ISSN: 1607-8322, e-ISSN: 2220-5799 **Anaesthesia, Pain & Intensive Care**
Vol 27(2); April 2023 DOI: 10.35975/apic.v27i2.2176

CASE REPORT **PERIOPERATIVE MEDICINE**

Bronchoscope-assisted nasogastric tube insertion using ureteric stent wire as a guide.

Shirjeel Chaudhry[1], Ratidzo Danha[2]

Author affiliation:

1. Shirjeel Chaudhry, University Hospital Coventry & Warwickshire, Coventry, UK. E-mail: Shirjeel.chaudhry@nhs.net
2. Ratidzo Danha, University Hospital Coventry & Warwickshire, Coventry, UK. E-mail: Ratidzo.danha@uhcw.nhs.net

Correspondence: Shirjeel Chaudhry, E-mail: Shirjeel.chaudhry@nhs.net

ABSTRACT

Insertion of nasogastric tube (NGT) can be very difficult in patients with minimal or no mouth opening under anesthesia. We describe a novel technique for NGT insertion using a flexible Fiber-Optic Bronchoscope (FOB) and a ureteric stent wire.

We encountered a patient with minimal mouth opening, who had to undergo a maxillofacial surgery which would result in temporary inability to eat because of free flap surgery. A blind attempt at NGT insertion failed. We used FOB to insert a ureteric stent wire under direct vision and then threaded NGT over it into the stomach.

So far, we have inserted 10 NGTs uneventfully using bronchoscope and a ureteric stent wire as a guide. It is safe, cheap and a quick way of inserting NGT in patients with difficult anatomy, intubated patients, those at a high risk for bleeding, base of skull fracture and previous ear nose and throat or neurosurgery.

Keywords: Endotracheal tube; Fiber-optic bronchoscope; Laryngoscope; Nasogastric tube; Ureteric stent wire

Citation: Chaudhry S, Danha R. Bronchoscope-assisted nasogastric tube insertion using ureteric stent wire as a guide. Anaesth. pain intensive care 2023;27(2):269–271; **DOI:** 10.35975/apic.v27i2.2176

Received: October 10, 2022; **Reviewed:** February 23, 2023; **Accepted:** February 25, 2023

1. INTRODUCTION

A 54-year-old patient suffering from squamous cell carcinoma (SCC) of the left cheek with submucosal fibrosis of the mandible limiting the mouth opening to less than 2 cm, presented for tracheostomy, neck dissection, tumor resection and free-flap. He had a background history of chewing tobacco, hypertension, and smoking. An awake fiber-optic intubation (AFOI) was planned in the light of his reduced mouth opening. Due to the nature of the surgery, the patient was not expected to feed orally for at least 10 days and hence a nasogastric tube (NGT) was mandated at the start of the surgery.

An endotracheal tube (ETT) was inserted via AFOI from the left nostril uneventfully and blind NGT insertion was attempted but failed. Due to the limited mouth opening, the use of laryngoscope and Magill forceps for the NGT insertion was impossible. So, we used FOB to facilitate NGT insertion in this patient.

2. CASE REPORT

Patient written consent was taken for the publication of this case report. Under General Anesthesia (GA) we passed the FOB (Olympus LFGP RCO-28) from the right nostril to the stomach under direct vision. When the FOB reached the stomach, a ureteric stent wire (Boston Scientific Nitinol Wire with a Hydrophilic tip 150 cm x 0.035 in) was inserted from the suction port of the FOB until the tip of the stent wire was just visible at the distal end of the FOB. The FOB was then gently removed while threading the stent wire into the scope. Then, an 8Fr NGT (guide wire removed) was railroaded over the stent wire from its side perforation (as shown in the Figure 1) and passed into the stomach till the mark 70 cm at the nostril (as measured). Postoperative X-rays were obtained to confirm the location of the NGT in keeping with the hospital protocol. All recommended standards of monitoring by Association of Anesthetists were maintained throughout the procedure.

