Radiology Case Reports 13 (2018) 150–152

Available online at www.sciencedirect.com

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journal homepage: http://Elsevier.com/locate/radcr

RCR RADIOLOGY CASE REPORTS

Interventional Radiology

Transgastric jejunal snare technique facilitates primary jejunostomy placement

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ARTICLE INFO

Article history:
Received 18 September 2017
Received in revised form 7 October 2017
Accepted 8 October 2017
Available online 21 November 2017

Keywords:
Retrograde jejunostomy
Transgastric snare technique

ABSTRACT

Placement of percutaneous jejunostomy tubes using fluoroscopy may be technically challenging because of the peristaltic motion of small bowel loops within the peritoneum. Furthermore, fluoroscopic jejunostomy placement has an inherent risk of complications, including peritonitis and death. A transnasal snare technique to facilitate direct jejunostomy in patients with a surgically altered gastric anatomy has been previously reported. This report describes a patient with gastroparesis and a chronic nasojejunal tube who underwent a percutaneous *transgastric* snare technique to facilitate the placement of a direct jejunostomy.

Introduction

Direct percutaneous jejunostomy placement has high clinical and technical success rates [1]. Despite this, many consider it a technically demanding procedure fraught with complications [1]. This is due to the small bowel being freely mobile, making it difficult to access percutaneously, especially in patients who have not previously had a primary jejunostomy tube. A transnasal snare technique for the placement of retrograde jejunostomy tubes has been previously described and makes the placement of primary jejunostomy tubes much more simple [2]. This report describes a *transgastric* jejunal snare technique to place a primary jejunostomy. Institutional review board approval was not required for the preparation of this report.

Case report

A 24-year-old woman with a history of gastroparesis and malnutrition who required chronic feeding through a nasojejunal tube presented for percutaneous enteral feeding tube

Competing Interests: The authors have declared that no competing interests exist.

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https://doi.org/10.1016/j.radcr.2017.10.012

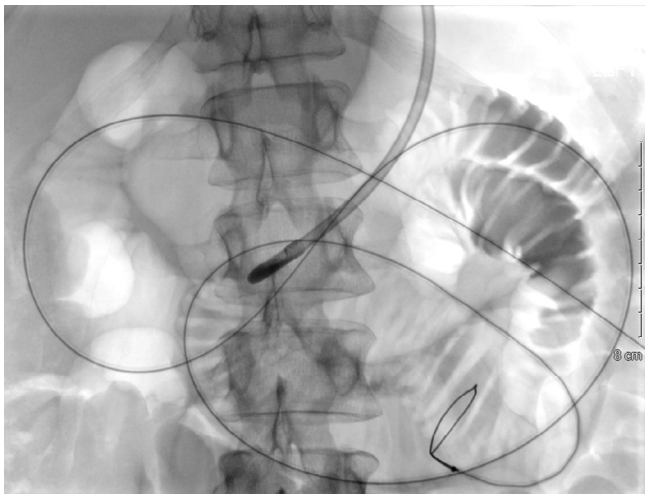

Fig. 1 – From the percutaneous gastric access, a loop snare is advanced over a guidewire into the mid-jejunum. Ultrasound (not shown) confirmed that the loop of bowel containing the snare was superficial, without intervening bowel loops.

Fig. 2 – A 22-gauge Chiba needle was advanced toward the loop snare, which acted as a target. An 0.018-inch guidewire was subsequently introduced through the needle and captured by the snare.

placement. She required frequent replacement of her previous nasoenteric tubes because of clogging and desired a more long-term access for postpyloric enteral feeds. Although the woman was a candidate for a primary gastrojejunostomy tube, she preferred a primary jejunostomy tube, desiring to be able to self-exchange a low-profile MIC KEY button (Halyard Health, Irvine, CA) gastrostomy, acting as a postpyloric jejunostomy, in the future.

