First Aid for the Choking Child

Committee on Pediatric Emergency Medicine

There are more than 300 annual deaths of children in the United States due to choking. Prompt, effective first aid provided by a bystander may and often does prevent morbidity or death. Pediatricians should review the risk of choking with parents during routine health care visits and encourage families to obtain formal training from local agencies such as the American Red Cross and American Heart Association.

Toys, food, or other foreign objects find their way into youngsters’ airways. Any child who has choked on a foreign body and is coughing, crying, or speaking is best left to his/her own reflexes to relieve the obstruction. If the child or infant is unable to make sounds or if complete obstruction develops, without evidence of respiratory air movement, immediate first aid is required to avoid permanent disability or death.

CURRENT TECHNIQUES

Abdominal Thrust Technique

Most experts agree that the abdominal thrust maneuver (Fig 1), as originally described by Henry Heimlich, MD, is the most effective method of relieving airway obstruction in children more than 1 year of age. This method utilizes the following concepts: (1) four fifths of normal respiration occurs using the diaphragm; (2) abdominal pressure compresses the diaphragm upward, thereby raising intrathoracic pressure; (3) rapid increase in intrathoracic pressure may expel the obstructing object; and (4) as a patient becomes hypoxic, muscle tone diminishes. Thus, repeated abdominal thrusts that may be ineffective initially become effective minutes later.

Controversy exists concerning first aid management for a choking child less than 12 months of age: abdominal thrust technique versus back-blow and chest thrust technique.

Infants have a relatively large stomach, liver, and spleen compared to older children. Damage or even rupture of abdominal organs with the abdominal thrust technique is a possibility.

Head-Down Back-Blow Technique

The head-down back-blow technique utilizes the force of gravity and compression of the baby’s chest to expel intrathoracic air. Many successes have been reported with this technique. Some investigators have suggested the possibility that back blows may force the object further into the airway. The current recommendation is that the head-down back-blow technique is best for the initial management of the choking infant.

Chest Thrust Technique

This technique utilizes sternal compression in an effort to expel the foreign object from the infant. Although rib and cardiac damage is a theoretical risk of compressions, these complications in children seem negligible.
Finger Sweep Technique

Blind finger sweeps should not be performed as they may force the foreign body deeper into the airway. If the object is visible in the child's or infant's throat, the rescuer is encouraged to attempt removal with a hooked index finger or Magill forceps.

RECOMMENDATIONS

Many protocols for relief of foreign-object airway obstruction in infants have been proposed. Each has its own merits, risks, advantages, and disadvantages. The American Academy of Pediatrics makes the following recommendations based on current consensus within the pediatric and emergency medicine community for the treatment of the infant with an obstructed airway. These recommendations are consistent with the 1992 American Heart Association guidelines and are as follows.

The Infant Less Than 1 Year of Age

The rescuer should perform the following steps to relieve airway obstruction:

1. Hold the infant prone, resting on your forearm. Support the infant's head by firmly holding the jaw and turning the head to the side. The rescuer's forearm should rest on his or her thigh to support the infant; the victim's head should be lower than the trunk.
2. Forcefully deliver five back blows between the infant's shoulder blades, using the heel of the hand (Fig 2).
3. After delivering the back blows, place your free hand on the infant's back, holding the infant's head. The victim is effectively sandwiched between the two hands of the rescuer; one hand supports the neck, jaw, and chest, while the other supports the back.
4. Turn the infant while the head and neck are carefully supported and hold the infant in the supine position across the thigh. The infant's head is turned to one side and should remain lower than the trunk.
5. Provide five quick downward chest thrusts in the same location as external chest compressions (lower half of the sternum, approximately one finger's breadth below the nipple line) but at a slower rate (Fig 3). Attempts should be made to provide rescue breathing. If the airway remains obstructed, repeat these maneuvers.

The Child More Than 1 Year of Age

Abdominal Thrusts With a Conscious Victim Standing or Sitting. These thrusts are performed with the rescuer standing behind the victim. The rescuer should perform the following steps to relieve airway obstruction.

