

Insertion of Nasogastric Tube in Intubated Adult Patients - Comparison Between Sniffing Position and RAMP Position

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Introduction: Nasogastric tube insertion is a frequently performed procedure in the perioperative setting, allowing for gastric decompression, administration of medications. The conventional technique, involving blind insertion using anatomical landmarks, is commonly employed but can lead to difficulties and complications. This research paper aims to compare the effectiveness and safety of two different positions for nasogastric tube insertion: sniffing and RAMP. The study will assess success rates, insertion time, and potential complications. **Objectives:** To compare Sniffing position with that of RAMP position in nasogastric tube (NGT) insertion techniques among the intubated patients with respect to first attempt success rate, time taken for insertion, and complications. **Methodology:** This Prospective interventional randomized controlled trial was conducted among 112 patients posted for general anaesthesia requesting NGT insertion at R.L. Jalappa Hospital and Research Centre, Tamaka, Kolar. Patients of either sex, conforming to the American Society of Anesthesiologists' (ASA) physical status I or II, aged 18–60 years, requiring NGT insertion in intubated patients were included in the study. Patients with normal airway (modified Mallampati class I or II) were included in this study. **In group A** -conventional “sniffing” position was obtained by placing a firm 7-cm cushion underneath the patient’s head, thus raising the occiput a standard distance from the operating-table while the patient remained supine. **In group B** - In these patients, multiple folded blankets to be placed under the patient's upper body (head and neck) until horizontal alignment between the external auditory meatus and the sternal notch is achieved. **Results:** The present study included total of 112 patients. In this study, first attempt success rate for NGT insertion is greater for RAMP position (75%) when compared with sniffing position (44.6%) and this difference between the groups is statistically significant (p value <0.05). It is concluded that Mean time taken for NGT insertion is less for RAMP position (45.30±7.98) when compared to that of sniffing position (53.54±10.33) and this difference is statistically significant. From the study, it is concluded that RAMP position of NGT insertion has got fewer complications (25% of study subjects) when compared with that of Sniffing position (46.42% of study subjects) and this difference is statistically significant (p value <0.05).

Keywords: Nasogastric tube, Sniffing position, RAMP position, insertion time, complications.

Conclusion -

According to this study, RAMP position has better first attempt success rate, needs lesser time for insertion and has less complications compared to sniffing position for Ryles tube insertion in intubated patients.

Introduction:

Nasogastric tube insertion is a frequently performed procedure in the perioperative setting, allowing for gastric decompression, enteral feeding, and administration of medications. However, this procedure can be challenging in anesthetized and intubated patients due to the loss of protective airway reflexes, reduced patient cooperation, and limited access to the oropharynx. The conventional technique, involving blind insertion using anatomical landmarks, is commonly employed but can lead to difficulties and complications.

This research paper aims to compare the effectiveness and safety of two different positions for nasogastric tube insertion: sniffing and RAMP. The study will assess success rates, insertion time, and potential complications. By comparing two different positions, this study intends to provide valuable insights to improve nasogastric tube insertion in intubated patients with less attempts and less complications.

Objectives

To compare Sniffing position with that of RAMP position in nasogastric tube (NGT) insertion techniques among the intubated patients with respect to first attempt success rate, time taken for insertion, and complications.

Materials & Methods:

After obtaining permission from the Institute's Ethics Committee, a total of patients of either sex, confirming to the American Society of Anesthesiologists' (ASA) physical status I or II, aged 18–60 years, requiring NGT insertion in intubated patients were included in the study. Patients with normal airway (modified Mallampati class I or II) were included in this study.

Exclusion criteria -

Presence of any nasal mass

History of corrosive poisoning

Obesity (BMI >30 kg/m²).

Any uncontrolled bleeding diatheses or recent radiotherapy to head and neck

Presence of cleft lip or palate, significant deviated nasal septum, or esophageal stricture and varices.

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Study Design: Randomized control trial.?

Sample Size: 112 (56 in each group).

- ☐ Duration of study: 6 months.
- ☐ Study Participants: This study was conducted on patients posted for general anaesthesia requesting NGT insertion at R.L. Jalappa Hospital and Research Centre, Tamaka, Kolar.
- ☐ Sampling Method: Computer generated random sequence of numbers.

