

Self-knotting of distal end of nasogastric tube—Not an uncommon possibility

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ABSTRACT

Importance: A nasogastric tube is used commonly to decompress the stomach and provide enteral feeding in surgical and medical practice. Sometimes this safe and innocent-looking tube may lead to unexpected complications. We focus here on the possibility of spontaneous ‘lariat loop’ knotting of the nasogastric tube when some resistance is felt on tube retrieval and describe a method of safe tube removal.

Case presentation: We present a case of self-knotting of a nasogastric tube that was placed to decompress the stomach during the postoperative period after surgical repair of anorectal malformation in a 4-month-old boy.

Conclusion: Self-knotting of the distal end of nasogastric tube is an unusual complication with catastrophic sequelae if not addressed properly. If any resistance is felt during nasogastric tube retrieval, self-knotting of the tube must be suspected.

KEYWORDS

Nasogastric tube, Self-knotting, Laryngeal injury, Magill forceps

INTRODUCTION

Although intragastric knotting of nasogastric tubes on deep insertion of small-diameter tubes is rare, this complication should not be overlooked. This simple and blind procedure is associated with serious complications, including severe laryngeal injury, posterior epistaxis, tracheoesophageal puncture and respiratory distress.¹⁻³ Tracheo-pulmonary injury occurs in 0.3% to 8% of patients and has a mortality of around 0.3%.⁴ Various risk factors for knotting have been described,^{5,6} including use of small diameter tubes, multiple manipulations during insertion, insertion deep within the stomach, small capacity stomach, softening of the tube at body temperature and interference with the endotracheal tube in intubated patients. The main reason for knot formation is that the tube can coil back on itself when an excess length is introduced, resulting in super coiling, ‘lariat looping’ and concatenate formation. The knot further tightens on traction during retrieval.^{7,8}

CASE REPORT

A second-born male twin with a normal perinatal history presented on the second day of life with abdominal distention resulting from high-type anorectal malformation. After resuscitation and investigations, divided sigmoid colostomy was performed. After a proper work-up at 4 month of age, abdominoperineal pull through was performed and 10-Fr nasogastric tube was placed in situ to decompress the stomach. On postoperative day 5 the volume of nasogastric tube aspirate fell suddenly to nil; nasogastric tube blockage was suspected and tube removal was planned. During retrieval of the nasogastric tube, resistance was felt; more traction was applied but the tube remained stuck. Because self-knotting of the distal end of the nasogastric tube was suspected, X-ray film of postoperative day 1 was reviewed. This showed a ‘lariat loop’ at the distal end of nasogastric tube, which was deeply inserted into the stomach. The nasogastric tube

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was initially pushed into the stomach and then gradually and slowly withdrawn to the oropharynx. Under visualization, the distal knotted segment was taken out from the mouth with Magill forceps (Figure 1). The distal knotted end was cut and proximal part was removed via the nose (Figure 2). The oropharynx and nasopharynx were examined and no evidence of injury or bleeding was found.



FIGURE 1 Knotted end of the nasogastric tube in the 4-month-old-baby after colostomy.



FIGURE 2 Cutting end of removed knotted nasogastric tube in the 4-month-old-baby after colostomy (129 mm × 91 mm).

DISCUSSION

This case highlights the fact that this 4-month-old baby had a small-capacity stomach for which a small diameter (10-Fr) nasogastric tube was used. The tube was inserted deep into the stomach, and the x-ray film showed a 'lariat loop', which resulted in self-knotting of the distal end of the nasogastric tube. Any difficulty during insertion or removal of a nasogastric tube should prompt immediate investigation to rule out possible knotting.⁹

The following strategies can reduce the chances of nasogastric tube self-knotting: use of a wide-bore tube, cooling of the tube, adequate lubrication, forward displacement of the larynx, lateral neck pressure, and direct guidance with two fingers in the mouth.^{10,11} Estimation of proper tube length is necessary before

nasogastric tube placement. This length can be estimated by measuring the distance from the nose to the pinna and from the pinna to the xiphoid process and adding 5 cm. A radiograph can be taken to look for a knotted tube. Fluoroscopic guided placement of nasogastric tube is another method to check for appropriate length. The knotted tube can be removed via the nasal or oral route with manual or endoscopic methods. Endoscopy is helpful for both confirmation and retrieval.¹² Manual removal can be performed with the help of Magill forceps via the oral route. Although there are many reports of self-knotting of nasogastric tube in adults, we herein report a special emergency clinical scenario in a pediatric patient.¹³⁻¹⁵

In conclusion, the possibility of self-knotting of the distal end of the nasogastric tube must be kept in mind whenever resistance is felt while introducing a narrow-bore tube in a small capacity stomach, and deep insertion must always be avoided. A knotted tube must not to be removed forcibly. The best possible way to remove is with Magill forceps via the oral route.

CONSENT FOR PUBLICATION

Consent was obtained from the patient's guardians.

CONFLICT OF INTEREST

There is no conflict of interest.

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