

# Management of choking in the dental practice

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## Key points

Highlights foreign-body airway obstruction (FBAO) as a life-threatening emergency.

Demonstrates that prompt recognition and effective treatment of choking is paramount.

Suggests back slaps are effective in 50% of choking incidents.

Foreign-body airway obstruction (FBAO) (choking) is a life-threatening emergency. Each year in England and Wales, there are approximately 250 deaths caused by FBAO, 60% of which occur in the healthcare setting. Dental staff must be able to recognise and effectively treat FBAO. The aim of this article is to outline the recognition and treatment of choking in the dental practice.

## Background

Foreign-body airway obstruction (FBAO) is a life-threatening emergency. Each year in England and Wales, there are approximately 250 deaths caused by FBAO, 60% of which occur in the healthcare setting.<sup>1</sup> FBAO related incidents in dental practices have been reported,<sup>2</sup> though the risk is significantly reduced with the use of a rubber dam. Dental staff must be able to recognise and effectively treat FBAO. The Resuscitation Council UK provides guidance on the management of choking in adults<sup>3</sup> (Fig. 1) and infants/children (Fig. 2).<sup>4</sup>

FBAO is not uncommon. Every year in the UK, approximately 16,000 adults and children receive emergency treatment for FBAO.<sup>5</sup> In London alone, there are close to 2,000 FBAO episodes each year of significant severity requiring the need to call 999 for an ambulance.<sup>6</sup>

In adults, the incidence of FBAO increases with age.<sup>7</sup> Deaths from FBAO are more common in older people with almost 30% of deaths associated with FBAO occurring in the 80 years and over age group.<sup>1</sup>

The incidence of FBAO in dental practices is unknown, although the author is aware of numerous anecdotal reports from dentists

Fig. 1 Resuscitation Council UK's adult choking algorithm.<sup>2</sup> Reproduced with the kind permission of the Resuscitation Council (UK)

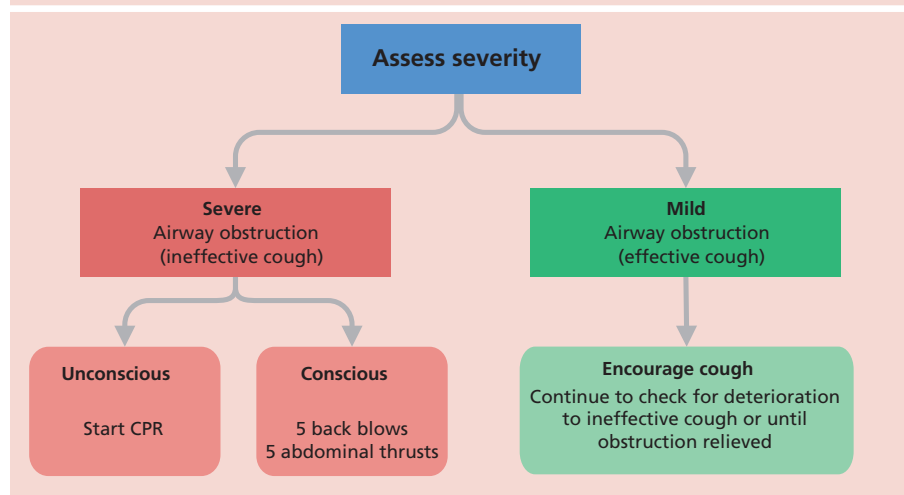
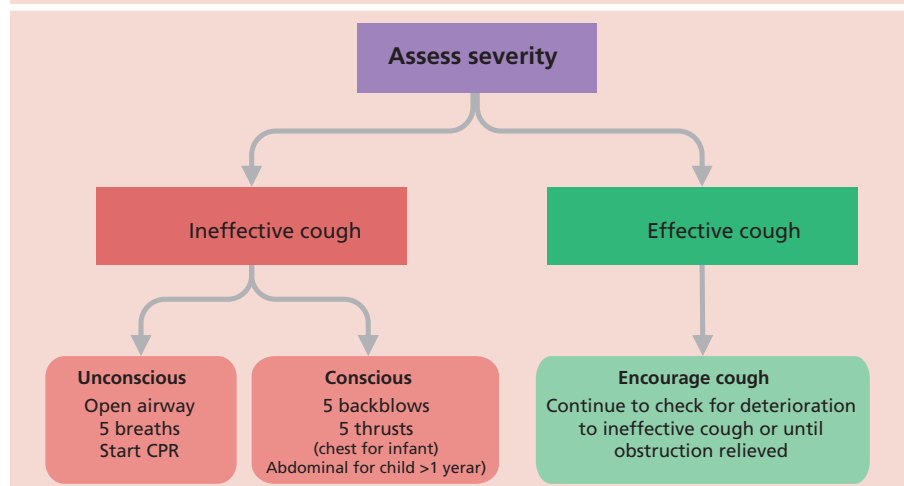


Fig. 2 Resuscitation Council UK's paediatric choking algorithm.<sup>3</sup> Reproduced with the kind permission of the Resuscitation Council (UK)



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Fig. 3 Back blows



Fig. 4 Abdominal thrusts



Fig. 5 Chest compressions

relating to this emergency. For example, choking on a sweet in the waiting room, choking on a dental object in the dental chair, and staff members choking during lunchtime, where back blows and abdominal thrusts have been needed to clear the obstruction.

