

## ASSESSMENT OF DIFFICULT INTUBATION IN CLEFT LIP AND PALATE SURGERY

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### ABSTRACT

Endo-tracheal Intubation in paediatric age group is one of the challenging to the anaesthesiologists. Adequate pre operative preparation and assessment is required for the successful intubation. Anatomical abnormalities in cleft lip and palate are further challenges. The aim of this study was to determine the predictors of difficult laryngoscopy in paediatric patients presenting for repair of cleft lip and palate. This was a prospective study which was carried out in the camp set up during the 5-year period (200-2005) in various district of Nepal in Rolpa Banke, Kailali, Kanchanpur Gulmi and Arghakhanchi. We studied prospectively 200 consecutive ASA grading I and II patients, presenting for cleft lip and cleft palate surgery of the age 2 months to 12 yr. The appearance at direct laryngoscopy was recorded by using the classification of Cormack and Lehane. The relationship between age and view on laryngoscopy were studied. Outcome of tracheal intubation was classified as easy (successful with one or two attempts), difficult (two to four attempts) and failed, when intubation was not possible with four attempts. We studied prospectively 200 paediatric patients undergoing repair of cleft lip and palate to determine the predictors of difficult laryngoscopy. Laryngoscopy was easy (grade I or II) in (94%) and difficult (grade III or IV) in 6% patients. The incidence of difficult laryngoscopy (Cormack and Lehane grade III and IV) was 6% in patients < one year and with abnormal anatomy like retrognathia, micronanathia and prominent upper jaw. Tracheal intubation was successful in 100% of patients in whom laryngoscopy was difficult with use of stylette in hook stick curvature. Extensive clefts, abnormal anatomy and age less than one year were found to be associated with difficult laryngoscopy. These factors must be considered in planning the anaesthetic technique. Where difficulty is anticipated, senior skilled personnel should be present.

**Keywords:** *difficult intubation, plastic surgery, paediatric Surgery*

### INTRODUCTION

Difficulties with intubation continue to be a major cause of anaesthesia-related morbidity, mortality. Preoperative identification of patients in whom intubation may be difficult may save lives. The existing bedside tests as predictors of difficult intubation are not practical in children. Also, they are not sensitive or specific enough for routine use.<sup>1</sup> Assessment of the degree of difficulty of intubation before operation is not always possible in children. Radiological assessment of the paediatric airway has been described based on measurement of the maxillo-pharyngeal angle on lateral x-ray. This angle is normally greater than 100°, and angles less than 90° suggest that it will be impossible to see the larynx at laryngoscopy.<sup>2</sup> Airway problems in children with cleft lip and palate were recognized by Magill more than 70 yr ago, and since then many methods of managing the child with the difficult airway have been described.<sup>3</sup>

### PATIENTS AND METHODS

This was the prospective study which was carried out in the camp set up during the 5-year period (2000-2005) in various

district of Nepal in Rolpa, Banke, Kailali, Kanchanpur, Gulmi and Arghakhanchi. We studied prospectively 200 consecutive ASA grading I and II patients, presenting for cleft lip and cleft palate surgery of the age 2 months to 12 yr. Anaesthesia was induced with 1 mg/kg of pethidine, 2 mg/kg of ketamin, 0.1 mg/kg of midazolam and 0.5 mg/kg of phenargan. Inj atropine 0.15 mg/kg was given as a antisialogue before induction as a premedication. Anaesthesia was maintained in halothane and oxygen. Neuromuscular block was made with pancuronium for endotracheal intubation as well as for maintainance of muscle relaxation. A towel roll was placed under the shoulders and laryngoscopy was performed with a small curved blade (Macintosh) laryngoscope when there was adequate jaw relaxation. The appearance at direct laryngoscopy was recorded by using the classification of Cormack and Lehane. The relationship between age and view on laryngoscopy were studied. Outcome of tracheal intubation was classified as easy (successful with one or two attempts), difficult (two to four attempts) and failed, when intubation was not possible with many attempts. The lowest arterial oxygen saturation (SpO<sub>2</sub>) and heart rate

recorded during laryngoscopy were compared with values before laryngoscopy. In the presence of congenital anomaly involving the upper airway the extubation was delayed until the child is awake to prevent respiratory problems in the immediate postoperative period.

## RESULTS

**Table 1: Age distribution.**

<1 year	>1year
n=140(70%)	n= 60(30%)

**Table 2 laryngoscopic view.**

Grade I or II	Grade . III or IV
n=188 (94%)	n=12 (6%)

**Table 3: Difficult intubation:**

Laryngoscopic view II	Laryngoscopic view. III or IV
n=8 (66.66%)	n=4 (33.33%)

In total of 200 patients 70% were < 1 year. The cleft lip was unilateral in majority of patients. Remaining was right or left lip with or without involvement of the alveolus and palate. Laryngoscopy was easy (grade I or II) in (94%) and difficult (grade III or IV) in 6% patients. The Laryngoscopy was easier with increasing age. The incidence of difficult laryngoscopy was 15% in children less than 1 year. Laryngoscopy was not difficult in children more than 1 year of age. Tracheal intubation was easy in the majority (94%) of patients. All had a grade I or II view. Intubation was difficult in 6% of patients. Of whom 68% had a grade III or IV view and 32 % had I or II view. No patients had failed Intubation. There was no loss of airway control or any postoperative airway problems. There was no significant decrease in SpO<sub>2</sub> or change in heart rate during laryngoscopy or intubation.

## DISCUSSION

Assessment of difficult intubation like malampatti grading and other tests like neck mobility, thioromental distance, jaw mobility is difficult in children. Even though to some extent they can be assessed preoperatively also for any anatomical abnormalities of mouth and mandible. The use of optimal laryngeal pressure improves the laryngoscopic view and increases the intubation angle in high anterior larynx. The incidence of grade III view is reduced by routine use of external laryngeal pressure.<sup>4</sup> Difficulties with intubation continue to be a major cause of anaesthesia-related morbidity, mortality. Preoperative identification of patients in whom intubation may be difficult may save lives<sup>5, 6</sup>. The difficulty in intubation lies entirely with the size of the mandible. If it is smaller than normal as one finds with Pierre Robin, Treacher Collins and other micrognathic syndromes, intubation may be difficult, although as the child grows older intubation problems associated with micrognathia diminishes.<sup>7</sup> In contrast to the micrognathic syndromes, abnormalities involving the cervical spine, e.g., Klippel

Feil syndrome and connective tissue mucopolysaccharides (Hurler, Scheie, Hunter and Morquio syndromes), do not present severe difficulties in intubation until the second half of the first decade.<sup>8</sup> If the mandible is normal size, intubation in other craniofacial defects, e.g., cleft lip and palate, Crouzon and Apert syndromes, will not present a problem as long as an induction with intravenous agents and muscle relaxants is chosen and not an inhalational agents. Our study shows that the intubation was comparatively difficult in the children of age <1 year and children with anatomical abnormalities. In overall successful rate was 100% with use of stylette in hook stick curvature. There was no significant change in heart rate and in SpO<sub>2</sub>. Recovery was uneventful.

## CONCLUSION

Anatomical abnormalities are the main challenges for the anesthesiologists for tracheo-bronchial intubation. Preoperative identification of patients in whom intubation may be difficult may save lives.

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