

# Congenital intestinal flange as a cause of intestinal obstruction. A case report

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## Case Report

General Surgery



**BACKGROUND.** An intestinal obstruction occurs when there is an interruption in the forward flow of the luminal content in the gastrointestinal system. This entity was first diagnosed and treated by Hippocrates.

An 18-year-old patient with no significant history, went to the emergency room after presenting a picture of sudden moderate abdominal pain of the colic type predominantly in the upper hemiabdomen accompanied by nausea and vomiting, on physical examination, slightly distended abdomen in the upper hemiabdomen with percussion bloat in the upper hemiabdomen and hypoactive peristalsis, slightly painful on diffuse palpation.

Medical management was started without presenting improvement at 78 hours, for which it was decided to perform exploratory laparotomy, identifying the flange at 120 cm of the Treitz angle, the flange is resected and secondary stenosis is identified, an end-to-end anastomosis of the small intestine is performed.

Bowel obstruction is an important cause of morbidity and mortality reporting for nearly 30,000 deaths; it is responsible for approximately 15% of hospital admissions for acute abdominal pain in the US and 20% of cases needing acute surgical care.

Patients presenting with intestinal obstruction are often frail and elderly. Small bowel obstruction with strangulation and large bowel obstruction can lead to mortality rates of 20% to 30%. They can also present septicemia, respiratory tract infections, anastomosis leak, short bowel syndrome which must be treated with parental nutrition support, enterocutaneous fistula and wound infection.

## KEY WORDS

Intestinal obstruction; small bowel obstruction; laparoscopic adhesiolysis; resection and end to end anastomosis.

## Introduction

An intestinal obstruction occurs when there is an interruption in the forward flow of the luminal content in the gastrointestinal system (3). This entity was first diagnosed and treated by Hippocrates. The first documented treatment was performed by Praxagoras in 350 BC, when he created a decompressive fistula between the skin and the bowel of a patient with acute mechanical intestinal obstruction. (6)

## Case report

This is an 18-year-old female patient with no significant history, who went to the emergency room after presenting a picture of sudden moderate abdominal pain of the colic type predominantly in the upper hemiabdomen accompanied by nausea and

vomiting, as well as abdominal distension, without the presence of evacuations.

On physical examination, she was calm with dehydrated mucosa, cardiopulmonary without compromise, slightly distended abdomen in the upper hemiabdomen with percussion bloat in the upper hemiabdomen and hypoactive peristalsis, slightly painful on diffuse palpation.

Preoperative studies are performed which show slight leukocytosis at the expense of neutrophils, the rest of the laboratories in normal ranges, the abdominal X-ray with the presence of air-fluid levels at the expense of the small intestine in the upper hemiabdomen (**Figure 1**), a simple abdominal tomography is performed with the presence of distension of small intestine loops with air-fluid levels in the jejunum (**Figure 2**), confirming suspicion of



**Figure 1.** Standing abdominal X-ray showing fluid levels dependent on the small intestine and predominantly in the upper hemiabdomen.

intestinal occlusion and without being able to identify the etiology of the occlusion.

Medical management was started based on antibiotics, analgesics, hydrotherapy, intestinal diversion with a nasogastric tube, without presenting improvement at 78 hours, for which it was decided to go to the operating room to perform exploratory laparotomy.

**Surgical Technique:** Under general anesthesia and the patient in the supra-decubitus position, a supraumbilical exploratory laparotomy is performed, the cavity is entered, an abdominal cavity is explored, performing a noble maneuver and identifying the flange at 120 cm of the Treitz angle, the flange is resected and secondary stenosis is identified (figure 3). A 5 cm small intestine resection is performed at the stenosis level, end-to-end anastomosis of the small intestine is performed in 2 planes with 3-0 vycril suture and 3-0 silk, penrose drainage is placed and closed in layers.

