

KEY ADVANCES SUGGESTION FROM THE LITERATURE

Video-Assisted Intubation for Adult Patients in the Emergency Department

June 2023

Why is this topic important? Endotracheal intubation (ETI) is a common and critically important procedure performed by emergency physicians. Recently, video laryngoscopy (VL) has become widely available as an alternative option to direct laryngoscopy (DL). Based on low-to-moderate certainty evidence, the authors of a Cochrane review concluded that VL may increase ETI success and decrease hypoxic events and esophageal intubation compared with DL in adults undergoing any ETI. (1) Subsequently published data further support these findings.

How will this change my clinical practice? Emergency physicians should have VL available, and those who have not attained proficiency with it need to master this essential skill.

Focus Points:

1. **VL should be considered as a first-line option for ETI, especially in patients with known or predicted difficult airway.**
2. **VL and DL are different techniques requiring different skill sets. Mastery of both is imperative for emergency physicians. Because mastery of one technique does not equate to mastery of the other, continuing lifelong training and experience with both techniques is crucial.**

Background:

A Cochrane review of 222 studies including more than 21,000 adults found that VL may increase ETI success and first-pass success and improve glottic view, while decreasing esophageal intubation and hypoxemic events, compared with DL. (1) The increase in ETI success was more pronounced in patients with known or predicted difficult airway.

Importantly for emergency physicians to know, most patients included in these studies were undergoing planned ETI in the operating room (OR). These were not emergent ETIs. In the subgroup of ETIs performed outside of the OR setting (11 studies including 1,846 cases), there was no statistically significant difference in the rate of successful intubation (relative risk for failed ETI with VL = 0.68, 95% CI = 0.42-1.09). The Cochrane review did not assess other outcomes for this subgroup.

Previous systematic reviews of studies outside the OR have reported lower rates of esophageal intubation with VL, but there was little evidence for improvement in other outcomes, such as hypoxemia, ETI success, or first-pass success. (2-4)

Two contributions to the literature since the Cochrane review warrant special attention. The first is data from the National Emergency Airways Registry. Analysis of this observational database of thousands of emergency intubations and other observational studies indicates an association between VL and higher first-pass intubation success compared with DL. (5,6). Second, the 2023 DEVICE study randomized 1,417 emergency department or intensive care unit adult patients to VL versus DL. (7) Almost all intubations were performed by trainees with a median of 50 prior intubations and more VL than DL experience. The trial was stopped early after an interim analysis found significantly higher first-pass success with VL than DL (85% versus 71%). There were no differences in adverse events or clinical outcomes.

Endotracheal intubation can be accomplished successfully using VL or DL. VL may increase first-pass ETI success compared with DL, especially in patients with known or predicted difficult airways. Because VL and DL are different techniques, emergency physicians need to learn and maintain mastery with DL in order to be prepared for instances of VL failure, which do occur, most frequently in cases when blood, vomit, or other substances in the airway obscure video views, as well as power or technical failure of the VL devices.

This is level 1 evidence. (8)

References:

1. Hansel J, Rogers AM, Lewis SR, Cook TM, Smith AF. Videolaryngoscopy versus direct laryngoscopy for adults undergoing tracheal intubation. *Cochrane Database Syst Rev.* 2022;(4):CD011136. <https://pubmed.ncbi.nlm.nih.gov/35373840/>
2. Jiang J, Ma D, Li B, Yue Y, Xue F. Video laryngoscopy does not improve the intubation outcomes in emergency and critical patients – a systematic review and meta-analysis of randomized controlled trials. *Crit Care.* 2017;21(1):288. <https://pubmed.ncbi.nlm.nih.gov/29178953/>
3. Arulkumaran N, Lowe J, Ions R, Mendoza M, Bennett V, Dunser MW. Videolaryngoscopy versus direct laryngoscopy for emergency orotracheal intubation outside the operating room: a systematic review and meta-analysis. *Br J Anaesth.* 2018;120(4):712-724. <https://pubmed.ncbi.nlm.nih.gov/29576112/>
4. Rombey T, Shieren M, Pieper D. Video versus direct laryngoscopy for inpatient emergency intubation in adults. *Dtsch Arztebl Int.* 2018;115(26):437-444. <https://pubmed.ncbi.nlm.nih.gov/30017026/>

5. Brown CA 3rd, Kaji AH, Fantegrossi A, et al. Video laryngoscopy compared to augmented direct laryngoscopy in adult emergency department tracheal intubations: a national emergency airway registry (NEAR) study. *Acad Emerg Med.* 2020;27(2):100-108. <https://pubmed.ncbi.nlm.nih.gov/31957174/>
6. Ruderman BT, Mali M, Kaji AH, et al. Direct vs video laryngoscopy for difficult airway patients in the emergency department: a National Emergency Airway Registry study. *West J Emerg Med.* 2022;23(5):706-715. <https://pubmed.ncbi.nlm.nih.gov/36205675/>
7. Prekker ME, Driver BE, Trent SA, et al. Video versus direct laryngoscopy for tracheal intubation of critically ill adults [published online ahead of print June 16, 2023]. *N Engl J Med.* doi:10.1056/NEJMoa2301601.
8. OCEBM Levels of Evidence Working Group. The Oxford 2011 levels of evidence. Centre for Evidence-Based Medicine. <https://www.cebm.ox.ac.uk/resources/levels-of-evidence/ocebmllevels-of-evidence>

Resources for additional learning:

<https://litfl.com/video-laryngoscopy/>

<https://rebelem.com/video-laryngoscopy-direct-laryngoscopy-trainees/>

<https://thesgem.com/2014/05/sgem75-video-killed-direct-laryngoscopy/>

<https://www.theairwaysite.com/>

June 30, 2023