

# Post sleeve gastrectomy superior mesenteric vein thrombosis. Case report

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## Case Report

### BARIATRIC SURGERY



**Abstract:** Mesenteric venous thrombosis has been recognized as a cause of intestinal necrosis for more than 100 years, the first descriptions were made by Elliot. It occurs in 5 to 15% of all mesenteric ischemia cases and usually involves the superior mesenteric vein. With the advent of the laparoscopic era in abdominal procedures, this complication, although rare, must be taken into account. Laparoscopic gastric sleeve currently represents one of the most performed procedures in bariatric surgery, and portomesenteric venous thrombosis has been reported as one of its rarest complications with high morbidity and mortality. Stasis on the portal venous system, surgical manipulation as well as damage to the splanchnic endothelium, the use of oral contraceptives, and obesity have been documented as possible etiologies. Usually the clinical manifestations appear after 14 days. Computed tomography helps to make the diagnosis and determine the extent of the pathology. A high index of suspicion is needed for its diagnosis and later to establish an adequate management which must be individualized in each patient. We report the case of a 27-year-old female patient, with a history of insulin resistance, who underwent a laparoscopic gastric sleeve that later presented with mesenteric venous thrombosis, re-admitted to the hospital at 20 days and successfully managed with anticoagulation and thrombolysis.

**Keywords:** Intestinal ischemia, mesenteric thrombosis, sleeve gastrectomy.

## Introduction

Bariatric surgery has been on the rise throughout the world. Global statistics reported in 2013 a total of 468, 609 cases, compared to those made in 2008, which were 344, 221 (1). Which represents in 5 years an increase of more than 100,000 surgeries around the world. The total rate of complications in bariatric surgery represents between 10-17% of cases (1).

Portomesenteric venous thrombosis is a rare but well documented complication of laparoscopic surgery (1). It has been reported with an incidence of 0.2% to 1%, after bariatric surgery (1). Represents between 5 to 15% of all ischemic mesenteric events (2). Since 1991, events of portomesenteric venous thrombosis have been reported after different laparoscopic procedures, many of which lack direct manipulation of the portal venous system, including bariatric procedures (2). Furthermore, obesity per se is associated with an increased risk of portomesenteric venous thrombosis and plays an important role in the bariatric population (2). Portomesenteric venous thrombosis includes a wide spectrum of clinical manifestations, ranging from incidental findings in asymptomatic patients to potentially fatal conditions (3). Recommended prophylaxis protocols range from mechanical compression devices with early ambulation, to the

addition of chemoprophylaxis and the use of inferior vena cava filters (2).

## Case report

27-year-old female patient, native and resident of the city of Chihuahua, Mexico. With a history of insulin resistance with treatment with metformin 500mg every 24 hours, grade II obesity (BMI 37), with consumption of oral contraceptives for 3 years. Gastric sleeve surgery was performed by laparoscopy on August 30. After gastric sleeve surgery, the patient received antithrombotic measures with compression stockings, in addition to early ambulation. Graduated at his home on August 31. The patient presented again on September 19 with intense abdominal pain of approximately 10 days of evolution, in addition to nausea, vomiting and diarrhea, the patient was admitted and laboratory and blood tests were requested, including a simple and contrasted tomography. The vital signs upon arrival were temperature 36.8°C, HR 87, TA 100/80, FR 20, SAT O2 96%. The laboratories marked a leukocytosis with  $18.35 \times 10^3$  (Neutrophils 82.5%), hemoglobin 14.5 g / dL, hematocrit 42.4%, platelets  $351 \times 10^3$ , blood chemistry with glucose 114.50 mg / dL, urea 21.7 mg /