3. DISCUSSION

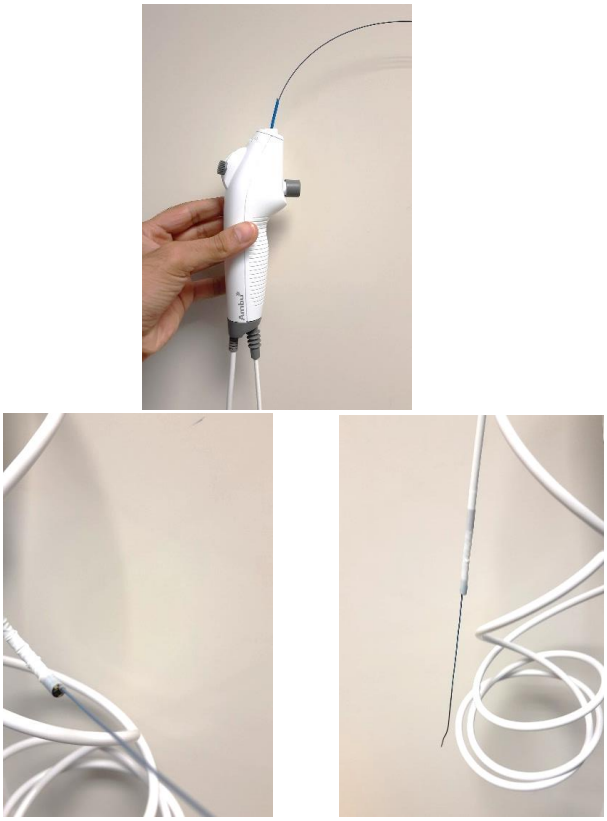
Head and neck cancer represent 6% of all cancer cases, resulting in 350,000 deaths worldwide per annum.[1] NGT insertion is indicated for various reasons including feeding, removal of excess gastric contents, and deflation of stomach during laparoscopic surgery.[2]

In an anesthetized patient, the failure rate of NGT insertion unaided is approximately 50%,[3] because of various reasons, such as obstruction or impingement of NGT to tongue, endotracheal tube, tracheostomy tube, lack of swallowing reflex (seen in awake patients), tracheal compression over the esophagus, and compression of esophagus by an inflated ETT cuff. Other reasons for difficult NGT insertion may include, mechanically restricted mouth opening due to tumors, previous facial fractures, submucosal fibrosis of the mandible, radiotherapy of neck, short neck, or high body mass index (BMI). There are many case reports showing that patients with previous nasal and neurosurgeries are at a higher risk of having epistaxis and inadvertent intracranial NGT insertion respectively when the procedure is done blindly.[4]

In an intubated patient, various maneuvers have been used to help inserting NGT. These include, jaw thrust by an assistant, deflation of ETT cuff, flexion of neck and reverse Sellick's manoeuvre.[1,5] Risks associated with these maneuvers include, aspiration of oral or gastric secretions, while neck flexion is contraindicated in patients with an unstable cervical spine. An NGT is most commonly inserted using a laryngoscope and a Magill forceps which can cause trauma, undesired sympathetic reaction leading to tachycardia, hypertension and severe bronchospasm in patients with hyper-reactive airways. At times, it is difficult ergonomically to use a laryngoscope when a female patient has large breasts which make it almost impossible to insert and hold the laryngoscope in a proper position, the patient may have limited mouth opening, drapes may make it difficult its use, or as in our case, a tumor mechanically restricts mouth opening. The odd posture the operator must maintain when NGT insertion is difficult may lead to backache.[6]

In bronchoscope-assisted nasogastric tube insertion, we use a simple Seldinger technique. This procedure has a very shallow learning curve. As airway experts, we are familiar with FOB and use it frequently for awake or asleep fiberoptic intubations in the operating rooms, ICU or in emergency room etc. The equipment is readily available, cheap (as bronchoscope is reusable) compared to fluoroscopic guided radiological procedure, with minimal or no trauma compared to blind or laryngoscope and Magill forceps aided insertion. There are few case reports where the anesthetists had used FOB nasally to insert 7 mm ETT (slit open from top to bottom from the inner concave side) then used the ETT as an introducer for the NGT for a patient with base of skull fracture.[7] However, the technique can be associated with complications as the ETT can cause severe epistaxis.[8] The use of bronchoscope-assisted nasogastric tube insertion is a safer technique as we do not use ETT as an introducer hence significantly reducing the chances of inadvertent trauma and hemorrhage. By using FOB, we were able to insert the NGT down to stomach under vision and the stent wire we used had a very soft tip (purpose built for ureters which are much less muscular as compared to esophagus). Therefore, the procedure was completed without any bleeding or tissue trauma.

