Awake tracheal intubation: Videolaryngoscopy in a pediatric institution: Use of guidelines and multidisciplinary team preparation to facilitate performance of an unfamiliar technique in a pediatric setting

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Abstract
Formal guidelines for awake tracheal intubation have recently been published providing a streamlined process for the first time. We present a case of awake videolaryngoscopy in the pediatric setting, not previously reported. Application of guidelines and careful team preparation facilitated performance of a novel technique in our pediatric institution. A multidisciplinary approach with ENT colleagues provided a patient-specific airway management plan for a rare airway pathology.

KEYWORDS
airway management, guidelines, intubation, pediatrics

1 | CASE REPORT

A 45 kg 16-year-old woman was admitted urgently for resection of an obstructing nasopharyngeal tumor, a suspected antrochoanal polyp. The mass extended from the right maxillary sinus through the nasal cavity into the oropharynx where it impinged upon the epiglottis (Figure 1). The soft palate was deviated anteroinferiorly, partially occluding the airway. It measured 2.9 × 3.9 cm in the oropharynx and 12.4 cm in length.

The patient described altered phonation as well as dyspnea in the supine position. This was alleviated by lying on her side. Flexible nasendoscopy confirmed an extensive mass occupying both the naso- and oropharynx extending to the epiglottis. Clinical examination of the airway revealed a Mallampati score of I, good mouth opening, unrestricted neck movement and a thyromental distance of greater than 6.5 cm. The mass was visible protruding posterior to the uvula.

Intravenous access was obtained, and standard monitoring was applied. The ear, nose, and throat (ENT) surgical team was in the room, and a tracheostomy set was open. Sedation was initiated with a remifentanil infusion at 0.05 mcg/kg/min. The vocal cords were anesthetized with 4 ml of nebulized 4% lidocaine (Wes-Ward Pharmaceuticals Corp., USA) (40% of maximum...
Antrochoanal polyps are benign lesions arising from the maxillary sinus. They are the cause of 33% of nasal polyps in children. Large polyps have previously been reported to cause obstructive sleep apnea in children but challenging airway management has not been described. Potentially impossible bag mask ventilation necessitated a cautious approach to airway management in our patient. The mobile polyp was abutting the larynx. Hanging from its stalk in the nasopharynx it had the potential to act as a ball and cage valve with the application of proximal positive pressure. Spontaneous ventilation was deemed to be essential to the safe management of this child’s airway.

A four step airway management plan was devised with the ENT team. Plan A was ATI:VL, not previously performed in our pediatric institution. Indeed, some of our nursing colleagues were completely unfamiliar with awake intubation. An in-depth team brief was undertaken with consideration of the plan, its rationale, the step-by-step process, and each team member’s role. The rigidity of the laryngoscope blade was postulated to provide a means to deflect the mobile mass from the path of the tube. A flexible bronchoscope may have failed to progress beyond the obstructing polyp. Plan A was dependent on the co-operation of the child. Plans B to D involved maintenance of spontaneous ventilation with total intravenous anesthesia (TIVA), should plan A have failed. Plans B to D were as follows: videolaryngoscopy, rigid bronchoscopy, and front of neck access, respectively. A tracheostomy set had been prepared.

The recent ATI guidelines describe 9 mg/kg of lidocaine as an absolute upper limit. We set a limit of 7 mg/kg and found this adequate to provide the requisite airway anesthesia. Indeed, it allowed for a remarkable tolerance of the endotracheal tube.

We feel this technique could be utilized in any scenario in which a difficult intubation is predicted in co-operative older children, in particular in congenital conditions including the mucopolysaccharidoses and Goldenhaar syndrome. The technique would also lend itself to situations where positive pressure ventilation could lead to complete loss of airway such as tracheal foreign body or a mediastinal mass.

In conclusion, we present a case of ATI:VL, which we believe to be the first in the pediatric setting. Recently published ATI guidelines helped allay anxiety in performing this technique in a center where it has not been encountered. An MDT approach provided a safe stepwise contingency plan should this technique have failed.

2 | LEARNING POINTS

1. The Awake tracheal intubation process has recently been formalized with the publication of the first guidelines providing a standardized technique.
2. Application of guidelines and careful team preparation facilitate performance of awake intubation in a center where it is uncommonly encountered such as a pediatric institution.

3. An MDT approach with ENT colleagues is useful in formalizing a patient-specific airway management plan when encountering rare airway pathology.

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CONFLICTS OF INTEREST
The authors have no competing interests, financial, or otherwise.

AUTHOR CONTRIBUTIONS
JR Skelly main author and researcher. J Wauchope and M Collreavey contributing researcher and author. B Walsh main author and project coordinator.

CONSENT
Written informed consent was obtained from the patient to publish this report in accordance with the journal’s patient consent policy.

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