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CONTINUOUS SUCTION DURING NASOTRACHEAL INTUBATION IN TONSILLECTOMY – A COMPARATIVE STUDY

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ABSTRACT We studied 100 patients presenting for tonsillectomy and in whom nasotracheal intubation (NTI) was planned/preferred. These patients were divided into two groups: Group N (50) where no suction was used during NTI and surgery and Group S (50) where continuous suction was used during NTI and during surgery. A comparison was made between the groups regarding incidence of bleeding and requirement of suction during NTI and surgery. Bleeding during NTI or blood in the airway can make even easy intubations difficult by obscuring the view of the larynx and also increase the probability for aspiration of blood. Continuous suction during NTI and surgery not only made airway clear during laryngoscopy and NTI but also improved the surgical field.

KEYWORDS : Nasotracheal Intubation, Epistaxis, Continuous Suction

INTRODUCTION

Tonsillectomy/ oral cavity surgeries usually require nasotracheal intubation to facilitate surgical access. Nasotracheal tube has to negotiate through the narrow nasal passage, increasing the potential for trauma. Epistaxis is the most common complication encountered, which may result in life threatening bleeding and airway obstruction.[1,2] Various methods have been employed in the past to reduce the incidence of epistaxis like, mucosal vasoconstrictor, lubricated softened tube etc.[3-10] Even in experienced hands the incidence of epistaxis may range from 18-77 %.[2,4] For tonsillectomy under nasotracheal intubation (NTI), epistaxis may obscure the laryngoscopic view and prevent adequate visualization of the larynx thereby adversely affecting intubation and establishment of secured airway.[10-13] To aid nasotracheal intubation (NTI) and keep the field clear of blood and secretions, a thumb controlled suction catheter passed through the lumen of nasotracheal tube with its tip beyond the tip of the nasotracheal tube may be used. Continuous aided suction during NTI helps in making passage clear of any blood and reduces the severity of epistaxis. After the tube is secured, suction catheter is withdrawn and passed through other nostril, to be used for continuous suction during surgery which improves the surgical field and also prevents peritubal pack leak. The present comparative study was undertaken to determine the rationale and benefit of using continuous suction during NTI and tonsillectomy.

MATERIAL AND METHODS

After approval from institutional ethics committee, 100 patients aged between 08 - 16 yrs in ASA-I, planned for tonsillectomy and in whom nasotracheal intubation was considered were included in this study. Informed consent was obtained from parents during preanaesthetic visit. Patients with expected difficult intubation, previous NTI, frequent nasal obstructions, previous nasal surgery and other abnormalities (deviated nasal septum, turbinate hypertrophy etc) were excluded from this study.

These 100 patients were randomly allotted to two different groups: Group N where no continuous suction was used and Group S where continuous suction was used during Nasotracheal intubation and during surgery.

The enrolled patients received a standardized anesthetic along with lubrication of nares. Portex cuffed nasotracheal tube (NTT) of appropriate size was used. Group N patients underwent routine nasotracheal intubation without suction. In Group S patients, thumb controlled suction catheter size 10 to 14G depending on the size of nasotracheal tube was used. Suction catheter was passed through the lumen of the nasotracheal tube with its tip beyond the tip of the tube. Nasotracheal tube (along with suction catheter in situ), with simultaneous application of continuous suction, was advanced through the selected lubricated nostril. Once the nasotracheal tube was in the pharyngeal cavity and the field was clear of blood, suction catheter was withdrawn and the tube advanced into the larynx either with the aid of magills forceps. After the airway was established and the nasotracheal tube secured, same suction catheter was passed through the other nostril and allowed to stay in the pharyngeal cavity during surgery till extubation, for applying continuous suction during the procedure. Peritubal packing was done in all patients.