Methodology:

1. Detailed history of the patient
2. Complete physical examination was done.
3. Routine investigations was checked.
4. The pre-anaesthetic check-up was done in all the patients.

A more patent nostril was selected in the pre-operative area based on better fogging on the metal tongue depressor while expiring through each nostril. Group allocation was performed after induction of anaesthesia and intubation. It was performed each time by opening the sequentially numbered and sealed opaque envelopes containing computer-generated random numbers. Thus, it was a single-blinded trial. Only the patients was unaware of the group allocation.

Before entering the OR, an intravenous (iv) line to be placed with an 18-G iv cannula. Intravenous fluid will be started with lactated Ringer's solution.

Premedication such as inj. midazolam (0.05 mg/kg), and inj. fentanyl (1.5 µg/kg) were administered as single push slowly through iv route.

Induction of general anaesthesia with propofol 2–3 mg/kg iv and muscle relaxation with vecuronium followed by intubation with appropriate-sized cuffed endotracheal tube. After tracheal intubation, oxymetazoline 0.05% was instilled into both nostrils.

In group A -conventional “sniffing” position was obtained by placing a firm 7-cm cushion underneath the patient's head, thus raising the occiput a standard distance from the operating-table while the patient remained supine.

In group B - In these patients, multiple folded blankets to be placed under the patient's upper body (head and neck) until horizontal alignment between the external auditory meatus and the sternal notch is achieved .

The NGT was inserted blindly through the nasal route . No external laryngeal manipulation was done. No change of head position was allowed. Instrumental assistance taken after 2 unsuccessful attempts .

The success rate of NGT insertion was the primary outcome of the present study. The procedure was termed successful if the NGT could be placed in the correct position within two attempts. The correct position was confirmed by auscultation

The procedure time (secondary outcome) was calculated with a stopwatch commencing from the insertion of the tip of the NGT into nostril till the confirmation of its correct position by auscultation over the epigastrium.

If both attempts failed, then the technique was considered as a failure, and an alternative technique with instrumental assistance (Magill's with macintosh laryngoscopy and with Video laryngoscopy) was used.

The following observations was documented ,number of attempts for successful insertion of NGT, time for insertion of NGT, and complications like kinking, coiling, bleeding and false passage.

Conflict Of Interest- Nil

Results

1. Age distribution among the groups

	Group A(n=56)	Group B (n=56)	P value
Mean age (in years)	40.21 ± 8.416	42.86 ± 8.161	0.798

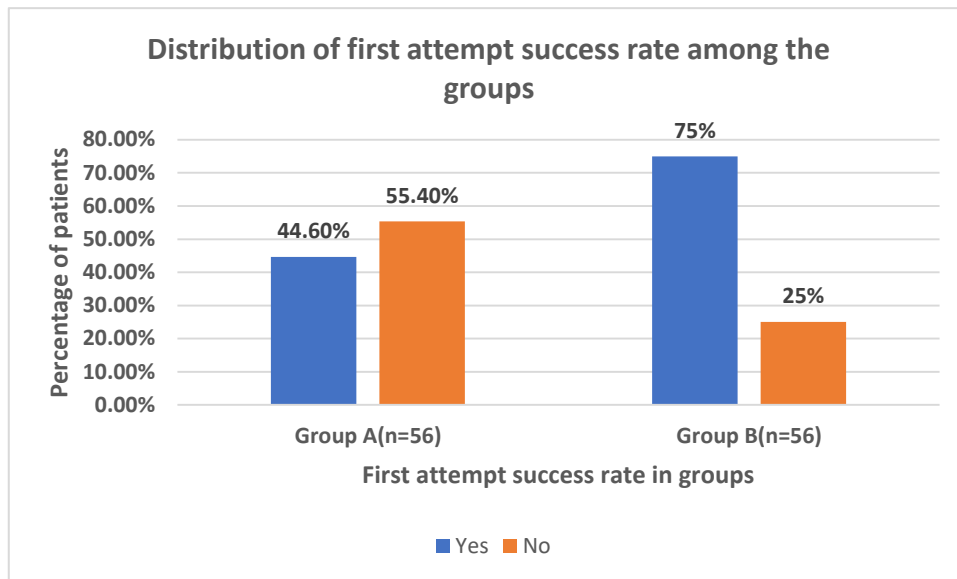
2. Gender distribution among the groups

Gender	Group A(n=56)		Group B (n=56)		P value
	Number	Percentage	Number	Percentage	
Male	32	57.1%	33	58.9%	0.848
Female	24	42.9%	23	41.1%	