1. Stand behind the victim, arms directly under the victim's axillae, and encircle the victim's chest.
2. Place the thumb side of one fist against the victim's abdomen in the midline slightly above the navel and well below the tip of the xiphoid process.
3. Grasp the fist with the other hand and exert five quick upward thrusts. The fist should not touch the xiphoid process or the lower margins of the rib cage, because force applied to these structures may damage internal organs.
4. Each thrust should be a separate, distinct movement, delivered with the intent to relieve the obstruction. The thrusts should be continued until the foreign body is expelled or five thrusts are completed. Attempts should be made to provide rescue breathing. If the airway remains ob-
structed, repeat these maneuvers. If patient becomes unconscious, use protocol for unconscious victim.

Abdominal Thrusts With Conscious or Unconscious Victim Lying Down. The victim is positioned supine for abdominal thrusts to be performed. The rescuer should perform the following steps:

1. Place the victim supine with the victim’s head turned to one side. Kneel close to the victim’s side or straddle the victim’s hips.
2. Open the victim’s airway using a chin lift or jaw thrust.
3. Place the heel of one hand on the child’s abdomen in the midline slightly above the navel and well below the rib cage and xyphoid process. The other hand should be placed on top of the first.
4. Press both hands into the abdomen with a quick upward thrust. If necessary, a series of five thrusts is performed, and each thrust should be a separate and distinct movement. Each thrust is directed upward in the midline and should not be directed to either side of the abdomen.
5. After delivery of five abdominal thrusts, attempt rescue breathing; if the airway remains obstructed, repeat these maneuvers.

Finger Sweep

Blind finger sweeps should not be performed. When chest thrusts or subdiaphragmatic abdominal thrusts are provided for the unconscious, nonbreathing victim, open the victim’s mouth by grasping both the tongue and the lower jaw between the thumb and finger and lifting (tongue-jaw lift). This action draws the tongue away from the back of the throat and may itself partially relieve the obstruction. If the foreign body is seen, remove it.

Any changes in these recommendations must be based on scientific evaluation.

COMMITTEE ON PEDIATRIC EMERGENCY MEDICINE, 1993 to 1994
Joseph A. Weinberg, MD, Chairperson

George L. Foltin, MD
J. Alexander Haller, Jr, MD
Dee Hodge, III, MD
Marc L. Holbrook, MD
Jane Knapp, MD
William J. Lewander, MD
Calvin C.J. Sia, MD
Robert A. Wiebe, MD

Liaison Representatives
Jean Athey, PhD, Maternal and Child Health Bureau
Max L. Ramenofsky, MD, American College of Surgeons
Robert W. Schafermeyer, MD, American College of Emergency Physicians

AAP Section Liaisons
Daniel Notterman, MD, Section on Critical Care
James O’Neill, MD, Section on Surgery

Consultants
Stephen Ludwig, MD
Linda Quan, MD
James Seidel, MD, PhD

REFERENCES

# First Aid for the Choking Child

*Pediatrics* 1993;92;477

<table>
<thead>
<tr>
<th>Updated Information &amp; Services</th>
<th>including high resolution figures, can be found at:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citations</td>
<td>This article has been cited by 1 HighWire-hosted articles:</td>
</tr>
<tr>
<td></td>
<td>/content/92/3/477#related-urls</td>
</tr>
<tr>
<td>Permissions &amp; Licensing</td>
<td>Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:</td>
</tr>
<tr>
<td></td>
<td>/site/misc/Permissions.xhtml</td>
</tr>
<tr>
<td>Reprints</td>
<td>Information about ordering reprints can be found online:</td>
</tr>
<tr>
<td></td>
<td>/site/misc/reprints.xhtml</td>
</tr>
</tbody>
</table>
First Aid for the Choking Child

Pediatrics 1993;92;477

The online version of this article, along with updated information and services, is located on the World Wide Web at: