Difficult and failed airway in small neonates: Lightwand revisited

Madam,

Difficult airway in neonates is a challenging task for every anesthesiologist and neonatologist. This is evenmore onerous in syndromic neonates. Moreover, this becomes complicated due to limited availability of difficult airway management devices for placing a small size endotracheal tube (ETT). Determination of correct ETT size in neonates is based on the patient’s age and weight. An ETT with ID 2.5 and 3 mm may be required in preterm neonates with weight 1000 and 1000–2500 g, respectively.\(^1\) A common feature in patients with syndromes is micrognathia (e.g. Pierre Robin syndrome). Micrognathia increases the difficulty in laryngoscopy with a disproportionately large tongue for the mandible, thus increasing the difficulty to visualize glottis.\(^1\)

Flexible bronchoscope (FB) is often considered as the first choice in anticipated difficult airway management, but the smaller size of FB required for neonates is not readily available in all centers. Ultra-thin FBs are available only for ETT size 3.0 mm ID and above.\(^2\) As low birth weight neonates often require ETT size 2.5 mm (ID), FB is not an option. The Frova intubating introducer is another useful adjunct for difficult airway management in neonates and infants, but the pediatric size (8 Fr) allows placement of a 3.0-mm ID ETT and above size. The pediatric versions of fiberoptic stylets (Shikani Optical Stylets, United states and Brambrink Karl Storz, Germany) accepts ETTs of size 2.5 ID, but they are expensive and not readily available.\(^3\)

Neonatal lightwand has proved to be a suitable alternative to FB for difficult and failed pediatric airway.\(^3\) The use of lightwand has been declined due to the availability of video-laryngoscope and FB over the years.\(^3\) Different types of lighted stylets or lightwands are available for use in pediatric patients and neonates which can load ETTs as small as 2.0–4.0 mm.\(^3\) Trachlight is one of the advanced lightwand devices which can load a 2.5-mm ID size ETT [Figure 1]. Lightwand relies on the principle of transillumination to guide endotracheal intubation. The presence of a well-defined glow in the neck indicates tracheal placement and absence of a glow indicates esophageal placement. Lightwand is unique in that it is effective in the traumatic and failed airway, where the usage of FB and fiberoptic stylets fails due to blood and secretions.\(^3\) Repeated attempts in a failed intubation cause the airway to bleed and increase secretions with edema. Lightwand also enables intubation with minimal spinal cord motion in unstable spinal cord syndromes (e.g. Klippel-Feil syndrome).\(^1\)

Lightwand aids in nasotracheal intubation even without mouth opening. It can also be used in synergy with other airway devices such as the classic laryngeal mask airway.

Figure 1: Trachlight (Laerdal Medical Corporation, NY, USA) loaded with endotracheal tube of size 2.5 mm ID (inset: a close-up view)
Other advantages of lightwand include low acquisition costs, portability, and disposable components that eliminate the need for disinfection of equipment. Though it is difficult to use when laryngeal structures are distorted and needs dim light during usage, the other advantages makes it more user-friendly.

Therefore, we suggest that infant lightwand is a useful device in the management of neonatal difficult airway especially where small size ETTs of less than 3 mm ID are required. Hence, it should be a readily available option in today’s world of flexible fiberscopes. We need to master the art of using it and gain the necessary experience to prevent a havoc when the crisis really occurs.

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Conflicts of interest
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