



Massive Gastrointestinal Bleeding Due to Splenic Artery Erosion by a PigTail Drain in a Post Sleeve Gastrectomy Leak: a Case Report

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Introduction

Digestive leak remains the main complication following surgery for morbid obesity, with an incidence rate of 1 to 5%, and a potential mortality rate between 0.1 and 5% [1, 2]. Historically, the management of leaks occurring after sleeve gastrectomy (SG) involved closure devices, including endoclips, over-the-scope clips and glue, or exclusion devices like self-expandable metallic stents (SEMS) [3–6]. The rate of success of these approaches averaged 70% [5, 6]. However, these commonly required several endoscopic sessions, numerous hospitalizations, and produced significant discomfort for the patients. More specifically, SEMS could lead to serious complications including migration, bleeding, ingrowth, or even perforation or stripping in up to 6% of cases [7].

More recently, the initial management of post sleeve gastrectomy leak (SGL) has shifted towards internal endoscopic drainage (IED) using either nasocavity drains and/or pigtail drains (PTD) placed throughout the fistula's orifice [8]. Numerous studies [8–11] have evaluated this specific approach with very promising success rates, ranging between 78 and 98%. However, complications of these IEDs may occur, including endoluminal slippage, migration into the abdominal cavity, splenic abscess

and portal vein gas formation, or even internal bleeding from the splenic hilum.

We hereby present the case of a patient with SGL who had severe upper gastrointestinal bleeding after the insertion of a PTD. To the best of our knowledge, this is the first report of such a complication in this setting.

Case Report

A 49-year-old male patient with a body mass index (BMI) of 41.2 kg/m² underwent laparoscopic SG. At postoperative day (POD) 7, he presented with epigastric pain, nausea, and 40 °C fever. The abdomen was tender with signs of peritonitis. Computerized tomography (CT) scan confirmed the presence of gastro-esophageal junction leak with extravasation of orally administered contrast. Laparoscopic lavage and external drainage were promptly realized.

At POD 22, the patient presented with diffuse abdominal pain and fever. Explorative laparotomy displayed massive gastric leak with generalized peritonitis. Peritoneal lavage was performed, after which closed, negative-pressure drainage was positioned in the left upper quadrant. Two days later, the patient had upper tract endoscopy with the insertion of a SEMS, while the external drainage was left inside. Eventually, the SEMS was retrieved and replaced by two double PTDs (7 French/5 cm). On POD 91, the patient was transferred to our department for the management of persistent SGL. Upon arrival, the patient suffered malnutrition and low-grade fever. Physical examination showed a total weight loss of 46 k, the current BMI being at 26.2 Kg/m². The patient had normal hemodynamic parameters and no tenderness upon abdominal clinical assessment. Biology tests revealed white blood count (WBC) at 15800 × 10⁹/L (*N*, 4.00–11.0 × 10⁹/L), C-reactive protein at 124 mg/L (*N*, < 5 mg/L), albumin at 3.2 g/dL (*N*, 3.5–5 g/dL), and pre-albumin at 8 mg/dL (*N*, 18–45 mg/dL). CT scan found a 13 cm diameter fluid collection around the PTDs which was deemed as obstructed.

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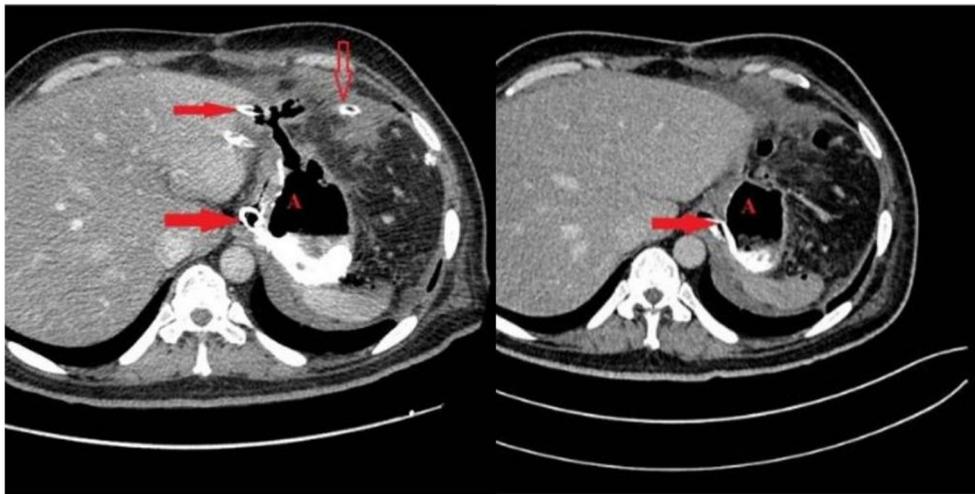


Fig. 1 A CT scan view in a 49-year-old patient 3 months after a post-sleeve gastrectomy leak treated with pigtail drains (PTDs). Left photo: obstructed PTDs (left photo) (small red arrows) with surrounding 13 cm diameter, air-fluid collection compatible with an abscess (A). The

previously inserted external drainage could be identified (big red arrow). Right photo: the obstructed PTDs were replaced by two larger ones (small red arrow): the previous abscess (A) decreased significantly

Initial management comprised total parenteral nutrition and wide spectrum intravenous antibiotics. The obstructed PTDs were retrieved and replaced by two larger drains (7 French/6 cm). Control CT confirmed the regression of the collection (Fig. 1). Consequently, the external drainage was retrieved.

