

Welcome to CPD

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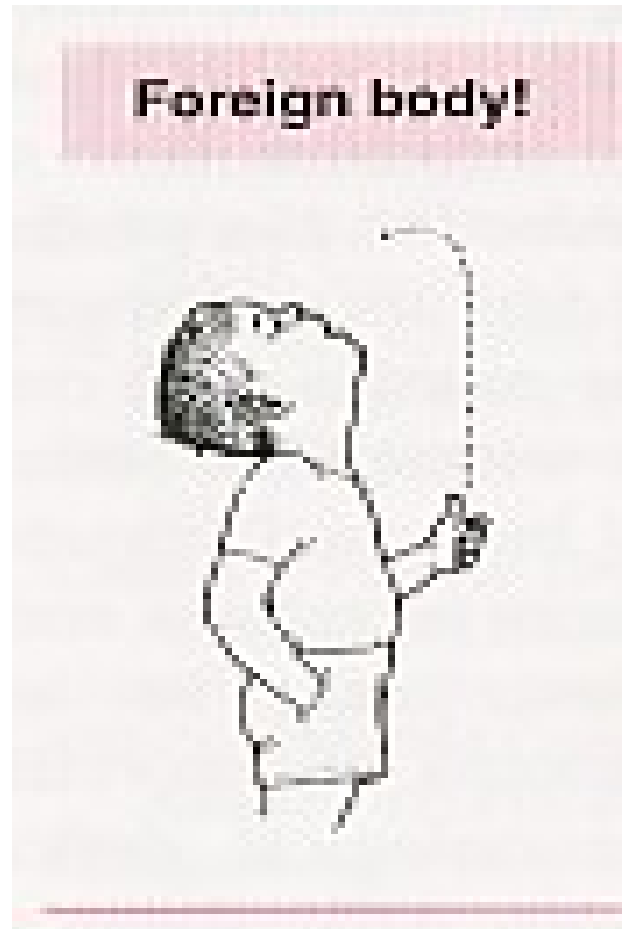
Registrar

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Foreign Body Aspiration in Children



FB Aspiration: Introduction

- Aspiration of FB is a major cause of morbidity and mortality in children
- It is a life-threatening emergency
- Severe lung damage is a possibility
- Perfect co-ordination among pediatrician, radiologist, anesthetist and thoracic surgeon is essential for proper management

FB Aspiration: Epidemiology

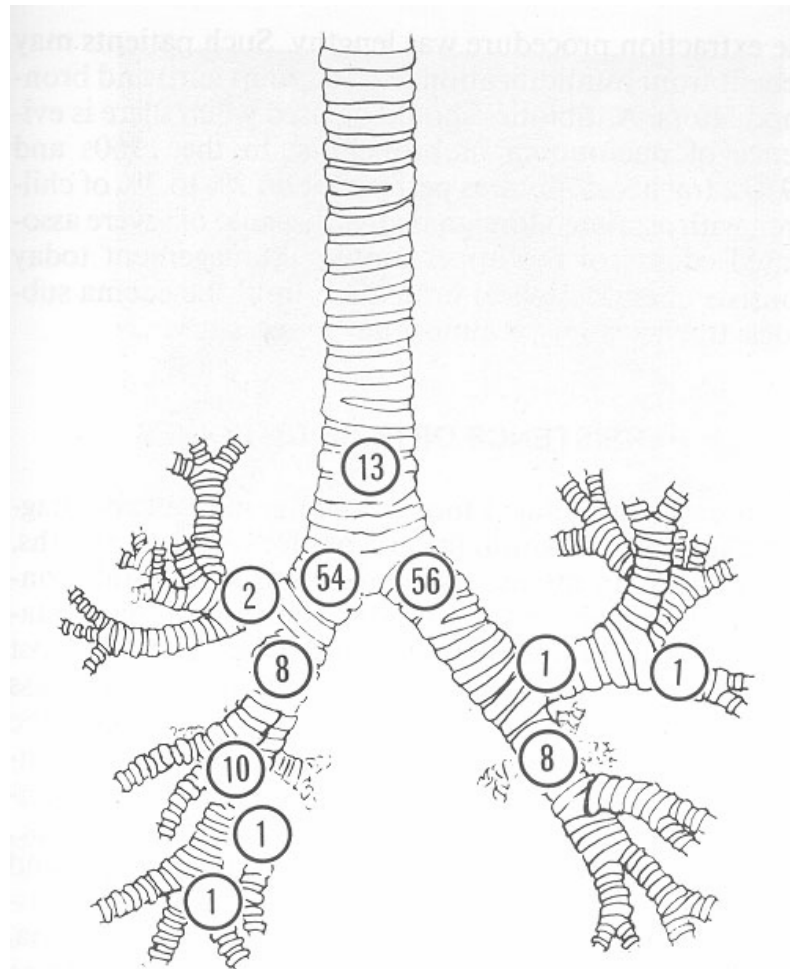
- Second leading cause of accidental death at home among children < 5 years
- Children of 6 months to 4 years are at risk
- 80% of the children below 3 years
- Male preponderance (M and F ratio 3:1)

Types of FB aspirated (n=145)

- **Peanut** or other nuts 48%
- **Seed**, husk, bean 20%
- Plastic toys/ fragment 6%
- Others 26%

Nuts and seeds account for 70% of FBs

Anatomic site of FB aspiration (n=155)



In 80-90% cases the FB is lodged in **bronchus** and in 10-20% cases FB is lodged in **larynx and trachea**

90% of the FBs are spontaneously coughed out

FB aspiration: Pathophysiology

Features depends upon the anatomic site, size, nature of the FB and duration since the aspiration

- Changes in airflow
- Inert objects may remain without producing an infection
- Local injury and inflammation
- Pneumonia higher in nut aspiration (20% Vs 8%) than non-nut aspiration
- Bronchiectasis in the long term

FB inhalation: Modes of Presentations

- One third gives no history suggestive of aspiration
- One third gives H/O choking and coughing with FB in hand
- One third presents with complications- recurrent pneumonia/ bronchiectasis/ persistent atelectasis/ mediastinal shift/ pulmonary aspiration

FB inhalation: Clinical features

- *A previously well toddler suddenly starts to choke and cough while eating, playing with a toy or crawling on carpet*
- Cough
- Tachypnea
- Stridor/ wheezing
- Diminished breath sound
- Localized wheezing

CF according to site of obstruction

Site of obstruction

Clinical features

Larynx

Highly restless, cyanosis, severe respiratory distress, stridor, croupy cough, dysphonia

Trachea

As above and audible slap and palpable thud

Bronchus
(check valve-69%)

Increasing respiratory distress, hyperresonant note and reduced respiratory movements on the affected side, diminished breath sound and VR (CXR-Obstructive emphysema)

Bronchus
(stop valve-15%)

Leads to collapse, respiratory distress, diminished respiratory movements, tracheal shift to the same side, impaired resonance, diminished breath sound and VR (CXR-Atelectasis)