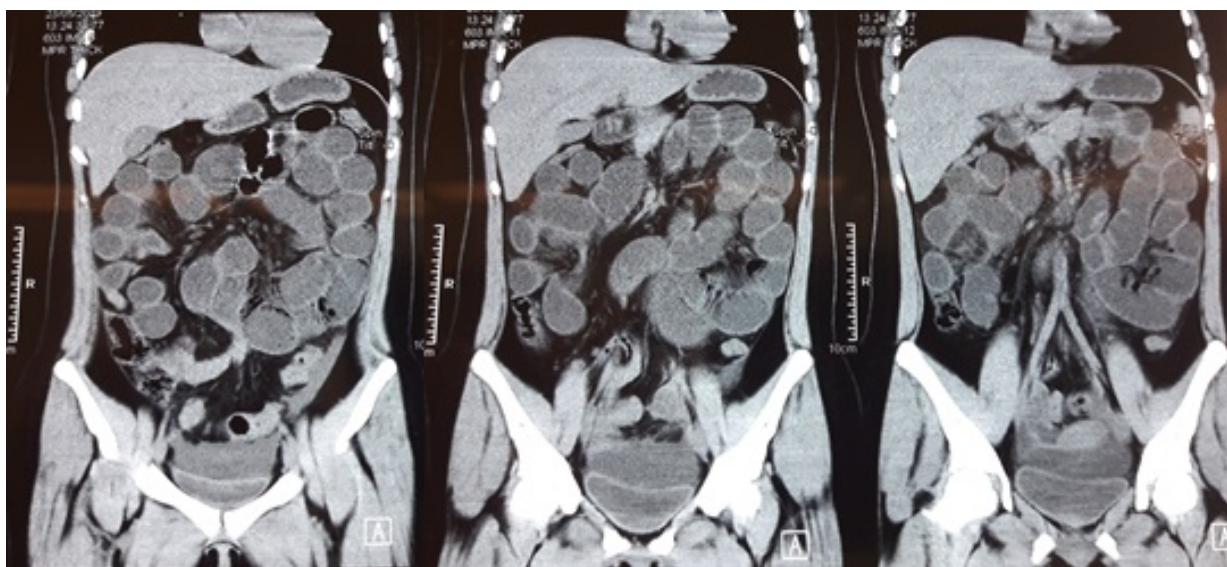
In the immediate postoperative period with satisfactory evolution, the nasogastric tube is removed at 72 hours and a liquid diet is started, which is tolerated without evidence of leakage through penrose, diet is progressed and the patient is discharged to continue home management.

### Discussion

Bowel obstruction is an important cause of morbidity and mortality reporting for nearly 30,000 deaths; it is responsible for approximately 15% of hospital admissions for acute abdominal pain in the US and 20% of cases needing acute surgical care. (2)

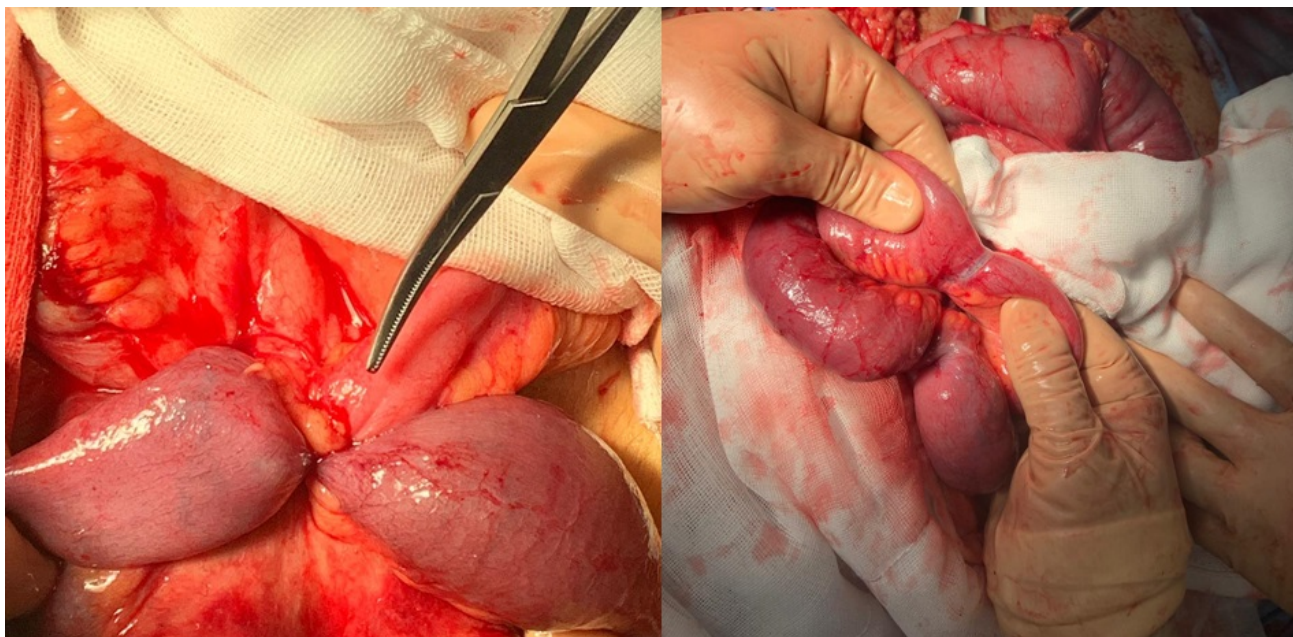
The most common causes of acute intestinal obstruction include adhesions, neoplasm and herniations. Adhesions resulting from prior abdominal surgery are the predominant cause of small bowel obstruction accounting for 60 to 75% of cases. (3) Early diagnosis of intestinal obstruction is comparatively difficult, even with complementary studies it is complicated to discern the location and cause of obstructions. (5)

