American Red Cross SAC Advisory on Obstructed Airway-Adults

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Available at: https://works.bepress.com/richard_bradley1/35/
ARC SAC Advisory
First Aid for Foreign Body Airway Obstruction in Adults

Overall Recommendation:
The evidence suggests that it is better to do something than nothing when faced with a person having a foreign body airway obstruction. Nevertheless, the available evidence is not strong enough to warrant a standard. Although the evidence for back blows is weak, the preponderance of available evidence suggests that it may be beneficial and has not been shown to cause harm. We recommend that rescuers use back blows as part of the resuscitation sequence when caring for a conscious patient with a complete foreign body airway obstruction. We do not, however, recommend interrupting chest compressions to deliver back blows in a patient that is unconscious and not breathing with a possible complete foreign body airway obstruction. Rather, we support other guidelines that suggest that patients that are completely unconscious and not breathing normally should receive chest compressions.

There is inadequate evidence to support a recommendation for or against finger sweeps in the treatment of complete foreign body airway obstruction.

Recommendations and Strength:

Standards: None.

Guidelines: 1) Rescuers attempting to resolve a complete foreign body airway obstruction in a conscious adult should provide back blows and either abdominal and/or chest thrusts to the victim.

2) Rescuers attempting to resolve a complete foreign body airway obstruction in an unconscious adult should provide CPR and use a finger sweep if a foreign body is seen in the mouth.

Options: None.

Questions to be addressed:
For adults, either conscious or unconscious, with obstructed airway, does any specific resuscitation techniques compared to other techniques, lead to different outcomes?

Introduction/Overview:
Acute foreign body airway obstruction is an important public health threat. In 2012, there were 4,700 deaths due to this problem.

In 1974, Dr. Henry Heimlich published an article describing the ‘Heimlich Maneuver.’ His first manuscript was based upon an uncontrolled study in anesthetized beagles. He went on to publish a number of studies describing reports of great success with this technique when used on choking humans. However there were a number of articles that were subsequently published that questioned the scientific basis and the effectiveness of this procedure.
The objective of this study was to complete a structured literature review to determine if there are any specific rescue techniques, when used on adults, either conscious or unconscious, with acute foreign body airway obstruction, when compared to other rescue techniques, which lead to different outcomes.

**Summary of Scientific Foundation:**
Several studies provide evidence that there are specific techniques that lead to better outcomes in adults with an airway obstruction.

**Abdominal Thrusts**

Five studies suggest that abdominal thrusts are effective. One particular study reviewed the San Diego County (California) prehospital database for all adults treated in the out-of-hospital setting with an airway obstruction. They identified 513 cases. Of the various techniques used to relieve the airway obstruction, the Heimlich maneuver was used most commonly. The success rate of the Heimlich maneuver was 86.5%.

Another author published a study with unclear details that supports abdominal thrusts as superior to back blows. This manuscript bundled several research maneuvers together.

The original study reported by Heimlich was a very short article that reported a study of four anesthetized beagles. Each dog received an endotracheal tube which was subsequently blocked with a foreign body. When the investigator delivered an abdominal thrust, the foreign body popped out of the endotracheal tube. There was no comparison group.

Heimlich also requested that individuals who performed the Heimlich maneuver on actual choking victims send him a case report. In 1975 he published a report of 162 communications of use of the Heimlich procedure. All 162 cases resulted in lives saved. This study reported no demographic data and did not estimate the number of unreported cases. No statistical data was provided.

**Chest Thrusts**

Three studies support the benefits of chest thrusts for obstructed airways. There is also a case report of chest thrusts successfully removing a foreign body airway obstruction where abdominal thrusts had failed.

**Back Blows**

Two studies support the use of back blows for obstructed airways.
Other Supportive Studies

There is one case report of successful resolution of an airway obstruction with a finger sweep after failure of the Heimlich maneuver and back blows. Another study suggests that the supine position is superior to standing for victims receiving abdominal thrusts.

NEUTRAL STUDIES

One author reviewed case reports from attempted rescue efforts on victims with obstructed airways that had been submitted to the American Heart Association. There were a total of 256 successful treatment events in 386 attempts (66% success rate). The author acknowledges the clear existence of reporting bias. In all but five cases, the investigator could not determine final outcome (survived vs. died).

<table>
<thead>
<tr>
<th>Maneuver</th>
<th>Cases</th>
<th>Successes</th>
<th>Percentage Successful</th>
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</thead>
<tbody>
<tr>
<td>Back Blows</td>
<td>109</td>
<td>53</td>
<td>49%</td>
</tr>
<tr>
<td>Abdominal Thrusts</td>
<td>168</td>
<td>132</td>
<td>79%</td>
</tr>
<tr>
<td>Chest Thrusts</td>
<td>25</td>
<td>16</td>
<td>64%</td>
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<tr>
<td>Finger Probe</td>
<td>52</td>
<td>39</td>
<td>75%</td>
</tr>
<tr>
<td>CPR</td>
<td>14</td>
<td>12</td>
<td>86%</td>
</tr>
</tbody>
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The reported harms included abdominal tenderness in 12 cases of abdominal thrusts. Abdominal thrusts also resulted in four incidents of vomiting, 1 pharyngeal abrasion, 1 retinal detachment and 1 esophageal laceration. One case of chest thrusts had a report of chest tenderness. Finger probes were associated with three cases of pharyngeal abrasions.

STUDIES OPPOSING HYPOTHESIS/HARMS

No studies directly oppose the hypothesis – that is to say there are no studies that provide evidence that there is any technique for resolving airway obstruction that is clearly better than other techniques. There are, however, a number of studies reporting harms for the Heimlich maneuver. There are multiple published reports of rupture of the stomach or damage to other parts of the digestive tract as a complication of abdominal thrusts. Several others reported damage to the major arteries in the chest or abdomen. There is one report of rib fractures, and another that reports a spinal fracture. There is also a report of a fatal injury to the major artery in the chest in a bystander that administered a Heimlich maneuver.