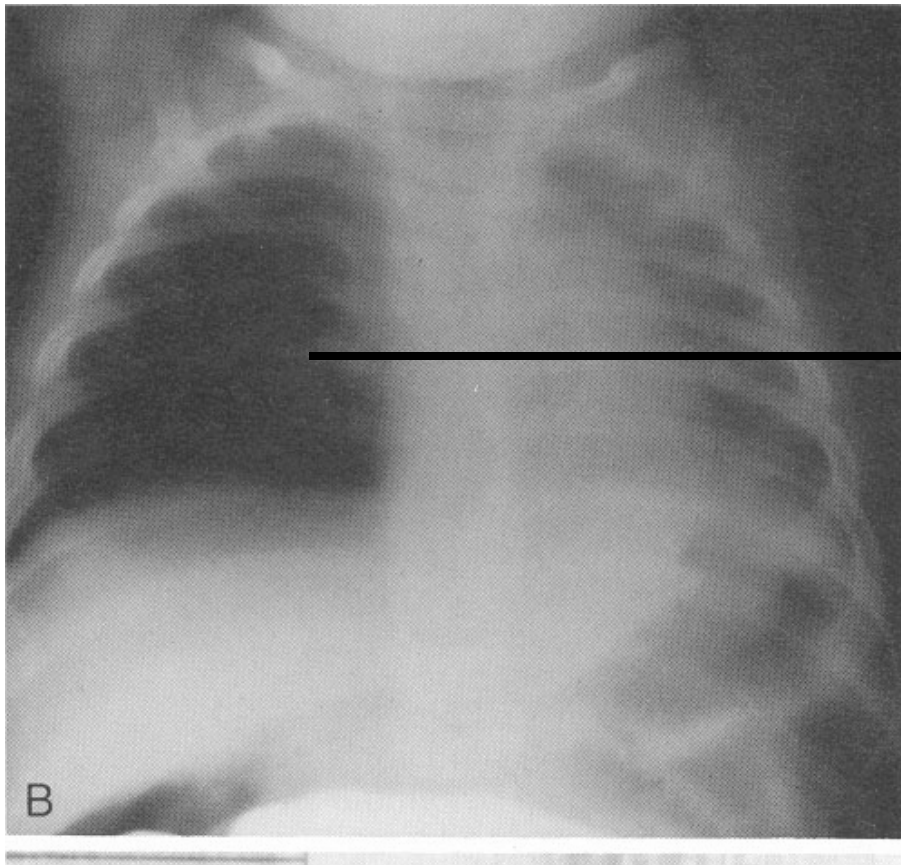
FB inhalation: Investigations

- Skiagram of the chest
- Fluoroscopy-mediastinal shift
- Forced expiration technique (FET)-CXR taken during inspiration compared with that after forced expiration
- CT scan of chest
- Fiberoptic bronchoscopy

CXR findings in FBA

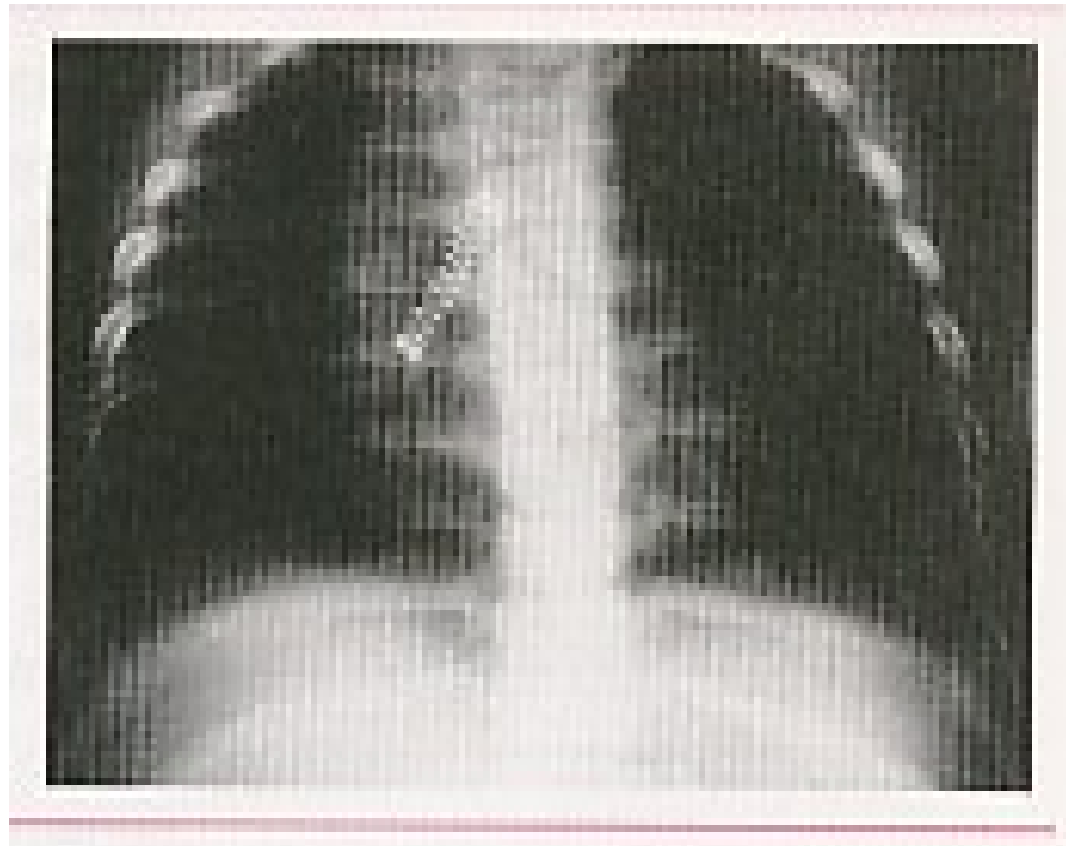
- Normal-80% of laryngotracheal and 28% of bronchial FB have normal CXR
- Obstructive emphysema-hallmark of FBA
- Bilateral hyperinflation in tracheal FB
- Collapse
- Pneumonitis
- FB visible