### Causes of FBAO

FBAO usually occurs while the casualty is eating or drinking and can be associated with muscle, neurological or cerebral impairment.<sup>6</sup> Most deaths from choking are caused by food (87%); while small objects, a particular cause in children, are the cause of 13% of choking related deaths.<sup>1</sup>

People at increased risk of FBAO include those with altered level of consciousness, drug and/or alcohol intoxication, neurological impairment with reduced swallowing and cough reflexes (for example, stroke, Parkinson's disease), respiratory disease, mental impairment, dementia, poor dentition, and the elderly.<sup>8</sup> Dental practices that use sedation must be particularly alert to the risk of FBAO.

The Medicines and Healthcare products Regulatory Agency (MHRA) has recently highlighted the potential risk of FBAO with the use of pressurised metered dose inhalers (pMDI); where patients have inhaled the pMDI's mouthpiece cover or objects that have been entrapped in the pMDI into the back of the pharynx resulting in coughing and in some cases aspiration, causing airway obstruction.<sup>9</sup> Dental staff must be aware of the correct technique for using an inhaler, including reminding the patient to remove the mouthpiece cover fully, as well as shaking the inhaler to remove loose objects that may not be visible, and checking that the inside and outside of the mouthpiece are clear before inhaling a dose.<sup>9</sup>

### Signs of FBAO

Typical signs of FBAO are coughing, struggling to breathe or talk, cyanosis, and grasping or reaching for the throat.<sup>10</sup> The casualty may go silent and hold or point to their throat.

### Treatment of FBAO in adults

The Resuscitation Council UK's adult choking algorithm<sup>2</sup> (Fig. 1) provides guidance on the treatment of choking in adults. Back blows (slaps), chest thrusts and abdominal thrusts are manoeuvres that can increase intra-thoracic pressure and relieve the FBAO; in 50% of FBAO cases back blows are effective, but in 50% of cases more than one technique is required to relieve the obstruction.<sup>2</sup>



Fig. 6 Back blows in an infant



Fig. 7 Chest thrusts in an infant

### Assess severity

If FBAO is suspected, then it is important to assess severity. Always ask the casualty 'are you choking?'

- Mild airway obstruction (effective cough): patient able to talk and has an effective cough
- Severe airway obstruction (ineffective cough): typically, patient responds 'yes' by nodding their head without speaking, unable to cough effectively.

### Mild airway obstruction (effective cough)

If not already, sit or stand the patient up, do not leave the patient lying flat in the dental chair, and encourage them to cough. Coughing generates high and sustained airway pressures and may expel the foreign body. Closely monitor the patient until they improve, because severe airway obstruction may subsequently develop.<sup>2</sup> If aspiration or swallowing of a dental product is suspected, seek medical advice.

### Severe airway obstruction (ineffective cough)

Call for help, stand the patient up and encourage them to cough. Stand at their side, slightly behind the patient. Support their chest with one hand and lean them well forward. Hopefully then, if the foreign object is dislodged, it will drop out of the mouth and not be aspirated. Deliver up to five back blows (slaps) between the scapulae using the heel of the hand (Fig. 3).

After each back blow, check to see if the obstruction has been cleared; typically the patient will start coughing and spluttering. If the back blows fail to relieve the obstruction, move on to abdominal thrusts. Stand behind the patient, placing a clenched fist between



Fig. 8 Back blows in a child



Fig. 9 Abdominal thrusts in a child

the casualty's umbilicus and xiphisternum and clasp it with the other hand. Lean the patient forward and deliver up to five abdominal thrusts (inwards and upwards) (Fig. 4), taking care to avoid applying pressure to the xiphoid process or the lower rib cage as this may result in abdominal trauma.

After each abdominal thrust, check to see if the obstruction has been cleared; typically the patient will start coughing and spluttering. If the obstruction remains, continue alternating up to five back blows with up to five abdominal thrusts.

If the patient loses consciousness, carefully support them, ideally with other work colleagues helping, to the floor or dental chair (in a horizontal position) and start CPR (30 chest compressions: two ventilations) (Fig. 5). Make sure 999 has been called for an ambulance and continue to perform CPR.

