

Case Report

A RARE CASE OF INTERNAL HERNIA THROUGH THE FALCIFORM LIGAMENT PRESENTING AS SUBACUTE INTESTINAL OBSTRUCTION

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ABSTRACT

Internal hernia are a rare cause of small bowel obstruction accounting for about 2% of cases. Herniation through the falciform ligament is an even rarer entity accounting for 0.2 % of internal hernias. Here we present a case of a 47 year old male who presented with complaint of abdominal pain. He had no history of previous abdominal surgery. Imaging was suggestive of small bowel obstruction. Exploratory laparotomy revealed incarceration of bowel loops through a defect in the falciform ligament.

Keywords: *Internal Hernia, Falciform Ligament, Intestinal Obstruction, Falciform Ligament Defect*

INTRODUCTION

Internal hernias are protrusion of an abdominal viscus through a defect in the peritoneum or mesentery, with the herniated content remaining within the abdominal cavity. The defect can be congenital or acquired. Internal hernias account for 2% of cases of bowel obstruction. The incidence of internal hernia through a defect in the falciform ligament is estimated at 0.2% of all internal hernias, with an even lower figure when the cause is a congenital defect ().¹ A literature search showed only 37 case reports of small bowel obstruction caused by internal hernia through defect in the falciform ligament. Here we report one such case managed at our department.

CASES

A 47 year old male presented with complaint of diffuse abdominal pain of 2 days duration. He also had complaints of vomiting and nausea. The patient had undergone CABG 5 years back. He is a known hypertensive on oral antihypertensive agents. He had no history of previous abdominal surgery. On admission, the patient was afebrile and his vitals were stable. Examination of the abdomen showed right hypochondrial tenderness. Bowel sounds were sluggish.

He underwent an ultrasound study of the abdomen which showed non peristaltic dilated fluid filled bowel loops in the right para umbilical region. A CECT abdomen was done which showed dilated distal small bowel loops with narrowing and transitional zone in the right mid abdomen. CECT suggested the possibility of mechanical closed loop small bowel obstruction. The patient was taken up for diagnostic laparoscopy which showed dilated small bowel loops.



Figure 1: Showing dilated loop of ileum

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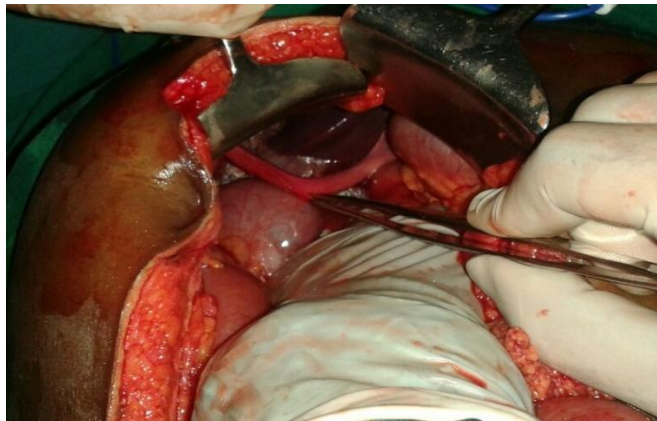


Figure 2: Showing the falciform defect through which herniation of the small intestine occurred

Further assessment could not be done laparoscopically and hence procedure was converted to open. Laparotomy was done by a midline incision and exploration was done. A small defect was found in the falciform ligament with herniation of bowel loops through it causing closed loop obstruction. The herniated loops had been incarcerated. The bowel loops were released and found to be viable. Post operative period was uneventful and the patient was discharged on post operative day five.

DISCUSSION

Hernia through the falciform ligament is a rare type of internal hernia in which protrusion of an intraabdominal viscus occurs through a defect in the falciform ligament of liver. The first reported case of falciform ligament hernia was described by Schultz and Ziegler in 1937 (Wiseman, 2000). The etiology of defect can be congenital or acquired. Acquired causes may be traumatic, inflammatory or iatrogenic.

A congenital explanation for the presence of a defect in the falciform ligament was first put forth by Gaster (Gaster, 1948). The falciform ligament and the lesser omentum develop from the ventral mesogastrium which itself is derived from the mesoderm of septum transversum. The free border of the falciform ligament houses the obliterated umbilical vein which forms the round ligament of the liver. Hypoplasia of the falciform ligament gives rise to the formation of a defect.