3. First attempt success rate distribution among the groups

First attempt success rate	Group A(n=56)		Group B (n=56)		P value
	Number	Percentage	Number	Percentage	
Yes	25	44.6%	42	75%	0.001 (Significant)
No	31	55.4%	14	25%	

In this study,first attempt success rate for NGT insertion is greater for RAMP position (75%) when compared with sniffing position (44.6%) and this difference between the groups is statistically significant (p value <0.05)

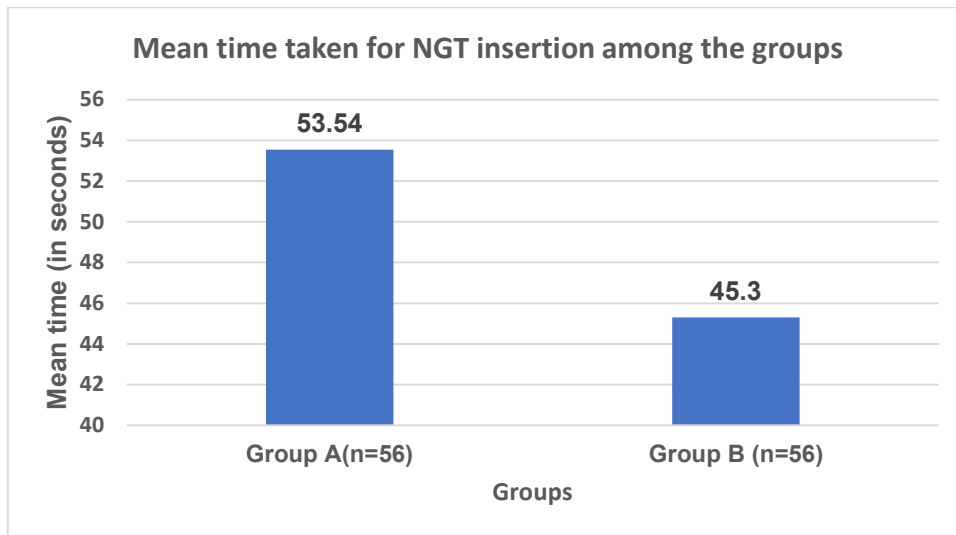


4. Second attempt success rate distribution among the groups

Second attempt success rate	Group A(n=31)		Group B (n=14)		P value
	Number	Percentage	Number	Percentage	
Yes	8	25.81%	6	42.86%	0.252
No	23	74.19%	8	57.14%	

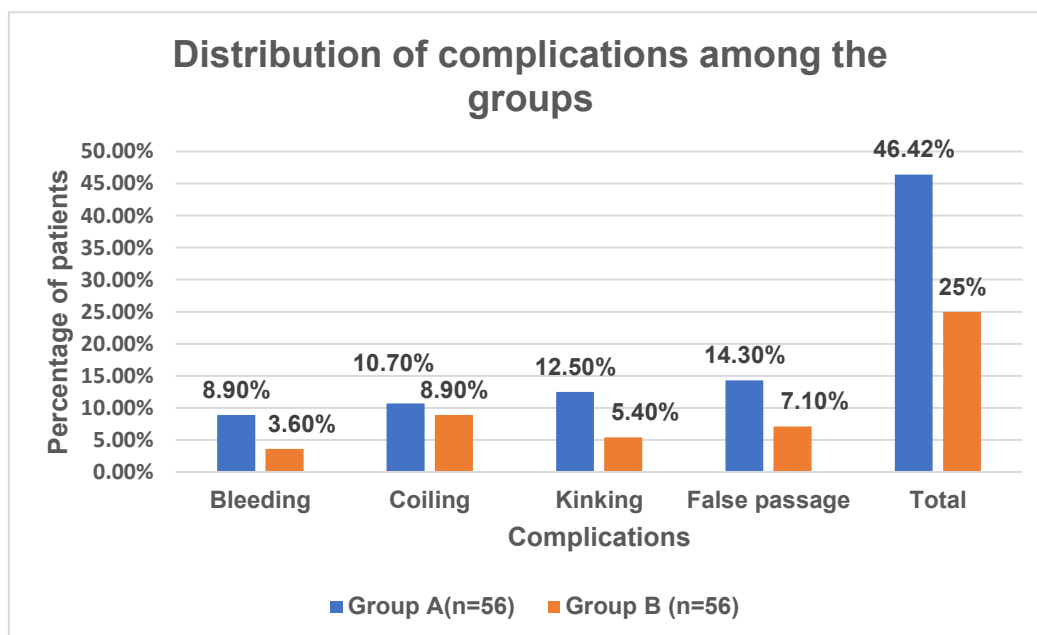
5. Mean time taken for NGT insertion among the groups

