

# Small bowel obstruction due to a migrated pyloric stent

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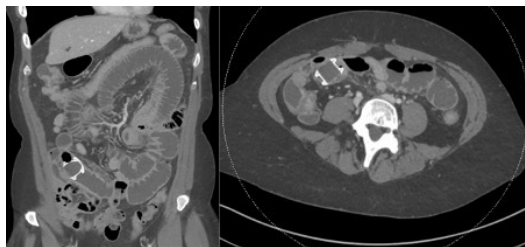
## CASE DESCRIPTION

A patient presented with a history of type 2 diabetes mellitus and gastroesophageal reflux disease status after laparoscopic Nissen fundoplication 5 months prior. The patient had postoperative refractory gastroparesis and eventually underwent pyloric stenting with a 20×10 mm AXIOS stent (Boston Scientific, Marlborough, MA) secured with an Endo Stitch device (Medtronic, Minneapolis MN). Three weeks later, the patient presented to the emergency department with a 48-hour history of bloating and gas pain progressing to multiple episodes of bilious vomiting. The patient denied having bowel movements for the past 2 days and was unsure about passing flatus.

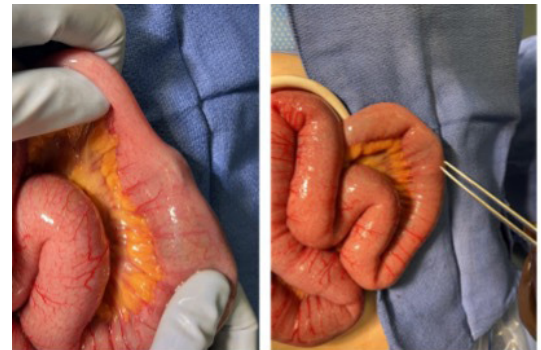
Physical examination was notable for abdominal distension and left-sided abdominal pain without peritoneal signs. Labs showed mild leukocytosis. CT of the abdomen and pelvis demonstrated a small bowel obstruction with a transition point at the distal small bowel where the AXIOS stent was visualized (*figure 1*). There was small-volume free fluid in the abdomen but no free air and no evidence of bowel ischemia.

## WHAT WOULD YOU DO?

- Enterotomy, removal of foreign body, and primary repair
- Enterotomy, removal of foreign body, small bowel resection, and anastomosis
- Double-balloon enteroscopy to remove the AXIOS stent
- Nasogastric tube placement for decompression followed by bowel prep to allow AXIOS stent to pass distally



**Figure 1** CT abdomen pelvis with intravenous contrast showing a small bowel dilation with transition point at the level of the migrated AXIOS stent, consistent with a small bowel obstruction.



**Figure 2** Intraoperative photos of the AXIOS stent acting as a transition point in the ileum, with upstream small bowel dilation and distal decompression. Bowel at the level of the obstruction appeared healthy.

## WHAT WE DID AND WHY?

A nasogastric tube was inserted for gastric decompression and the patient was given fluid resuscitation. Colonoscopic retrieval was considered but due to bowel dilation, presence of a transition point and lack of bowel preparation, a surgical approach was favored. The surgical team explained that the AXIOS stent would be unlikely to pass on its own in a reasonable time period, given its size and location above the ileocecal valve. Risks of ongoing bowel obstruction, and erosion, bleeding, or perforation due to the indwelling stent were also described. Endoscopic retrieval would have a low likelihood of



**Figure 3** A 20×10 mm AXIOS stent after removal via a longitudinal enterotomy.

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success given its distal location. Given these factors, we discussed with the patient that surgical removal would be necessary. The case could be approached laparoscopically or open. Due to persistent small bowel dilation, we anticipated more limited working space for laparoscopy and elected to perform a mini-laparotomy incision through which we could run the bowel. A limited 5 cm infraumbilical midline laparotomy was made and a small Alexis (Applied Medical, Rancho Santa Margarita, CA) wound protector was used for retraction. The small bowel was eviscerated and run from proximal to distal. The foreign body was palpated in the ileum and found to be causing obstruction (figure 2). There was mild hyperemia but no sign of ischemia of the small bowel. A longitudinal enterotomy was made along the antimesenteric border of the distal ileum proximal to the stent, and the AXIOS stent was milked out (figure 3). Given the healthy tissue, we did not think that bowel resection was indicated. The enterotomy was closed transversely in two layers, first with a running 3-0 Monofilament Polydioxanone Suture (PDS) suture, followed by an interrupted 3-0 Vicryl Lembert suture. Fascia and skin were closed in standard fashion. The patient had return of bowel function on postoperative day 3, and nasogastric tube was removed on postoperative day 4. Discharge occurred on postoperative day 6 after tolerating solid food.

AXIOS stents are self-expanding metal stents used to appose two lumens—typically pancreatic pseudocyst and stomach—to allow for enteric drainage.<sup>1</sup> They have been used off-label to stent across the pylorus in cases of pyloric stenosis or stricture with significant relief of symptoms.<sup>2-3</sup> In patients with gastroparesis, they can be used as a preoperative test to assess the potential efficacy of a gastric per oral endoscopic myotomy or a pyloroplasty; however, this can be complicated by distal migration of the stent down the alimentary tract.<sup>4</sup> In one case, a 20×10 mm AXIOS migrated from the pylorus to the rectum and was passed uneventfully in the stool.<sup>4</sup> Migration of the stents is a known complication. In a study of the FDA MAUDE database of complications related to AXIOS stent placement, migration of the stent was reported in 72 patients, comprising 12.4% of total complications.<sup>1</sup> There has been little literature devoted to how

to address distal migration of the stents into the gastrointestinal tract, with one case report describing selective non-operative management and another describing flexible sigmoidoscopy for retrieval.<sup>4,5</sup>

To our knowledge, this is the first published report of an AXIOS stent migrating into the small bowel, leading to a small bowel obstruction, and it is the first published report of the surgical removal of a migrated AXIOS from the small bowel.

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