

Endoscopic Resolution of Nasojejunal Tube Entrapment Post-Duodenal Ulcer Perforation Repair

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Abstract

Background: While common complications of naso-enteric tubes (NETs) i.e naso-jejunal (NJ) tube or naso-gastric tube are frequently encountered, rare complications pose significant challenges for both the treating doctor and the patient. One such rare complication is entrapment of NJ tube, which complicates its removal and requires careful handling to avoid major redo open surgery. **Case Report:** We present a case report of a 40-year-old man who experienced iatrogenic entrapment of naso-jejunal tube in a Mersilk suture thread following a Graham's omental patch repair for duodenal perforation. The entrapped NJ tube was successfully removed endoscopically using a needle knife papillotome. **Conclusion:** The use of needle knife papillotome to cut the suture thread causing entrapment can be a safe and simple technique particularly in the pylorus. Endoscopic procedure like this is economical, timesaving and minimally invasive, significantly improving the patient's outcome by reducing morbidity associated with a redo-surgery and alleviating surgeon's stress by avoiding a major open surgery.

Keywords: Complications, Duodenal Ulcer, Endoscopy, Enteral Feeding, Perforation.

Introduction

The use of a naso-jejunal tube for early post-operative enteral feeding and gastric decompression in gastric and duodenal surgeries is a routine and accepted intra-operative procedure [1]. The naso-jejunal tube is passed distal to the site of perforation to facilitate this [2]. Apart from the known common complications of naso-jejunal tube insertion like throat discomfort, epistaxis, tube blockage, misplacement, knotting and kinking [3,4], one of the rare complications is entrapment of tube in a suture bite while suturing the site of perforation. There are very few cases reporting this as a complication and its successful removal is a clinical challenge to the surgeon or endoscopist and may significantly affect the outcome of the patient in terms of morbidity associated with a second surgery.

Case Report

A 40-year-old man presented to the casualty with complaints of severe pain in abdomen with fever and vomiting for 2 days. On clinical examination his pulse rate was 130 beats/min and his blood pressure was 100/70 mm of Hg. His abdomen was rigid and guarded with diffuse tenderness all over. His X-ray chest showed gas under diaphragm. Diagnosis of perforative peritonitis was made. After resuscitation he was taken for emergency exploratory laparotomy. Intra-operatively there was a perforation of 0.5×0.5 cm in the first part of duodenum. A naso-jejunal tube was inserted beyond the site of perforation and a modified Graham's omental patch repair was done. On post-operative day 5, patient began receiving nutrition through naso-jejunal tube. On post-operative day 7, an attempt was made to remove the naso-jejunal

tube, but significant resistance was encountered and the tube could not be removed. An X-ray erect abdomen was performed to confirm the position of naso-jejunal tube and rule out any kink or knotting before giving it a second attempt. X-ray showed no kink or knot, and a second attempt was made the next day with the same result. It was then decided to perform a gastroscopy to look for entrapment of the tube in suture. The gastroscopy revealed that entrapment of the naso-jejunal tube in a Mersilk thread in first part of duodenum at the site of perforation. The decision was made to wait for one more week and wait for the thread to become loose so as to be able to pull the naso-jejunal tube out of the duodenum to perform the procedure safely. During this period the patient was kept on full diet.

Upon repeat gastroscopy the Mersilk thread had loosened, allowing the tube to be pulled out of pyloric opening in the stomach. Considering Argon Plasma Coagulation (APC) as a safer approach, attempt was made to cut the thread using APC under sedation. However, APC was unsuccessful in cutting the thread, so a needle knife papillotome connected to an endo-cautery was used to sever the thread. The naso-jejunal tube could then be easily and uneventfully removed. Patient was started on orals and discharged the following day.

Discussion

To prevent such iatrogenic complication, meticulous suturing is essential to ensure the tube is not inadvertently included in the suture bite. This can be achieved using a plane forceps to depress the tube or by lifting the anterior wall of bowel/stomach by stay sutures [5]. If such a complication does occur, an endoscopic approach may significantly improve the patient's outcome, by avoiding a need for major re-do surgery.