Mortality rates may vary from 3% in simple obstructions to 30% in cases harboring strangulation, or presence of comorbidities. Recurrence has been reported to take place in 12% of patients after



**Figure 2.** Simple abdominal tomography in coronal section which shows proximal distension of the small intestine loops, without being able to identify a clear cause of intestinal obstruction.





**Figure 3.** In the left image the intestinal clamp shows the site of the flange. The right image shows the stenosis secondary to the flange after it was resected.

conservative treatment, and in 8–32% of patients after surgical treatment. (6)

Intestinal obstruction is defined as any hindrance to the passage of intestinal contents. This obstruction can involve only the small or large bowel or via systemic alterations, involving both the small and large intestines. (8)

Intestinal obstruction may be divided into mechanical and non-mechanical causes. In mechanical obstruction there is a physical obstruction of the bowel lumen associated with increased peristalsis to overcome the blockage. This could be associated to adhesions, hernias, tumors, volvulus, and structures. Adynamic obstruction can be sub classified into paralytic ileus, which affects the small and large bowel and colonic obstruction. (1)

The bowel becomes dilated proximal to the site of the obstruction and fluid is sequestered due to impaired reabsorption. Major fluid shifts can occur, as up to 10 liters of fluid can be secreted into the bowel per day. This is compounded by reduced oral intake and vomiting. There is loss of intra-vascular volume and electrolyte depletion, with subsequent progression to hypovolemic shock. (1)

In mechanical obstruction, there is increased peristaltic activity initially to overcome the blockage, leading to colicky abdominal pain. Eventually the intestinal smooth muscle becomes fatigued, and the peristalsis stops. Distal to the obstruction, the bowel empties, before becoming collapsed. In an adynamic obstruction there is abdominal discomfort due to the distension rather than colicky pain and reduced or absent peristalsis activity. (1) In a low-grade intestinal obstruction, some gas passes beyond the point of

obstruction, whereas nothing passes beyond it in high grade small bowel obstruction. (3)

Microvascular changes can result in loss of mucosal integrity and translocation of bacteria into the bloodstream, leading to development of the systemic inflammatory response syndrome with progressive distension for the bowel wall; venous return can become impeded leading to further congestion, loss of fluid into the bowel lumen and leakage of serosal fluid into the abdomen causing ascites. Further venous engorgement compromises arterial inflow into the capillary bed, resulting in intestinal ischemia. This can ultimately lead to bowel wall necrosis and perforation. (1)

In bowel obstruction, colicky pain is classically and usually the first feature due to an increase in mortality to overcome occlusion and it is later replaced by continuous pain attributable to reduced peristalsis and dilatation. Nausea and emesis present earlier and are more representative of small bowel obstruction. Abdominal examination can detect a strong predictive sign such as abdominal distension. (1-2)

Tachycardia and hypotension may indicate severe dehydration, but they may also be signs of systemic inflammatory response syndrome or sepsis. (3)

