Awake Intubation with Video Laryngoscope and Fiberoptic Bronchoscope in Difficult Airway Patients

To the Editor:

In a randomized clinical trial, Rosenstock *et al.*[1] showed no significant difference in time to awake intubation by experienced investigators using the McGrath video laryngoscope (MVL) compared with the fiberoptic bronchoscope (FOB) in difficult airway patients. Accordingly, the authors conclude that awake MVL intubation seems to be a potential alternative to awake fiberoptic intubation. However, an important issue ignored by them is that awake intubation actually includes two parts: airway topical anesthesia and subsequent intubation.[2] Moreover, effective airway topical anesthesia is a prerequisite to successfully perform awake intubation.[3] When adequate airway topical anesthesia is obtained, subsequent intubation is usually easy. To obtain a uniform airway topical anesthesia in the two groups, transtracheal injection of lidocaine was used in this study. This method is invasive and carries more potential risk than other topical anesthesia methods do. More importantly, it can be difficult or even impossible to perform if the patient's neck anatomy is troublesome to locate.[4] In this study, a total of seven patients were excluded because transtracheal injection was impossible.

In our view, a limitation of this study design is lack of assessment on the performance of airway topical anesthesia provided by the two devices. As a "gold standard" tool in managing difficult airway, FOB is not only a common choice for awake intubation, but can also provide flexibility in selectively anesthetizing the airway by a "spray as you go" technique.[5] That is, two parts of the awake intubation can be completed with an FOB. In the Discussion section, the authors claim, "Awake MVL intubation may not prove as easy in using the 'spray as you go' technique, because insertion of the MVL blade causes pressure on the tongue and on the laryngeal structures, thereby probably creating a greater degree of patient discomfort compared with introducing the FOB." It would be interesting to know whether there is any evidence to support the above comments. Had the authors performed airway topical anesthesia with the MVL?

The MVL has an anatomically shaped blade with an extra curve, and oropharyngeal tissues do not need to be retracted and compressed to achieve a straight line of sight during laryngoscopy with the MVL.[6] Thus, there is usually no need for significant lifting force to visualize the glottis. It has been shown that the use of Glidescope video laryngoscope with an anatomically shaped blade creates less pressure on the tongue when compared with the Macintosh blade.[7,8] After topical anesthesia of the tongue and pharynx with lidocaine spray, patients can well tolerate the MVL with minimal discomfort.[9] In our experience, once the oropharyngeal mucosa is anesthetized by the method described in this study, the MVL can be advanced easily to a position in the hypopharynx where the epiglottis and larynx can be clearly visualized. At this point, aliquots of lidocaine can be sprayed using a MADgic® atomizer (Wolfe Tory Medical Inc., Salt Lake City, UT). The MADgic® atomizer is then advanced through the glottis into the larynx and trachea to spray further aliquots of lidocaine in the remaining airway. This modified spray-as-you-go technique with the video laryngoscope can provide excellent airway topical anesthesia and is less affected by secretions or blood compared with fibreoptic technique. It has been used successfully in difficult airway patients who undergo awake intubation with Glidescope video laryngoscope.[10] All of these suggest that performing airway topical anesthesia under superior vision of the airway with a video laryngoscope on awake subjects is feasible. Unfortunately, there has been no randomized clinical study comparing video laryngoscopic and fiberoptic techniques of airway topical anesthesia. Before we have enough evidence to make a conclusion that the video laryngoscope is a useful alternative to the FOB for awake intubation, therefore, further studies are needed to evaluate and compare performances of both airway topical anesthesia and awake intubation in difficult airway patients. In such a study, other than the intubation time and success rate, the observed variables should also include the patient's comfort during airway topical anesthesia and awake intubation, time required for airway topical anesthesia, awake intubating condition, possible difficulties a nd so forth.[2,5]

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In Reply:

We appreciate the comments of Drs. Levin and Leibowitz regarding our editorial,[1] in which we stated that the article by Rosenstock *et al*. established video laryngoscopy as a useful alternative to fiberoptic intubation in the study population. Their study provides evidence for the utility of video laryngoscopy in difficult airway management. This does not in any way take away from the utility and necessity of acquiring and maintaining skill with flexible bronchoscopy, which remains our definitive standard for difficult airway management. The Fourth National Audit Project of the Royal College of Anaesthetists and Difficult Airway Society (NAP4) was designed to identify and study serious airway complications occurring during anesthesia, in the intensive care unit and the emergency department.[2] This study found that the lack of education and training of care providers was a significant cause of adverse outcomes. We encourage the acquisition of skill with a variety of airway management techniques. Although the flexible bronchoscope is the most versatile device available to us, it does not represent a panacea for difficult airway management, it is not readily available around the world, and the acquisition (and maintenance) costs make it unattainable in many centers. We believe that our opinion is supported by the published literature, that in select patients with difficult airways, video laryngoscopy may be as effective as flexible bronchoscopy. However, the judgment of the clinician is critical to avoid the inappropriate use of a video laryngoscopy when flexible bronchoscopy is the better choice. We disagree with the statement that any device (including traditional Macintosh and Miller laryngoscopes) would be equally successful if patients with limited mouth opening (<15 mm) and neck pathology prohibiting recurrent laryngeal nerve block placement were eliminated. There are many other known predictors of difficult intubation, and 15 mm of mouth opening may be insufficient for intubation with a standard laryngoscope that relies on direct line-of-site visualization. Furthermore, video laryngoscopy has been associated with higher tracheal intubation success rates than standard direct laryngoscopy in patients with predicted difficult airways.[3]

In summary, we encourage education and training with a variety of airway devices, including the flexible bronchoscope, and we look forward to the day when skills assessment is incorporated into all training programs to establish a minimum standard of skill for all clinicians who manage the airway.

We appreciate the insight of Dr. Metz regarding education in flexible bronchoscopy and video laryngoscopy. We agree that all anesthesiology residency programs should encourage mastery of both techniques. However, we suspect that video laryngoscopy will be easier to learn because it may be kinesthetically less demanding than flexible bronchoscopy. It has been demonstrated that novices can become proficient with tracheal intubation using a video laryngoscope with as little as two attempts.[4]

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In Reply:

We thank Drs. Todd and Bayman, Levine and Leibowitz, and Xue, Cheng, and Li for their interest in our article "Awake fiberoptic or awake video laryngoscopic tracheal intubation in patients with anticipated difficult airway management."[1] We value their questions and considerations.

Drs. Todd and Bayman raise an important issue concerning postrandomization exclusion and missing intention-to-treat analysis. We agree that postrandomization exclusion is a limitation of our study and an intention-to-treat analysis is preferable. We have now performed intention-to-treat analyses for both tracheal intubation time and the success rate for first attempt of intubation. In six of the seven cases with impossible transtracheal injection, patients' airways were topically anesthetized and the data are available, and for patients without this information, we did the calculation