



Peering Over the Ether Screen

Airway Management in 2020: Different and Scarier

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It's early May in Los Angeles, and dystopian reality is here – storefronts boarded up; people (if they are out at all) wearing sinister-looking black facemasks. Inside the hospital, everyone wears a mask all the time, no one gathers in clusters to chat, and even the tail-wagging therapy dogs must be sheltering at home because they are nowhere to be seen.

One change I *didn't* see coming was a metamorphosis in airway management.

Guidelines developed for the intubation of COVID-19 patients are evolving into the new normal whether a patient is infected or not. This is even more remarkable since anesthesiologists consider ourselves experts in airway management, and many of us (how can I put this kindly?) hold firmly to our opinions. Who would have thought old habits could change? But airway management this year is different and scarier. Remember when we did not think of it as hazardous duty?

Who still “tests” the airway?

Consider the question of whether to “test the airway” before giving any neuromuscular blocker (NMB) during a routine anesthesia induction. Some of us believe it offers a measure of safety, because you can back out and wake the patient up if you cannot ventilate. Those (like me) who do not do it quote studies that demonstrate more effective mask ventilation with larger tidal volumes *after* NMB, and point out that if you can't ventilate, most people will give NMB anyway (*Anaesthesia* 2011;66:163-7; *Anaesthesia* 2019;69:826-31; *Anesth Analg* 2019;129:e103-e104; *Br J Anaesth* 2010;104:313-7; *Anesthesiology* 2009;110:891-7).

That controversy seems to have gone into hiding. Today, the guidelines for intubating a patient with proven or suspected COVID-19 recommend rapid sequence induction (RSI) to reduce the risk of the patient coughing and spraying the area with aerosolized coronavirus (*Anesth Analg* 2020;130:1109-10). No one in that situation seems worried about testing the airway.

What about the patient who is asymptomatic, and has a recent negative COVID-19 test result? There is legitimate concern that the patient could still be in the early, asymptomatic stage of infection, and the incidence of false negative results

from COVID-19 testing could be as high as 30% (asamonitor.pub/3dB9Wdq). By that logic, we should treat every patient as a patient under investigation, and perform RSI on all comers. It would be interesting to survey anesthesia professionals and see how many now perform RSI as their default approach. Certainly, residents now ask me on nearly every case if the plan is RSI, and I hear from colleagues at other institutions that my experience is not unique.

What about extubation?

If we don't want coughing on intubation in the era of COVID-19, logically we wouldn't want it on extubation either (asamonitor.pub/2SR9mAo). Awake extubation, especially in the hands of novices, can include an alarming display of coughing and struggling by the patient, accompanied by cries of “Open your eyes! Take a deep breath!” by the person at the head of the table. More coughing follows as the tube comes out. In contrast, a recent review article on the care of COVID-19 patients advises removing the endotracheal tube “as smoothly as is feasible” (asamonitor.pub/2WmZu3J). For our colleagues in the United Kingdom who are accustomed to deep extubation, this is routine. In the U.S., it is not.

Anecdotally, there is new interest stateside in the art of deep extubation. If you are experienced with it, there could not be a better indication for deep extubation than the COVID-19 pandemic, and you will probably hear less backtalk from those who still think it's dangerous. However, anyone who has not been well trained in deep extubation, or who has not practiced it in quite some time, has no business trying it in a high-stress situation. There are other ways – dexmedetomidine, lidocaine, ketamine, opioids – to achieve a tranquil, cough-free emergence.

How will medical students and residents learn?

As the universities evacuated this spring, the medical students disappeared along with the undergraduates. It is unclear when they will be back or how they will make up the lost time. The anesthesiology residents are here, but at many programs they have been kept away from the intubations in the emergency department (ED) and the COVID-19 wards.

In the operating room, it would be interesting to know how many anesthesiologists find that they are less willing now to let a resident struggle with mask ventilation, if they allow it at all. Certainly, it is not easy to teach mask ventilation today with so many obese patients. Residents with smaller hands have difficulty reaching the mandible even on normal-size adults, and need to learn alternate methods such as the modified chin-lift (*Anesth Essays Res* 2016;10:643-8). If they have fewer opportunities to ventilate by mask, it will be tough to learn to do it well.

Will COVID-19 succeed in making the video laryngoscope (no matter what brand you choose) the default standard of care? Will residents ever learn fiberoptic intubation? The same guidelines that encourage RSI also recommend video laryngoscopy and avoiding fiberoptic intubation for any patient suspected of COVID-19 (*Anesth Analg* 2020;130:1109-10). Cost may be the only reason keeping many departments from adopting video laryngoscope use today for every case. Why drive without headlights when headlights can be had? Those of us who are old enough will recall when we had the same kind of standard-of-care discussions about pulse oximetry, end-tidal CO₂ monitoring, and the use of ultrasound for central lines. Perhaps COVID-19 simply will push us sooner toward video laryngoscopy for everyone.

Aerosol generation?

Here is a question: Is routine airway management in the operating room, under controlled conditions, really the same in terms of aerosol generation as airway management in the ED or the ICU? Does it make sense to treat them as equivalent?

Imagine that we have a patient who is afebrile and asymptomatic, with a negative COVID-19 test result documented within 48 hours. We are preparing for a routine surgical or diagnostic procedure. We preoxygenate and administer a hypnotic agent and NMB. Assuming a good mask seal and easy ventilation, what quantity of aerosolized respiratory secretions actually would escape into the air? What is the real risk of coronavirus transmission?

Intubating this patient, who is completely paralyzed, should generate no coughing at all. It could not be more different from approaching the critically ill patient in the ED or ICU with a high



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viral load, who is likely to be coughing relentlessly and receiving high-flow oxygen. Similarly, smooth extubation of the normal surgical patient should produce little or no coughing, and minimal aerosol generation. It is still reasonable to wear higher-level personal protective equipment (PPE) than the simple surgical mask and eye protection we wore before COVID-19, but the practical risk seems far less, and wearing full head-to-toe PPE seems wasteful.

The new “post-aerosol pause” – a waiting period after intubation and extubation before allowing personnel in or out of the operating room – is meant to allow time for air exchange to clear the air of contaminants. Should it be done only for patients with confirmed or suspected COVID-19, or expanded to all patients, given the risk of asymptomatic infection and false-negative tests? The time required to remove airborne contaminants varies with the room's air exchange rate per hour. The pause would need to last 14 minutes to achieve 99% removal in a room with 20 air exchanges per hour, or as long as 46 minutes if there are only six exchanges per hour (*Anesth Analg* 2020). Once elective surgery ramps up again, the odds are (in my opinion) that production pressure and sheer human impatience will bury the post-aerosol pause except for urgent cases in patients with proven or suspected COVID-19.

Will we ever get back to “normal”?

No one knows the answer. Writing today, I suspect that anesthesia professionals will be wearing N95 masks for intubation, extubation, bronchoscopy, and upper endoscopy (including TEE) for a long time to come, even after the pandemic is over. It is hard to walk back PPE recommendations, or eliminate worry about some new lung pathogen yet to come.

How we think about the airway will never be the same. ■