Journal of Visceral Surgery (2019) 156, 153—159

Available online at ScienceDirect www.sciencedirect.com

Elsevier Masson France EM|consulte www.em-consulte.com/en

SURGICAL TECHNIQUE

Percutaneous reinsertion of a jejunostomy feeding tube

L. Genser, N. Margot, E. Savier*

Service de chirurgie digestive hépato-bilio-pancréatique et transplantation hépatique, groupe hospitalier Pitié-Salpêtrière, Assistance publique—Hôpitaux de Paris (AP—HP), 75013 Paris, France

Available online 27 March 2019

KEYWORDS
Percutaneous;
Jejunostomy feeding tube;
Endoscopy;
Interventional radiology;
Enteral nutrition

Introduction

Undernutrition is a major factor in oncological morbidity and poor prognosis following digestive surgery [1,2]. Wherever possible, enteral nutritional support via a gastrostomy or jejunostomy tube should be preferred to parentral nutrition [3]. A jejunostomy tube may, however, fall out in the months following its surgical placement. Indeed, unlike endoscopically placed gastrostomy probes that have a balloon or an internal abutment to prevent dislodgement, feeding jejunostomies inserted by laparotomy or laparoscopy are anchored with sutures only at the skin. Over time, the fixation suture may cut through the skin enabling dislodgement of the feeding catheter. Immediate catheter reinsertion does not generally pose a problem because the fibrotic tract is well matured after the first postoperative month. However, this tract tends to shrink within a few hours after dislodgement, making late blind reinsertion of a catheter along the tract and bedside placement of a new feeding tube difficult if not impossible. We describe here a method of feeding jejunostomy tube reinsertion using interventional radiology techniques to identify the tract and replace the tube, even several days after its dislodgement, thereby avoiding re-operative surgery.

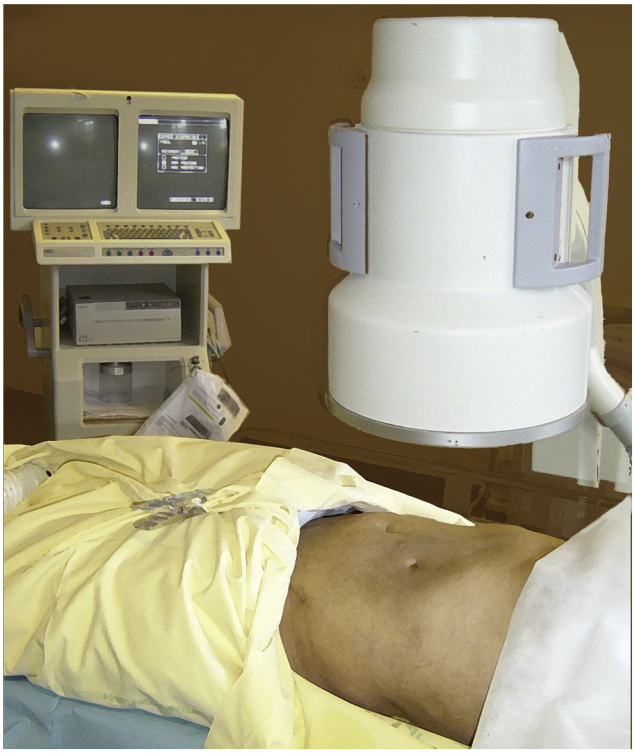
* Corresponding author.
E-mail address: eric.savier@aphp.fr (E. Savier).

