Postoperative upper gastrointestinal bleeding, though rare, is a potentially fatal complication following gastric bypass surgery. 

One reason for this is that endoscopic access to the excluded stomach and duodenum is difficult. A variety of techniques and diagnostic methods have been suggested to visualize the excluded stomach and duodenum. These include endoscopy via percutaneous gastrostomy, retrograde endoscopy, virtual gastroscopy using CT scan, and intraoperative gastroscopy. 

We present a case of a recurrent bleeding peptic ulcer following gastric bypass that was diagnosed and treated with the help of laparoscopic endoscopy.

**CASE**

A 39-year-old male with morbid obesity (weight=207 kg) with no other medical problems, was referred to our hospital. He underwent a Roux-en-Y gastric bypass in November 2006. Three months postoperatively, he was admitted to another hospital with melena and a drop in his hemoglobin (Hb) from 13 g/dL to 7 g/dL. He received 5 units of packed red blood cells and was started on proton pump inhibitors. He was admitted to our hospital on April 26, 2007 with similar complaints. His hemoglobin was 8.7 g/dL. MCV-89.8, MCH-30.1, PLATS-258, WBC-6.1, RDW-14.3, IRON-2 umol/l. He denied any history of use of non-steroidal anti-inflammatory drugs (NSAIDs). He was given 2 units of packed red blood cells. He underwent upper gastrointestinal endoscopy which revealed a bleeding duodenal ulcer. About 5 ml of saline with adrenaline was injected, followed by electrocoagulation to seal the overlying cleft and blood vessel. He was also treated with a course of a proton pump inhibitor and given treatment for *H pylori* eradication with no further attacks of bleeding. Taking in consideration the difficulties in accessing the bypassed stomach endoscopically, laparoscopic endoscopy is a feasible and valuable diagnostic and therapeutic procedure in patients who had gastric bypass.
intestinal endoscopy did not reveal the source of the bleeding. His hemoglobin on discharge was 10.4 g/dl. On February 9, 2008 he presented to our hospital with a 3-day history of melena and his hemoglobin dropped from 10.6 g/dL to 8 g/dL. He underwent an upper gastrointestinal endoscopy, which was normal. We decided to perform laparoscopic gastroduodenoscopy to evaluate the residual stomach and duodenum.

With the patient under general anesthesia, three ports were used: a size 12-mm trocar was introduced in the upper midline, below the xiphisternum, for the camera; a size 12-mm trocar was introduced in the right upper quadrant; and a size 15-mm trocar was introduced in the left upper quadrant. The residual stomach was identified and a gastrostomy was made using diathermy scissors. The gastroscope was introduced through the 15-mm trocar in the left upper quadrant and guided into the residual stomach via the already made gastrostomy (Figure 1). This revealed old blood covering the gastric mucosa. There was also a fresh duodenal ulcer with a clot over the base (Figure 2). About 5 mL of saline with adrenaline was injected, followed by electrocoagulation to seal the overlying cleft and blood vessel. The gastrostomy was closed with endo-GIA. The trocar wounds were also closed. Postoperatively, the patient did well and was started on a course of a proton pump inhibitor and given treatment for \textit{H pylori} eradication. Ten months postoperatively he was doing well with no complaints. His follow-up hemoglobin level was 13.3 g/dL in August 2008.