CXR : Obstructive Emphysema



**Hallmark of
FB aspiration**

CXR- Visible FB



CXR: after removal of FB



No obstructive
emphysema

Fluoroscopy in FB Aspiration

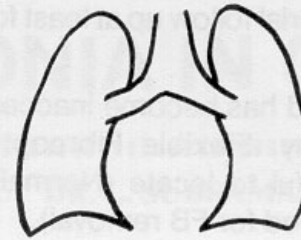
NORMAL MEDIASTINAL CHANGES [Fig.1]

Heart shadow narrows



INSPIRATION

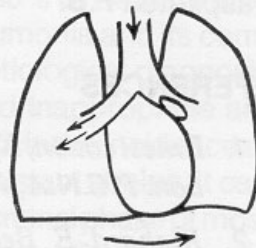
Heart shadow widens



EXPIRATION

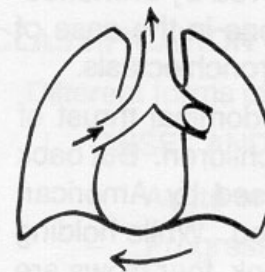
During inspiration heart shadow moves to obstructed site

PENDULAR MOVEMENT OF MEDIASTINUM IN FBA [Fig.2]



INSPIRATION

During expiration heart shadow moves far to normal site



EXPIRATION

FB aspiration: Diagnosis

- High index of suspicion
- Age of the child (6 mo to 4 years)
- Child with small objects in hands
- Sudden choking, coughing
- A silent period afterwards (hours to weeks)
- Recurrent cough, stridor, wheeze
- CXR-obstructive emphysema/ atelectasis/
mediastinal shift/ bronchiectasis

FB Aspiration: DD

- Recurrent pneumonia
- Asthma
- Bronchiectasis
- Lung abscess
- Atelectasis

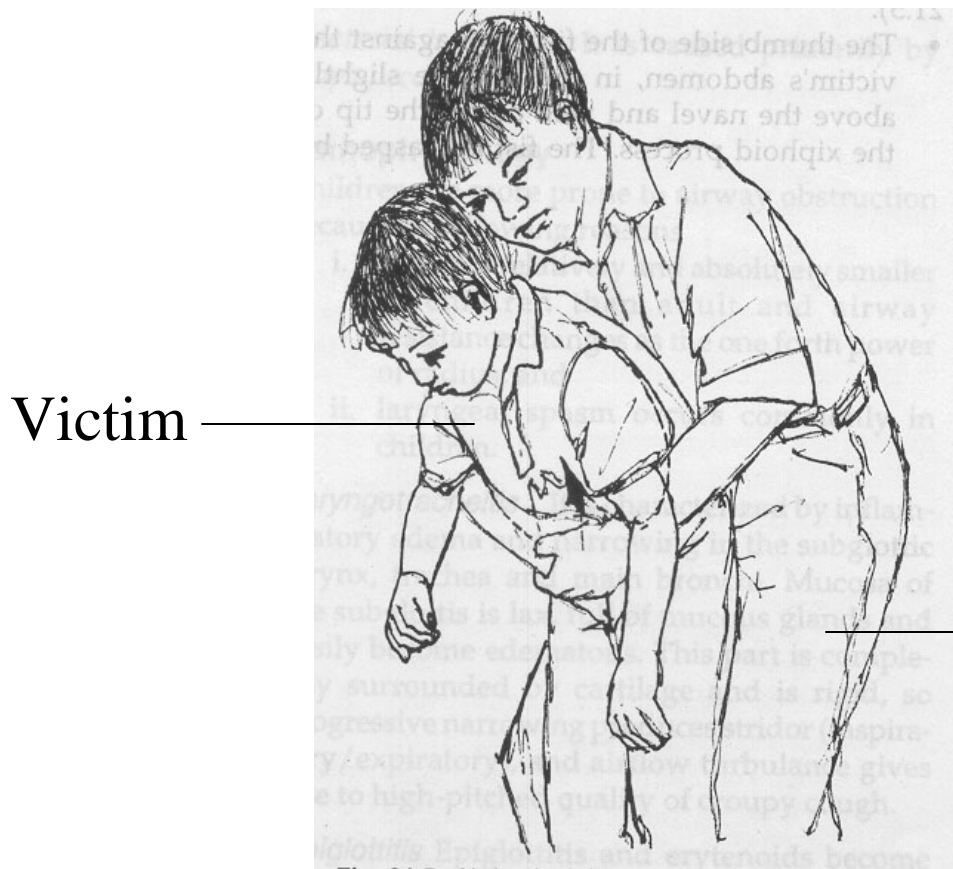
FB Aspiration: Complications

- Recurrent pneumonia
- Atelectasis
- Lung abscess
- Bronchiectasis

FB Aspiration: Emergency management

- Heimlich maneuver: **abdominal thrust** for patients older than 1 year
- **Back blows and chest thrust** for patients younger than 1 year
- Finger sweeps of the oropharynx
- Mouth to mouth resuscitation
- Transportation to hospital facility

