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Case Report

Ruptured Appendicitis after Laparoscopic Roux-en-Y Gastric Bypass: Pitfalls in Diagnosing a Surgical Abdomen in the Morbidly Obese

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A recent gastric bypass can mask the symptoms of an acute abdomen. Physical examination is generally unreliable and subtle clinical symptoms or signs should alert clinicians to a significant postoperative problem. In morbidly obese patients, the presence of overt peritoneal findings is usually ominous, leading to sepsis, organ failure and death. We report a case of ruptured appendicitis following a laparoscopic Roux-en-Y gastric bypass. The patient developed tachycardia, fever, and leukocytosis in the absence of abdominal pain or positive upper GI contrast studies. Eventually, a CT scan revealed a large pelvic abscess and inflammation. A subsequent exploratory laparotomy confirmed a perforated appendicitis with pelvic peritonitis. Her recovery was rapid and uneventful. This case highlights the pitfalls in promptly diagnosing an unrelated acute surgical abdomen postoperatively in the morbidly obese patient. The need for extreme vigilance and a low threshold for aggressive intervention in the period after bariatric surgery is emphasized.

Key words: Appendicitis, gastric bypass, bariatric surgery, morbid obesity, peritonitis, intestinal perforation

Introduction

Physical examination of the abdomen is generally unreliable in the period immediately following abdominal surgery, particularly in the morbidly obese. Subtle clinical symptoms or signs should alert surgeons to a potentially significant postoperative problem. We report a patient who underwent laparoscopic Roux-en-Y gastric bypass with systemic evidence of an inflammatory problem on postoperative day 3, with abdominal pain first manifested on day 7. One would entertain a postoperative intra-abdominal complication, but a *de novo* intra-abdominal process and an acute abdomen may be masked. We report a case of ruptured appendicitis with abscess in the postoperative period following LRYGBP.

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Case Report

A 37-year-old woman with a BMI of 37 kg/m^2, presented for bariatric surgery after failing numerous weight loss programs. Her medical history included diabetes, gastroesophageal reflux disease, arthritis of weight-bearing joints, and hypothyroidism. Her only past abdominal surgery was a partial hysterectomy and left oophorectomy, during which her appendix had not been removed. After appropriate preoperative work-up and consultations, including a negative colonoscopy 2 months earlier for a significant family history of colon cancer, she underwent a LRYGBP with a 75-cm alimentary limb. The gastrojejunostomy was reinforced following a leak-test, and a 19-Fr closed suction drain was placed in its vicinity.

Her postoperative course was initially unremarkable. On postoperative day 3, she complained of

nausea, and a marked ileus was seen on abdominal X-rays. Over the next 24 hours she developed a fever of 38.4°C, tachycardia, and her white blood cell (WBC) count increased to 13,000/ml. A Gastrografin® upper GI study showed no evidence of leak. Fever work-up, including blood and urine cultures and a chest x-ray, were negative. Her fever and tachycardia gradually resolved, and oral intake was resumed. Repeat X-rays confirmed a resolving ileus as well as a small amount of free air beneath the right hemidiaphragm (Figure 1). Coincidently, the drain output had become cloudy. On postoperative day 6, she redeveloped a fever and her WBC count increased to 17,000/ml. A repeat Gastrografin® upper GI study remained negative for any leaks. Abdominal tenderness was notably absent on daily physical examinations. An undetectable leak was suspected, and she was made NPO, and total parental nutrition and intravenous broad spectrum antibiotics were re-started.

Over the next 48-72 hours, her condition worsened and band forms increased with the WBC. She now complained of right lower quadrant abdominal pain. Physical examination confirmed the presence of severe right lower abdominal tenderness and a palpable mass. A contrast CT scan of the abdomen and pelvis revealed free air, mesenteric stranding, and a large pelvic abscess (Figures 2-4). The patient was then transferred to our institution.

