

Sigmoid Volvulus Through a Transomental Internal Hernia: A Novel Observation Misdiagnosed Simple Sigmoid Volvulus

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Abstract: Sigmoid volvulus is the torsion of sigmoid colon around its mesenteric axis. It is a common cause of colonic obstruction in our regions. It requires a prompt and emergency management due to the high risk of occurrence of strangulation. As for internal hernia, it is a protrusion of a hollow viscus through an intraperitoneal defect. Its incidence is very rare and the prevalence of intestinal obstruction for an internal hernia is very low. However, this condition is associated with a high mortality when strangulation of the viscus occurs. The peritoneal defect can be localized in multiples places. From the various locations of the peritoneal defect, transomental defect is one of the rarest. This transomental defect may be congenital or acquired. It is known that the small bowel, due to its high mobility, most of the time herniates and volvulates through the defect. But, a redundant sigmoid colon may herniate and volvulate through an omental defect. The occurrence of sigmoid volvulus through a transomental defect is very rare and few cases have been reported in the literature. This condition requires prompt diagnosis and emergency surgery. The preoperative diagnosis may be tricky. Frequently the diagnosis is made at surgery. We report a novel observation of sigmoid volvulus through a transomental (great omentum) hernia missed on investigations, delaying thus the treatment which is based on an emergency surgery.

Keywords: Internal Hernia, Sigmoid Volvulus, Intestinal Obstruction, Transomental

1. Introduction

Sigmoid volvulus (SV), common cause of intestinal obstruction, is the torsion of the sigmoid colon around its mesenteric axis leading to an acute colonic obstruction by strangulation [1, 2].

Internal hernia (IH) is the protrusion of a viscera through the peritoneum or mesentery and into a compartment in the abdominal cavity [3, 4]. It accounts for 0.5% to 5% of cases of intestinal obstruction, however the mortality exceeds 50% when strangulation is present [4]. IH may located in multiple sites, paraduodenal being the most common site and transomental the rarest (1%-4%) [3]. The omental defect can be congenital or

acquired, and small bowel herniates most of the time through the defect [3].

Herniation of sigmoid colon being rare, we report a novel case of SV through a defect of the great omentum missed on investigations and discover intraoperatively, delaying thus the treatment which is surgical.

2. Case Presentation

A 26 years old man was admitted at our emergency department for a 3 days' onset of symptoms associating abdominal pain, vomiting and inability to pass gas and stool.

He had only past surgical history of Bassini repair for right uncomplicated inguinal hernia 3 years ago.

Physical exam revealed a distended abdomen with an enormous asymmetric abdominal meteorism. Blood investigation was normal.

The abdominal CT scan concluded to an uncomplicated sigmoid volvulus.

A non-surgical treatment consisting to insert by anus a lubricated rectal Faucher tube to decompress the sigmoid was first attempted with a partial release of the abdominal distension. The patient was then kept 24 hours under observation but any improvement was achieved.

He subsequently underwent a median exploratory laparotomy. It showed a sigmoid volvulus without necrosis through a transomental (great omentum) internal hernia (figure 1). The torsion of the sigmoid was at 270° in an anticlockwise direction. An untwisting of the sigmoid was done followed (figure 2) by the reduction of the hernia (figure 3). The great omentum was multiperforated and the defect in which the sigmoid herniated was at the left side with more than 10cm in size (figure 4). A one stage sigmoidectomy was performed with a side to side colocolic mechanical anastomosis using GIA linear stapler terminalized by TA linear stapler, followed by partial omentectomy. The post-operative course was uneventful. The patient was discharged at 6 days after surgery. The 4 month follow up was unremarkable.

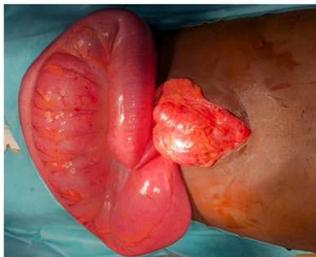


Figure 1. Intraoperative findings: SV with viable sigmoid colon.



Figure 2. Intraoperative findings: Sigmoid devolvulated through the omental defect (white arrow greater omentum, black arrow transverse colon).

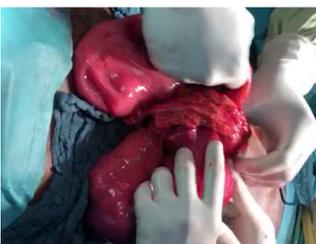


Figure 3. Intraoperative findings: SV with viable sigmoid colon, the sigmoid colon exsufflated is pulled out through the defect.