https://doi.org/10.1016/j.jviscsurg.2018.11.005

1 Patient installation

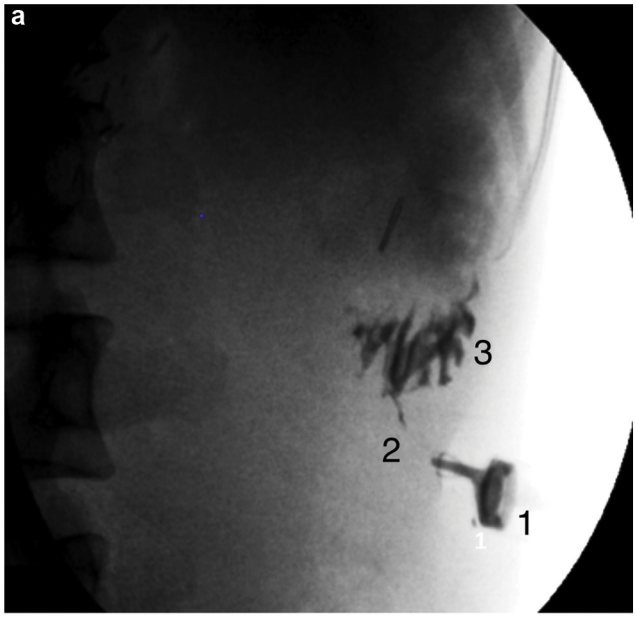
The patient is positioned supine, with legs and arms extended. General anesthesia is optional. A C-arm fluoroscopy unit, placed facing the operator, is essential. The list of materials is detailed below:

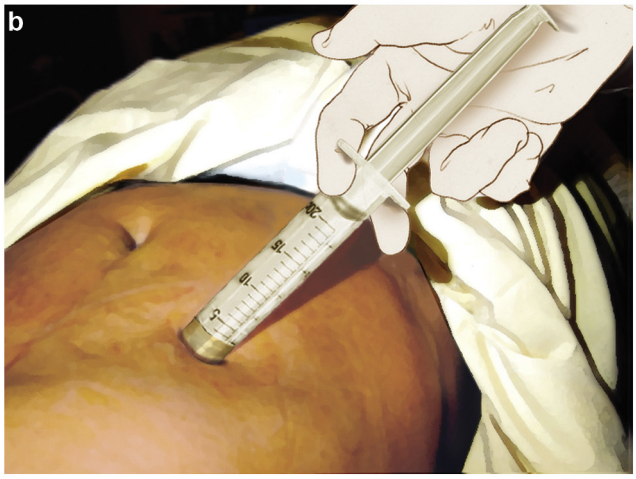
- standard-tip 20 mL syringe (non-Luer-lock);
- 60 mL irrigation syringe;
- hydrophilic flexible guidewire Terumo® (ref RF * GA 35153M);
- 12-French (Fr) Cook® dilator [ref JCD12.0-38-20 (12Fr)];
- 5-Fr or 6-Fr Medical Biosphere® radiopaque sheath [ref 3814 or a Flexima® sheathed drain (6-Fr) (APDL ref M001271330)];
- 14-Fr Vygon® jejunostomy probe (ref 2391.14);
- 6-Fr Amplatz Super Stiff™ guidewire (Boston Scientific® ref 46-525).



2 Tract identification

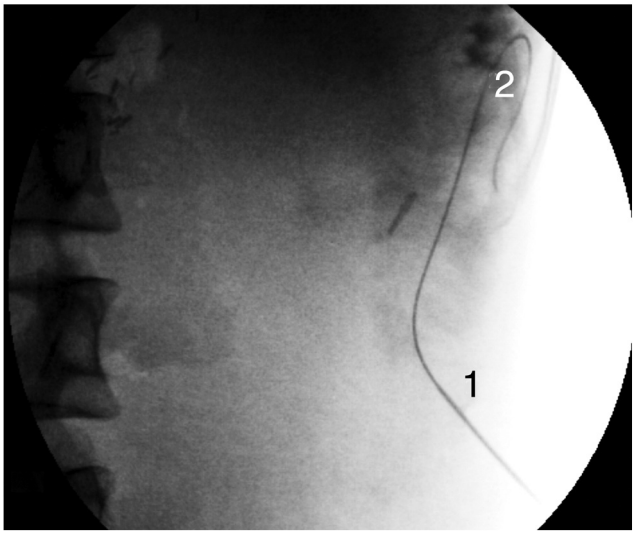
Contrast medium diluted to 20% in normal saline (NS) (1 part contrast per 4 parts NS), is injected with a syringe introduced directly into the cutaneous orifice (1) to opacify the pathway of the tract (2). The injection must be performed under pressure and under fluoroscopic control. The hydrostatic pressure helps to open the fistulous tract (2) without creating a false passage. Injection must be continued until the valvulae conniventes, are visualized, attesting to the opacification of the intestinal lumen (3). Tissues should not be infiltrated with local anesthetic at this stage since this may compress or distort and obscure the transparietal pathway. If there is leakage around the tip of the syringe, use of a taper-tipped irrigating syringe is recommended.