Mean time taken for NGT insertion (in seconds)	Group A(n=56)	Group B (n=56)	P value
		53.54 ± 10.338	45.30 ± 7.984



6. Distribution of complications among the groups

Complications	Group A(n=56)		Group B (n=56)		P value
	Number	Percentage	Number	Percentage	
Bleeding	5	8.9%	2	3.6%	0.242
Coiling	6	10.7%	5	8.9%	0.751
Kinking	7	12.5%	3	5.4%	0.185
False passage	8	14.3%	4	7.1%	0.222
Total	26	46.42%	14	25%	0.01796



7. Usage of other methods distribution among the groups

Other methods used	Group A(n=23)		Group B (n=8)		P value
	Number	Percentage	Number	Percentage	
Direct Laryngoscopy	21	91.30%	7	87.5%	0.753
Video Laryngoscopy	2	8.70%	1	12.5%	

Discussion

This prospective randomized comparative study revealed that modified techniques of NGT insertion, such as standard sniffing position and RAMP are effective techniques in inserting NGT in intubated patients in the first attempt with less time and with fewer complications. The present study will concentrate on comparison between these two techniques.

The usual sites of resistance while inserting NGT in an intubated patient are seen at the piriform sinuses and the arytenoid cartilages at the same side of the NGT passage. In an awake state, the upper esophageal sphincter is open during deglutition, thus helping in NGT passage into the esophagus. Inserting NGT after general anaesthesia is difficult because deglutition is impossible, and the sphincter remains closed and due to compression by the inflated cuff of an endotracheal tube at the esophagus[1].

SORT maneuver for insertion of NGT placement in anesthetized patients is one of the suitable methods. Each component of this maneuver overcomes a problem during NGT insertion. Sniffing position thrusts the arytenoid cartilage away from esophageal entrance. Contralateral rotation of head blunts the ipsilateral piriform sinus malposition while orientation changes the anterior curve of NGT tip to posterior, facing the esophagus. Twisting is for applying back and forth movement to NGT tip in order to reduce resistance during deep insertion until it finds its way through esophagus[2].

With SORT maneuver, the tip is always faced posteriorly, hence the tube always advances with the posterior esophageal wall. So, it reduces the chance of malposition of nasogastric tube[2].

The supine position is a common risk factor for aspiration. As indicated earlier, elevated head-of-bed position is helpful in reducing aspiration and pneumonia[5].

In this study, sniffing position (Group A) and RAMP (Group B) were used for NGT insertion in intubated patients. The advantages of these techniques are that the

structural changes that occur when the neck is flexed along with the curve of NGT help in the easy passage of NGT into the esophagus by keeping it in the posterior pharyngeal wall and it also prevents glossoptosis[7].

In this study, first attempt success rate for NGT insertion is greater for RAMP position (75%) when compared with sniffing position (44.6%) and this difference between the groups is statistically significant (p value <0.05).

Rajesh Mahajan et al⁷, from their study Compared the position of Neck for insertion of NGT in flexion and Neutral position and observed that passage of NGT with Neck flexion is associated with higher first attempt success rate (80%) than neutral position (50%).

From this study, it is concluded that Mean time taken for NGT insertion is less for RAMP position (45.30 ± 7.98 seconds) when compared to that of sniffing position (53.54 ± 10.33 seconds) and this difference is statistically significant.

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Conclusion:

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