Blind Pouch Syndrome in Gastrojejunostomy

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ABSTRACT

Blind pouch syndrome is a rare complication of a gastrojejunostomy. Its presentation may differ from blind pouches at other locations in that a small pouch can cause significant symptoms of mechanical obstruction before it is large enough to develop bacterial overgrowth. The effect of a small pouch may be overlooked at endoscopy and a high clinical index of suspicion is required. Here we present a case report of Gastrojejunostomy Blind Pouch Syndrome to highlight this clinically distinct entity.

Case

A 65-year-old female presented with nausea and vomiting, upper abdominal pain, bloating after meals, and gradual weight loss. A midline incisional hernia was noted on examination. Six years prior she had undergone an emergency distal gastrectomy with Roux-en-y reconstruction for a perforated peptic ulcer. Blood tests showed normal electrolytes. A gastroscopy and contrast swallow showed two long jejunal limbs arising from the gastrojejunostomy though one was blind. The blind pouch measured approximately 45x60mm (Figure 1).

Blind pouch syndrome is the set of signs and symptoms caused by intestinal content stasis and consequent bacterial hyperproliferation in a segment excluded from the intestinal flow after surgical anastomosis.1 Its occurrence is not well documented though considered rare.1,2,5 It typically occurs following a side-to-side anastomosis which inherently leaves a small blind pouch on either end of the bowel anastomosed, and may also occur with end-to-side anastomoses such as in a gastrojejunostomy. An end-to-side gastrojejunostomy is commonly performed as part of a Roux-en-Y reconstruction after a subtotal gastrectomy or for weight loss. A blind pouch of sufficient size to cause symptoms may occur either by technical error or subsequent dilation of a smaller pouch. The exact size a blind pouch needs to be before symptoms develop has not been established. Stagnation of intestinal contents within the pouch can result in bacterial proliferation.1,2 Bacterial proliferation can result in a variety of symptoms and signs ranging from non-specific abdominal pain, fevers and intermittent constipation to major nutritional deficiencies and mechanical complications. The bacterial overgrowth can lead to vitamin B12 or iron deficiency, inflammation, oedema, ulceration, gastrointestinal bleeds, and even perforation.1–4

The pattern of presentation in Gastrojejunostomy Blind Pouch Syndrome may differ from that of entero-entero or entero-colic anastomoses. With a gastrojejunostomy, a small pouch may cause symptoms of obstruction due to selective filling of the pouch with subsequent angulation of the enteral limb before it is large enough to cause problems related to bacterial overgrowth. Gastrojejunostomy Blind Pouch Syndrome may therefore present with specific symptoms of reflux, outflow obstruction, post-prandial epigastric pain, early satiety, and excess weight loss.
The patient underwent laparoscopic converted to open surgical revision of the gastrojejunostomy. The blind limb was mobilized and laid alongside the enteral limb. Enterotomies were made in both limbs and a linear cutting stapler was used to create a single pouch in continuity with the enteral limb.

The patient made a good post-operative recovery. One month post-surgery her symptoms had mostly resolved, and she was eating well and gaining weight.

**Discussion**

This case highlights that blind pouch syndrome in a gastrojejunostomy may cause symptoms of mechanical obstruction. As opposed to gastric outlet obstruction, symptoms may be mild and major electrolyte imbalances have not been reported. There was a significant time interval from initial surgery to presentation, which has also been found by other investigators.

Blind pouch syndrome following gastrojejunostomy may be a technical issue at the
time of anastomosis. Physiological changes in side-to-side and end-to-side anastomoses may also play a role. Interruption of the circular muscle fibers of the gut in anastomotic surgery result in disruption of the normal peristaltic contractions and antegrade propulsion of food. Motor complex propagation in the proximal part of the anastomosed intestine is altered, resulting in a change in the direction of migration usually toward the blind end, resulting in dilatation of the blind loop.2,7

Investigation is typically endoscopic and imaging based.5,6,9 We found endoscopy useful to exclude other mechanical causes such as anastomotic stricture and ulceration though radiological contrast study was invaluable to assess functional aspects such as preferential pouch filling and the effect pouch filling had on emptying via the enteral limb. CT is more useful for assessing blind pouch syndrome of more distal anastomoses.2,5,8

The management of blind pouch syndrome generally requires surgical revision of the offending anastomosis.2,3,5,6 Surgical resection of the blind pouch has been advocated by some though revision by entero-entero anastomosis between the blind loop and the efferent loop is an effective alternative (Figure 2).6,9

Meticulous technique should be practiced when forming any side-to-side or end-to-side anastomosis to minimise the size of any blind pouch and thereby minimise the potential to develop this complication. The transverse diameter of the blind pouch in documented cases of entero-enterostomy blind pouch syndrome ranges between 3.7cm to 11cm. However, we found no reference to how big an abnormal pouch was in a gastro-jejunal case.5,8 It is suggested that when forming a side-to-side entero-enterostomy, a blind pouch should be no more than 2.5cm to avoid occurrence of the syndrome.5 We found no size recommendation specifically for gastro-jejunal anastomosis. Measurements involving the intestine are fraught with inaccuracies given its highly dynamic nature. Hence liberal interpretation is required for all measurements. Angulation of the blind pouch in relation to the gastrojejunostomy may also play a role in preventing Blind Pouch Syndrome. Techniques to create a favorable angulation include suturing the blind pouch vertical to the staple line which secures the blind pouch perpendicular and superior to the entero-enterostomy. Another technique is to form a vertical stapled gastrojejunostomy which again secures the blind pouch superior to the anastomosis. Neither

Figure 2: Illustration contrasting the path of gastric contents before (left) and after (right) blind pouch resection.
of these techniques have been critically appraised for their impacts on the development of Blind Pouch Syndrome.

Gastrojejunostomies have increased significantly over recent years with the increase in Roux-en-Y Gastric Bypass (RYGB) procedures being performed. Considering the significant time lag to presentation of Gastrojejunostomy Blind Pouch Syndrome, patients who develop symptoms may no longer have any contact with their original surgeon and may instead present to their general practitioner or be referred to a gastroenterologist or general surgeon without upper gastrointestinal expertise. Hence it is important a broad range of doctors are aware of this syndrome.

Competing interests:
Nil.

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