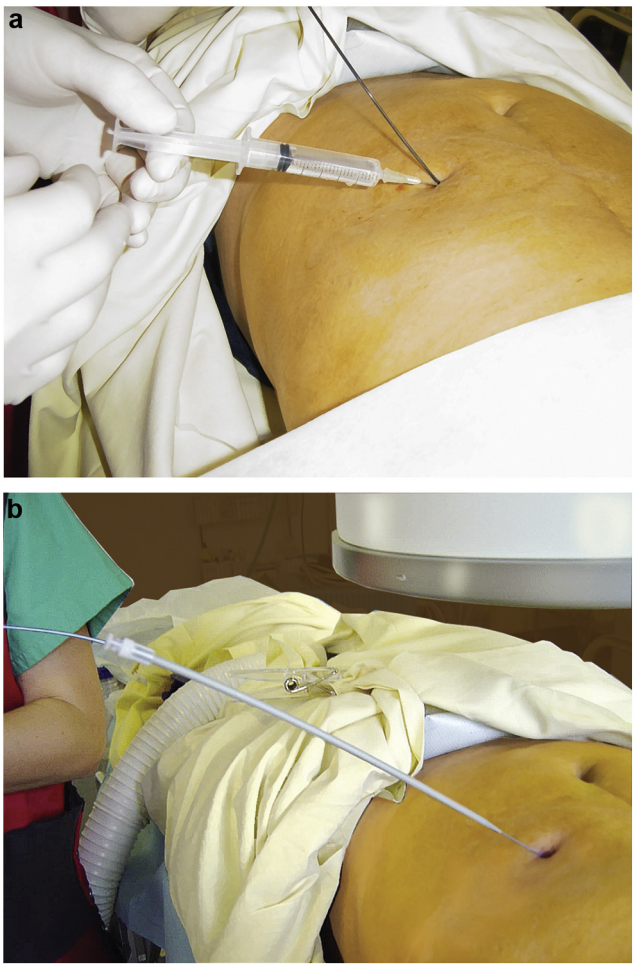
3 Catheterization of the tract and small intestine

A flexible guide introduced into a 5-Fr radio-opaque sheath (1) allows passage of the catheter along the transparietal tract to the intestinal lumen. The catheter is inserted about 30 to 40 cm. Once in place, the sheath is opacified after removal of the flexible guide, to verify its good position in the digestive lumen (2). A rigid guide introduced through the sheath helps maintain the pathway until the end of the catheter placement.



4 Preparation for transparietal catheter insertion

The cutaneous orifice is now anesthetized locally and deeply, following a path parallel to the rigid guide. The skin is then incised on both sides of the metal guide (1) to facilitate the introduction of the 12Fr dilator (2). The dilator is slid over the rigid guide and advanced progressively under fluoroscopic control in order to widen the transparietal pathway (insert). Once positioned in the intestine it is left in place for several minutes, while the replacement feeding tube is prepared.

