

Case Report

## Complications of gastric bypass surgery, a Northern Ireland experience.

Michael Mullan<sup>1</sup>, Brian McFall<sup>2</sup>, Ian McAllister<sup>2</sup>

Accepted 22 March 2011

### ABSTRACT

Amongst western nations there are increasing levels of adult obesity. In Northern Ireland the majority of patients who undergo bariatric surgery travel to centres in the UK mainland. Thus, local experience of this type of surgery and the complications which can arise is limited.

We report the case of a young woman who had previous bariatric surgery and a significant complication. In the future, greater numbers of patients will undergo this type of surgery. Therefore all emergency doctors need to be familiar with these procedures and the common complications.

**Keywords:** Hernia, Gastric bypass surgery

Obesity is now a World Wide epidemic and is associated with both physical and psychological morbidity. Over the last decade, increasing numbers of patients have undergone bariatric procedures as these interventions have consistently been shown to be the only way to achieve sustainable weight loss with improvements in co-morbidities such as type II diabetes and hypertension<sup>1</sup>.

Currently in Northern Ireland, no funding exists for a designated centre for bariatric surgery and local patients travel to centres in the UK mainland. Last year (2009), 150 patients were referred from this Province for consideration for surgery, 80 patients subsequently underwent bariatric procedures. This

year, 44 patients have had surgery (number correct to May 2010) and the total number for the year is expected to exceed 80<sup>2</sup>. In addition, a significant number of patients are thought to self-refer to bariatric centres in both the Republic of Ireland and mainland Europe. Therefore, significant numbers of these patients do exist locally and, since they travel for surgery, local experience of the complications which may arise is limited.

### REPORT

A thirty four year old woman was admitted under the care of the gynaecologists with a six day history of left iliac fossa pain. She had no history of vomiting and her bowels were moving satisfactorily. She had a past history of gastric bypass surgery in 2003, which had been so successful that subsequently she had an abdominoplasty in 2007. Following senior review, the pain was not felt to be gynaecological in origin and surgical opinion was requested.

At surgical assessment the patient was found to be afebrile and haemodynamically normal. Abdominal examination found tenderness in the left iliac fossa with localised peritonism. White cell count was 4g/dL and C reactive protein was 65ug/L. Plain film of the abdomen did not demonstrate any significant abnormality, but in view of the clinical findings, a CT scan was arranged.

The CT scan found that the oral contrast passed from the gastric pouch into collapsed small bowel (Figure 1). This was an unusual finding. The gastric remnant was dilated and there were multiple dilated loops of small bowel in the



Fig 1. CT scan showing dilated small bowel, (note contrast in the gastric pouch and collapsed small bowel).

1 Department of Surgery, Altnagelvin Area Hospital, Northern Ireland.

2 Department of Surgery, Ulster Hospital Dundonald, Northern Ireland.

Correspondence to Michael Mullan,

michaelmullan@doctors.org.uk

left abdomen. The Radiologist reported a suspicion of an internal hernia.

The patient proceeded to laparotomy where it was established that a retro-colic Roux en Y gastric bypass had been fashioned at the bariatric operation. In addition, two causes of obstruction were identified. A closed loop bowel obstruction involving the pancreatico-biliary limb was caused by a band adhesion to the proximal jejunum. This was simply divided. An internal hernia was also found involving the common jejunal channel, which was herniating through a defect between the transverse mesocolon and the free edge of the mesentery of the alimentary (Roux) limb as it ascended to the supra-colic compartment. This site is known as Petersen's space by bariatric surgeons and the hernia is labelled Petersen's hernia. Fortunately, it was possible to relieve both causes of obstruction without the need for small bowel resection or disruption to the neo-anatomy. The mesenteric defect which caused the internal hernia was closed and post-operatively the patient did well.

### DISCUSSION

In the UK, the predominant bariatric surgical procedure is laparoscopic gastric banding. This involves the placing of a silicone ring-like inflatable device around the stomach just below the gastro-oesophageal junction<sup>1</sup>. In North America, laparoscopic gastric bypass is the most common procedure<sup>3</sup>. This involves partitioning the stomach to create a 15-30ml gastric pouch just distal to the oesophagus. An area of jejunum about 50-100 cm distal to the ligament of Treitz is then selected for division. The distal jejunum (alimentary/Roux limb) is then brought to the supra-colic compartment, either through the transverse mesocolon or anterior to the transverse colon and anastomosed to the gastric pouch. The bypassed segment, which includes the gastric remnant, duodenum and proximal jejunum, is anastomosed at a variable location down the alimentary (Roux) limb (generally 100-150cm length). This form of bariatric surgery has been shown to result in greater and more consistent weight loss than other bariatric procedures and induces weight loss by decreasing the absorption of nutrients and calories<sup>4</sup>.