Figure 4. Intraoperative findings: the aspect of the greater omentum.

3. Discussion

Transomental hernia is one of the rarest form of IH [3]. It is generally observed after 50 years but there is a peak in frequency in children [5]. Indeed, in pediatric age, transomental hernia occurs through a congenital defect and the herniated bowel, depending to the size of the aperture and the length of the herniated loop, may spontaneously reduce or incarcerate. While in adult, transomental hernia may be the result of abdominal traumatism, peritoneal inflammation or iatrogenic after mostly a Roux-en-Y anastomosis in gastric bypass surgery [6]. The transomental defect can also be related to a senile atrophy of the greater omentum in elderly patients [5, 6].

In our young patient, the defect may be congenital regarding to the aspect of the greater omentum and as he had no past history of abdominal traumatism or inflammation and thinking that the direct right inguinal repair could not lead to defect formation.

According to Takayama et al, there are 2 types of transomental hernia. The most common is the herniation through a free greater omentum, as it happened to our patient, and the second type is herniation into the lesser sac through the gastrocolic ligament [3]. Yamagushi et al, classified transomental hernias in 3 types: type A (peritoneal cavity → greater omentum → peritoneal cavity), type B (peritoneal cavity → omental bursa → peritoneal cavity), type C (peritoneal cavity → omental bursa) and identified also the type A, found in our patient, the most frequent one [7]. For Jung et al, transomental internal hernia is a type of transmesenteric hernia together with transmesocolic hernia [8]. However, for Regent et al, herniation through the greater omentum should be named transepiploic hernia and herniation through the lesser omentum should be designated transomental hernia [5].

The defect is usually a slit-like orifice up to 10cm in size located near the free edge on the right side of the greater omentum [4, 5].

The greater omentum of our patient was multiperforated and the defect in which the sigmoid herniated was located in the left with more than 10cm in size. This condition motivated the partial omentectomy we performed. Incarcerated loops are frequently small bowel, related to its length and its great mobility [9].

The incarceration of the colon is unusual [5, 10].

Ayi Megnanglo et al, has described in the same department a transomental herniation and strangulation of a mobile unfixed right colon [11]. SV through the greater omentum,

related to the existence of a dolichosigmoid as it was the case in our patient, have also been reported [10, 12]. The preoperative diagnosis is difficult [10]. Indeed, the clinical signs and symptoms are not specific [7]. Abdominal CT scan is at a great value to make the diagnosis [10]. The CT findings suggestive of internal hernia include abnormal displacement of the colon to the right or left side and posteriorly, unusual dilation of the pre-stenotic bowel loops, collapse of the distal loop, distortion of the mesenteric or mesocolic vascular structures, and narrowing (beaklike appearance) at the site where the two loops enter or exit the intraperitoneal hernial ring [13, 14].

Ito *et al.*, calculated the proportion of transverse colon loop posterior to dilated intestinal loop and found that the CT finding of displacement of the transverse colon posterior to obstructed intestinal loops is characteristic of a transomental hernia [15]. Indeed, our radiologist should be aware of these CT findings because the recognition of transomental hernia by abdominal CT scan may lead to the appropriate surgical treatment early on.

In our patient, the existence of the SV was easily suspected as it is the first cause of colonic obstruction in our region and our radiologists are quite aware of the CT images of SV. The presence of the transomental hernia was missed on abdominal CT scan which concluded to an uncomplicated SV. The unavoidable surgical treatment was then delayed, the patient undergoing first an inappropriate instrumental treatment. Indeed, the emergency surgical treatment is compulsory [9, 16]. This surgical treatment may be done by laparoscopic or open surgery [16-18]. Laparoscopic surgery is suggested once the expertise is available in view of its advantages in the post-operative recovery [16, 17]. If strangulation or necrosis occurs the bowel is resected, however, if there is no strangulation or necrosis, the bowel is loosened and pull back gently through the defect [16-19]. In our case, the sigmoid was viable but we performed sigmoidectomy to prevent recurrence of SV. To prevent recurrence of herniation, the defect is most of the time closed by suture, but cases of partial omental resection, as we did and total omental resection have been reported [13, 16-20]

4. Conclusion

Although rare, SV through a transomental hernia should be suspected in any patient with uncomplicated SV. Timely diagnosis can lead to the appropriate surgical treatment early on.

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