The patient was placed under general anesthesia, and following gastric insufflation, percutaneous gastric access was obtained with an 18-gauge single wall needle (Cook Medical, Bloomington, IN). A guidewire and a 5-Fr, 120-cm angled Glidecath (Terumo Medical, Tokyo, Japan) were advanced distally into the mid-jejunum. The catheter was exchanged for a 6-Fr × 20 mm loop snare (Amplatz GooseNeck Snare; Covidien, Minneapolis, MN), which was localized under ultrasound to a superficial loop of the jejunum in the left mid-abdomen (Fig. 1). Ultrasound also confirmed that there were no intervening bowel loops along the planned percutaneous tract.

With the deployed snare as a target, a 22-gauge Chiba needle (Cook Medical) was positioned through the snare (Fig. 2). An 0.018-inch V-18 Control Wire (Boston Scientific, Marlborough, MA) was advanced through the needle and grasped through the percutaneous gastric access, establishing through-and-through access from the stomach puncture site to the percutaneous jejunal access. The 0.018-inch V-18 Control Wire was then exchanged for an 0.035-inch Amplatz Super Stiff Guidewire (Boston Scientific). Tension on both ends of the guidewire significantly shortened the bowel (Fig. 3) and provided a fixed rail for serial dilation and a 20-Fr Peel-Away Sheath (Cook Medical) placement. A 16-Fr MIC (Kimberly-Clark, Irving, TX) jejunostomy was placed in a retrograde fashion. The balloon was inflated and retracted up against the abdominal wall. Contrast injection through the tube confirmed placement in the jejunum (Fig. 4).

Fig. 3 – After establishing through-and-through access, tension on both external ends of the wire significantly shortened the bowel. Continued back tension on both ends of the wire enabled tract dilation and a subsequent tube placement.

Discussion

Although several techniques of direct percutaneous jejunostomy placement have been described [1–5], the overall reported experience is limited owing to the inherent difficulties with the procedure. The loose mesenteric attachment of the jejunum

Fig. 4 – Contrast injection through the tube opacified jejunum. Computed tomography of the abdomen performed at the time of the procedure (not pictured) confirmed that the balloon and the jejunum were retracted against the abdominal wall with no intervening bowel loops.

and its relatively compliant wall complicate both the initial needle access and the ensuing tract dilation and tube placement. In this technique, the loop snare provides a safe and accurate target for initial needle puncture, particularly when combined with ultrasound visualization, and the through-and-through access stabilizes the new percutaneous jejunal tract for tube placement. Furthermore, this technique may be faster than conventional jejunostomy tube placement as the procedure time was only 30 minutes.

The placement of a loop snare as a target in the jejunum from a percutaneous gastric access has not been previously described. Cope et al. reported several techniques for targeting the jejunum by the placement of guidewires or balloon catheters through the nose [3]. In patients who have had a prior gastric or proximal small bowel resection, such as a Roux-en-Y gastric bypass, the placement of a target such as an endoluminal snare through the nares and into the jejunum is feasible because the bowel is foreshortened. In patients with conventional anatomy, however, the initial cannulation of an appropriate jejunal loop from the nose would be challenging, time-consuming, and limited by the lengths of suitable catheters. Percutaneous gastric access may be performed quickly and allows faster catheterization of the jejunum. As the percutaneous gastric tract is dilated to only 5 or 6 Fr, the catheter may typically be safely removed during the procedure.

To address the mobility of the jejunum during tract dilation and tube placement, several authors have recommended jejunopexy with as many as 3 T-fasteners [1,3,4]. Kim et al. described frequent breakage during tract dilation when a single T-fastener was employed [1,5]. The loss of guidewire access along with the jejunopexy may lead to a leaking enterostomy that would be unable to be reaccessed. In this case, no T-fasteners were placed. The additional step of placing a T-fastener after establishing through-and-through access would certainly further stabilize the bowel during tract dilation and should be strongly considered.

Conclusion

For patients who have not had a previous gastrointestinal surgery and who are more likely to have freely mobile small bowel, the techniques described in this report appear to offer a potentially safe method of postpyloric enteral nutrition with jejunostomy placement. Further investigation is warranted to determine success rates and long-term outcomes in similarly placed tubes.

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