Original Research Article

Comparing the incidence of sore throat between awake nasogastric tube insertion and nasogastric tube insertion after general anaesthesia with endotracheal intubation

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Abstract

Aim: This study was designed to compare the incidence of postoperative sore throat(POST) between awake nasogastric tube (NGT) insertion and NGT insertion after GA with ETT tube in-situ over 6 ,12 ,24 hours in the postoperative period. **Method:** A total of 100 Normotensive patients posted for surgeries under general anaesthesia in whom NGT insertion is required for surgery and its placement is not required in post operative period were selected, with 50 in each group. Patients were randomized to receive either awake Nasogastric insertion or Nasogastric insertion done after GA with ETT intubation. **Results:** Incidence of Postoperative sore throat, 6 hours after surgery in group IA was 34% and in group II G was 70% and the difference was statistically significant. In group IA after 12 hours, 2 patients with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain, and 5 patients with mild pain were completely relieved. In group IIG after 12 hours, 1 patient with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain and only 2 patients with mild pain were completely relieved. In group IA after 24 hours, No patient had complaints of severe pain, the only patient with severe pain experienced moderate pain, while 2 patients with moderate pain still had mild pain with a total of only 7 left with mild discomfort. In group IIG after 24 hours, 2 patients with severe pain experienced mild pain, while 5 patients with moderate pain experienced mild pain and 3 patients from mild group were completely relieved while still leaving a total of 13 patients under mild discomfort. Thus we can also say that the pain persisted more in IIG. **Conclusion:** Post operative sore throat is a common complaint with patients after NGT insertion and the incidence of post operative sore throat with NGT inserted after general anaesthesia with endotracheal intubation is high as compared to awake NGT insertion .This undesirable incidence can be decreased through a slow and gentle awake NGT insertion technique whenever possible, which can also overcome undesirable effects of re-laryngoscopy. Our study recommends inserting NGT before GA.

Key Words: endotracheal intubation, nasogastric tube, post operative sore throat.

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INTRODUCTION

Post operative sore throat is a common and distressing complaint in patients receiving general anaesthesia (GA) with endotracheal intubation.[1] Post-Operative Sore Throat (POST) is often neglected, as the concern of most of the clinicians is towards surgical pain. Number of predisposing factors have been identified of which the notable ones are the size of the endotracheal tube (ETT) used, cuff pressure, use of anesthetic spray, female sex, duration of anaesthesia, surgical positioning, concurrent

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use of Nasogastric tube (NGT), aggressive oropharyngeal suctioning and laryngeal mask airway(LMA).[2] Biruk melkamu *et al*, in their study found that sore throat is more common with use of Nasogastric tube compared to no Nasogastric tube [67.3% vs 57.2% (37/55 vs 106/185)].[3] Use of NGT was significantly associated with post operative sore throat.NGT inserted patients were 0.41 times more likely to develop post operative sore throat than those who have not. This finding was similar with the study conducted by Kloub R *et al*, in United Kingdom .[4] Some authors reported that multiple attempts at endo-tracheal intubation do not affect the incidence of throat complication. [4] However Biruk Melkamu *et al*, in their study found that the incidence of post operative sore throat was high(59.6%). Female sex, multiple intubation attempt and use of Nasogastric tube were independent risk factors for POST based on their study conducted in Gondar university hospital.[3] Regardless of its incidence and some preventive measures, POST is listed from the top as patients most undesirable outcome in the post operative period.[5,6] Nasogastric tube insertion for a patient under general anaesthesia with an endotracheal tube in place can prove a challenge to the most experienced anaesthesiologist. Variations in a patients functional anatomy, whether physiological or pathological, can further complicate an already difficult procedure.[7,8] Ozer and benumof demonstrated that the most common sites of resistance for passage of orogastric tube and NGT are the arytenoids cartilage and piriform sinuses.[9] Additionally, NGT insertion has been associated with numerous adverse outcomes such as aspiration pneumonia, nasal mucosal bleeding, intracranial placement, esophageal and other enteric perforation, hypertension, tachycardia, arrhythmia, bronchial placement, pneumothorax, hydrothorax, empyema and vascular penetration. [8,10-14] Nasogastric tube syndrome is a rarely reported complication of NGT use that can cause life-threatening laryngeal obstruction .The syndrome results from post-cricoid ulceration, which affects the posterior cricoarytenoid muscles, thus causing vocal cord abduction paralysis and upper airway obstruction.[15] Most of the times anaesthesiologist prefer to pass Nasogastric tube after general anaesthesia and ETT intubation which requires re-laryngoscopy and intervention by Magill's forceps which again raises hazardous effects of laryngoscopy and mucosal trauma leading to soar throat. The present study was undertaken to compare the incidence of sore throat between awake NGT insertion and NGT insertion after GA with ETT tube. This is the first study which compares the incidence of sore throat between awake NGT insertion and NGT insertion after GA with ETT in-situ.