There are very reported cases reported reporting such a complication. Kataria *et al.* reported a similar case of a pre-pyloric perforation wherein a naso-gastric tube was iatrogenically entrapped in a Vicryl suture which was successfully removed

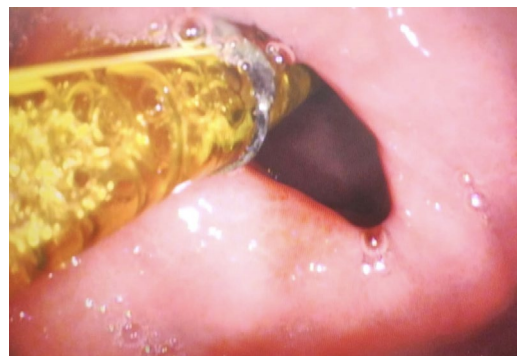


Fig.1: Entrapped NJ tube in Mersilk thread at pyloric opening.



Fig.2: Attempt by Argon Plasma Coagulation.



Fig.3: Cutting of thread using needle knife papillotome.



Fig.4: After successful removal of entrapped NJ tube.

using a needle knife sphincterotome attached to a diathermy with a side-viewing duodenoscope [5]. Su Young Kim *et al.* reported a case of duodenal perforation wherein a naso-gastric tube was intertwined in granulation tissue and a Vicryl suture in second part of duodenum. Their report mentions attempts made using a rat tooth forceps, snare and loop cutter to remove the entrapped nasogastric tube which was finally removed by forcible pulling using the loop cutter [6]. Rui Morias *et al.* used hot biopsy forceps endoscopically to remove a naso-jejunal feeding tube entrapped during an exploratory laparotomy for pre-pyloric perforation [7].

In our case, first attempt was made using argon plasma gas to coagulate the Mersilk thread over the naso-jejunal tube [8]. APC was chosen as a safer approach to prevent another iatrogenic complication like perforation or bleeding which could have occurred with other accessories like a needle knife papillotome or spiked biopsy forceps. After an unsuccessful APC attempt the suture thread was cut using a needle knife papillotome attached to an endo-cautery using a gastroscope.

Conclusion

Although prevention is preferable, using a needle knife papillotome to cut the suture thread causing entrapment can be a safe and simple technique when in the pylorus. Such endoscopic procedures are economical, timesaving and minimally invasive, significantly improving the patient's outcome by reducing morbidity associated with a redo-surgery and alleviating the surgeon's stress by avoiding a major open surgery.

Contributors: MAG: concept, design, intellectual content, data analysis, literature search, manuscript review; SJK: literature search, data acquisition, manuscript preparation, manuscript editing; AGB: literature search, manuscript preparation; PHP: literature search, data acquisition, manuscript editing. SJK will act as a study guarantor. All authors approved the final version of this manuscript and are responsible for all aspects of this study.

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References

1. Druyan ME, Compher C, Boullata JI, Braunschweig CL, George DE, Simpser E, *et al.* Clinical guidelines for the use of parenteral and enteral nutrition in adult and pediatric patients: applying the GRADE system to development of A.S.P.E.N. clinical guidelines. *J Parenter Enteral Nutr.* 2012;36(1):77-80.
2. Weimann A, Braga M, Carli F, Higashiguchi T, Hübner M, Klek S, *et al.* ESPEN practical guideline: Clinical nutrition in surgery. *Clin Nutr.* 2021;40(7):4745-4761.
3. Niv E, Fireman Z, Vaisman N. Post-pyloric feeding. *World J Gastroenterol.* 2009;15(11):1281-1288.
4. Prabhakaran S, Doraiswamy VA, Nagaraja V, Cipolla J, Ofurum U, Evans DC, *et al.* Nasoenteric tube complications. *Scand J Surg.* 2012;101(3):147-155. Erratum in: *Scand J Surg.* 2013;102(3):215.
5. Kataria H, Sharma R, Bansiwala R, Jindal A, Attri AK. Endoscopic needle knife sphincterotome-an alternative for retrieval of an entrapped nasogastric tube. *Indian J Surg.* 2015;77(Suppl 3):1473-1475.
6. Kim SY, Chung JW, Yang JY. Endoscopic removal of a nasogastric tube accidentally ligated to the duodenum after open abdominal surgery. *Endoscopy.* 2016;48 Suppl 1 UCTN:E18.
7. Morais R, Marques M, Rodrigues S, Macedo G. An immobile postsurgical nasojejunal tube: a case for King Arthur! *Rev Esp Enferm Dig.* 2017;109(3):222.
8. Wilkinson MN, Jayaraman V, Watkins K, Bao P, Buscaglia. Newly developed flexible endoscopic scissors for removal of a nasogastric tube trapped within a gastrojejunal anastomotic staple line. *Endoscopy.* 2011;43 Suppl 2 UCTN:E234-E235.