

A Case of Difficult Nasotracheal Intubation in the Uncooperative Pediatric Patient

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01. Abstract

A 2-year-old 39kg male ASA 2 outpatient presented for a dental exam, prophylaxis, restoration, and possible extractions, due to his advanced dental caries. His comorbidities included Autism, severe obstructive sleep apnea, and severe childhood obesity. During induction the decision to use a larger sized nasotracheal tube was made causing trauma to the airway. Difficulties with intubation and the nature of the procedure led to excessive bleeding during induction as well as emergence.

04. Case Description and Management

Due to hospital-specific culture, no pharmacological medication was given preoperatively to the patient. Instead, familial companionship was chosen to help ease the patient's anxiety. Following inhalation induction, a 5.0 endotracheal tube was chosen to be passed through the right nostril. Miller blade was then used to visualize an oropharynx full of blood. Suction was used to clear the oral cavity and cords were visualized. Magill forceps were used to try and advance the tube through the cords. The tip of the tube consistently hit the top aperture of the vocal folds and was not successfully passed into the trachea. Ventilation techniques and suctioning were used intermittently to maintain adequate oxygenation levels while intubation was attempted. Communication with the surgical team and anesthesia ended with an oral RAE endotracheal tube being passed successfully through the vocal folds without difficulties. For emergence the patient was given a dose of dexmedetomidine (0.5mcg/kg) and was awoken completely. Suction was used to clear mucal secretions and excessive blood from the airway. Patient was then transported to PACU with CPAP.

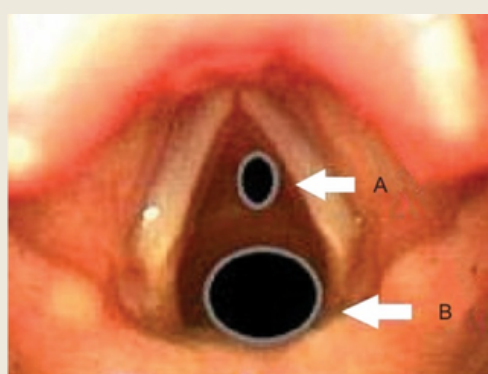


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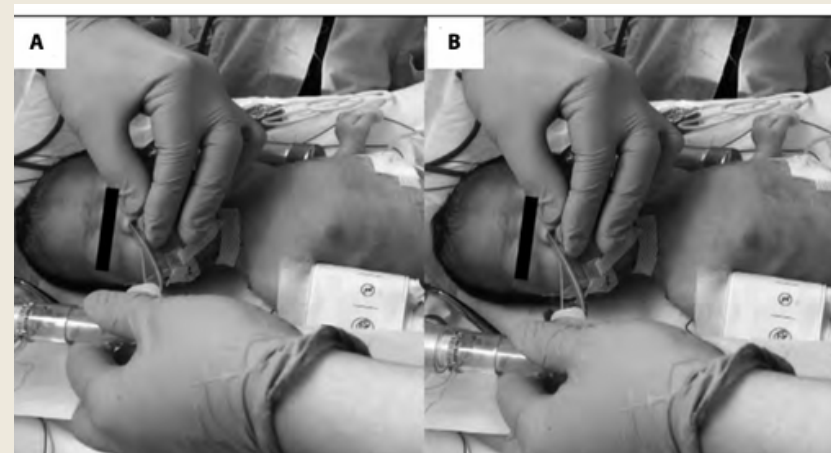


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02. Learning Objectives

- Discuss preoperative management for an uncooperative pediatric patient with special needs
- Review nasotracheal intubation
- Outline different techniques used to help with difficult nasotracheal intubations

Commonly used medications for premedication in children.

DRUG	ROUTE OF ADMINISTRATION	DOSE
Benzodiazepines	IN	0.3 mg/kg
Midazolam	IV	0.05–0.1 mg/kg
Lorazepam	PR	0.5 mg/kg
Temazepam	PO	0.025–0.05 mg/kg (max 4 mg)
Triazolam	PO	0.25–0.5 mg
Alpha-agonists	IN	2–4 µg/kg
Clonidine	PR	2.5–5 µg/kg
Dexmedetomidine	IN	1–2 µg/kg
NMDA Antagonist	IM	4–6 mg/kg
Ketamine (*)	IV	0.5–1 mg/kg
Chloral Hydrate	PO	25–75 mg/kg (max 2 g)
Melatonin	PO	0.5 mg/kg

(* [49,50]) Administration of drugs. IN: intranasally; IV: intravenously; PR: rectally; PO: orally.

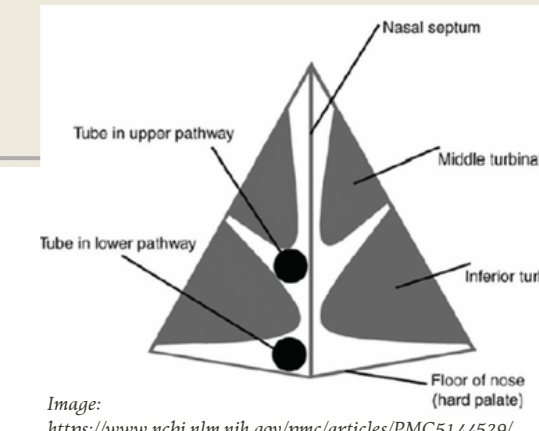


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05. Discussion

There are two anatomical pathways through which the endotracheal tube is passed through the nasal cavity. The lower pathway which lies along the floor of the cavity and the upper pathway which lies below the middle turbinate, both of which are separated by the inferior turbinate. The lower pathway is thought to be the safer route to avoid the highly vascular middle turbinate and cribriform plate leading to less trauma. The tube should be inserted with the bevel facing the septum and advances posteriorly, caudal, and medially to avoid trauma. In our case, a large tube was advanced through the patient's nostril causing trauma to the middle turbinate. Choosing an endotracheal tube half a size smaller than normal is recommended for minimal trauma.

Nasal Tracheal Intubation techniques used when encountering difficulties:

- Nasal trumpets to dilate the nostrils
- DL + Magill forceps
- Blind nasal intubation (awake vs. cervical flexion)
- Stylet-facilitated
- Light wand assisted
- FFOB assisted
- Red-foley catheter assisted

Important!

Difficult nasotracheal intubation does NOT mean difficult oral tracheal intubation

03. Background

- The preoperative management of pediatric patients with psycho-physical disorders with related cognitive problems must be methodically planned in order to make the whole hospitalization process as comfortable and least traumatic as possible.
- Premedication is recommended to safely provide quality care, minimize aversive measures, and help in cooperation development.
- Non-pharmacological techniques such as virtual sedation with smartphones and familial companionship have proven to be a helpful adjunct in reducing anxiety but is not always enough for a patient with immature cognitive development and can at times provide paradoxical anxiety and agitation.

06. References

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