Effect of Cuffed Endotracheal tube on the requirement of Oropharyngeal oxygen and volatile anesthetic agent among Children: A Comparative Study

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BACKGROUND
Recent anesthetic practice suggests the use of cuffed endotracheal tube (ETT) instead of uncuffed among children undergoing general anaesthesia for multiple reasons. Since the cuffed tube is going to seal the trachea, benefit is to eliminate the contamination of the oropharynx with oxygen which should be advantageous during tonsilslectomy operations where there is a risk of airway fire. Our study prospectively assesses the oropharyngeal oxygen and volatile anesthetic agent concentration during adenotonsilslectomy in infants and children undergoing general anaesthesia while using cuffed and uncuffed endotracheal tubes while mutually comparing their outcomes.

METHODS
This study was conducted at the Anaesthesia department of Holy Family Hospital, Rawalpindi, Pakistan over a period of 6 months from July 2011 till January 2012. After induction of general anaesthesia among children below 12 years of age planned for either adenoidectomy or tonsilslectomy, the trachea was intubated. The use of a cuffed or uncuffed ETT was at the discretion of the anesthesia team. The oxygen concentration was kept at 100% oxygen until the study was completed. Following placement of the mouth gag, the otolaryngologist placed into the oropharynx a small bore catheter, which was attached to a standard anesthesia gas monitoring device which sampled the gas at 150mL/min. The concentration of the oxygen and the concentration of the anesthetic agent in the oropharynx were measured for 5 breaths.

RESULTS
A total of 100 patients were recruited in our study. With the use of a cuffed ETT, the oxygen concentration in the oropharynx was 16-17% and the volatile agent concentration was 1% in 89 patients. With the use of an uncuffed ETT and the administration of 100% oxygen, there was significant contamination of the oropharynx noted. The oropharyngeal concentration of oxygen is high enough to support combustion in the majority of patients. The use of a cuffed ETT eliminates oropharyngeal contamination with oxygen during the administration of anesthesia and may be useful in limiting the incidence of an airway fire.

CONCLUSIONS
With the use of an uncuffed ETT and the administration of 100% oxygen, there was significant contamination of the oropharynx noted. The oropharyngeal concentration of oxygen is high enough to support combustion in the majority of patients. The use of a cuffed ETT eliminates oropharyngeal contamination with oxygen during the administration of anesthesia and may be useful in limiting the incidence of an airway fire.

REFERENCES

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