

# Common causes of trouble – how to prevent or address them before they make it into morbidity studies

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Airway-related morbidity continues to occur, even in the hands of trained and experienced airway managers. Postgraduate continuing education courses in airway management must continuously be updated to address recurring or new themes that are causing the trouble. By doing this, strategies for managing the issues, together with their prevention, can be advanced. To this end, as an airway course director, I regularly review the published literature for closed legal claim (1, 2) and morbidity studies (3) related to airway management. The content of such articles, together with coroners' and lay press reports about airway disasters help drive updates to course curriculum. In doing these reviews, it becomes evident that it is rarely the "weird and wonderful" that causes the trouble, so much as "garden variety" issues that could have been managed better. These latter issues continue to recur decade after decade, despite advances in airway equipment or the publication of updates to airway guideline recommendations. In the following few paragraphs, some of these top recurring themes are addressed.

Poor planning. Failure to perform a thorough pre-operative airway evaluation is a common theme, or, despite doing an adequate evaluation, not modifying the planned approach to securing the airway – especially, switching to use of an awake approach when significant difficulty is predicted. Deliberate consideration of whether an awake approach may be safer is especially important in the patient with obstructing upper airway pathology, other severe anatomic distortion of head or neck, or a history of neck radiation – all conditions that are over-represented in the airway morbidity studies. A second theme relating to planning is the failure to use video laryngoscopy (VL) for a first attempt when difficulty is predicted, yet airway management is planned after induction of general anaesthesia. Thus, although awake tracheal intubation may be a good solution to address predicted difficulty, if managing the airway after the induction of general anaesthesia, extra attention to the details of implementation should occur, including the first attempt use of VL, rather than DL. Obesity is another condition that is over-represented in airway morbidity studies, so that here again, careful evaluation and planning is warranted.

Perseveration and multiple attempts at the intended technique. Perseveration is defined as "the consistent application of any airway management technique or tool in three or more attempts without deviation or change, or the return to a technique or tool that was previously unsuccessful" (3). Perseveration is a common theme in reports of morbidity, often with multiple futile attempts at tracheal intubation facilitated by DL. It's problematic for many reasons, but perhaps the most concerning is that fixating on a single method can cause a loss of situational awareness, meaning that the clinician may overlook calling for help, thinking of a more effective device to address the anatomic constraints, or pausing to consider an effective exit strategy. Prevention of perseveration occurs through adhering

to guideline-recommended limits of no more than three attempts at the intended technique before declaring failure and pausing to consider an exit strategy. Always calling for the help of another clinician after three unsuccessful attempts at the intended technique will also help interrupt perseveration with a single technique.

Failure to bridge with a supraglottic airway (SGA). In addition to their use as the intended airway management technique for many elective surgical procedures, SGAs can and should be used to bridge some difficult airway situations. First, an SGA should be considered in a failed intubation situation even when fallback FMV is non-problematic. Here, it can help buy some “hands-free” time for the clinician to think of an effective exit strategy – and will help interrupt futile perseveration with further failed attempts at laryngoscopy. It may also provide a conduit through which to attempt flexible endoscopic-guided tracheal intubation. However, for the elective surgical case, if tracheal intubation had been the initial goal, proceeding with the case using the SGA might be unwise, so that an alternate exit strategy option should be engaged. Another “bridging” indication for placing an SGA is the failed intubation situation that coincides with difficult or impossible face mask ventilation – two elements of the “can’t intubate, can’t oxygenate” (CICO) situation.

Failure to recognize and declare a CICO situation and failure to perform timely eFONA. This is a perennial issue. Prevention of a poor outcome includes the recognition of when a CICO situation has occurred or is evolving. CICO can be defined as a failure of all three modes of ventilation (via endotracheal tube, face mask, or SGA ventilation), each tried on at least one optimized occasion, manifest by absent or severely attenuated waveform capnography, resulting in current or imminent hypoxemia. Alternatively, the Vortex cognitive aid calls for three attempts at each of the three modes of ventilation: if none succeeds, then eFONA should proceed, regardless of oxygen saturation. Once recognized, CICO should be declared to all present, so that everyone’s efforts can be brought to bear on beginning emergency front of neck access (eFONA) as soon as possible. While equipment is being readied for eFONA, neuromuscular blockade (NMB) should be established or confirmed, and final attempts can occur at any ventilation pathway that has not yet occurred in an optimized fashion (e.g., FMV facilitated by NMB; or tracheal intubation facilitated by hyperangulated blade VL). Final attempts at ventilation should not, however, substantively delay the onset of eFONA. eFONA is a rare event, so that the clinician should learn a single technique, to remove the element of choice in a stressful situation, and “overlearn” it on part-task simulators, to help create “motor memory” which can be called upon in the heat of the moment.

Obvious as the management of the foregoing situations may seem to the airway manager who has thought about them, these are still the top issues causing patient morbidity and indeed, mortality. Regardless of their originating country or society, airway guidelines are very consistent in their recommendations to help prevent and address these situations. Reviewing the guidelines, thinking about their message, and ideally, practicing management of these scenarios in team-based simulation sessions will help avoid airway-related patient morbidity.

1. Joffe AM, Aziz MF, Posner KL, Duggan LV, Mincer SL, Domino KB. Management of Difficult Tracheal Intubation: A Closed Claims Analysis. *Anesthesiology*. 2019;131(4):818-29.

2. Crosby ET, Duggan LV, Finestone PJ, Liu R, De Gorter R, Calder LA. Anesthesiology airway-related medicolegal cases from the Canadian Medical Protection Association. *Can J Anaesth*. 2021;68(2):183-95.
3. Cumberworth A, Lewith H, Sud A, Jefferson H, Athanassoglou V, Pandit JJ. Major complications of airway management: a prospective multicentre observational study. *Anaesthesia*. 2022;77(6):640-8.