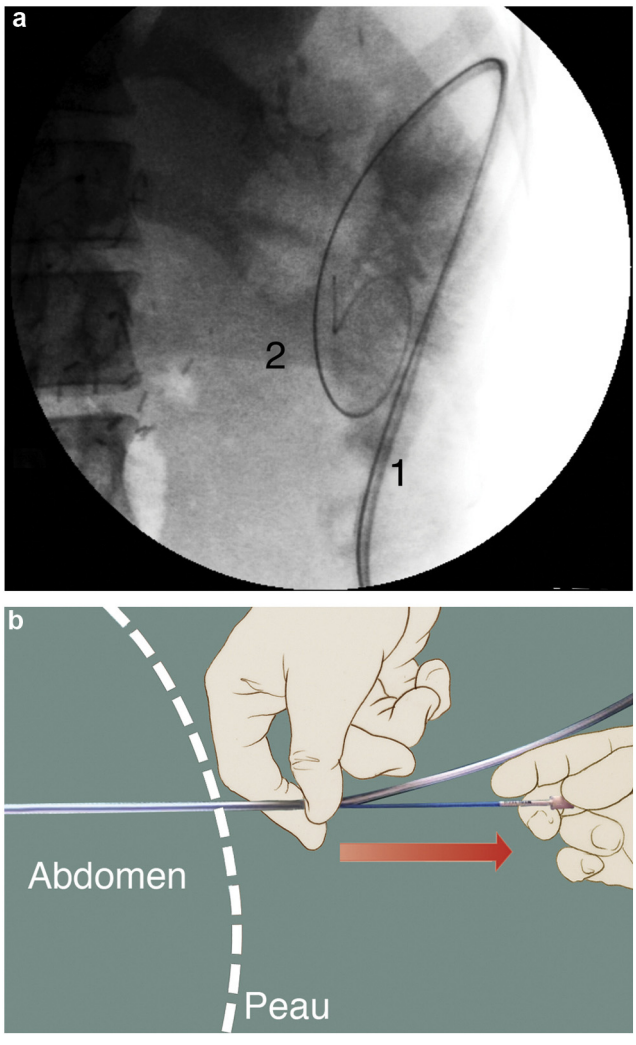


5 Preparation of the new jejunostomy tube

While percutaneous feeding tubes are commercially available, they are often short and have an inflatable balloon that may not be suitable for jejunostomy. Indeed, the balloon can be obstructive because of the small jejunal diameter. However, a 14-Fr flexible feeding tube can be used, even though it has a blind end. To do this, the tip of the feeding tube is cut diagonally. An additional lateral sidehole is made 22 cm from the distal end of the feeding tube (1), through which a 6-Fr metal-reinforced drain (Biosphere® sheath or Flexima® drain) can be introduced, whose end will protrude just beyond the beveled tip of the modified feeding tube (2). This maneuver makes it possible to stiffen the feeding tube and thus facilitate its passage through the abdominal wall. In addition, the conical end of this 6-Fr stiffening drain/sheath fits exactly over the previously placed guide wire.

6 Reinsertion of the Feeding Tube

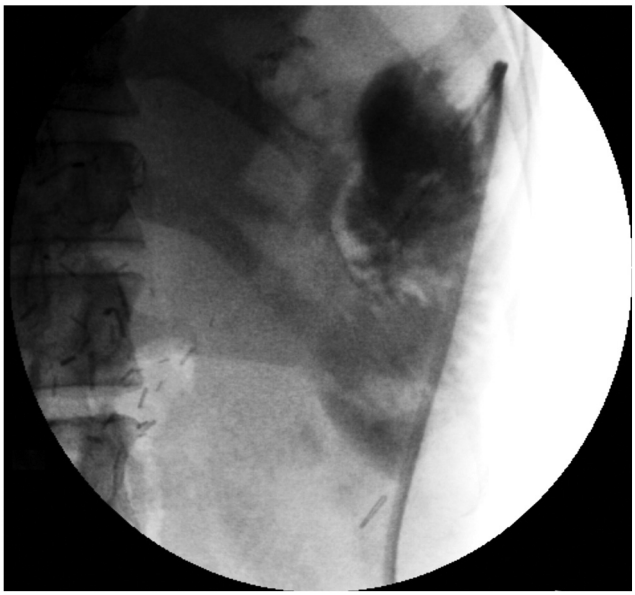
After removal of the dilator, the feeding tube stiffened by the radiopaque sheath (1) is slid over the rigid guide (2) and advanced until it is well positioned within the intestinal lumen. When the point of introduction of the 6-Fr drain into the probe reaches flush with the skin, this drain is removed and the feeding tube is further advanced to the 50 cm mark (insert).