MATERIALS AND METHOD

This study was carried out in the department of anaesthesiology, Dr.D.Y. Patil Medical College, Hospital and Research Institute, Pimpri, Pune, Dr.D.Y.Patil Vidyapeeth, Pimpri, Pune, Maharashtra 411018,India. no. of cases:100 Normotensive patients were included and randomly divided into two groups

Group IA - 50 patients- awake Nasogastric insertion

Group II G -50 patients – Nasogastric tube insertion done after GA and ETT intubation.

Selection of cases:

Inclusion criteria

- Patients age group 20-55 years
- Normotensive patients
- ASA-I and II
- Haemodynamically stable patients.
- Patient posted for Surgery less than two and half hours.
- Patients posted for surgeries under general anaesthesia in whom NGT insertion is required for surgery and its placement is not required in post operative period.

Exclusion criteria

- Patients with anticipated cardiac , respiratory and renal diseases
- Patients with difficult intubation
- Obese patients.
- Patients on prolonged anti-hypertensive drugs, sedatives and hypnotics drugs.
- Patients with bleeding disorders
- Patients having throat symptoms preoperatively
- Head and neck surgeries
- Surgeries where throat pack is required
- Patients on steroids
- Patients with impaired cognitive ability.
- Patients with upper respiratory tract infection.
- Non cooperative patients

All patients were thoroughly examined during pre-operative anaesthesia check-up and investigated to diagnose any systemic disorder. All routine investigations were done i.e. complete blood count, bleeding time, clotting time, PT/INR, LFT, RFT, Serum Electrolytes, ECG and Chest X-RAY.

suitable cases were selected and patients were explained about the procedure and a written consent was taken, patients were divided into two groups of 50 each.

In group IA patients, awake NGT insertion was done. Xylocaine jelly applied on both nostril and patient is asked to sniff it in. 5 ml of 4% xylocaine mixed with 15 ml of water was given and patient is asked to gargle once or twice. Xylocaine aerosol/spray was avoided as it can lead

to anaesthesia of airway and can allow accidental passage of NGT into the airway. 2% xylocaine jelly was applied on NGT and inserted in the selected nostril. To avoid gag and vomiting NGT was advanced slowly and gently keeping the patient comfortable. Placement of NGT was confirmed and secured. Suitable GA with ETT was administered. All the patients were premedicated with intravenous 2mg midazolam and 50mcg of fentanyl. Intubation was done by an expert anaesthesiologist using ETT size 7.5 in male and 7 in female and laryngoscope blade no.3, with adequate condition for laryngoscopy. Immediately after intubation the endotracheal tube cuff was inflated with just enough air to prevent an audible leak. Same anaesthesia technique and analgesic drugs were used in all patients.

In group IIG patients, after the ETT is fixed, lubricated NGT was passed; Magill's forceps was used wherever required. Oral suctioning was done just before extubation by soft suction catheter to avoid trauma to mucosa. The ETT tube was extubated after deflating the cuff when patient was fully awake with good reflex and tone. All the patients received inj.paracetamol 1gm TDS as a post operative analgesia. Assessment of patient for postoperative sore throat at 6, 12 , 24 hours after surgery was carried out.

Grade 0 – No sore throat
Grade I - mild
Grade II - moderate
Grade III – severe

This is the first study which compares the incidence of sore throat between awake NGT insertion and NGT insertion after GA with ETT in-situ.

STATISTICAL ANALYSIS

Chi square test was applied for comparison, P value < 0.05 was considered as significant. Software used was primer of biostatistics

OBSERVATION

Table 1: Gender distribution

Gender	IA	IIG	Total
Female	26	32	58
Male	24	18	42
Total	**50**	**50**	**100**

Table 2: Incidence of POST after 6 hours

Group	Yes	No	Total
IA	17(34%)	33(66%)	50
IIG	35(70%)	15(30%)	50

Chi square 11.6, d.f=1 , p<0.001 , OR =0.22 (95% CI 0.095 to 0.512)

Table 3: Software used was primer of biostatistics

Gender	IA POST		IIG POST		Total
	Yes	No	Yes	No	
Female	9(34.62%)	17(65.75%)	22(68.75%)	10(31.25%)	58
Male	8(33.33%)	16(66.66%)	13(72.22%)	5(27.78%)	42
Total	**17**	**33**	**35**	**15**	**100**