Method of assessing bleeding was simple and reproducible. Bleeding was assessed by direct visualization, as swabbing would not have retrieved all the blood in the hypopharynx. Bleeding was classified as follows :-

1. Blood absent
2. Blood staining on the cuff only (mild bleeding)
3. Blood pooling on the posterior pharyngeal wall (severe bleeding)

RESULTS

There was no significant difference between the two groups in demographic parameters (Table 1 and 2). Total of 36 patients experienced epistaxis (20 in Group S and 16 in Group N). The incidence of epistaxis was comparable between the two groups (Table 3). No difficulty was encountered during intubations in either group and there was no case of failed intubation.

There was statistically significant difference in the requirement of suction during intubation between the two groups. Suction was necessitated to aid intubations in 10 patients in normal Group N, whereas only 02 patients in Group S required additional suction (Table 3).

During surgery, continuous pharyngeal suction through the other nostril was assured in Group S. There was a remarkable decrease in requirement of suction along with appreciably clear surgical field during the intraoperative period in Group S. There was no evidence of aspiration in either group.

Table 1: Age distribution

		Group		Total	Pearson chi-square	p-value
		CP	Control			
Age Group	<=9 Yrs	2	1	3	1.201	0.878
	10-11 Yrs	5	3	8		
	12-13 Yrs	11	10	21		
	14-15 Yrs	23	27	50		
	>15 Yrs	9	9	18		
Total	50	50	100			

Table 2: Gender distribution

Sex	Group		Total	Pearson chi-square	p-value
	CP	Control			
Male	24	22	46	0.161	0.688
Female	26	28	54		
Total	50	50	100		

Table 3: Incidence of bleeding and requirement of suction

	N = 50	**S = 50**	***p-value***
INTUBATION			
• Absent	34	30	0.57
• Mild	04	07	
• Severe	12	13	
EXTUBATION			
• Absent	46	44	0.50
• Present mild	04	06	
SUCTION REQUIREMENT			
• *During NTI*	*10*	*02*	*0.00899*
• *During Surgery*	*Frequent*	*Occasional*	

DISCUSSION

Our result showed that visualization of the larynx and laryngoscopy was with ease in group where continuous suction was used during nasotracheal intubations. Continuous suction during surgery led to improvement in surgical field too. Various methods have been used to improve the visibility during laryngoscopy while performing nasotracheal intubation as there is invariably obscured field due to epistaxis, avulsion of adenoids etc. Trauma occasionally occurs when a large tube is passed through narrow nasal passage and it may also lead to lumen of the tube getting blocked due to tissue or blood. A suction catheter passed through the lumen of the nasotracheal tube and beyond prevents not only blockage of the lumen but also clears the secretions and blood encountered during intubation.[2] Additionally, it prevents secretions or blood draining into the lung through the nasotracheal tube.

One cannot be sure whether tube will pass through a nasal passage into the pharynx or epistaxis will result and obscure the laryngoscopy field until the attempt is made. Bleeding may accompany the gentlest and easiest intubations. Various techniques have been advocated to reduce the incidence and severity of bleeding like red rubber catheters passed in advance of nasotracheal tube.[14]

We did not formalize our assessment of difficulty of intubation and did not distinguish between various difficulties in visualizing the larynx, adequacy of relaxation or insertion of the tube; as previously published.[15] Using a red rubber catheter to guide a softened nasoendotracheal tube leads to decrease in the severity of nasopha ryngeal bleeding.[14,16] Preparation of nasal passage by passing series of nasal airways to dilate the passage has also been suggested.[17] Apart from being time consuming, this may increase the incidence of trauma.

During surgery, continuous pharyngeal suction through other nostril leads to clear surgical field; and prevents accumulation of blood or secretions in the immediate post extubation period .

CONCLUSION

Epistaxis has the potential to make even easy intubation difficult; by obscuring the view of the larynx as well as increasing the potential for aspiration of blood. Application of continuous suction during nasotracheal intubation and surgery decreases bleeding, improves surgical field and ensures better hemostasis. The only drawback of this technique is that it requires an assistant to ensure continuous suction during nasotracheal intubation and surgery.

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