7 Final control of the tube position

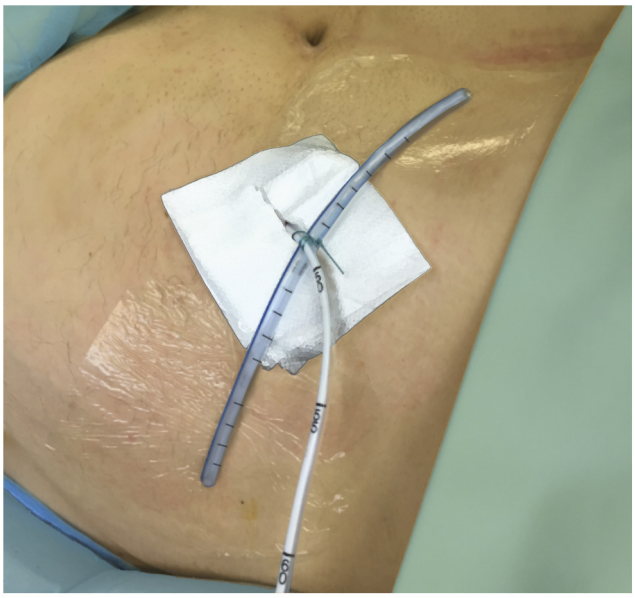
Contrast opacification of the probe, under fluoroscopic control, allows verification that:

- the small intestine is well opacified (1);
- that the probe is not kinked;
- that there is no leakage along the tract or at skin level.



8 Fixation of the probe

At the time of reinsertion of the feeding tube, the patient's skin is often inflamed or macerated at the cutaneous orifice and skin fixation sites. In addition, the shearing effect of sutures on this inflamed skin may cause intolerable pain. It is therefore preferable to anchor the feeding tube to a rod that is (1) neither too flexible nor too rigid (a segment of nasogastric tube about 20 cm long) applied to the skin perpendicular to the course of the feeding tube. Two non-woven dressings, split in opposing directions are interposed between the rod and the skin (2). The two ends of the rod are anchored to the skin by Vi-drape (3), allowing the feeding tube to be secured while permitting ongoing local skin care at the orifice.



Conclusion

Familiarity with this interventional radiology technique can allow digestive surgeons to avoid re-interventions and spare patients painful and unnecessary emergency procedures. Until the transparietal fibrous tract is well matured (> 1 month in the immunocompetent patient), this technique is contraindicated. Once the tract is well-organized, the patient (or immediate family) should be taught how to immediately reinsert a dislodged feeding tube.

Disclosure of interest

The authors declare that they have no competing interest.

References

[1] Ho JWC, Wu AHW, Lee MWK, Lau S, Lam P, Lau W, et al. Malnutrition risk predicts surgical outcomes in patients undergoing gastrointestinal operations: Results of a prospective study. Clin Nutr 2015;34:679—84, http://dx.doi.org/10.1016/j.clnu.2014.07.012.

[2] Zheng H-L, Lu J, Li P, Xie J-W, Wang J-B, Lin J-X, et al. Effects of preoperative malnutrition on short- and long-term outcomes of patients with gastric cancer: can we do better? Ann Surg Oncol 2017;24:3376—85, http://dx.doi.org/10.1245/s10434-017-5998-9.

[3] Luo Z, Wang J, Zhang Z, Li H, Huang L, Qiao Y, et al. Efficacy of early enteral immunonutrition on immune function and clinical outcome for postoperative patients with gastrointestinal cancer. JPEN J Parenter Enteral Nutr 2017, http://dx.doi.org/10.1177/0148607117715439 [148607117715439].