. Strictures are known to occur needing serial dilatations.