Reaffirming Patient Positioning as a Foundation of Airway Management in Ambulatory and NORA Settings

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Abstract

Patient positioning remains a fundamental pillar of airway safety across both OR and NORA environments. Airway safety discussions increasingly emphasize new technologies and difficult airway algorithms, yet the foundational role of patient positioning remains underrepresented. Successful airway management depends not only on technical proficiency but also on pre-planned, optimal alignment of the head, neck, and torso prior to laryngoscopy. Proper positioning improves preoxygenation, prolongs safe apnea time, and increases first-pass intubation success across both operating room (OR) and non-operating room anesthesia (NORA) environments. As NORA cases expand, often involving older and more medically complex patients, environmental constraints further heighten the importance of positioning readiness. Even with advanced video-laryngoscopy devices, positioning remains a key determinant of safety. This viewpoint reaffirms patient positioning as a core airway skill that must be explicitly taught, emphasized, and referenced in educational materials and clinical publications. Recognizing positioning as a proactive component of airway preparedness will strengthen patient outcomes and sustain the core competencies of anesthesia practice..

Keywords: Patient positioning, Airway management .

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Key Points:

- Patient positioning is a fundamental skill and key element for airway safety in both the OR and NORA's.
- This core skill is frequently overlooked when airway safety is referenced.
- Optimized upper body positioning can improve the apneic reserve and airway management success.
- Favorable positioning will facilitate all methods of airway management.

The advent of newer intubating assist devices have influenced algorithm pathways for difficult airway management and prompted renewed discussions of airway safety. However, in these valuable discussions of airway safety in both the operating room (OR) and non-operating room anesthesia (NORA) settings, an essential component often receives insufficient emphasis.

A 2022 APSF update emphasized the time-sensitive nature of hypoxemia and the critical role of preoxygenation strategies in extending the safe apnea period (1). The head-elevated laryngoscopy position (HELP) has been shown to improve oxygenation and extend safe apnea time by reducing the onset of hypoxia, thereby providing essential latitude during airway instrumentation (2-5). Positioning is therefore not a passive preparatory step but an active, evidence-based intervention that directly influences airway safety.

The ASA Difficult Intubation Algorithm and related guidelines underscore that readiness is a defining component of maintaining core airway skills (6). Airway difficulties often arise unexpectedly and demand immediate response. Devices should be readily available, and patient positioning should be viewed as a pre-planned "tool" applied before laryngoscopy begins, not corrected reactively after difficulty has begun. When proactively optimized, positioning enhances readiness, shortens time to intervention, and reduces peri-intubation complications.

Nearly half of all anesthetics in the United States now occur in NORA environments, including GI endoscopy, interventional radiology, cardiac catheterization, and procedure suites (7-8). These patients tend to be older, medically complex, and more physiologically vulnerable than their OR counterparts (7-8). Notably, NORA environments account for a disproportionate number of closed claims, with GI suites representing a major source of airway-related events (7-9).

Environmental and ergonomic challenges such as non-articulating tables, limited head access, awkward room configurations, reliance on deep sedation, and reduced staffing, frequently limit optimal airway alignment in these ambulatory settings. Given the frequent use of deep sedation, particularly in obese patients or those with comorbidities such as obstructive sleep apnea (OSA), inadequate head and neck positioning contributes significantly to respiratory complications. Failure to position the head and neck correctly is a common and preventable contributor to critical events. Malpractice claims related to respiratory events comprise 30–40% of NORA claims, nearly double the rate observed in traditional operating rooms (10). Optimal head-elevated positioning improves oxygenation, enhances laryngoscopy view, and decreases the risk of hypoxemia during both sedation and intubation. Emergency airway management literature reinforces that positioning is integral to intubation success and complication reduction (11,12). Positioning is not only a technical maneuver but a readiness skill that influences every phase of airway management, from preoxygenation and mask ventilation to first-pass intubation success and rescue strategies. The omission or under-representation of positioning represents a critical gap in airway safety education, particularly in ambulatory and NORA environments where ergonomic limitations and patient complexity compound risk.

Video-laryngoscopy (VL) has improved first-pass success in many settings, including critical care (13). However, concerns persist regarding the potential "deskilling" of direct laryngoscopy skills among anesthesia professionals (14). These technological advances should not obscure a key physiologic truth: proper alignment improves success across all airway techniques, including mask ventilation, VL, direct

laryngoscopy, supraglottic airway placement, and emergency rescue pathways (15-20). When synergistically combined with modern airway devices, optimal positioning substantially increases first-pass success. The omission or under-representation of positioning represents a critical gap in airway safety education, particularly in ambulatory and NORA environments where ergonomic limitations and patient complexity compound risk.

Repeated laryngoscopy attempts worsen outcomes and decrease subsequent success rates, as shown in multicenter intubation studies (21,22). The ASA guidelines recommend limiting attempts to three or fewer whenever possible (6). Obesity, OSA, and increased neck circumference further amplify risk (23-25). ASA Closed Claims analyses show that 68% of difficult intubation claims involve obese patients (25). Across ambulatory and NORA settings, where obesity and OSA are common, head/neck/upper torso positioning plays a pivotal role in risk reduction.

Conclusion

Patient positioning remains a fundamental pillar of airway safety across both OR and NORA environments. As anesthesia delivery increasingly transitions to ambulatory and procedural locations, the importance of head-elevated and well-aligned positioning becomes even more pronounced. Its role as an early, indispensable, and modifiable airway skill warrants deliberate emphasis in future publications, guideline updates, training curricula, and clinical practice.

Reaffirming positioning as a foundational element of airway management is essential not only for optimal procedural success but for safeguarding patients in environments where airway risks are heightened and resources may be limited.

Conflict of Interest

James M. Gayes, MD is the founder of OPAD Airway Inc., a start-up medical device company. Dr. Gayes is co-inventor on patents covering an inflatable patient adjustment device and has equity in the company but does not receive any personal or professional financial renumeration. The company has no current commercial product.

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