### Abdominal thrusts in an obese or pregnant patient

Delivering abdominal thrusts in an obese or pregnant patient may be difficult (unable to encircle the abdomen). Alternatively, stand

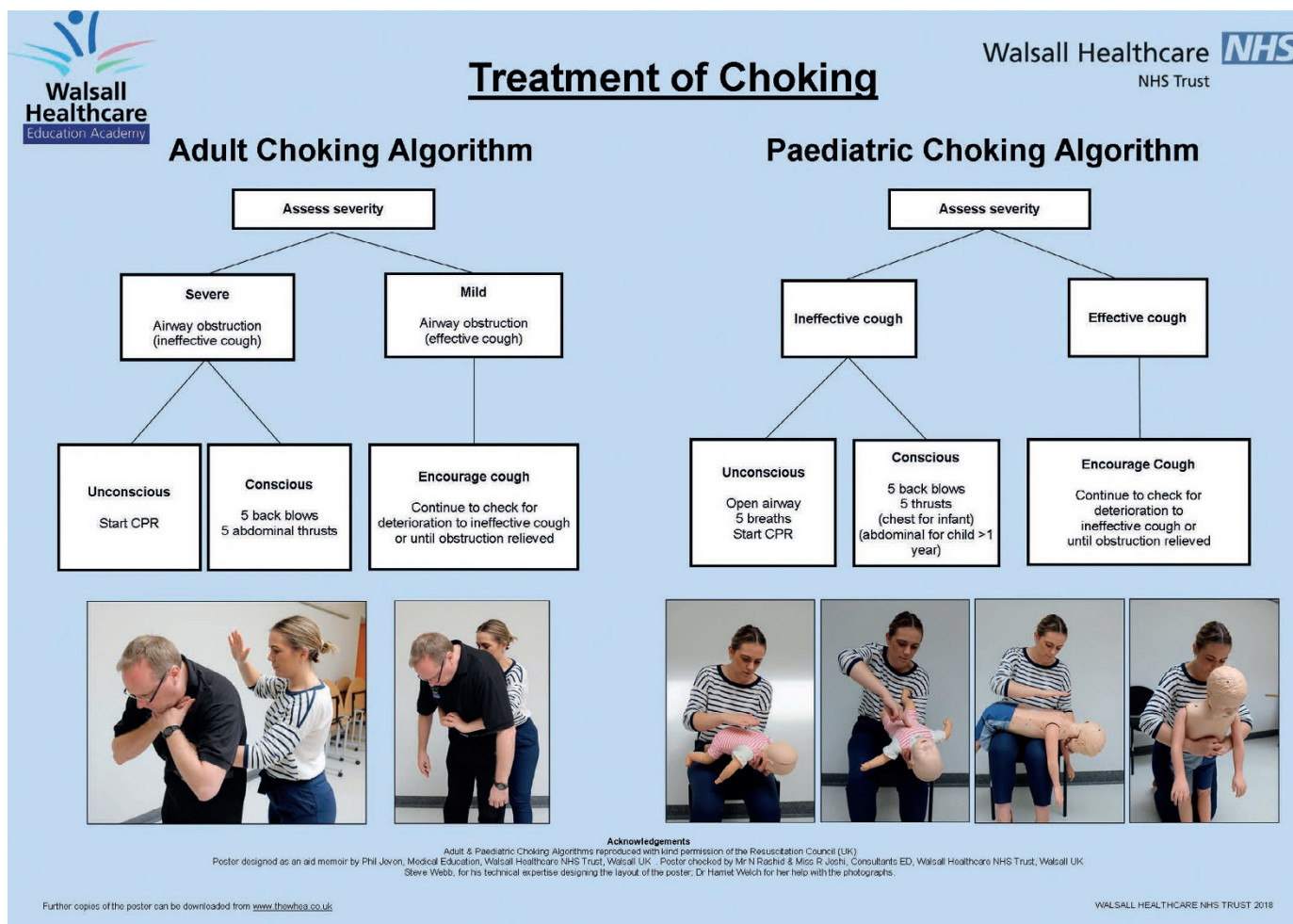


Fig. 10 Management of choking in the dental practice poster

behind the patient, encircle the chest and place the hands over the lower end of the sternum and pull hard into the chest with quick thrusts (chest thrusts).<sup>2</sup>

### Treatment of FBAO in infants & children

Each year in England and Wales, there are about ten deaths linked to FBAO in infants and children up to 14 years of age, caused by food (50%) or small objects (50%).<sup>1</sup> The Resuscitation Council UK's paediatric choking algorithm<sup>3</sup> (Fig. 2) provides guidance on the treatment of choking in infants (< 1 year) and children (> 1 year).