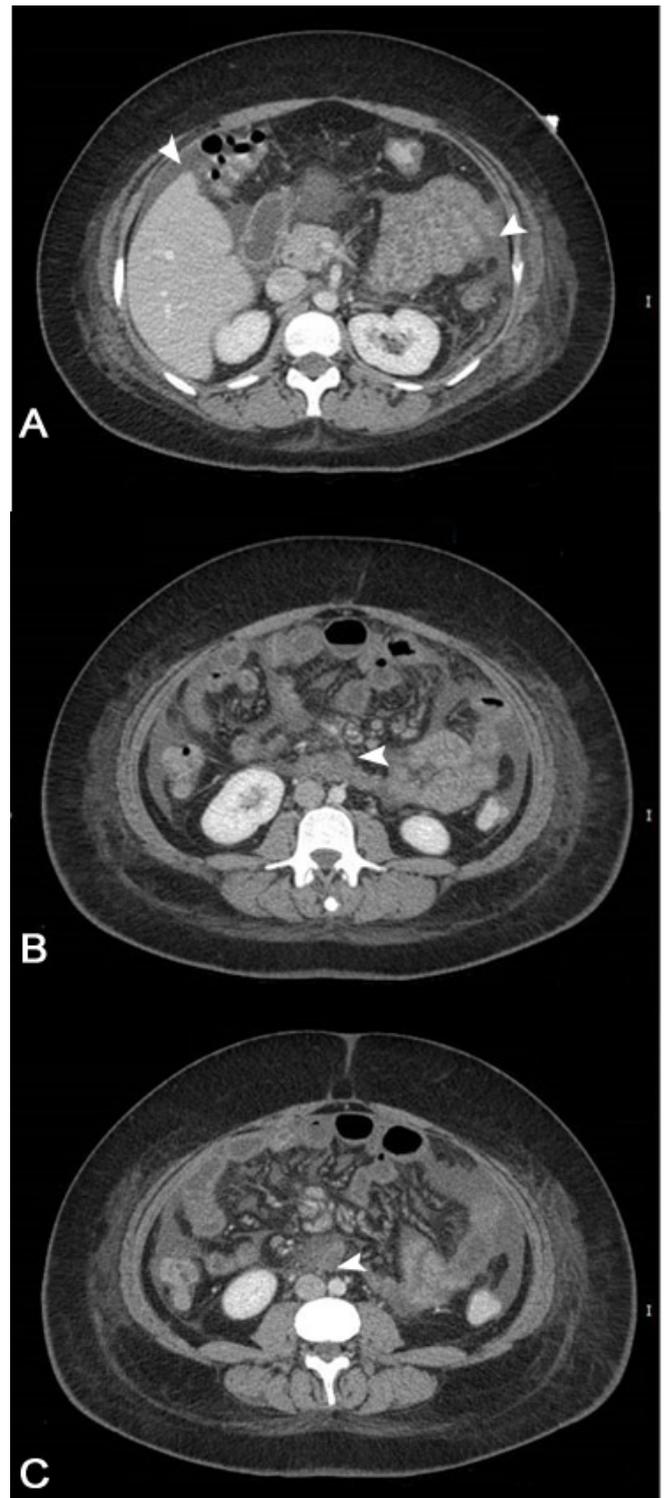
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dL, creatinine 0.88 mg / dL Phosphatase Alkaline 132, TGO 27.8, TGP 50.10, GGT 64, Serum Electrolytes Na: 137 mmol / L, K: 3.90 mmol / L, Cl: 105 mmol / L, Dimero D:> 5000, Procalcitonin <0.200, Amylase 68, Lipase 24.40. Simple tomography (FIGSSSS) is requested and then IV contrast tomography (FIGS) is requested (**Figure 1**). Superior mesenteric venous thrombosis was diagnosed and the patient was transferred to the intensive care unit where anticoagulation with enoxaparin and thrombolysis with alteplase were started on September 20, 2019, continuing with close surveillance. Finally, the patient presents a favorable evolution after anticoagulation and thrombolysis, improving symptomatically and with adequate intestinal function. She was discharged for improvement from the hospital on September 28.

### Discussion

Bariatric surgery has been on the rise throughout the world. Global statistics reported in 2013 a total of 468, 609 cases, compared to those made in 2008, which were 344, 221 (1). Which represents in 5 years an increase of more than 100,000 surgeries around the world. The total rate of complications in bariatric surgery represents between 10-17% of cases (1).

