



INADVERTENT PLACEMENT OF NASOGASTRIC TUBE IN TRACHEA IN INTUBATED PATIENT AND ROLE OF CAPNOGRAM IN DETECTING THE SAME : A CASE REPORT

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ABSTRACT Nasogastric tube insertion is a simple procedure and it is commonly inserted in intubated patients for early initiation of enteral nutrition in post-operative period. However its insertion in an intubated, paralysed and sedated patient may be difficult. Serious complications such as pneumothorax, pleural effusion and even death can result if nasogastric tube is misplaced and is inadvertently placed in trachea and lungs. We share our experience of having with us a 50 years adult achondroplastic male with restricted mouth opening who got operated for buccal mucosa carcinoma under general anaesthesia with fiberoptic intubation (patient underwent Commando surgery) and was shifted to intensive care unit (ICU) for elective ventilation and observation purpose in view of difficult intubation and prolonged duration of surgery. A 14 French feeding tube was inserted on post-operative day 2 in ICU with minimal resistance. Auscultation of epigastrium for air was inconclusive. Direct laryngoscopy was not feasible due to restricted mouth opening and xray machine was not readily available. But capnogram on monitor was getting depressed which helped us in knowing it could be intratracheal placement of NGT rather than esophageal. Intratracheal placement was further confirmed by Ultrasonography as well. And NGT was instantly removed. Therefore, hereby, we are emphasizing on the role of capnogram for early detection of intratracheal placement of NGT in similar patients while inserting it.

KEYWORDS :

INTRODUCTION

Nasogastric tube (NGT) insertion is a routine practice in intubated patients for starting enteral nutrition and/or for administering medications in intensive care settings. However, NGT insertion is often challenging in post-operative period in patients operated for buccal mucosa carcinoma due to various reasons such as distorted anatomy, restricted mouth opening and intraoral swelling. Conventionally, its correct placement in esophagus is confirmed by auscultation, aspiration of gastric contents, radiologically and by palpating NGT in the stomach. But still the malposition of NGT is reported in 2% cases and may lead to injury, hypoxia, aspiration and even death if not detected well in time.^{1,2}

CASE REPORT

We report a post-operative case of buccal mucosa tumor, a 50yr male with restricted mouth opening, with achondroplasia, with insignificant past medical history, who underwent commando surgery under general anaesthesia, for which patient was intubated nasally (via left nostril) with awake fiberoptic intubation after airway topicalization and was mechanically ventilated intraoperatively. Intraoperative period went uneventful. At the end of surgery which took almost 8 hrs, extubation trial was not given and patient was shifted to Intensive care unit (ICU), intubated and sedated, for elective ventilation and was put on volume control mode of ventilation in ICU. On next day in ICU, sedation was stopped in morning and elective ventilation was continued, shifting mode of ventilation from volume control to pressure support mode of ventilation and a 14 French NGT was inserted with minimal resistance through right nostril after application of lubricating lignocaine jelly. But, auscultation of epigastrium for air bolus to confirm its placement was inconclusive. Direct laryngoscopy was not feasible because of restricted mouth opening and portable X-ray machine was not readily available at that time. We did attach suction to NGT but no gastric contents could be aspirated and instead to our surprise, EtCO₂ capnogram on ventilator monitor was getting depressed and EtCO₂ fell down to 20 mmHg from a previous reading of 33 mmHg, possibly due to air leak after NGT insertion, although the oxygen saturation remained 96% which was same as his baseline saturation. USG machine was readily made available and intratracheal placement of Ryle's tube was confirmed. Thereafter NGT was instantly removed and xylometazoline drops were inserted in nostrils. Later on same day, chest radiograph was obtained in which no abnormality was detected except for emphysematous lung fields. Air leak following NGT insertion and also use of capnogram with calorimetry for preventing misplacement of feeding tube while inserting has been previously reported but depression of capnogram to diagnose intratracheal placement of feeding tube has not been documented before.³

DISCUSSION

Insertion of NGT is simple and mostly uneventful procedure. However, dreaded and serious complications due to inadvertent placement of NGT in trachea and lungs may occur in 1% - 15% of

cases.⁴ If undetected, misplaced NGT may lead to infusion of tube feeding in lungs, pneumothorax, hydropneumothorax, tracheobronchial injury, bronchopleural fistula, pneumonitis and pleural effusion.⁵

In our case, a smaller lumen ETT (size 7mm ID) for nasotracheal intubation, distorted oropharyngeal anatomy and possibly inadequately inflated cuff, might have facilitated the tracheal insertion of NGT. Although confirmation by auscultation is routinely done but this may be inaccurate in 20% of cases.⁶ In our case, confirmation by auscultation was inconclusive. Other confirmatory tests like NGT aspirate, pH, capnography and ultrasound have been described but are not fool proof.⁷ Laryngoscopy is a feasible option for anaesthetists but in our patient it was not possible due to restricted mouth opening. Though X-ray is confirmatory but may not be readily available at all locations. In our case, declining capnogram did help us think it's intratracheal placement instead of intended esophageal placement, which was later confirmed by ultrasonography as well and hence capnography helped us in early detection of intratracheal placement of NGT and thereby prevention of possible complications which could have happened in our patient.

CONCLUSION

Capnographic monitoring is simple, easy to learn and may be useful in preventing respiratory complications after inadvertent tracheal placement of feeding tube in similar post-operative patients and critically ill patients. However, further studies are required to validate its routine clinical application.

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