Two weeks later, the patient suddenly complained of severe nausea and hematemesis. CT scan showed a 15-cm diameter hematoma in the splenic hilum with a false aneurysm of the splenic artery (Fig. 2). Shortly after, the patient experienced another episode of explosive vomiting expelling the two PTDs in a flow of red fresh blood. Concomitantly, blood pressure dropped (80/40 mmHg) with tachycardia (123/min). Hemoglobin decreased from 12 to 9 g/dL (*N*, 12–15 g/dL). Urgent embolization was performed (Fig. 3). Vascular access was performed through a catheterization of the right femoral artery (Cobra Terumo 5F and micro-catheter Maestro 2.8 F). The selective and hyper-selective arterial opacification showed a ruptured pseudo-aneurysm of the splenic artery,

with both sub-phrenic and endoluminal contrast diffusion. Highly selective embolization of the pseudo-aneurysm was performed using particles 700–900 and 1100 μ m and 4 Hilal micro-spines 3 mm/3 cm. A total of 8 blood unit pack transfused. The post embolization course was uneventful.

Eventually, the patient underwent laparoscopic Roux-en-Y fistulo-jejunostomy 12 days after the embolization. The post-operative course was smooth and the patient was discharged on POD 8. At a 6-month follow-up, the patient was asymptomatic with normal control CT.

Discussion

To the best of our knowledge, this is the first report of a PTD-induced bleeding in a patient with SGL. Over the past 5 years, endoscopic management of fistulas complicating bariatric surgery evolved dramatically towards the

Fig. 2 A 49-year-old patient with a post-sleeve gastrectomy leak treated with pigtail drains (PTDs) presented with massive upper digestive bleeding: Axial view and coronal view CT scan showed pseudo-aneurysm (red arrow) of the splenic artery with active extravasation of the intravenous contrast

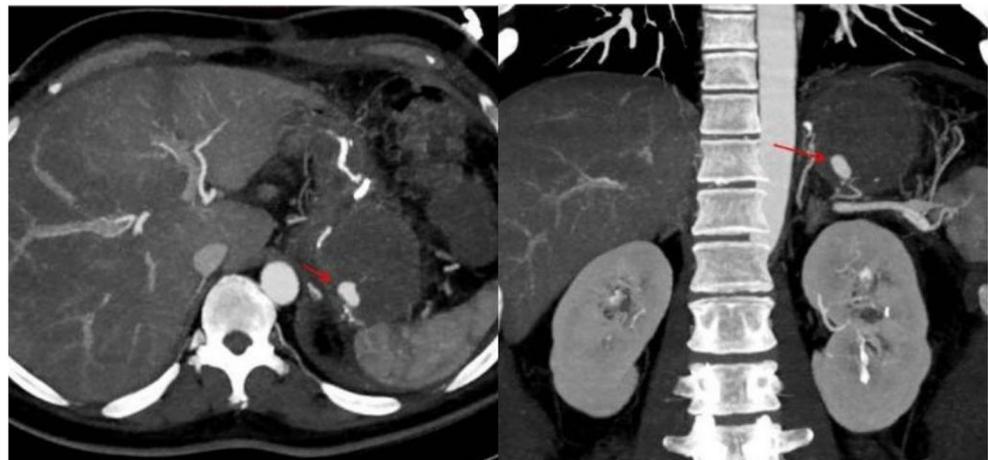


Fig. 3 A 49-year-old patient with a post-sleeve gastrectomy leak treated with pigtail drains (PTDs) presented with massive upper digestive bleeding: Upon angiography, active bleeding from a branch of the splenic artery was identified (small arrow). Selective coil embolization was performed with complete control of the bleeding (big arrow)



use of IEDs. Our approach to SGL is based on conservative treatment initially unless the septic condition of the patient mandates explorative surgery. Besides antibiotics and artificial nutrition, either enteral or parenteral, our preferred approach is the use of one or more PTDs or nasocavity drainage if the fistula is more than 1 cm diameter. Rarely, an over-the-scope clip is used if the fistula is very recent (i.e., less than 10 days). Usually, gastropleural fistulas should be considered as contraindications to the insertion of PTDs since the negative intra-thoracic pressure may disturb the flow of fluids from the lumen towards the pleura.

The overall risk of complications usually related to SEMS, including bleeding, migration, ingrowth, and perforations, and was significantly decreased by the use of PTDs [8–11]. However, newer forms of complications emerged including intra-abdominal migration and oral expulsion of the device, as in our case.

Whether the previous abdominal drainage contributed to the fragilization of the splenic artery in our case remains uncertain. However, the CT scan performed before the insertion of the last set PTDs did not show any splenic pseudo-aneurysm. Moreover, the patient did not suffer from previous acute pancreatitis which could have facilitated the rupture of the splenic artery. Finally, whether the number of PTDs (single or multiple) affects the risk of vascular erosion remains unclear.

In conclusion, PTD should currently be considered as the mainstay of the initial conservative treatment of patients with SGL. Its efficacy seems to be very competitive as compared to the more traditional devices while being well tolerated by the patient. However, PTD could lead to severe bleeding complications hindering the vital prognosis of the patient. In case of resistance to conservative management, or in case of a severe

complication, our approach is based on the realization of a Roux-en-Y fistulo-jejunostomy [12]. We believe this ultimate surgical option is safe and feasible, enabling 100% control of the SGL, including upon long-term follow-up.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval Statement For this type of study, formal consent is not required.

Informed Consent Statement Informed consent was obtained from all individual participants included in the study.

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