Portomesenteric venous thrombosis has been recognized as a cause of intestinal ischemia for more than 100 years, the first descriptions were made by Elliot, but Warren and Eberhard were the first to identify venous thrombosis as a cause other than arterial occlusion (4). Since 1991, portomesenteric venous thrombosis events have been reported after different laparoscopic procedures, many of which lack direct manipulation of the portal venous system, including bariatric procedures. (2). Represents between 5% and 15% of mesenteric ischemic events and normally involves the superior mesenteric vein (4). Portal vein thrombosis has been described as a condition resulting from the abnormal development of a thrombus in the extrahepatic portion of the portal vein that results in a total or near total obstruction (5). When the extent of thrombosis reaches the mesenteric vein, it can lead to intestinal ischemia, with secondary development of peritonitis (5). Portomesenteric venous thrombosis is a rare but well-documented complication of laparoscopic surgery and has been reported with an incidence of 0.2% to 1%, after bariatric surgery. (1). Portomesenteric thrombosis after laparoscopic gastric sleeve was first reported in 2009 by Berthet et al, in a patient with thrombophilia. Since then, numerous case reports and studies on portomesenteric thrombosis after gastric sleeve have been reported (7). Other authors have reported an inconsistent incidence, which



**Figure 1.** **A.** The presence of free fluid is observed in the abdominal cavity in the subdiaphragmatic region, Morrison's space, as well as in parietocolic space bilaterally. **B.** Inflammatory changes in the mesenteric fat towards the region close to the emergence of the superior mesenteric artery and portal vein. **C.** Inflammatory changes are observed at the level of the superior mesenteric artery and vein, with changes in the density of the mesenteric fat, which indicate changes related to the presence of a thrombus at the level of the superior mesenteric vein.

could be related to the surgical technique, Salinas et al, reported an incidence of 1% in a retrospective analysis of 1713 postoperative laparoscopic gastric sleeve

patients, while Villagran et al, reported an incidence of 0.4% in 1236 patients, gastric sleeve postoperative. Boza et al described 17 (1%) of patients with portomesenteric thrombosis after laparoscopic gastric sleeve, however none after gastric bypass (5).

In recent years there has been an increase in interest in identifying other factors that could contribute to hypercoagulability during these procedures (6). Potential risk factors for the development of portomesenteric thrombosis include intra-abdominal inflammatory states, blunt abdominal trauma, hypercoagulable states, portal hypertension, use of oral contraceptives, among others. (8). Interest has focused on identifying patients who may be predisposed to developing portomesenteric thrombosis after gastric sleeve surgery. In a multicenter analysis of 40 patients who developed portomesenteric thrombosis after gastric sleeve, 92% had hematological abnormalities (6). The most common abnormality was elevation of factor VIII (76%). Other relevant abnormalities were deficiencies in antithrombin III, factor V Leiden, and protein C / S (6). Furthermore, obesity per se is associated with an increased risk of portomesenteric venous thrombosis and plays an important role in the bariatric population(2).

Portomesenteric venous thrombosis includes a wide spectrum of clinical manifestations ranging from incidental findings in asymptomatic patients to potentially fatal conditions (3). In 2009, a review by James et al. Described 18 cases of portomesenteric thrombosis after laparoscopic surgery and found a mortality of 11.11% (7).

The recommended prophylaxis protocols recommend from mechanical compression devices with early ambulation, to the addition of chemoprophylaxis and the use of inferior vena cava filters (2). Caruso et al describe a postoperative protocol which includes a 4-week long course of antithrombotic prophylaxis with low molecular weight heparin, specifically enoxaparin at a rate of 40mg per day. High-risk patients are treated with enoxaparin 40mg twice daily (7) Of the 2854 postoperative laparoscopic gastric sleeve patients had only one case of portomesenteric thrombosis (7). The gold standard of treatment for uncomplicated portomesenteric thrombosis is unfractionated heparin. Anticoagulation can be started even in the presence of gastrointestinal bleeding, if the risk of bleeding is superimposed with the benefit of preventing intestinal infarction (7). In the absence of any thromboembolic disorder, anticoagulation should be extended over a period of 6 months to 1 year (7). If the patient presents sepsis, antibiotic therapy should be started, and if intestinal ischemia is suspected, an emergency laparotomy should be performed (7).

## Conclusion

Portomesenteric vein thrombosis represents a rare but potentially fatal complication of gastric sleeve surgery. The identification of risk factors is of vital importance, since obese patients per se represent a risk group. Contrast tomography continues to be the cornerstone for diagnosis and also helps us to determine the extent and complications of this pathology. The protocols for its detection and management must still be improved and its complications, which can lead to the death of the patient, must be avoided. In the case of our patient, her diagnostic suspicion was of vital importance and being able to establish aggressive management, in addition to the collaboration of other specialists and services.

## Conflicts of interest

The authors have no conflicts of interest to declare.

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