Removing FB in older child (conscious) : Heimlich maneuver

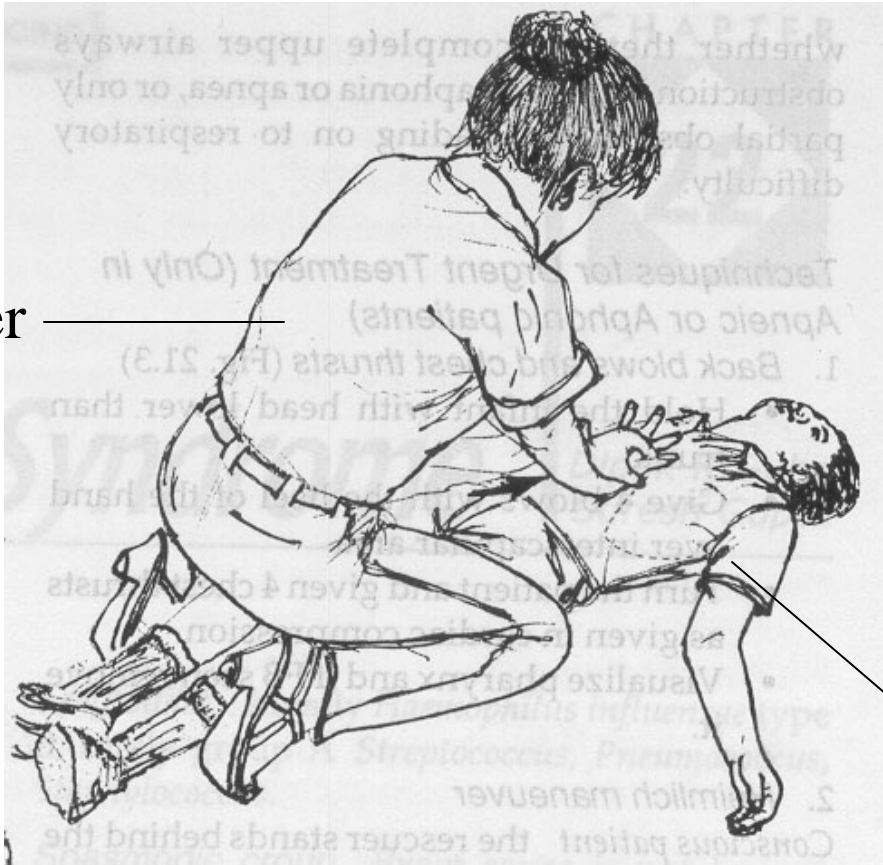


Abdominal thrust
for patients
(conscious)
older than 1 year

Rescuer

Removing FB in older child (unconscious): Heimlich maneuver

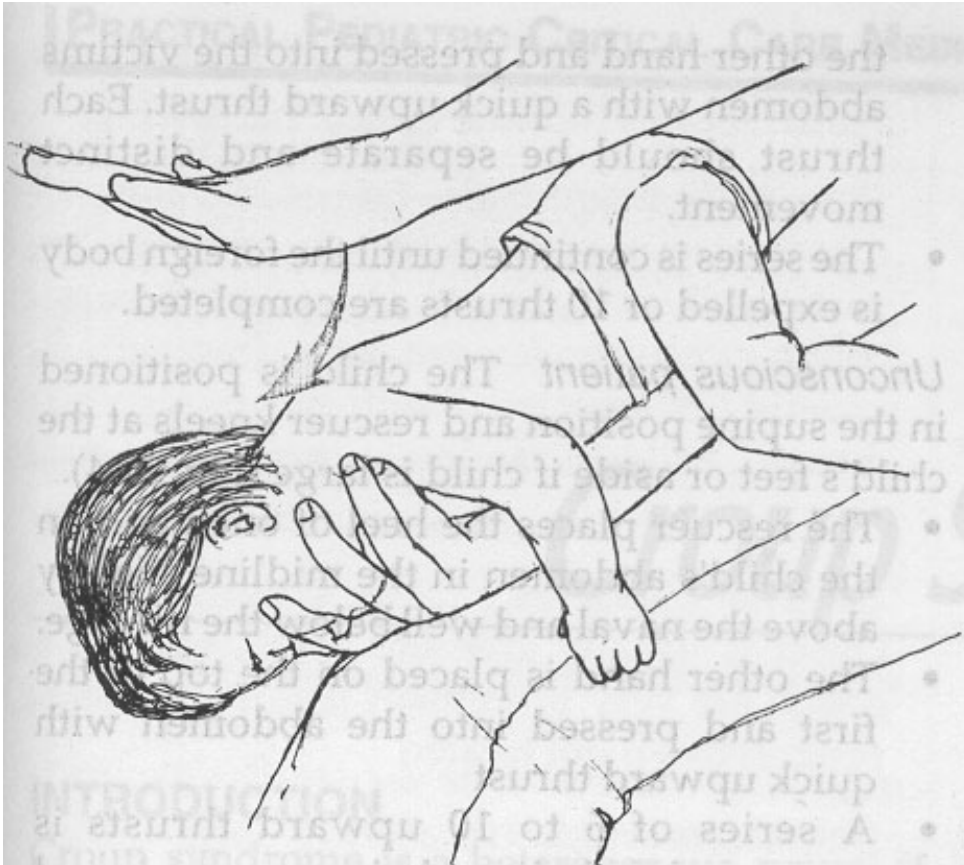
Rescuer



Abdominal thrust
with victim lying
(unconscious)

