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GLIDESCOPE REDUCES LARYNGOSCOPY ASSOCIATED LARYNGOSPASM IN 1,200 CONSECUTIVE PEDIATRIC NASAL INTUBATIONS WITHOUT MUSCLE RELAXANT

AUTHORS: T. West, A. Targ, N. Noone

AFFILIATION: Targ Mobile Anesthesia, Palo Alto, CA

INTRODUCTION: Children experience perioperative laryngospasm at twice the adult rate[1]. Laryngospasm (LS), defined in this study as partial or complete vocal cord closure preventing the passage of an appropriately sized* endotracheal tube (ETT), risks oxygen desaturation, pulmonary edema, aspiration, bradycardia, and cardiac arrest[1]. Many studies have shown the GlideScope video laryngoscope (GVL) equal or superior to direct laryngoscopy (DL) for glottic visualization and ETT insertion[2], yet none have examined GVL assisted pediatric nasal intubation.

METHODS: Records of 1,290 consecutive ASA I elective dental procedure patients under 12 years of age (all anesthetized by one anesthesiologist experienced with 5,000 pediatric nasal intubations) were retrospectively surveyed. In each case, a standardized induction had been performed. Sevoflurane (8%) was administered followed by placement of supraglottic airway device(s) as needed (Guedel oral airway and/or laryngeal mask airway). At an end tidal sevoflurane concentration of 3.0%, a mean of 6.1 ± 1.9 mg/kg propofol was given to induce apnea, thus avoiding anesthetic exhalation and undesired reduction of anesthetic depth during nasal intubation. An 18 F red rubber catheter guided the Nasal RAE ETT through the nasopharynx to decrease trauma[3], and tracheal intubation was completed with a tube bender. The first 637 cases were performed by Miller laryngoscope and the second 653 by GVL. In every case of LS during laryngoscopy, succinylcholine was administered and resulted in immediate resolution and ETT passage. Ninety cases were excluded due to deviation from protocol (42 no propofol given, 37 no intubation desired, 8 LS prior to laryngoscope insertion, 3 other), leaving 1,200 cases for analysis (600 DL, 600 GVL).

RESULTS: LS during laryngoscopy occurred in 16 of 600 DL patients and 4 of 600 GVL patients. The log odds of LS increases by 1.45 with DL (95% C.I. 0.43-2.7) and is significant at $\alpha=0.01$ (see table 1). Propofol was significantly lower in the GVL group ($p \leq .01$).

DISCUSSION: This previously unreported finding supports routine use of GVL for children undergoing nasal intubation when muscle relaxation is not desired. It is unlikely the GVL group's lower propofol dose would reduce LS, as propofol has been reported to resolve LS[4]. The significant reduction in LS with GVL may result from reduced stimulation with video laryngoscopy (less force applied and improved laryngeal view).

* ETT size (mm i.d.) = 4 + patient age/4 (±0.5 mm based on patient size)

REFERENCES:

1. Olsson GL. Acta Anaesthesiol Scand 1984; 28(5):567
2. Jones PM. Anesth. Analg. 2008; 107(1):144
3. Watt S. Anesthesiology 2007; 106(2):238
4. Alalami AA. Pediatr Anesth 2008; 18:281

Coefficient:	Estimate	Std. Error	z value	p-value
(Intercept)	1.81	6.72	0.270	0.787
Age	-0.006	0.218	-0.029	0.977
Gender (M)	0.180	0.456	0.395	0.693
Weight	0.043	0.069	0.624	0.533
Sevoflurane %	0.235	2.19	0.107	0.915
Dexamethasone	1.13	4.55	0.249	0.804
Ketorolac	0.056	2.36	0.024	0.981
Laryngoscopy method (DL)	1.45	0.565	2.57	0.010*

Table 1: A logistic regression was used to assess the effects of demographics, preoperative medication, and DL vs GVL on laryngoscopy associated LS. DL was found to be associated with an increase in LS.