CORRESPONDENCE

A retrospective review of pediatric difficult airways: once easy, not always easy

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To the Editor,

Retrospective series tend to report a lower incidence of difficult intubation in pediatric patients than in adults. It is also believed that the incidence of unanticipated difficult intubation in children is exceedingly low.^{1,2} We conducted a retrospective review in a pediatric tertiary care facility to identify the incidence and clinical characteristics of patients with difficult airways undergoing surgery.

With research ethics board approval (December 2011), we analyzed the anesthesia records of all patients < 18 yr presenting for surgery at The Hospital for Sick Children over a two-year period (January 1, 2010 to December 31, 2011). Patients with a difficult airway were defined as (1) those having a Cormack-Lehane grade 3 or worse view on direct laryngoscopy (which was routinely documented in the anesthesia record) or (2) those who were identified preoperatively as potentially having a difficult airway or who had been previously demonstrated to have one and were subsequently managed by pre-planned videolaryngoscopic or flexible bronchoscopic intubation. All cases were assessed and managed by an attending pediatric anesthesiologist. The patients' charts were reviewed for demographics, preoperative airway history/characteristics, and airway management details. Descriptive statistics were used to analyze the data.

Of the 22,766 cases of anesthetics delivered during the study period, 125 (0.5%) were deemed to have a difficult

intubation. Among them, 21 (16%) were emergency procedures, 13 of which were primary airway emergencies. Also, 73 (58%) of the patients were diagnosed to have a syndrome known to be associated with difficult intubation. In descending order of prevalence, the following accounted for 48 (66%) of these cases: Goldenhar, Pierre-Robin, arthrogryposis, Apert, Treacher-Collins, and various mucopolysaccharidoses.

Of the 125 difficult airway patients, 70 (56%) had undergone general anesthesia prior to the study period. Only 32 (46%) of the 70 patients had a history of prior difficult airway. In all, 100 (80%) of the 125 cases had an anticipated difficult airway based on their history and airway physical examination. Airway management in the remaining 25 (20%) patients in whom a difficult airway had been unanticipated is shown in the [Figure](#).

The vast majority (91.2%) of the difficult airway cases were managed with endotracheal intubation. Another 5.6% were managed with a supraglottic airway and the remaining 3.2% with nasal prongs or face mask. There were no deaths attributable to airway management in this series.

A particularly interesting finding in this study was that one in five difficult airways was unanticipated despite the fact that an attending anesthesiologist was involved in each case and the study took place in a pediatric tertiary care center. This is in contrast to the popular belief that the vast majority of pediatric difficult airway cases are predictable. We also found that, among the difficult airway patients in our study who had had a previous anesthetic, more than half did not have a history of airway difficulty. This finding speaks against a commonly held adage that tracheal intubation usually becomes less difficult as the child develops.³ Indeed, in conditions such as Goldenhar syndrome, arthrogryposis, and the mucopolysaccharidoses,

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Figure Airway management in patients with an unanticipated difficult airway. DL = direct laryngoscopy; GVL = GlideScope® videolaryngoscopy; LMA = laryngeal mask airway

tracheal intubation may become increasingly difficult with age.⁴

The findings in this study suggest that, even in specialized pediatric centers, the incidence of unanticipated difficult intubation remains considerable. A previous history of easy tracheal intubation should not rule out the possibility of subsequent airway challenges, particularly in a syndromic child. Continuous preparedness to deal with unanticipated airway difficulties remains essential in pediatric anesthesia practice. To this end, a portable difficult-airway cart stocked with pediatric-specific intubation aids and identified difficult airway experts who can be called on to assist in such cases are valuable assets to any pediatric anesthesia practice group.⁵

Conflicts of interest None declared.

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