A complete history along with physical exam and laboratory test should be performed upon presentation to the emergency unit. Patient should be asked about their last defecation/bowel gas passage. Having a history of previous abdominal surgery or any other symptom. (2)

A plain supine abdominal radiography is the first study we should performed to look for signs of

obstruction, showing dilated gas-filled loops of bowel with cut-off, based on distribution of the distended bowel is a better way to differentiating the level of obstruction, small bowel loops are located centrally, whereas the large bowel is seen peripherally in the typical pattern. In a paralytic ileus there is global dilatation of small and large bowel without any cut-off. (1) The radiologic hallmark of mechanical small bowel obstruction is a dilatation of the proximal small bowel (transverse diameter >3 cm from outer wall to outer wall) with non-dilated distal bowel loops. It can also include stomach dilatation. The presence of air-fluid levels greater than 2.5 cm in width and air-fluid levels differing more than 5 mm from each other. (4)

Computed tomography (CT) can identify 95% of the cases of intestinal obstruction, as well as providing further information regarding the level of obstruction and the potential etiology. (1)

Ultrasound performs better than plain abdominal X-ray in large bowel obstruction. A small bowel obstruction can be diagnosed with ultrasound if there are > 2.5-cm dilated loops of the bowel that are proximal to collapsed loops of bowel and if there is decreased or absent peristalsis activity. (2)

Magnetic resonance imaging (MRI) is superior to CT in the evaluation of intestinal obstruction. However, because of its high cost and the technical expertise and the time required to perform the study it is not used as often (3)

Relative indications for surgery include obstruction in the virgin abdomen, failure to improve or a clear transition point imaging indicating complete obstruction. Patients with features of strangulation should be operated after adequate resuscitation, they usually present with signs such as tachycardia, tenderness, fever, and leukocytosis. Other indications for surgery are generalized peritonitis, evidence of perforation or an irreducible hernia. (1)

Regardless of the underlying cause, there are some basic principles that should be followed in the management of all patients with bowel obstruction. Initially conservative management is appropriate and can be continued for 48 to 72 hours with the expectation that most cases will resolve. (1) Treatment must begin as soon as possible with intravenous crystalloids, anti-emetics, and bowel rest. (2)

Patients require adequate fluid resuscitation and electrolyte replacement. The results of the performed tests should guide the rate of fluid replacement and patients should have a urinary catheter and hourly measurement of urine output (>0.5ml/kg). (1) Nasogastric suction can be also therapeutically important to prevent aspiration, pneumonia and to decompress the proximal bowel. (2) Antibiotics are used to treat intestinal overgrowth of bacteria and translocation across the bowel wall. (3)

The abdomen is usually entered via a midline approach in small bowel obstructions including hernias, in there has been previous surgery then it is better to try and enter through virgin territory to avoid adhesions. (1) Surgical exploration is recommended in patients who clinically deteriorate at any point during hospitalization and those for whom three to five days of nonoperative management is ineffective. (3)

Often there is a constriction ring around the bowel in case of a band adhesion, this heals by fibrosis and causes an important postoperative stricture. Resection should be evaluated depending of the circumferential extent of the constriction. (1) Following small bowel resection and anastomosis should be performed if the patient is stable, not nutritionally depleted. (1)

Patients that are expected to have simple band adhesions as a cause for small bowel obstruction may undergo laparoscopic adhesiolysis in experienced hands with extreme caution in the presence of distended bowel because it is easy to create an enterotomy. (1)

Patients presenting with intestinal obstruction are often frail and elderly. Small bowel obstruction with strangulation and large bowel obstruction can lead to mortality rates of 20% to 30%. (1) They can also present septicemia, respiratory tract infections, anastomosis leak, short bowel syndrome which must be treated with parental nutrition support, enterocutaneous fistula and wound infection (7-8)

## Conclusion

Intestinal occlusion is a disease frequently found in the emergency services, being the most common causes secondary to adhesions, hernias or tumors, however congenital flanges are an infrequent cause and are a cause of intestinal occlusion in a virgin abdomen, which requires the same initial medical management.

## Conflicts of interests

There was no conflict of interest during the study, and it was not funded by any organization.

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