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EDITORIAL VIEW **AIRWAY MANAGEMENT**

What's in a name – unmasking the supraglottic airway devices conundrum

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ABSTRACT

Prior to the introduction of Laryngeal Mask Airway (LMA) in 1983 by Archie Brain, endotracheal intubation was the only established method to secure the airway aside from the facemask, which could assist airway management but offered no protection against gastric insufflation or aspiration of gastric contents. This breakthrough opened the floodgates for new inventions targeting the space above the glottis, designed to control the airway without entering the trachea. However, the overwhelming variety of these devices, combined with blurred classifications and misleading nomenclature, has turned their selection, procurement, training, and stock maintenance, into a logistical quagmire for any anesthetic or emergency department. This editorial provides a simplified overview of the situation and the proposed structured approaches to navigate it more effectively.

Abbreviations: ETT: endotracheal intubation, SAD: Supraglottic Airway Devices, SGA: Supraglottic Airways, LMA: Laryngeal Mask Airway,

Keywords: ADEPT**:** Airway Device Evaluation Project Team; DAS**:** Difficult Airway Society; EAD**:** extraglottic airway device; EOA: Esophageal Obturator Airway; Laryngeal Mask Airway; Supraglottic Airway Device; Endotracheal intubation

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"A tulip a day to open your airway" … the tabloid claim was intriguing![1]

The inventor of the Tulip® Airway, recalled being taught basic resuscitation skills by his father at the age of seven. This inspired him to later invent an oropharyngeal airway envisioned to "directly replace the Guedel and Facemask technique for all users and all first-line airway interventions, even in semi-conscious patients," owing to its "one size fits all" simplicity and ease of use by laypersons of all ages with minimal training.[2] Though it sounds like a dream come true, how do we know it isn't just another addition to the already teeming landscape of Supraglottic Airway Devices (SADs), Supraglottic Airways (SGAs or SAs), or simply Supraglottic Devices (SGDs), as some prefer to call them, making similar claims?

What's in a name? Does it help discern an extraglottic device from a supraglottic, periglottic, or laryngeal airway, or mask as some prefer to call it? Can we speculate on the effectiveness, safety, and ease of use from the name alone? Clearly not. The contest among inventors and manufacturers to coin unique names for individual devices is understandable, perhaps even essential, for commercial reasons. Even so, the ever-expanding inventory makes it challenging to understand the functionality, utility, and clinical application of every device; without clear guidance on preferring one over another, it may make it financially and logistically

unviable to procure, stock, and train on multiple options – in other words, a clinical gamble.[3]

Several classification systems have emerged over time in an effort to categorize SADs. Brimacombe (2004), for instance, proposed categorization based on three features: presence of a cuff, route of insertion, and the anatomic location of the device's distal portion.[4] Around the same time, Miller categorized SADs by their sealing mechanism, i.e., Cuffed perilarnygeal and pharyngeal sealers, and uncuffed anatomically preshaped sealers.[5] The International Standards Organization (ISO) later introduced its own classification in 2009, incorporating both of the above.[6]

The term "subglottic" refers to a device passing through and placed below the vocal cords, while "infraglottic" describes those staying behind the laryngeal inlet but passing below the level of vocal cords. In contrast, an "extraglottic" airway device (EAD) identifies devices resting above the vocal cords, regardless of anatomical position in relation to the glottis. Terminological variations for such devices, whether resting close to the glottis or pharyngeal devices staying above the peri-glottic space, include laryngeal, peri-laryngeal, glottic, peri-glottic, and supraglottic. While providing some clarity about the final placement of the device in question, these terms are frequently used interchangeably, contributing to the lack of standardization.

The classification that, arguably, gained greater popularity due to its simplicity was introduced by Cook (2011), who divided SADs into 1st and 2nd generation based on the presence of an additional channel for dealing with the regurgitant gastric contents or providing gastric decompression with questionable efficacy.[7] Annotation with prefixes like **i** (intubating), **g** (guidance), etc., has also been proposed,[8] but not universally adopted; at the same time names like i-gel® do not represent the intubating feature.

While a 3rd generation has emerged,[9] the debate and disagreements in the use of these classifications remain complex and unsettled.[8,10] Ironically, the so-called first-ever 1st generation SAD, the Laryngeal Mask Airway (LMA), credited to Archie Brain (1983),[11] arrived a decade after what would later qualify for the earliest 2nd generation device, the Esophageal Obturator Airway (EOA).[12] What describes a 3rd generation SAD – an incorporated visual guidance system for tracheal intubation,[9] dynamic or energized sealing pressures,[8] or merely presence of more than two ports[13] – remains elusive.

The need for a standardized approach to evaluating SADs has been felt all along since their adoption into clinical practice, and various scoring systems have been proposed. Miller (2004) proposed one such system based on ease of insertion, stability after positioning, sealing quality, minimal associated risk of aspiration, and other side effects.[5] Lately, the Difficult Airway Society (DAS) introduced the Airway Device Evaluation Project Team (ADEPT) guidelines, aiming to streamline the evidence base requirements for new airway equipment,[14] but those have not made an impact in the case of SADs.[15] Hence, a methodology has been described to inform the design of a hybrid effectiveness-implementation trial to compare implementation strategies to support SADs use.[16]

Recently, a new scoring system has been proposed to evaluate the position and functioning of SADs in research and clinical audits;[17] an SGD-P-F-Score of 0-10 is generated based on accuracy of SAD placement, device size suitability, symmetry in positioning, extent of gas leakage or airway obstruction, potential for inserting a gastric drain tube, feasibility of tracheal intubation through the SAD, and capability to ventilate through the ETT or SAD. A score of 8-10 signifies SAD position is "optimal", 4-7 indicates "less-than-optimal", and ≤ 3 relates to "inadequate" devices. With its nuanced approach, this score could be incorporated into the anesthetic record for each SAD insertion for future clinical reference or medicolegal needs. However, this scoring system is yet to be validated through evidence base for routine use.

The future of SADs has been envisioned to incorporate multiple ports and cameras to allow for direct visual confirmation of SAD placement, positioning, corrective maneuvers, and insertion of a gastric tube and/or endotracheal tube; recording and documentation of all difficulties may facilitate future patient management as well as medical defense in case of complications.[18]

Conflict of interest

All authors declare that there was no conflict of interest.

Authors' contribution

AM: Concept, literature search, manuscript

MAA, BT: Literature search, manuscript

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