Table 4: Incidence of POST after 12 HRS

POST	IA	IIG
No pain	38(76%)	17(34%)
Pain	12(24%)	33(66%)

Table 5: Incidence of POST after 24 HRS

POST	IA	IIG
No pain	38(76%)	20(40%)
Pain	12(24%)	30(60%)

Table 6: Pain score after 6, 12, 24 hours

Pain	6 hours		12 hours		24 hours	
	IA	IIG	IA	IIG	IA	IIG
Mild	8	11	5	11	7	13
Moderate	6	15	6	14	5	11
Severe	3	9	1	8	0	6

In the group IA after 12 hours, 2 patients with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain, and 5 patients with mild pain were completely relieved. In group IIG after 12 hours, 1 patient with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain and only 2 patients with mild pain were completely relieved. In group IA after 24 hours, No patient had complaints of severe pain, the only patient with severe pain experienced moderate pain, while 2 patients with moderate pain still had mild pain with a total of only 7 left with mild discomfort. In group IIG after 24 hours, 2 patients with severe pain experienced mild pain, while 5 patients with moderate pain experienced mild pain and 3 patients from mild group were completely relieved while still leaving a total of 13 patients under mild discomfort.

DISCUSSION

Pain is a highly subjective experience. For the purpose of this analysis, the term discomfort also was considered as synonymous with pain.[16,17,18] Post operative sore throat listed as the patients top most undesirable outcome in the postoperative period. It is believed to originate from mucosal dehydration or edema, tracheal ischemia secondary to the pressure of endotracheal tube cuffs, aggressive oropharyngeal suctioning, and mucosal erosion from friction between delicate tissues and the endotracheal tube or instruments.[3] Factors which had association with post operative sore throat from the

multivariable logistic value were female sex, repeated number of attempts.[3] Number of predisposing factors have been identified of which the notable one are the size of the endotracheal tube, cuff pressure, use of anaesthetic spray, female sex, duration of anaesthesia, surgical positioning, concurrent use of NGT, aggressive oropharyngeal suctioning, LMA.[2] So to avoid errors in results we have used ETT size 7 for female and 7.5 for mlaes patients. Patients who required repeated attempts of intubation were excluded from research. Duration of surgery more than two and half hours were excluded as long duration of surgery is a predisposing factor for POST. Surgeries which required throat pack was also excluded from trial as it has significant effects on the incidence of throat complication.[19] Aggressive suction was avoided and we have used soft suction catheter for suctioning. Surgeries of the head and neck were avoided in our study. Nasogastric tube insertion of a patient under general anaesthesia with ETT in place can pose challenge to the most experienced anaesthesiologist.[7,8] Additionally, NGT insertion has been associated with numerous adverse outcomes such as nasal mucosal bleeding, intracranial placement, hypertension, tachycardia, arrhythmia, endobronchial placement.[8,10-14] These complications are more while inserting NGT after endotracheal intubation which requires re-laryngoscopy. Neuromuscular effects of general anaesthesia on relaxing and approximating the soft palate, tongue base, epiglottis and posterior pharyngeal wall in addition to the presence of a tracheal tube can create further difficulty for NGT insertion.[7]

Biruk melkamu *et al*, in their study showed female sex had significant association with post operative sore throat,[3] but there was no association between gender and post operative sore throat in a study conducted by Edomwonyi NP *et al* in Nigeria.[20] The incidence of post operative sore throat varies in most research studies, but some report the incidence to be less than 15% and others as high as 64%.[21] In our study we found no significant association between POST and gender. In group IA 34.62% female has POST as compared to 33.33% male and in group IIG 66.75% female has POST and 77.25% male had POST. However the aim of our study was not to find the association of POST with gender, the findings expressed here were a part of our study. In our study 6 hours after surgery we found that the incidence of POST in group IA was 34% and in group II G was 70%. Chi square 11.6, d.f=1 , $p<0.001$, OR =0.22 (95% CI 0.095 to 0.512)Software used was primer of biostatistics. The difference was statistically significant, so we can say that the incidence of POST is drastically low with awake NGT insertion. In the group IA after 12 hours, 2 patients with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain, and 5 patients with mild pain were completely relieved. In group IIG after 12 hours, 1 patient with severe pain experienced only moderate pain, while 2 patients with moderate pain had mild pain and only 2 patients with mild pain were completely relieved. In group IA after 24 hours, No patient had complaints of severe pain, the only patient with severe pain experienced moderate pain, while 2 patients with moderate pain still had mild pain with a total of only 7 left with mild discomfort. In group IIG after 24 hours, 2 patients with severe pain experienced mild pain, while 5 patients with moderate pain experienced mild pain and 3 patients from mild group were completely relieved while still leaving a total of 13 patients under mild discomfort. Thus we can also say that the pain persisted more in IIG.