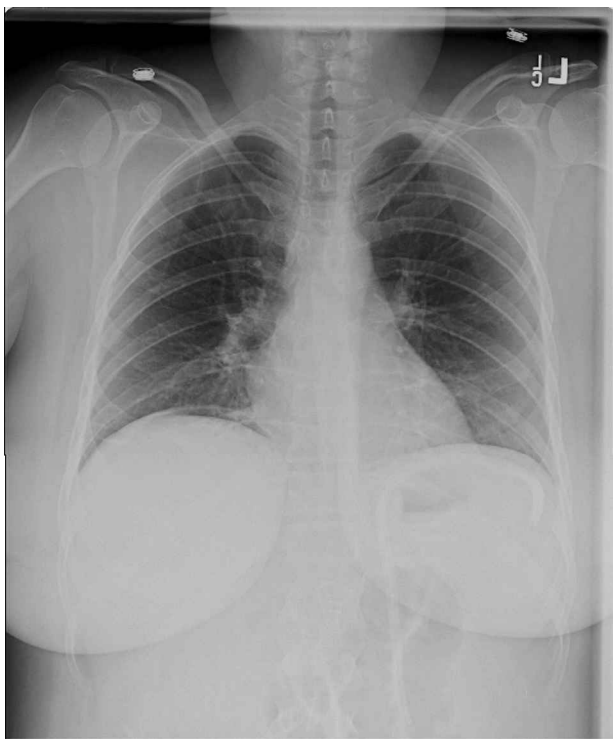

Figure 1. Free air on upright chest x-ray. Note that the air could still be unabsorbed CO_2 from the *laparoscopic* gastric bypass.

With the presumption of an undetected leak and following rapid resuscitation, she underwent an exploratory laparotomy. The gastrojejunal and jejunojejunal anastomoses were found to be intact with no inflammatory changes suggestive of a prior leak. A large amount of foul-smelling purulent fluid was drained from a pelvic abscess abutting the ileocecum. Exploration of the pelvis did not demonstrate any rectosigmoid or right tubo-ovarian pathology. An intact appendix, however, could not be identified. A mangled tubular structure was seen incorporated into the right abscess wall, representing the remnants of a ruptured appendix. After an otherwise negative exploration, large volume abdominal lavage, placement of large drains, and insertion of a gastrostomy tube, the abdomen was closed with the wound left partially open.

The patient made a rapid postoperative recovery and was discharged home on postoperative day 6 (16 days after the LRYBGP). Final abscess cultures grew rare Group B hemolytic streptococcus. The gastrostomy tube and drain were removed 7 days after discharge. Follow-up CT scan showed no residual abscess. She has lost 38.6 kg in 7 months.

Discussion

Obesity-related co-morbidities, such as coronary artery disease, hypertension, diabetes, obstructive sleep apnea, and respiratory insufficiency, place these patients at a higher risk for most surgical procedures. Furthermore, complications such as deep venous thrombosis/pulmonary embolus, abdominal catastrophes, and anastomotic bleeds are potentially fatal causes of postoperative morbidity in this population.[1-5] In contrast to other patients, abdominal catastrophes, such as anastomotic leaks, may not manifest peritoneal signs until very late in the process, resulting in a higher mortality rate.

She did complain of some intermittent pain in the right lower quadrant, and she underwent an uneventful interval laparoscopic appendectomy at 7

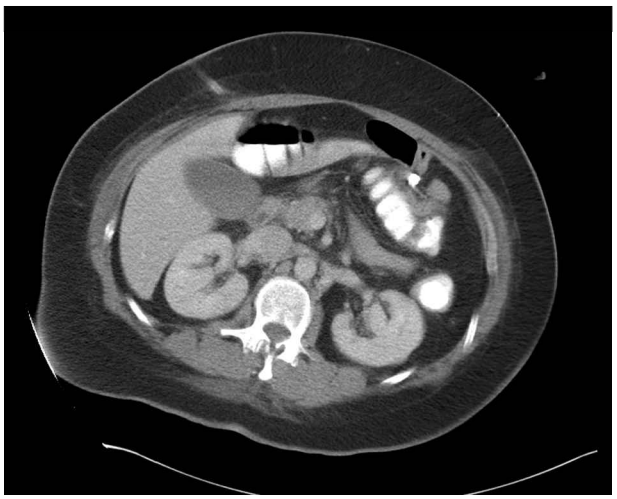

Figure 2. Free air pocket shown by white arrow on CT scan.

