Performance of the Airtraq, Airway Scope, and Macintosh Laryngoscope in Different Lighting Conditions

The Airway Scope performs poorly in daylight.

Lighting conditions during prehospital intubation can range from darkness to bright sunlight. Researchers in Japan compared the performance of the Airway Scope (a video laryngoscope), the Airtraq laryngoscope (an optical device that incorporates lenses and a light-emitting diode light source), and the Macintosh laryngoscope in the operating room in darkness and with standard ceiling lighting and outdoors on a sunny day (daylight). Fifteen anesthetists used the three devices in random order in each of the lighting conditions to intubate the trachea of a simulator manikin placed on the floor.

In ceiling-light and dark conditions in the operating room, operators achieved intubation in <30 seconds in all cases, and time to intubation and ventilation varied by only a few seconds among the devices. In daylight conditions, intubation was successful in <30 seconds for all attempts using the Airtraq and Macintosh laryngoscopes, but in only 1 of 15 attempts with the Airway Scope. Three Airway Scope intubation attempts in daylight failed (esophageal intubation or intubation not achieved within 2 minutes). Average time to ventilation in daylight was more than 30 seconds longer with the Airway Scope than with the Macintosh or the Airtraq laryngoscopes. All operators stated that the glottis was difficult or impossible to see on the video screen of the Airway Scope in daylight.

Comment: Video laryngoscopy is extending into prehospital (JW Emerg Med Apr 9 2010) and military applications. The Airway Scope, as currently configured, clearly is not suited to the high ambient light that often is present in the out-of-hospital environment, and it cannot be recommended for emergency medical services applications.

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Disclosure: Dr. Walls has provided testimony in a patent infringement suit in Scotland on behalf of Verathon, Inc., manufacturer of the GlideScope video laryngoscope.

Published in Journal Watch Emergency Medicine July 16, 2010

Citation(s):


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