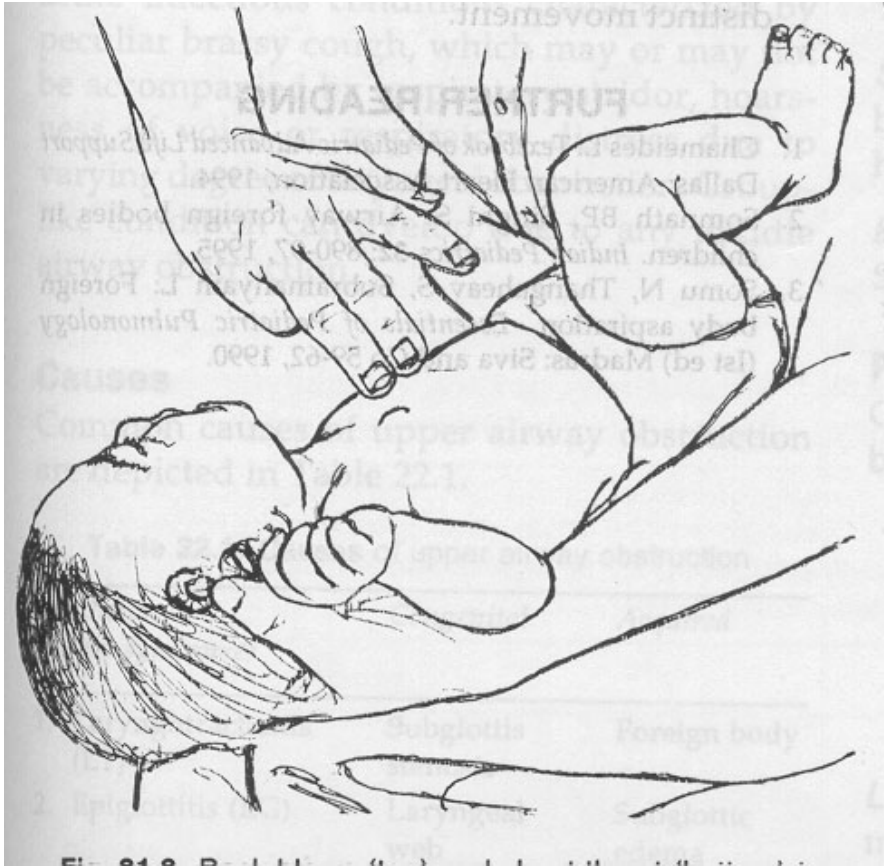
Victim

Removing FB in infants: Back blows and chest thrusts



- Infant held with head down
- **Back blows**
4 blows with the heel of hand over the inter-scapular region

Removing FB in infants: Back blows and chest thrusts



- Turn the child
- **Chest thrusts**
4 thrusts as given
in cardiac
compression

FB Aspiration: Hospital management

- Rigid bronchoscopy by a thoracic surgeon/
pediatric otolaryngologist under anesthesia
to remove FB
- Tracheotomy
- Thoracotomy

FB Aspiration: Prevention

- Constant supervision
- should not be given peanut, bengal gram, coins, tablets, small candies
- Toddlers with food in their mouth should not be encouraged to laugh or cry
- Younger children should not be allowed to play with a small toys.
- Repeat CXR to ascertain that there are no pneumothoax , atelectasis, bronchiectasis

Thank You