**DISCUSSION**

Morbid obesity is increasing worldwide. In the US, in 2002, 5.1% of adults were considered to be morbidly obese, having a body mass index of 40 or higher.\(^9\) This resulted in an increase in the number of gastric bypass surgeries. In the US, 13,365 bariatric surgical procedures were performed in 1998, and this increased to 205,000 in 2007.\(^1,10\) Gastric bypass is considered the most common bariatric surgical procedure, accounting for about 88% of all surgeries performed for obesity.\(^10\) The increase in the number of bariatric gastric bypass procedures resulted in an increase in the number of postsurgical complications. One serious and challenging complication following Roux-en-Y gastric bypass is upper gastrointestinal bleeding. It is commonly the result of bleeding from marginal ulcers at the gastrojejunostomy staple line.\(^11,12\) This has been reported in as many as 7% of all patients who have had Roux-en-Y gastric bypass.\(^11\) Jamil et al, in a large series of 933 patients who underwent laparoscopic Roux-en-Y gastric bypass, reported a 3.2% incidence of postoperative upper gastrointestinal bleeding.\(^12\) All these patients were found to have bleeding from the gastrojejunostomy staple line. The diagnosis of this complication is not difficult with the aid of esophagogastroduodenoscopy. On the other hand, a peptic ulcer in the bypassed stomach in patients who have had a Roux-en-Y gastric bypass poses both diagnostic and therapeutic difficulties. It has been shown that the bypassed gastric segment retains its ability to secrete acid and respond to vagal and hormonal stimu-
REFERENCES

1. Zerey M, Sigmon LB, Kuvada TS, Heniford BT, Sing RF. Bleeding duodenal ulcer after Roux-en-Y gastric bypass surgery. J Am Osteopath Assoc 2008;108:25-7.
2. Hussain S, Ahmed AR, Johnson J, Boss T, O'Malley W. CT-scan diagnosis of bleeding peptic ulcer after gastric bypass. Obes Surg 2007;17:1520-2.
3. Bjorkman DJ, Alexander JR, Simons MA. Perforated duodenal ulcer after gastric bypass surgery. Am J Gastroenterol 1989;84:170-2.
4. Voeller GR, Bunch G, Britt LG. Use of technetium-labeled red blood cell scintigraphy in the detection and management of gastrointestinal hemorrhage. Surg 1991;110:799-804.
5. Yoon W, Jeong YY, Shin SS, Lim HS, Song SG, Jang NG, et al. Acute massive gastrointestinal bleeding: Detection and localization with arterial phase multi-detector row helical CT. Radiol 2006;239:160-7.
6. Inamato K, Kouzai K, Ueeda T, Marukawa T. CT virtual endoscopy of the stomach: Comparasion study with gastric fibroscopy. Abdom Imaging 2005;30:473-8.
7. Sinar DR, Flickinger EG, Park HK, Sloss RR. Retrograde endoscopy of the bypassed stomach segment after gastric bypass surgery: Unexpected lesions. South Med J 1985;78:255-6.
8. Sakai P, Kuga R, Safatle-Ribbeiro AV, Faintuch J, Gama-Rodrigues JJ, Ishida RK, et al. Is it feasible to reach the bypassed stomach after Roux-en-Y gastric bypass for morbid obesity? The use of the double balloon enteroscope. Endoscopy 2005;37:566-9.
9. Hedley AA, Ogden CL, Johnson CL, Carroll MD, Curtin LR, Flegal KM. Prevalence of overweight and obesity among US children, adolescents, and adults, 1999-2002. JAMA 2004;291:2847-50.
10. Santry HP, Gillen DL, Lauderdale DS. Trends in bariatric procedures. JAMA 2005;294:1909-17.
11. Rasmussen JJ, Fuller W, Ali MR. Marginal ulceration after laparoscopic gastric bypass: An analysis of predisposing factors in 260 patients. Surg Endosc 2007;21:1090-4.
12. Jamil LH, Krause KR, Chengelis DL, Jury RP, Jackson CM, Cannon ME, et al. Endoscopic management of upper gastrointestinal hemorrhage following laparoscopic Roux-en-Y gastric bypass. Am J Gastroenterol 2007;102:86-91.
13. Mason EE, Munns JR, Kealey GP, Wangler R, Clarke WR, Cheng HF, et al. Effect of gastric bypass on gastric secretion. Am J Surg 1976;131:162-8.
14. Flickinger EG, Sinar DR, Pories WJ, Sloss RR, Park HK, Gibbon JH. The bypassed stomach. Am J Surg 1985;149:151-6.
15. Gumbs AA, Duffy AJ, Bell RJ. Incidence and management of marginal ulceration after laparoscopic Roux-en-Y gastric bypass. Surg Obes Relat Dis 2006;2:489-3.