Internal herniations through the falciform ligament occurring against a background of cholecystitis (inflammatory etiology) have been documented. Cases reports about herniation occurring through the falciform ligament following trauma are also present (Sykes *et al.*, 2010).

With the advent of laparoscopic surgery, there has been an increasing number of internal herniation through the falciform ligament via a defect made in the falciform ligament through the placement of a laparoscopic trocar (Ghiassi *et al.*, 2007; Charles *et al.*, 2005).

The anatomy of defect in the falciform ligament is varied. It may range from a discrete aperture to the complete absence of the falciform with the ligamentum teres acting as a constricting band. The herniated viscus is most commonly small bowel; however large bowel and omentum have also been reported.

Conditions that favor the shift of bowel loops into the upper abdomen, such as pregnancy, undescended caecum, visceroptosis and conditions causing increased bowel motility, are known to favor the development of herniation through the falciform ligament. In late pregnancy, the gravid uterus enlarges, pressing the small bowel into to the upper abdomen, allowing relatively easy passage through congenital falciform ligament defects (Sato *et al.*).

There is no age or sex predilection for the development internal herniation through the falciform ligament. Cases have been reported in neonates as well as in persons of age 92 years.

Internal herniation may be inconspicuous without symptoms or may present with symptoms ranging from constant vague epigastric pain to intermittent colicky periumbilical pain. Some patients may present with nausea, vomiting (especially after a large meal), and recurrent intestinal obstruction (Meyers, 1994). The severity of the symptoms depends on the duration and reducibility of the hernia and the presence or

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absence of incarceration and strangulation (Blachar and Federle, 2002). These symptoms may be altered or relieved by changes in patient position.

Incarcerated bowel loops in internal hernias are particularly prone to strangulation because of vascular compromise due to high pressure in the hernial neck. This may be further aggravated by volvulus of herniated bowel segments.

Imaging studies often play an important role in the diagnosis of internal hernias because they are often difficult to identify clinically. Because of the propensity of these hernias to spontaneously reduce, patients are best imaged when they are symptomatic (Bruno *et al.*, 2010). In the past, these hernias were most frequently assessed with small-bowel oral contrast studies. However, CT has become the first-line imaging technique in these patients. Radiographic features include apparent encapsulation of distended bowel loops with an abnormal location, evidence of obstruction with segmental dilatation and stasis. Mesenteric vessel abnormalities, with engorgement, crowding, twisting, and stretching of these vessels may be found on CT and is an important clue to the underlying diagnosis. In cases where the defect in the falciform ligament is close to the liver, the point of stricture of the falciform ligament may be visualized clearly as edematous intestines may compress onto the anterior liver. If a defect in the falciform ligament is caudal to the liver, it will not be readily identifiable. However, in such cases, the diagnosis may still be made by recognizing the constriction of intestine directly under the abdominal wall and directly in the medial axis of the trunk.

Crucial for surgeons is that obstruction due to internal hernias is differentiated from adhesive small bowel obstruction, as internal hernias most often require emergency surgery. A high index of suspicion should be maintained to rule out this possibility along with careful interpretation of radiological findings. It is imperative that patients, in whom bowel obstruction has been found, be closely monitored and taken up for emergency surgery at the earliest sign of strangulation.

In our case, the patient had presented only with complaint of diffuse abdominal pain. Imaging was suggestive of small bowel obstruction, but the cause of obstruction was not clearly made out. On laparotomy, herniation of bowel loops was found through a discrete defect in the falciform ligament. Since the patient had no history of previous abdominal surgery or trauma, it is assumed for this to be a case of congenital defect allowing for spontaneous herniation of bowel loops.

Conclusion

Internal herniation through the falciform ligament is a rare subtype of internal hernias. Defects of the falciform ligament can be congenital or acquired. It can occur at any age from the neonatal period to the geriatric population. With an increasing number of surgeries being performed laparoscopically, there is likely to be an increased incidence of this entity. Though the diagnosis remains rare, a careful analysis of clinical presentation and imaging should alert physicians to its possibility. Early recognition of the condition will be helpful in that strangulation and subsequent bowel resection can be avoided. It is now recommended that if a defect is created in the falciform ligament during surgery, it should be divided as to not allow for the potential of subsequent internal herniation.

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