Abdominal pain following gastric bypass has a broad list of differentials. Although common diagnoses cannot be discounted, complications specific to gastric bypass such as: biliary disease; anastomotic strictures; marginal ulceration at the gastro-jejunal anastomosis and internal hernia must be considered first.

Internal hernias, although quite rare in the general population, are well described following laparoscopic gastric bypass. Clinical presentation can be vague. Patients often present with ambiguous symptoms such as nausea or intermittent abdominal pain. Vomiting is frequently absent due to the reconfigured anatomy and other findings, such as abdominal distention may be masked by the patient's body habitus<sup>1,3</sup>. Hence, the diagnosis of obstruction is frequently overlooked. Laboratory investigations add little. Upper GI contrast studies and CT scanning have proved more useful<sup>3</sup>. However, surgeons should bear in mind a 2003 report by Higa et al. Higa et al reported a series of 63 patients who had previously underwent laparoscopic gastric bypass. Nine of these patients had reported "normal" contrast enhanced radiological studies,

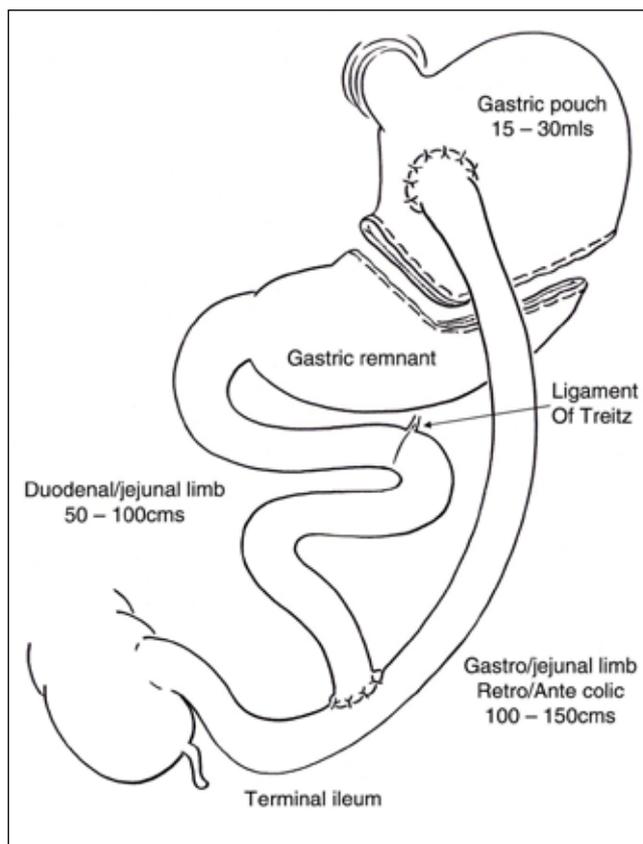


Fig 2. Simplified drawing of the neo anatomy following gastric bypass surgery.

yet proceeded to laparotomy due to ongoing abdominal pain. At operation, all were found to have internal hernias<sup>5</sup>.

The mechanism of hernia formation following bariatric surgery is thought to be due to the expansion of potential internal hernia sites that follow loss of intra-abdominal fat. In addition, although not a factor in this case, is the reduced tendency to form post-operative adhesions following laparoscopic procedures<sup>4,5</sup>. This increased mobility allows the bowel to enter the potential sites of hernia more frequently. Three locations are well described where internal hernia are likely to occur following a retro-colic Roux en Y gastric bypass, the mesomesenteric defect at the jejuno-jejunostomy, Petersen's defect which is the space posterior to the alimentary (Roux) limb, and, the mesocolonic defect which can be avoided if the alimentary (Roux) limb is brought to the supra-colic compartment anterior to the transverse colon<sup>4,5</sup>.

Surgical treatment consists of hernia reduction and ideally this should be conducted by the original bariatric team. However, if bowel ischemia is a possibility operation should not be delayed. Hernia reduction has been reported laparoscopically, but for those surgeons who have no experience of bariatric surgery, an open procedure is advised. Following any emergency management, the patient should then be referred back to a dedicated bariatric team to provide appropriate follow-up<sup>1</sup>.

### CONCLUSION

With bariatric surgery becoming more prevalent, all

emergency doctors need to be familiar with the procedures performed and the common complications. Following gastric bypass, patients can have a small bowel obstruction without displaying the classical symptoms of abdominal distention, absolute constipation and vomiting due to the reconfigured anatomy. These patients are difficult to assess and vague symptoms may be all that heralds the onset of serious complications. Therefore, it is advised that all post-operative bariatric patients who present with abdominal pain should be evaluated quickly and undergo early contrast enhanced CT if obstruction is suspected. If a diagnosis of an internal hernia is confirmed or still thought likely regardless of “normal” radiological studies, surgical exploration should not be delayed. This early and aggressive approach after gastric bypass will prevent bowel ischaemia and perforation.

The authors have no conflict of interest.

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