CASE REPORT

Laryngospasm during extubation. Can nasogastric tube be the culprit?

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SUMMARY

Nasogastric tube insertion is a common clinical procedure carried out both by doctors and other paramedical personnel. Misplacement of the nasogastric tube into the tracheobronchial tree is not uncommon. It can easily be detected in awake patients with intact cough reflex. Insertion of the nasogastric tube under general endotracheal anaesthesia can be difficult and when the misplacement is not promptly detected can result in unusual and disastrous complications. Laryngospasm is not uncommon in anaesthetic practice; however, reports of recurrent laryngospasm are very sparse. We report a case of misplaced nasogastric tube causing recurrent laryngospasm.

BACKGROUND

Insertion of a nasogastric tube in the operating room is a common procedure carried out in patients undergoing laparoscopic and other gastrointestinal surgical procedures. There is no clear and universally accepted protocol to confirm the position of the nasogastric tube.¹ Failure to confirm the proper placement of the nasogastric tube can result in harmful and fatal complications. We report a case of recurrent laryngospasm associated with malpositioned nasogastric tube under general anaesthesia.

CASE PRESENTATION

A 45-year-old male patient was scheduled for laparoscopic cholecystectomy. Examination of the airway, vitals and laboratory investigations were normal. The patient was shifted to the operating room after obtaining consent. Standard monitoring was applied. After preoxygenation, anaesthesia was induced with propofol 150 mg, 150 mg fentanyl and vecuronium 6 mg. Trachea was intubated with 8.5 mm internal diameter cuffed oral endotracheal tube. Size 14 French lubricated nasogastric tube was inserted through the nostril under direct laryngoscopy and placement was confirmed by auscultation over the epigastrium by insufflating air. Anaesthesia was maintained with oxygen, nitrous oxide and isoflurane. The intraoperative period was uneventful. After the procedure residual neuromuscular blockade was reversed and trachea was successfully extubated when the patient was awake. However, he soon developed laryngospasm and desaturated to 90% on room air. Continuous positive airway pressure (CPAP) with 100% oxygen was provided, laryngospasm was not relieved. Anaesthesia was deepened with a bolus dose of 30 mg propofol with 100% oxygen. Oropharyngeal

suctioning was repeated and adequate recovery from the neuromuscular blocking agents was confirmed with a peripheral nerve stimulator. Laryngospasm was relieved and oxygen saturation improved to 100% with patient breathing spontaneously and regularly. After about 10 min the patient was awake. However, the patient developed another bout of cough with laryngospasm which was relieved with propofol, 100% oxygen and CPAP. We noticed that the proximal end of the nasogastric tube which was connected to a sterile glove for collection of secretions was inflating and deflating by inspiration and expiration of the patient. Direct laryngoscopy confirmed the entry of the nasogastric tube into the trachea which was removed immediately. The post-operative period and the hospital stay were uneventful.

DISCUSSION

Nasogastric tube insertion is a common clinical procedure carried out in patients undergoing laparoscopic cholecystectomy to decompress the bowel. It is routinely removed at the end of the procedure. A nasogastric tube is also used for short-term administration of enteral feeds and gastric lavage. Nasogastric tube insertion is performed by doctors and other healthcare professionals. Insufflation of air by a syringe is an easy and common method used to confirm proper placement of the nasogastric tube. However, this is not a reliable method for excluding tube malposition and misplacement, because sounds arising from a tube in the lower airways can be transmitted into the upper abdomen.¹ It is not uncommon for the nasogastric tube to enter the trachea during insertion. However, this can easily be detected in awake patients with intact cough reflex. Other methods described to confirm the placement of a nasogastric tube are testing gastric pH and radiograph. Though insertion of a nasogastric tube has been described as being simple this is not without risks. Common complications noted in awake patients are discomfort and nasal trauma. There are reports of harmful and fatal complications resulting out of misplaced nasogastric tubes like pneumothorax,² gastric perforation, haemorrhage, retropharyngeal haematoma,³ feed entering the pulmonary system and nasogastric tube syndrome.⁴

Insertion of nasogastric tube in patients under general anaesthesia can be difficult, because of the inability of the patient to swallow and the presence of the inflated cuff in the trachea. Easy insertion of nasogastric tube in patients under general endotracheal anaesthesia can be performed by freezing,

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filling the tube with water, using Glidescope⁵ and flexible fiberoptic nasendoscope.⁶ Various techniques are described for the detection of a malpositioned nasogastric tube using endotracheal cuff pressure monitoring, end tidal carbon dioxide and colorimetric carbon dioxide detector. However, there is no universal consensus on the technique to confirm correct placement of nasogastric tube under general anaesthesia. Hence complications continue to occur.⁷

Laryngospasm is a common complication in routine anaesthetic practice; frequently in children. Common precipitating factors for laryngospasm are history of recent respiratory tract infection, allergies, presence of secretions, blood, foreign body in the airway, lighter planes of anaesthesia and gastro-oesophageal reflux disease. Laryngospasm is a potentially life-threatening complication, if not diagnosed and treated early can result in hypoxaemia and negative pressure pulmonary oedema. Treatment of laryngospasm is to identify and treat the cause.⁸

There are reports of recurrent laryngospasm in literature. However, there is no report of a malpositioned nasogastric tube causing recurrent laryngospasm.

In our patient malpositioned nasogastric tube in the trachea was responsible for recurrent laryngospasm. We did not notice any significant gas leak in the intraoperative period. In our case we can explain malposition of the nasogastric tube in the trachea to be around the cuff of endotracheal tube or by possible migration from a high position in the oesophagus into the trachea during intraoperative period or extubation of the trachea.

Most of the preventable complications associated with nasogastric tubes are a result of ignorance of malposition and inconclusive confirmatory methods. To avoid disastrous complications we suggest the use of modern equipment and techniques to aid insertion and confirmation of proper placement, along with the application of standard precautions and care employed in other invasive and potentially dangerous procedures.

Contributors All the authors have substantial contribution in the design, conception and formulation of draft of the case report.

Competing interests None.

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Learning points

- It is advisable to follow a protocol for the confirmation of proper placement of the nasogastric tube, especially in patients under endotracheal anaesthesia and in unconscious patients.
- Use of equipment like ultrasound, glidescope and fiberoptic nasoendoscope would help in minimising complications associated with a misplaced nasogastric tube. The anaesthetised subject presented in this case report developed recurrent laryngospasm owing to a misplaced nasogastric tube, which could have proven fatal if it had not been diagnosed and treated at the earliest.
- Similar complication may also be seen in the patients who are in the intensive care unit with nasogastric tube in situ and requiring mechanical ventilation.

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