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## Is Airway Management Better?

To the Editor:

The article by Aziz *et al.*<sup>1</sup> describes difficult airway management over a 8- to 9-yr period and analyzes the use and success of different airway devices for rescue after failed direct laryngoscopy. The authors found that video laryngoscopy was used most often and had the highest rate of success as a rescue tool (92%) compared to fiberoptic bronchoscopy, lighted stylets, optical stylets, and supraglottic airways (67 to 78% success rate). They speculate that the results may “reflect . . . widespread availability of video laryngoscopy, an anticipated high success rate, and growing comfort and familiarity with this technique.” The authors state that the growing use of the video laryngoscopes, of which the GlideScope was used 83% of the time, is a “practice improvement.” The attractiveness of video laryngoscopy is understandable as it is technically similar to direct laryngoscopy and, compared to other rescue techniques, may be easier to teach, learn, and master, perhaps fueling the increased use as highlighted in this article.

However, based on these data, we wonder whether there is an improvement in airway management or just a change in clinical practice and training. Moreover, we are concerned that this change in practice and training has resulted in a decrement in clinical skills. Despite its increasing use, the reported rate of failure of video laryngoscopy consistently ranges from 5 to 20%,<sup>1–5</sup> despite reports of improved view of the glottis.<sup>5,6</sup> The current investigation reports an 8% failure of video laryngoscopy as a rescue tool, at which time the practitioner used either fiberoptic bronchoscopy or direct laryngoscopy with or without bougie to rescue the rescue.<sup>1</sup> There are significant limitations to video laryngoscopy seen with small mouth opening, tongue and/or soft-tissue swelling (*e.g.*, infection, angioedema), altered neck anatomy (radiation, surgery, airway displacement, presence of a halo), and/or any airway obstruction.<sup>1,4</sup>

Despite reporting significant *P* values, the authors recognize the retrospective and unmatched nature of the study.<sup>1</sup> Important unknown variables include the reasoning for selection of a particular rescue airway device, which was at the practitioner’s discretion. The equivalency of the patient’s airways between the groups is not known. We do not know, for example, how many patients rescued with fiberoptic bronchoscopy had known predictors of failed video laryngoscopy. With regard to general conclusions of difficult airway management, the success of video laryngoscopy may have been artificially high if practitioners did not attempt to use video laryngoscopy if predictors of failure were present.

The authors did not discuss the 81% of the initial 7,259 cases that were excluded. Because the airway was ultimately secured with direct laryngoscopy, 40% of cases were excluded. In the other 41% (2,951 cases), another primary technique was used (*i.e.*, not direct laryngoscopy). There are no further data describing what technique was used nor how they were rescued. If consistent with the practice trends, then these initial “nondirect laryngoscopy attempts” would more commonly have included video laryngoscopy. If this were the case, then the success of video laryngoscopy is not accurately represented. Perhaps the failure rate of video laryngoscopy is significantly greater than 8%.

Airway trauma was reflected by the number of attempts made before the rescue attempt. The retrospective nature of the study precludes any conclusions regarding which technique was superior because there is no explanation as to how practitioners decided when “enough was enough.” Furthermore, the only pharyngeal and airway injuries (1% of total) reported in the present study occurred during use of video laryngoscopy. Finally, the present investigation reports an incidence of failed intubation of 2% (7,259 of 346,861), which is significantly higher than the 0.9%<sup>7</sup> or 0.1%<sup>8</sup> previously reported.

We do not refute the value of video laryngoscopy but want to emphasize the benefit of maintaining expertise with multiple airway management techniques. If teaching video laryngoscopy is overemphasized, then other skills will deteriorate. Prior investigations report success rates with fiberoptic bronchoscopy to be greater than 95%.<sup>9,10</sup> In another study of 100 cases of “unanticipated difficult airway,” the practitioners reported a rescue success of 98% using a specific airway management algorithm that included adjustments in direct laryngoscopy, laryngeal mask airway, and a gum-elastic bougie.<sup>7</sup> These studies allude to the importance and impact of training.

There are limitations for each airway technique, and a failure to appreciate them will have adverse consequences. Aside from the video laryngoscope, no other device or class of devices were used in more than 9% of the study group.<sup>1</sup> Instead of showing a practice improvement, we are concerned that airway management, training, and education has declined as a result of reduced emphasis on becoming expert with multiple techniques to allow greater versatility in managing any airway.

## 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