

with bag-mask ventilation has relied on different hand placement, with greatest success attributed to the two-handed mask holding approach.

In our opinion, the anesthesiology community has maintained its integrity with regard to patient safety *via* airway management. However, the next step is to continue progressive strides and gain momentum on how we perform these skills. The attention should be on techniques to optimize ventilation, including mask seal and accurate mandibular advancement. In exploring alternative mask ventilation techniques, we believe innovation in education and equipment needs to be expanded and improved.

Competing Interests

Dr. Rosen is the founder of Oteg Medical LLC. The other authors declare no competing interests.

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References

1. Schroeder RA, Pollard R, Dhakal I, Cooter M, Aronson S, Grichnik K, Buhrman W, Kertai MD, Mathew JP, Stafford-Smith M: Temporal trends in difficult and failed tracheal intubation in a regional community anesthetic practice. *ANESTHESIOLOGY* 2018; 128:502–10
2. Adnet F, Jouriles NJ, Le Toumelin P, Hennequin B, Taillandier C, Rayeh F, Couvreur J, Nougère B, Nadiras P, Ladka A, Fleury M: Survey of out-of-hospital emergency intubations in the French prehospital medical system: A multicenter study. *Ann Emerg Med* 1998; 32:454–60
3. Jabre P, Penaloza A, Pinerio D, Duchateau FX, Borron SW, Javaudin F, Richard O, de Longueville D, Bouilleau G, Devaud ML, Heidet M, Lejeune C, Fauroux S, Greingor JL, Manara A, Hubert JC, Guihard B, Vermylen O, Lievens P, Auffret Y, Maisondieu C, Huet S, Claessens B, Lapostolle F, Javaud N, Reuter PG, Baker E, Vicaud E, Adnet F: Effect of bag-mask ventilation vs endotracheal intubation during cardiopulmonary resuscitation on neurological outcome after out-of-hospital cardiorespiratory arrest: A randomized clinical trial. *JAMA* 2018; 319:779–87
4. Lewis RJ, Gausche-Hill M: Airway management during out-of-hospital cardiac arrest. *JAMA* 2018; 319:771–2

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In Reply:

We appreciate the response of Rosen *et al.* to our recent article, “Temporal Trends in Difficult and Failed Tracheal Intubation in a Regional Community Anesthetic Practice,”¹ including their highlighting the importance of the anesthesia community as subject matter experts in airway management. We concur with the authors’ assertion that mask ventilation, as the precursor to endotracheal intubation and a critical airway management skill, deserves a similar level of scrutiny and study. Mastery of the technical skill of

mask ventilation is absolutely critical to the safe practice of anesthesiology but also to emergency airway management in both pre- and in-hospital settings. Sadly, mask ventilation has historically received less attention in our clinical anesthetic documentation and, consequently, less rigorous investigation.

Rosen *et al.* highlight that mask ventilation and endotracheal intubation are separate entities with different predictors of difficulty and management strategies when complications arise. Despite the fact that these procedures are almost always taught in the same clinical encounter and are clinically proximate in time, it is also well known that they are distinct technical skills, each potentially life-saving and with distinct value. It is equally true that they should be studied independently.

As previously mentioned, our hypothesis addressed the incidence of difficult and failed endotracheal intubation, which we observed to decrease over the past decade and a half, evidenced by lowered rates of difficult and failed intubations documented in a quality-assurance database. Unfortunately, the quality of mask ventilation was not recorded in this database and, as such, was not accessible for our study.

Of interest when considering the points raised by Rosen *et al.* is the literature relating to out-of-hospital airway management in Europe and the United States; notably, such studies typically involve emergency physicians, paramedics, and other ambulance practitioners with varying levels of training and experience.² In addition, evolving recommendations regarding mask ventilation strategies in the setting of out-of-hospital cardiopulmonary resuscitation, as well as the introduction of supraglottic airways, have contributed significantly to published literature in this area.³ The importance of advancements in mask ventilation as they relate to the conduct of anesthesia care but also outside of the operating room should not be underestimated.

Nonetheless, the findings of our study are important; that the incidence of difficult and failed intubation by anesthesiologists has decreased over time, suggesting that management of endotracheal intubation has become safer. Further studies are required to confirm this occurrence in other populations and to explore potential causes. Unfortunately, at the present time, we believe that a similar study of mask ventilation is not possible given the lack of clinical documentation addressing this issue in most longitudinal quality-assurance databases.

Competing Interests

The authors declare no competing interests.

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References

1. Schroeder RA, Pollard R, Dhakal I, Cooter M, Aronson S, Grichnik K, Buhrman W, Kertai MD, Mathew JP, Stafford-Smith M: Temporal trends in difficult and failed tracheal intubation in a regional community anesthetic practice. *ANESTHESIOLOGY* 2018; 128:502–10
2. Jabre P, Penaloza A, Pinero D, Duchateau FX, Borron SW, Javaudin F, Richard O, de Longueville D, Bouilleau G, Devaud ML, Heidet M, Lejeune C, Fauroux S, Greingor JL, Manara A, Hubert JC, Guihard B, Vermylen O, Lievens P, Auffret Y, Maisondieu C, Huet S, Claessens B, Lapostolle F, Javaud N, Reuter PG, Baker E, Vicaut E, Adnet F: Effect of bag-mask ventilation vs endotracheal intubation during cardiopulmonary resuscitation on neurological outcome after out-of-hospital cardiorespiratory arrest: A randomized clinical trial. *JAMA* 2018; 319:779–87
3. Link MS, Berkow LC, Kudenchuk PJ, Halperin HR, Hess EP, Moitra VK, Neumar RW, O'Neil BJ, Paxton JH, Silvers SM, White RD, Yannopoulos D, Donnino MW: Part 7: Adult advanced cardiovascular life support: 2015 American Heart Association Guidelines Update for cardiopulmonary resuscitation and emergency cardiovascular care. *Circulation* 2015; 132(suppl 2):S444–64

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