The described method can also be used in the ICU as an alternative to insertion of fluoroscopic-guided NGT which requires time and is expensive. In our ICU, we stock Ambu bronchoscopes (Ambu® aScope™), and the same technique can be used on them as shown in the Figures 1, 2 and 3. Notice in Figure 1, we have used the introducer (which comes with the ureteric stent kit) to pass the stent wire. This is because the wire's tip is very soft and will not enter through the top of the Ambu Scope, so the introducer is necessary. However, it can easily be inserted through the suction port of an Olympus FOB unaided.



Figures 1-3: Insertion of the ureteric stent wire through the Ambu® aScope™

4. CONCLUSION

There are various ways of handling a situation. Most of the time, NGT insertion is easily performed especially with awake patients. However, there are circumstances in which blind NGT insertion is very challenging leading to trauma, prolonged time to succeed and additional stress to the anesthetist. In situations where the procedure is difficult, an awkward posture by the operator might lead to musculoskeletal strain and backache. Prolonged insertion time and repeated laryngoscopy attempts might result in release of stress hormones in the patient, lead to undue tachycardia and hypertension. With the assistance of a bronchoscope and with or without using a ureteric catheter stent wire, nasogastric tube insertion is made easier, more successful and atraumatic.

5. Acknowledgements

The authors thank A. Zia for assistance with proof reading, formatting and referencing.

6. Declarations of interest

No conflicts of interest declared by the authors.

7. Funding

Support was provided solely from department.

8. Authors' contribution

SC: Drafting the case report

RD: Revising the case report

Both authors approved the final draft.

9. REFERENCES

1. Chen PT, Lee BC, Huang YC, Chang YC, Tzeng HL, Liu KL. Fluoroscopic-guided nasogastric tube placement in patients with advanced head and neck cancers. JFMA 2020;119:1320–1324. [PubMed] DOI: 10.1016/j.jfma.2019.11.003
2. Oxford Medical Education. Nasogastric (NG) Tube Placement. Available from https://oxfordmedicaleducation.com/clinical-skills/procedures/nasogastric-ng-tube/ (accessed 26 July 2022).
3. Mandal M, Karmakar A, Basu SR. Nasogastric tube insertion in anaesthetised, intubated adult patients: A comparison between three techniques. Indian J Anaesth 2018 Aug;62(8):609-615. [PubMed] PMCID: PMC6100283 DOI: 10.4103/ija.IJA_342_18
4. Psarras K, Lalountas MA, Symeonidis NG, Baltatzis M, Pavlidis ET, Ballas K, et al. Inadvertent insertion of nasogastric tube into the brain: case report and review of the literature. Clin Imaging 2012 Sep-Oct;36(5):587-90. [PubMed] DOI: 10.1016/j.clinimag.2011.12.020
5. Parris WC. Reverse Sellick Maneuver. Anesth Analg 1989 Mar;68(3):423. [PubMed] DOI: 10.1213/00000539-198903000-00061
6. Reid S, Falconer R. A novel method of nasogastric tube insertion. Anaesthesia 2005 ov;60(11):1055-1159. [PubMed] DOI: 10.1111/j.1365-2044.2005.04418.x
7. Jillela S, Subrahmanyam R. A safer technique of nasogastric tube insertion in a patient with basilar skull fractures. BJA 2015; 115: issue e-letter supplement. [Internet] DOI: 10.1093/bja/el_12540
8. Yamamoto T, Flenner M, Schindler E. Complications associated with nasotracheal intubation and proposal of simple countermeasure. Anaesthesiol Intensive Ther 2019;51(1):72-74. [PubMed] DOI: 10.5603/AIT.a2019.0002

