

# A New Technique to Insert Nasogastric Tube in an Unconscious Intubated Patient

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## Abstract

**Background:** Insertion of a nasogastric tube in an unconscious intubated patient may be difficult as they cannot follow the swallowing instructions, and therefore has a high first attempt failure rate. **Aim and Methods:** We describe here a new technique to insert nasogastric tube in an unconscious intubated patient by neck flexion and using angiography catheter as a stylet and manipulating the cricoid ring of trachea for easy passage of nasogastric tube. **Results and Conclusions:** The technique is easy and helpful for nasogastric insertion in unconscious intubated patients. Additionally, it neither alters vital responses nor increases intracranial pressure like with laryngoscopy.

**Keywords:** Cricoid cartilage, Nasogastric tube, Samanta and Ghatak's technique

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## Introduction

With the proven supremacy of enteral nutrition, nasogastric (NG) tube insertion is now a must to deliver nutrition or medication in hospital wards and intensive care.<sup>[1]</sup> Patient cooperation by swallowing on instruction while inserting an NG tube is important. As unconscious patients cannot follow the swallowing instructions, NG tube insertion in an unconscious intubated patient may be difficult, often having high first attempt failure rates (nearly 50%).<sup>[2]</sup> After each unsuccessful insertion, incidences of mucosal bleeding and hemodynamic complication increase.<sup>[3]</sup> We are describing a new technique to insert NG tube in such patients.

## Materials and Methods

Emergency critical care help was asked for difficult NG tube insertion in a 48-year-old male patient with intracerebral hemorrhage who had an acute myocardial infarction 4 days back. Six failed attempts were already

made by ward residents. They felt that the NG tube was coiling in upper esophagus, but nobody did a laryngoscopic examination in view of raised intracranial pressure. The patient was unconscious, moving limbs to painful stimulus only with bilateral mid dilated pupil. He was hemodynamically stable with normal perfusion parameters, maintaining a mean blood pressure >85 mm Hg. He was intubated with 8.5-mm-internal diameter cuffed endotracheal tube and mechanically ventilated (PaCO<sub>2</sub> < 35 mm Hg) and kept in a head-up neutral position in a calm isolated room. We packed the selected nostril (relatively large-sized right nostril) with a sterile gauge, adding 3 ml lignocaine 2% with adrenaline (1:200,000). His endotracheal tube cuff was checked to prevent over-inflation and was inflated to that extent that obscure visible leak in the ventilator. Then a 6-Fr sterile angiography catheter (Medtronic, Minnesota, USA) (previously used for angiography, but thoroughly washed with saline after 2% glutaraldehyde treatment for 10 min<sup>[4]</sup>) was placed in a 12-Fr NG tube [Figure 1]. The NG tube was then lubricated with 2% lignocaine jelly and inserted gently through the selected nostril with mild flexion of the patient's neck. As the tube entered around 20 cm, the internist identified cricoid cartilage and externally pulled it outward and rightward in a controlled way [Figure 2]. With maintaining this pull, the NG tube (with angiography catheter *in situ*) was pushed with another hand smoothly. After insertion of 50 cm, angiography catheter was removed with a gentle traction after releasing the outward cricoid pull. Successful

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insertion of the NG tube in our case was confirmed by auscultating a gurgling sound over the epigastrium after injecting 20 ml of air through the nasal end of NG tube. His vitals were stable during the whole procedure. After the whole procedure, the angiographic catheter was kept in 2% glutaraldehyde solution.

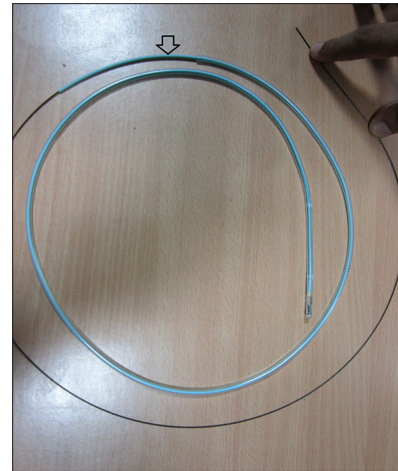
## Results and Discussion

Unconscious intubated patients cannot follow the instructions to swallow, like awake patients, and cannot help in successful insertion of the NG tube. This is a major drawback in intubated patients. Not only this, but also failures during NG tube insertion in unconscious intubated patients are firstly due to softening of tube during placement on exposure to body temperature and secondly due to impaction of NG tube tip.