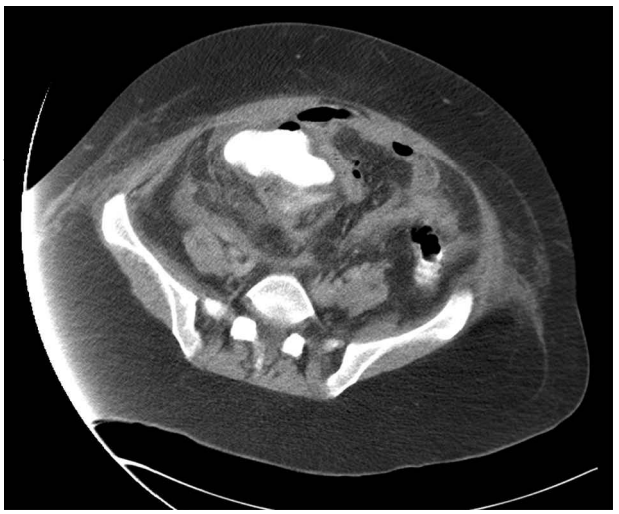

Figure 3. Severe peri-cecal inflammatory changes on CT scan.

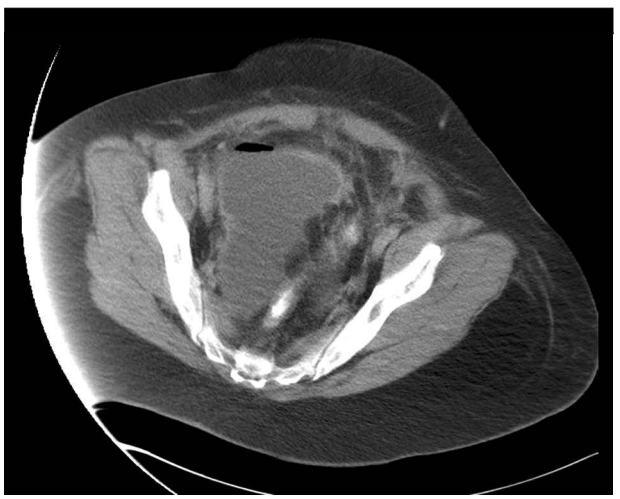

Figure 4. Large right pelvic abscess on CT scan.

months after discharge. The distal appendix was enclosed in dense adhesions. Pathology report found focal fibrosis and hemosiderin-laden macrophages, consistent with resolved appendicitis with rupture.

Physical examination may be unreliable in obese patients and subtle clinical symptoms or laboratory and x-ray findings should alert clinicians to a significant postoperative problem. Malaise, shoulder pain, hiccups, tachycardia, fever, and pleural effusion constitute some of these signs and symptoms.[1]

In this patient, the LRYGB did not cause the appendicitis. It did, however, mask its symptoms and skewed the thought process away from the presence of a new problem. Our patient had no abdominal pain or tenderness for several days until she developed a palpable abscess. The small pocket of free air seen on x-rays on postoperative day 4, the persistently elevated WBC count and temperatures, despite antibiotics, and two negative upper GI series, chest x-rays and cultures, were subtle clues pointing away from a leak. Although it is usually not deemed helpful in the immediate postoperative period, an earlier CT scan may have diagnosed appendicitis prior to its rupture. In morbidly obese patients, the presence of overt peritoneal signs is usually ominous, leading to sepsis, organ failure and death in a short period of time.[1] Therefore, we chose immediate surgical exploration rather than percutaneous drainage of the abscess or some other form of conservative therapy. This case further highlights the need for extreme vigilance and a low threshold for aggressive intervention in the postoperative period following bariatric surgery.

References

1. Byrne TK. Complications of surgery for obesity. Surg Clin North Am 2001; 85: 1181-93.
2. De Maria EJ, Sugerman HJ, Kellum JM JM et al. Results of 281 consecutive total laparoscopic Roux-en-Y gastric bypasses to treat morbid obesity. Ann Surg 2002; 235: 640-7.
3. See C, Carter PL, Elliott D et al. An institutional experience with laparoscopic gastric bypass complications seen in the first year compared with open gastric bypass complications during the same period. Am J Surg 2002; 183: 533-38.
4. Higa K, Boone K, Ho T. Complications of the laparoscopic Roux-en-Y gastric bypass: 1,040 patients – What have we learned? Obes Surg 2000; 10: 509-13.
5. Wittgrove AC, Clark GW. Laparoscopic gastric bypass, Roux-en-Y – 500 patients: technique and results, with 3-60 month follow-up. Obes Surg 2000; 10: 233-9.

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