#### Assess severity

As in adults, if FBAO is suspected, assess severity by establishing whether the infant/child has an effective or ineffective cough. In an older child, as with adults, ask the child 'are you choking?'

- Effective cough: for example, crying or verbal response to questions, loud cough,

able to take a breath before coughing and fully responsive. No external manoeuvres are needed, but closely observe the infant/child until they improve, as severe airway obstruction may subsequently develop. It is most important, if at all possible, to leave the infant/child with the carer

- Ineffective cough: for example, unable to vocalise, quiet or silent cough, unable to breathe, cyanosis and decreasing level of consciousness. Call for help immediately and deliver up to five back blows (slaps) and if necessary up to five thrusts (chest thrusts in an infant and abdominal in a child).

#### Back blows in an infant

Place the infant in a prone position, usually over the lap, with the head downwards to enable gravity to assist removal of the foreign body. Clasp the jaw with the thumb and fingers to stabilise the head. Deliver up to five sharp back blows (slaps) with the heel of one hand in the middle of the back between the shoulder blades (Fig. 6).

After each back blow, check to see if the obstruction has been cleared; typically, the infant will start coughing and spluttering. If back blows are unsuccessful, proceed to chest thrusts.

#### Chest thrusts in an infant

Turn the infant supine with head in a downwards position, using the arm to support the infant's back and the hand the head. The thigh can provide additional support. Locate the landmark for chest compressions (lower sternum approximately a finger's breadth above the xiphisternum).

Deliver up to five chest thrusts, similar to chest compressions but sharper in nature and delivered at a slower rate (Fig. 7). Following each chest thrust, check to see if it has been successful at relieving the obstruction. If the obstruction remains, continue alternating up to five back blows with up to five chest thrusts.

#### Back blows in a child

Place the child over the lap with the head down. If this is difficult, support the child in

a learning forward position. Deliver up to five sharp back blows (slaps) with the heel of one hand in the middle of the back between the shoulder blades (Fig. 8). After each back blow, check to see if the obstruction has been cleared; typically, the child will start coughing and spluttering. If back blows are unsuccessful, then proceed to abdominal thrusts.

### Abdominal thrusts in a child

Stand or kneel behind the child. Placing a clenched fist between the child's umbilicus and xiphisternum and clasp it with the other hand. Lean the child forward and deliver up to five abdominal thrusts (inwards and upwards) (Fig. 9), taking care to avoid applying pressure to the xiphoid process or the lower rib cage as this may result in abdominal trauma. After each abdominal thrust, check to see if the obstruction has been cleared; typically, the child will start coughing and spluttering. If the obstruction remains, continue alternating up to five back blows with up to five abdominal thrusts.

### Unconscious infant/child with FBAO

If the infant/child loses consciousness, carefully support them to a flat surface. Ask a colleague to call 999 for an ambulance, if they haven't already. If alone, don't leave the infant/child at this stage.<sup>3</sup>

Open the mouth and attempt to remove any obvious object with a single finger sweep. NB: blind or repeated finger sweeps are not recommended as they may push the object further into the pharynx. Open the airway and attempt five ventilations. Determine the effectiveness of each ventilation; if there is no chest rise, reposition the head before trying again.

If the infant/child remains unresponsive, commence chest compressions immediately and continue CPR with a ratio of 30

compressions: two ventilations. Before repeating ventilations, check the mouth for presence of an object and remove if able. It is advised for a lone rescuer to perform CPR for 1 min before summoning assistance, for example, calling 999 for an ambulance.

### Follow-up care

Following successful treatment for FBAO, as a foreign body could still be present in the airway, if the patient has dysphagia, a persistent cough or complains of having something 'stuck in their throat', then medical advice should be sought.

As abdominal thrusts and chest compressions can potentially cause serious internal injury, for example, ruptures or laceration of abdominal or thoracic viscera; patients who have been treated with them must be examined for injuries by a doctor.<sup>2</sup>

### Significant event analysis

If FBAO occurs in the dental practice, then this is certainly a significant event and a significant event analysis should be undertaken as soon as possible, ideally immediately following the event. Lessons learnt should be communicated to all team members and a written record should be recorded.

### Management of choking in the dental practice poster

A 'Management of choking in the dental practice poster' (Fig. 10) has been produced to remind dental staff of how to treat FBAO in infants, children and adults. The poster is included as an insert in this issue of the *British Dental Journal*. Further copies can be downloaded free of charge from [www.thewhea.co.uk](http://www.thewhea.co.uk).

### Summary

FBAO is a life-threatening emergency which could occur in the dental practice. All dental staff must be able to recognise and effectively treat FBAO. The Resuscitation Council UK's guidance on the management of FBAO in infants, children and adults has been described.

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