

Identification of the Failed Airway

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INTRODUCTION

A failed airway exists when a method of intubation is unsuccessful and gas exchange is failing in patients who cannot do so on their own. A failed airway scenario occurs when a provider has embarked on a certain course of airway management (eg, rapid sequence intubation [RSI]) and has recognized that intubation by that method is not going to succeed, requiring the immediate initiation of a rescue sequence. Certainly, in retrospect, a failed airway can be called a difficult airway because it has proven to be difficult or impossible to intubate, but the terms “failed airway” and “difficult airway” must be kept distinct because they represent different situations, invoke different actions, and arise at different points in the airway management timeline.

In contrast to difficult airway management, for which the goal is placement of a definitive airway, failed airway management focuses on ensuring adequate oxygenation by any means. The failed airway algorithm and its management strategies are described in detail in Chapter 5.

THE FAILED AIRWAY

A failed airway exists when any of the following conditions are met:

1. Failure to maintain acceptable oxygen saturation during or after any missed laryngoscopic attempt (CICO) *or*
2. Two failed attempts at orotracheal intubation by an experienced intubator, even when oxygen saturation can be maintained *or*
3. The single “best attempt” at intubation is unsuccessful in the “Forced to Act” situation (see Chapter 5).

Clinically, the failed airway presents itself in two ways, dictating the urgency created by the situation:

1. **Can’t Intubate, Can’t Oxygenate:** There is insufficient time to evaluate or attempt a series of rescue options. Rescue oxygenation cannot be accomplished by bag-mask ventilation (BMV) or extraglottic device (EGD) and the airway needs to be secured immediately.
2. **Can’t Intubate, Can Oxygenate:** There is time to evaluate and execute various options because the patient can be oxygenated by BMV or an EGD.

One way of thinking about this is that the difficult airway is something one anticipates and plans for whereas the failed airway is something one experiences (particularly if one did not assess for, and anticipate, a difficult airway). However, the incidence of overall intubation failure is quite low, that is, <1%. Intubation failure occurs when the patient can be neither intubated

nor oxygenated. It also exists when multiple attempts at placement of a cuffed tube in the trachea have been unsuccessful, yet the patient can be oxygenated by an alternative method, such as by BMV or using an EGD. The incidence of the “can’t intubate, can’t oxygenate” (CICO) situation in preselected operating room intubations is rare, estimated to occur once in 5000 to 20 000 intubations. The true incidence is unknown in emergency intubations, but it is likely substantially more common, given patient acuity, lack of preselection, and a higher rate of difficult airway markers. Rescue cricothyrotomy most often happens in the setting of a can’t oxygenate failed airway, but its incidence has declined with the advent of video laryngoscopy (VL) and various rescue devices. Based on a large registry data of adult intubations, rescue surgical airways occur in 0.3% to 0.5% of all airway encounters in the emergency department (ED). Furthermore, recognizing the failed airway promptly allows use of the failed airway algorithm to guide selection of a rescue approach.

Some argue that the term “failed” has too negative a connotation and emergency airway providers have an intrinsic desire to avoid failure at all costs. It is thought that labeling an airway as *failed* may prevent the intubator from letting go and taking necessary corrective actions to save the situation. A failed airway should *not* be understood to mean the provider has “failed the patient” or is him/herself a failure. In contrast, the idea of the failed airway is meant to be distinct from airway difficulty or any single missed intubation attempt. It should invoke a stark understanding that the current approach is not going to work and a rescue strategy, one that focuses on gas exchange and not definitive airway placement, needs to be prioritized. Without being able to recognize and call an airway as having “failed” one runs the risk of remaining on the current unsuccessful path of foolishly attempting intubation when a shift to providing rescue oxygenation (via EGD, BMV, or cricothyrotomy) is required.

The most important way to avoid airway management failure is to identify in advance those patients for whom difficulty can be anticipated with intubation, BMV, insertion of an EGD, or cricothyrotomy. In the “Forced to Act” scenario, airway difficulty is apparent, but the clinical conditions (eg, combative, hypoxic, rapidly deteriorating patient) force the operator’s hand, requiring administration of RSI drugs to create the best possible circumstances for tracheal intubation, with immediate progression to failed airway management if that one best attempt is not successful (see Chapter 5).

EVIDENCE

What is the incidence of a can’t intubate and can’t oxygenate (CICO) failed airway in the emergency department?

The exact incidence of airway failure in the ED is unknown. However, a reasonable surrogate marker is the rate of cricothyrotomy, as most patients with a CICO failed airway require surgical access. In a recent analysis of 4500 trauma intubations from the National Emergency Airway Registry (NEAR), 31 of 4499 patients needed a surgical airway (0.7%, 95% CI: 0.5% to 1.0%); however, 7 of 31 surgical airways (23%) were done on first attempt.¹ The “rescue” surgical airway rate (ie, a cricothyrotomy performed after another method was attempted) was observed to be 24 out of 4499, or 0.53%. In a cohort of approximately 15 800 medical intubations, 18 (0.12%) surgical airways were recorded in the registry.² No pediatric surgical airways were observed.

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References

1. Trent S, Haukoos J, Kaji AH, Brown CA III. Video laryngoscopy is associated with first-pass success in emergency department intubations for trauma patients: a propensity score matched analysis of the National Emergency Airway Registry. *Ann Emerg Med.* 2021;78(6):708-719.
2. April MD, Arana AA, Reynolds JC, et al. Peri-intubation cardiac arrest in the Emergency Department: a National Emergency Airway Registry (NEAR) study. *Resuscitation.* 2021;162:403-441.