

Choking and foreign body airway obstruction (FBAO)

Choking is the physiological response to sudden obstruction of airways. Foreign body airway obstruction (FBAO) causes asphyxia and is a terrifying condition, occurring very acutely, with the patient often unable to explain what is happening to them. If severe, it can result in rapid loss of consciousness and death if first aid is not undertaken quickly and successfully. Immediate recognition and response are of the utmost importance.

Choking due to inhalation of a foreign body usually occurs whilst eating; it need not have been a formal 'sit-down' meal – a snack eaten 'on-the-go' or chewing gum can also be inhaled.

Recognition^[1] ^[2]

The clinical manifestations of foreign body (FB) aspiration can range from an asymptomatic presentation to a life-threatening emergency. Patients may present with acute-onset cough, chest pain, breathlessness or sub-acutely with unexplained hemoptysis, non-resolving pneumonia, or as an incidental finding on imaging^[3].

Inhaled foreign objects may induce prompt gagging, choking, and distress as they pass down through the vocal cords and epiglottis. Tracheal foreign bodies cause an asthmatoic wheeze, audible slap from the rubbed trachea, and a palpable thud. Penetration syndrome, (choking and intractable coughing followed by vomiting) characterises endobronchial bodies^[4].

Because recognition is the key to successful outcome, "Are you choking?" is the important question to ask the conscious victim. This at least gives the victim who is unable to speak the opportunity to respond by nodding!

Consider the diagnosis of choking particularly if:

- The episode occurs whilst eating and onset was very sudden.
- The victim is an adult – may clutch their neck, or points to throat.
- The victim is a child – there may be clues – eg, seen eating or playing with small items just before the onset of symptoms.

Assess severity^[1]

Mild obstruction

- The patient is able to breathe, cough effectively and speak.
- Children are fully responsive, crying or verbally respond to questions; may have a loud cough (and be able to take a breath before coughing).

Severe obstruction

This is indicated by:

- The victim being unable to breathe or speak/vocalise.
- Wheezy breath sounds.
- Attempts at coughing that are quiet or silent.
- Cyanosis and diminishing conscious level (particularly in children).
- The victim being unconscious.

Choking epidemiology

Incidence

Choking is a risk whenever food is consumed. Foreign body airway obstruction represents a true medical emergency in adults, with a mortality rate of just over 3%^[5].

FBAO also has a unique demography – 80% of cases are below the age of 3 years, with a peak frequency in the 1- to 2-year age group^[6].

Risk factors for choking^[7]

Possible risk factors include:

- Old age
- Poor dentition
- Alcohol consumption
- Chronic disease
- Sedation
- Eating risky foods

Foreign body airway obstruction was diagnosed correctly in fewer than 10% of cases where help was summoned.

The elderly are a particularly vulnerable group and asphyxiation due to foreign body airway obstruction is associated with:

- A higher risk with soft/slick foods.
- Agomphiasis (absence of teeth).
- Neurological impairment.

Children, in particular mobile babies and toddlers who orally explore their environments, are at risk from foreign body airway obstruction. Carers need to maintain vigilance for objects such as coins, balloons and marbles. Risky foods in childhood tend to be round in shape and include sweets, nuts, grapes and improperly chewed other food^[8].

Differential diagnosis

Rapid evaluation is key: swiftly consider other conditions that may cause sudden respiratory distress, cyanosis or loss of consciousness, such as:

- [Anaphylaxis](#)
- [Syncope](#)
- [Myocardial infarct](#)
- [Seizure](#)

Choking treatment and management^[1] ^[2]

The European Resuscitation Council recommends that back blows and abdominal thrusts should be performed for relieving foreign body airways obstruction in conscious adults. There is evidence that applying a prone or a head-down position increases the effectiveness of these approaches to relieve obstruction, due to the help of gravity^[9] .

Adults

- In mild obstruction, encourage the patient to continue coughing; however, do nothing else except monitor for deterioration.
- In severe obstruction in a conscious patient:
 - Stand to the side and slightly behind the victim, support the chest with one hand and lean the victim well forwards (so that the obstructing object comes out of the mouth rather than going further down the airway).
 - Give up to five sharp back blows between the shoulder blades with the heel of your other hand (checking after each if the obstruction has been relieved).
 - If unsuccessful, give up to five abdominal thrusts. Stand behind the victim (who is leaning forward), put both arms around the upper abdomen and clench one fist, grasp it with the other hand and pull sharply inwards and upwards.
 - Continue alternating five back blows and five abdominal thrusts until successful or the patient becomes unconscious.
- In an unconscious patient:
 - Lower the patient to the floor.
 - Call an ambulance immediately.
 - Begin CPR (even if a pulse is present in the unconscious choking victim).

