

## Competing Interests

The authors declare no competing interests.

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## Apneic Intubation: Video Laryngoscopy Lacks the Continuous Ventilation Offered by Other Airway Management Techniques

To the Editor:

The article by Aziz *et al.*<sup>1</sup> significantly contributes toward understanding the response of anesthesiologists to failed intubation attempts with conventional direct laryngoscopy. We are concerned, however, that one unwise message that may be drawn from this paper is that video laryngoscopy is

the *sine qua non* for management of an unexpected difficult direct laryngoscopy. Indeed, Aziz *et al.* found an 8% failure rate with video laryngoscopy (90 of 1,122), underscoring the fact that anesthesiologists must have other trusted responses to failed conventional direct laryngoscopy. Additionally, it must be recognized that video laryngoscopy is an apneic intubation technique; oxygenation and ventilation are not maintained during laryngoscopy and intubation.

Aziz *et al.* reported inferior success rates with both intubation using a supraglottic airway as a conduit and intubation using a flexible fiberoptic bronchoscope (78% for both *vs.* 92% with video laryngoscopy). However, there are two important considerations to weigh when evaluating intubations using a supraglottic airway and/or fiberoptic bronchoscopy in these situations. First, because this was a multicenter study and no data were reported regarding the practitioners' prior training and experience with any of these techniques, it is impossible to know whether practitioners had equal competence with all three techniques. In general, most practitioners have more experience with video laryngoscopy. It is entirely possible that in experienced hands the success rates for intubation using a supraglottic airway as a conduit and intubation using a flexible fiberoptic bronchoscope would be higher. Second, and most importantly, many intubation techniques using a supraglottic airway and/or fiberoptic bronchoscopy allow for continuous ventilation during airway management and intubation, an advantage that video laryngoscopy does not offer and one that can be critical when a difficult intubation occurs in the setting of difficult or impossible mask ventilation. Previously described techniques for intubation using a supraglottic airway as a conduit and intubation using flexible fiberoptic bronchoscopy *while maintaining continuous ventilation* involve placing a supraglottic airway or an intubating oral airway with a mask and connecting the supraglottic airway or the mask to the ventilator using a bronchoscopy elbow.<sup>2–4</sup> An Aintree catheter can then be loaded onto a fiberoptic bronchoscope and advanced through the bronchoscopy elbow, through the supraglottic airway or mask and intubating oral airway combination and into the trachea, all while continuously oxygenating and ventilating the patient. An endotracheal tube is then threaded over the intratracheal Aintree catheter, and the Aintree catheter is removed.<sup>2</sup> Alternatively, an endotracheal tube can be placed within an *in situ* intubating supraglottic airway and the ventilator connected to a bronchoscopy elbow placed on the endotracheal tube. Again, continuous oxygenation and ventilation are maintained as a fiberoptic bronchoscope is passed through the bronchoscopy elbow, through the endotracheal tube placed within the supraglottic airway, and into the trachea. The endotracheal tube is then advanced over the fiberoptic bronchoscope and into the trachea.<sup>3,4</sup>

Effective fiberoptic-guided intubation is a skill that, although infrequently necessary, is critical in its ability to continuously oxygenate and ventilate the patient when a difficult laryngoscopy occurs in the setting of difficult or impossible mask ventilation. This critical advantage over video laryngoscopy should not be underestimated, and

indeed, the American Society of Anesthesiologists Difficult Airway Algorithm encourages practitioners to “actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management.”<sup>5</sup>

It is imperative that the anesthesiology community continue to teach residents techniques for airway management beyond direct and video laryngoscopy with a focus on those techniques that allow for continuous oxygenation and ventilation during airway management. Equally as important, once these skills are attained, anesthesiologists must make efforts to maintain these skills through their practical application. We hope that, rather than highlighting the efficacy of video laryngoscopy over other techniques, the article by Aziz *et al.* will serve to underscore the importance of the competent practitioner having an arsenal of techniques, with which they are well versed, to secure the difficult airway.

### Competing Interests

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### In Reply:

We thank Drs. Xue *et al.*, Drs. Herway and Benumof, and Drs. Maslow and Panaro for their interest and thoughtful comments regarding our recent publication.<sup>1</sup> They offer

several interesting insights and questions regarding our article that we wish to address.

All three letters point out that video laryngoscopy was not universally successful as a rescue technique and that other approaches to intubation and oxygenation should be considered. Furthermore, training and competency with other primary or rescue tools should be maintained. We absolutely agree. The practical application of our findings provides a framework for prioritizing how to best invest time and training in rescue techniques. The supraglottic airway in particular offers advantages to maintain oxygenation and ventilation as a definitive airway or as a conduit for final tracheal intubation. Indeed, many patients in this data set were effectively temporized in this fashion. However, when used to guide tracheal intubation with or without the use of a flexible bronchoscope, the supraglottic airway was not as successful as video laryngoscopy. Nor was the flexible bronchoscope as successful. Does this mean that these well-established techniques should be abandoned? Certainly not! They have a clear role when video laryngoscopy is not feasible or when used by providers more experienced with these techniques. That said, if a higher risk of failure is anticipated or when preparing for an unanticipated difficult direct laryngoscopy, our data support the immediate availability of video laryngoscopy.

It is likely true that performance with the supraglottic airway and flexible bronchoscopic intubation would have been improved with better training. However, this data set represents the experience of 353 distinct attending anesthesiologists in large tertiary care academic medical centers. While they all may have experienced different performance with different training, we believe this sample represents the reality of clinical practice in academic medicine in the United States. Similar discussions occurred in the United Kingdom regarding rescue surgical airway approaches after publication of the fourth national audit project.<sup>2</sup> The study observed higher success rates with the scalpel approach compared to percutaneous techniques, and national guidelines soon called for only the scalpel technique.<sup>3</sup> Appropriate cautionary editorials were provided that discussed the importance of training and human factors when selecting rescue techniques.<sup>4</sup> We believe both of these rescue situations represent opportunities for improvements in training, but it is as important to recognize why certain techniques may have failed and why one performed better than the other. We believe the high success rate with video laryngoscopy relates to ease of use and experience in both urgent and nonurgent situations. Furthermore, we recognize that competence at the highest level may not be feasible with all available devices, and it is useful to understand what may work most frequently in most providers' hands. We need to understand better why such a large group of anesthesia providers may have not performed as well with flexible bronchoscope techniques and intubating supraglottic airways. We also hope that our article will encourage others to research these questions.