The modern soft and atraumatic NG tubes are made up of polyurethane which becomes more soft on exposure to patient's body temperature.<sup>[5]</sup> Additionally, several non-opposing lateral eyes like opening near the tip make the NG tube more prone for kinking.<sup>[6]</sup> Moreover, a curved NG tube (when it is in the packet) promotes coiling in the mouth than a straight tube.<sup>[7]</sup> Stiffening of NG tube can be done by various techniques like cooling of the NG tube with iced saline, and by using a guitar wire or ureteral catheter as a stylet.<sup>[2]</sup> We used a smaller-diameter NG tube (12 Fr) to decrease the incidence of iatrogenic sinusitis and the patient discomfort.<sup>[8]</sup> So, we used angiography catheter as a stylet in our case to strengthen the small-bore NG tube. To decrease the intraoral coiling of NG tube in an intubated patient, intraoral manipulation of the NG tube is described as a method.<sup>[7]</sup> We feel this technique will not help much in intensive care setting where we do not prefer to use muscle relaxants.

Piriform sinuses and arytenoid cartilages areas are the most common sites of NG tube impaction.<sup>[9]</sup> Lateral neck pressure/thyroid cartilage traction anteriorly can allow the successful passage of NG tube.<sup>[9]</sup> We handled the impaction issue with flexion of the patient's neck (keeping the tube proximal to posterior pharyngeal wall<sup>[10]</sup>) and by outward and rightward traction of the trachea at the level of cricoid cartilage. In addition to collapse of the piriform recesses and anterior movement of arytenoid cartilage, by manipulating the cricoid cartilage we can separate trachea from esophagus effectively, making room for NG tube [Figure 3]. Our technique is based on two concepts: Firstly, NG tube is impacted at arytenoid cartilage level<sup>[9]</sup> and secondly, in intubated patients, inflated balloon of tracheal tube can cause obstruction of the NG tube, especially in a setup where cuff pressure measurement is not common.<sup>[11]</sup> Additionally, cerebroprotection was an issue in our case,

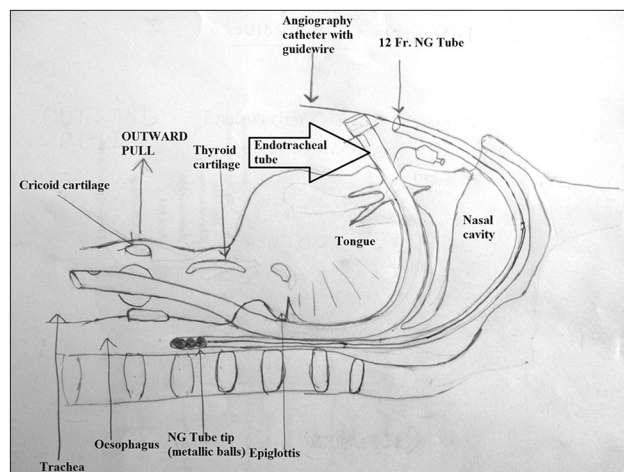
so we did not use the laryngoscope (that could increase intracranial pressure further). Our technique also helps



**Figure 1:** Nasogastric tube with angiography catheter placed inside (arrowed)



**Figure 2:** Outward and rightward pull of trachea externally at cricoid level (Samanta and Ghatak's technique). Thyroid cartilage is arrowed



**Figure 3:** Concept behind Samanta and Ghatak's technique. Anterior movement of arytenoid with separation of trachea and esophagus following pull at cricoid level

in decreasing the aspiration and ventilator-associated pneumonia chances as we are also in favour of inflating the tracheal tube cuff.<sup>[12]</sup> However, we feel further studies based on our new technique are needed to prove ease and supremacy of the technique.

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