Children

- If coughing effectively, just encourage the child to cough, and monitor continuously.

- If coughing is, or is becoming, ineffective, shout for help and assess the child's conscious level.

- If the child is conscious, give up to five back blows, followed by five chest thrusts to infants or five abdominal thrusts to children (repeat the sequence until the obstruction is relieved or the patient becomes unconscious):
 - For infants (<1 year old) – back blows and chest thrusts:
 - In a seated position, support the infant in a head-downwards, prone position to let gravity aid removal of the foreign body.
 - Support the head by placing the thumb of one hand at the angle of the lower jaw, and one or two fingers from the same hand at the same point on the other side of the jaw. Do not compress the soft tissues under the jaw, as this will aggravate the airway obstruction.
 - Deliver up to five sharp blows with the heel of your hand to the middle of the back (between the shoulder blades).
 - After each blow, assess to see if the foreign body has been dislodged and, if not, repeat the manoeuvre up to five times.
 - After five unsuccessful back blows, use chest thrusts: turn the infant into a head-downwards supine position by placing your free arm along the infant's back and encircling the occiput with your hand. Support the infant down your arm, which is placed down (or across) your thigh. Identify the landmark for chest compression. This is the lower sternum, about a finger's breadth above the xiphisternum. Deliver five chest thrusts. These are similar to chest compressions for CPR, but sharper in nature and delivered at a slower rate.

- For children (1 year old to puberty) – back blows and abdominal thrusts:
 - Blows to the back are more effective if the child is positioned head down. A small child can be placed across the lap as with an infant. If this is not possible, support the child in a forward-leaning position.
 - Deliver up to five sharp back blows with the heel of one hand in the middle of the back between the shoulder blades.
 - After five unsuccessful back blows, abdominal thrusts may be used in children over 1 year old:
 - Stand or kneel behind the child, placing arms around torso. Place a clenched fist between the umbilicus and xiphisternum (ensuring no pressure is applied to either landmark).
 - Grasp this hand with your other hand and pull sharply inwards and upwards, repeating up to five times.
- If the child becomes unconscious, place him or her on a flat, firm surface, shouting for help if none has arrived. Open the mouth and look for any obvious object. If one is seen, make an attempt to remove it with a single finger sweep (don't do blind finger sweeps).
- If unsuccessful, begin CPR as for paediatric basic life support. Begin with five rescue breaths, checking for rise and fall of the chest each time (reposition the head each time if a breath does not make the chest rise, before making the next attempt).

Complications

- **Inhaled foreign body:** after successful treatment for choking, foreign material may still be present in the upper or lower airways and cause complications such as [bronchiectasis](#) or [lung abscess](#) later. Anyone with a persistent cough, difficulty swallowing, or with the sensation of an object being still stuck in the throat should therefore be referred to A&E. CXR may show an opacity that requires removal at bronchoscopy or atelectasis. In children, clinical features and radiological findings may have a poor correlation with findings at bronchoscopy^[10] . If a foreign body is suspected, bronchoscopy should be performed at an early stage for best results^[11] .
- **Iatrogenic:** abdominal thrusts can cause serious injuries (eg, gastric and splenic rupture)^[12] .
All victims receiving abdominal thrusts require examination of the abdomen with a particular view to visceral injuries.
- **Hypoxic brain injury and death.**

Prevention

Tragedy due to foreign body airway obstruction is unpredictable. In our risk-averse society, we can try to iron out some elements of increased risk, such as:

- Not eating whilst exercising.
- Remembering to chew food properly.
- Avoiding drunkenness.
- Cutting up grapes and not giving peanuts to small children.

We can also increase public awareness of choking and confidence at initiating first aid. The abdominal thrust manoeuvre used in the pre-hospital setting on adults has a good rate of success (86.5%)^[5] . These skills should be widely taught and practised, given the speed with which individuals lose consciousness and die in a complete airway obstruction and the fact that survival often requires obstructions to have been cleared prior to the arrival of paramedics^[13] .

Further reading

- [First aid for choking: an illustrated guide](#); Babycentre UK
- [Couper K, Abu Hassan A, Ohri V, et al](#); Removal of foreign body airway obstruction: A systematic review of interventions. Resuscitation. 2020 Nov;156:174–181. doi: 10.1016/j.resuscitation.2020.09.007. Epub 2020 Sep 16.
- [Dodson H, Cook J](#); Foreign Body Airway Obstruction. StatPearls, January 2024.

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