

## “Candy cane” syndrome: a report of a mini-invasive endoscopic treatment using OverStitch, a novel endoluminal suturing system

A 25-year-old woman with a history of Barrett’s esophagus with dysplasia underwent Ivor Lewis esophagectomy at the age of 18 years.

After 24 months, she developed dysphagia, postprandial vomiting, and epigastric pain, with progressive weight loss. Upper gastrointestinal (GI) series showed delayed gastric emptying with pre-pyloric stagnation.

After multiple, fruitless, endoscopic hydro-pneumatic dilations of the pylorus, the patient underwent Roux-en-Y gastrojejunostomy, with clinical benefit and weight regain.

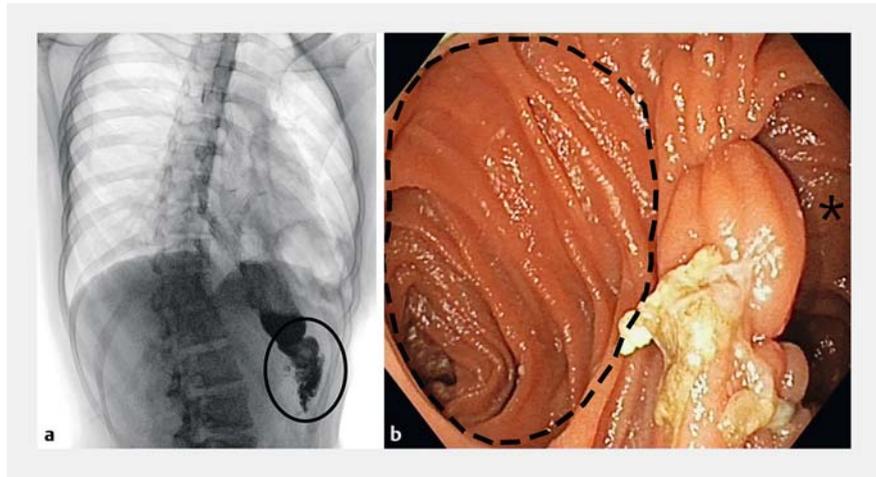
One year later, symptoms recurred, with nausea and recurrent postprandial pain that resolved after vomiting. Upper GI series revealed direct filling of the blind afferent cul-de-sac with no spilling over into the efferent limb (► Fig. 1).

In order to avoid further hazardous surgery, and considering the young age of the patient, we decided to proceed with a minimally invasive approach. We attempted to obliterate the afferent limb, preventing the food from collecting in its lumen, and allowing the intestinal transit entirely into the efferent limb.

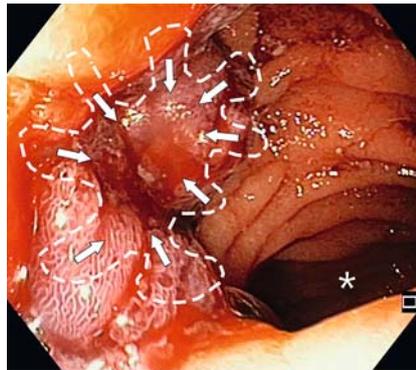
We used argon plasma coagulation to scar the entire cul-de-sac mucosal layer in order to promote cicatrization. We then proceeded to approximate the opposite enteric walls of the afferent limb, from the bottom to the top, by placing multiple purse-string sutures using the OverStitch Endoscopic Suturing System (Apollo Endosurgery, Inc., Austin, Texas, USA); total closure of the cul-de-sac was achieved (► Fig. 2, ► Video 1).

After treatment, the patient had complete resolution of symptoms. At the 1-month follow-up, upper GI series showed direct transit of contrast dye into the efferent limb without any filling of the obliterated afferent lumen (► Fig. 3).

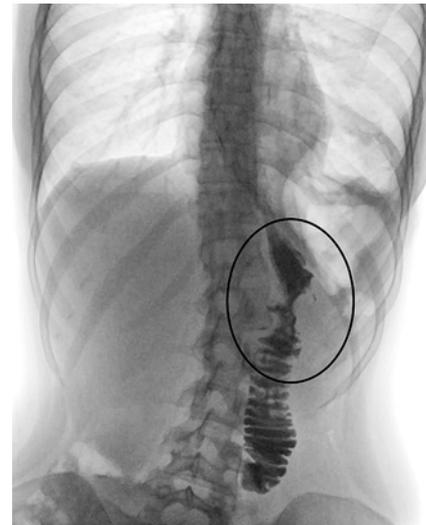
“Candy cane” syndrome is a poorly described surgical complication [1–3]. In



► Fig. 1 Preoperative work-up. **a** Upper gastrointestinal series showing contrast dye pooling in the dilated afferent blind limb (circle). **b** Endoscopic view of the afferent (dashed circle) and efferent (asterisk) limb.



► Fig. 2 Complete obliteration of the blind afferent limb using multiple purse-string sutures (white dashed line), leaving total patency of the efferent limb (asterisk).



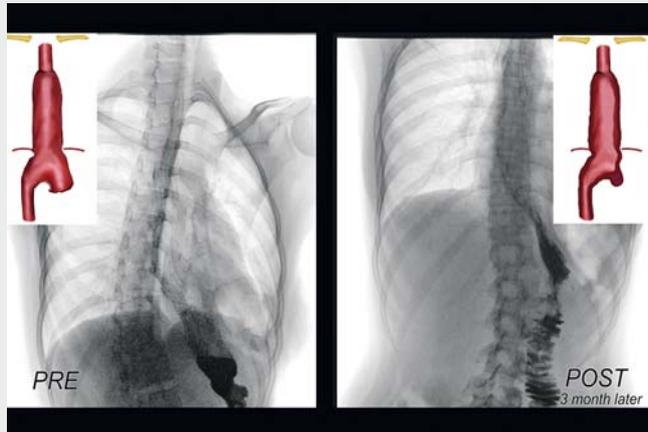
► Fig. 3 Upper gastrointestinal evaluation 1 month later showed direct transit of contrast dye into the efferent limb.

the largest published case series (19 patients), Aryaie et al. reported a success rate of 94% by laparoscopic resection of the redundant afferent limb [4]. In patients with “candy cane” syndrome, a minimally invasive endoscopic approach seems to be a valid alternative, especially in patients who are unfit for surgery and have critical medical conditions or a history of multiple surgical revisions.

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### Competing interests

None



**Video 1** A novel endoluminal suturing system applied for the treatment of the “Candy cane” syndrome, allows a mini-invasive endoscopic solution with complete resolution of symptoms in a young patient with a history of multiple surgical procedures.

- [2] Robert M, Pelascini E, Poncet G et al. Blind biliary limb dilatation (Candy cane syndrome) of jejuno-jejunal anastomosis after Roux en Y gastric bypass (with video). *J Visc Surg* 2018; 155: 239–241
- [3] Romero-Mejía C, Camacho-Aguilera JF, Paipilla-Monroy O. [“Candy cane” Roux syndrome in laparoscopic gastric by-pass]. *Cir Cir* 2010; 78: 347–351
- [4] Aryaie AH, Fayeziadeh M, Wen Y et al. “Candy cane syndrome”: an underappreciated cause of abdominal pain and nausea after Roux-en-Y gastric bypass surgery. *Surg Obes Relat Dis* 2017; 13: 1501–1505

#### Bibliography

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#### References

- [1] Dallal RM, Cottam D. “Candy cane” Roux syndrome – a possible complication after gastric bypass surgery. *Surg Obes Relat Dis* 2007; 3: 408–410

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