SUMMARY AND CONCLUSIONS

Incidence of POST is less in awake NGT insertion compared to NGT insertion with GA and ETT in-situ. The severity of pain persisted more in group IIG. Thus, in the present study we conclude: Post operative sore throat is a common complaint and often unpleasant to the patient after NGT insertion which can be avoided or its intensity can be decreased. As the incidence of POST is less in awake NGT insertion compared to NGT insertion with GA and ETT in-situ, we strongly recommend slow and gently awake NGT insertion as a better option whenever possible, as it can also overcome the undesirable effects of re-laryngoscopy.

REFERENCES

1. Monem A, Kamal RS. Postoperative sore throat. J Coll Physicians Surg Pak 2007; 17:509-14.
2. Agarwal A, Nath SS, Goswami D. An evaluation of the efficacy of aspirin and benzydamine hydrochloride gargle for attenuating postoperative sore throat. Anesthesia and Analgesia. 2006 Oct; 103(4): 1001-3.
3. Biruk Melkamu Gemechu *et al*. The Pan African Medical Journal. 2017;27:127.
4. Kloub R. Sore throat following tracheal intubation. Middle East Journal Anesthesiology. 2001; 16(1): 29- 40.
5. McHardy FE, Chung F. Postoperative sore throat: cause, prevention and treatment. Anaesthesia. 1999; 54: 444- 53.
6. Biro P, Seifert B, Pasch T. Complaints of sore throat after tracheal intubation. European Journal of Anaesthesiology. 2005 Apr; 22(4): 307-11.
7. Gombar S, Khanna AK and Gombar KK. Insertion of a nasogastric tube under direct vision: another atraumatic approach to an age-old issue. Acta Anaesthesiol Scand 2007; 51(7): 962–963.
8. Hung C-W and Lee W-H. A novel method to assist nasogastric tube insertion. Emerg Med J 2008; 25(1): 23–25.
9. Ozer S and Benumof JL. Oro- and nasogastric tube passage in intubated patients: fiberoptic description of where they go

at the laryngeal level and how to make them enter the esophagus. Anesthesiology 1999; 91(1): 137–143.
10. Bautista EM. Complications of nasogastric tube insertion. Chest 1988; 93(5): 1119b–1120.
11. Pillai JB, Vegas A and Brister S. Thoracic complications of nasogastric tube: review of safe practice. Interact Cardiovasc Thorac Surg 2005; 4(5): 429–433.
12. Tsai Y-F, Luo C-F, Illias A, *et al*. Nasogastric tube insertion in anesthetized and intubated patients: a new and reliable method. BMC Gastroenterol 2012; 12(1): 99.
13. Chun D-H, Kim NY, Shin Y-S, *et al*. A randomized, clinical trial of frozen versus standard nasogastric tube placement. World J Surg 2009; 33(9): 1789–1792.
14. Fassoulaki A and Athanassiou E. Cardiovascular responses to the insertion of nasogastric tubes during general anaesthesia. Can Anaesth Soc J 1985; 32(6): 651–653.
15. Esther-Lee Marcus, *et al*. Age and Ageing, Volume 35, Issue 5, September 2006, Pages 538–539.
16. Ducharme J, Matheson K. What is the best topical anesthetic for nasogastric insertion? A comparison of lidocaine gel, lidocaine spray, and atomized cocaine. J Emerg Nurs 2003;29:427e430.
17. Singer AJ, Konia N. Comparison of topical anesthetics and vasoconstrictors vs. lubricants prior to nasogastric intubation: a randomized, controlled trial. Acad Emerg Med 1999;6:184e190.
18. Power DM, Bhadra A, Bhatti A, Forshaw MJ. Xylocaine spray reduces patient discomfort during nasogastric tube insertion. Internet J Surg 2006;8: 1e3.
19. Marais J, Prescott RJ. Throat pain and pharyngeal packing: a controlled randomized double blind comparison between gauze and tampon. Clin Otolaryngol 1993; 18: 426-429.
20. Edomwonyi NP, Ekwere IT, Omo E, Rupasinghe. Postoperative throat complication after tracheal intubation. Annals of African Medicine. 2006; 5: 28-32.
21. Higgins PP, Chung F, Mezei. Postoperative sore throat after ambulatory surgery. British Journal of Anaesthesia. 2002 Apr; 88(4): 582-4.

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