

## Case study

# Pitfalls and Pearls Obtained from a Case of Strangulated Spigelian Hernia Repair

### Abstract

Strangulated Spigelian hernia is an uncommon abdominal emergency. This condition requires open emergency surgery, which often involve bowel resection. Here I have described a case of strangulated right sided Spigelian hernia with gangrenous small bowel. The surgery was conducted through a lower abdomen transverse incision with small bowel resection and anastomosis. The hernia defect was closed with tension free Darning's repair. Post operative day 4, the abdomen was reexplored as patient had signs of intestinal obstruction. Intraoperative findings showed distal small bowel kinking with anastomosis dehiscence. Lessons learnt from this case highlights the importance of adherence to general principles of emergency surgery such as, choice of abdominal incision, safe method of hernia closure, prevention of intraperitoneal adhesion and safety of bowel anastomosis in emergency surgery.

### Keywords

Strangulated Spigelian hernia, Strangulated ventral hernia, Spigelian hernia, Ventral interstitial hernia, Emergency ventral hernia repair, Early Adhesion Small Bowel Obstruction (ASBO), Darning's repair

### Introduction

Spigelian hernia is a rare abdominal hernia (0.1-2% of all abdominal hernias) which occurs in the obese population, commonly from the age of 40-70 years<sup>1</sup>. The defect of a Spigelian hernia, occurs through the weakened transversus abdominis aponeurosis, at the semilunar line and below the arcuate line<sup>2</sup>. Spigelian hernia is difficult to identify clinically as the contents often slips in between the muscular layers (hence, the name ventral interstitial hernia) and 90% of patients are asymptomatic<sup>3</sup>. Nevertheless, it should be sought and repaired because it carries a high risk of strangulation, 20-40%<sup>3</sup>.

Limited literature about repair of strangulated Spigelian hernia, have shown that a transverse lower abdominal incision and primary tissue repair technique to close the hernia defect is popular choice<sup>4,5</sup>.

## Case History

A 52 years of age gentleman was presented with painful right iliac fossa swelling since couple of days with symptoms associated with of intestinal obstruction. He had acute onset of abdominal distension with two episodes of bilious vomiting. Further history revealed that he was having intermittent pain at that site for the past two years but did not seek medical attention. On examination, the abdomen was distended with a tender 15 x 7 cm oblong parietal swelling at the right iliac fossa (Picture 1). Abdominal radiograph revealed dilatated small bowel. A clinical diagnosis of strangulated Spigelian hernia was made and surgery was done within an hour of presentation.

At surgery, a transverse right lower abdominal incision was made along the horizon of the swelling and the wound was explored. The hernia sac was seen at the subcutaneous plane having breached the external oblique aponeurosis (Picture 2). The hernia defect was found to be 5 x 7 sq. cm. in dimension involving all musculo-aponeurotic layers of the abdomen. The edges of the defect were extended horizontally to release the constriction and facilitate inspection of the content (Picture 3). The hernia content was gangrenous small bowel about 20cm from the terminal ileum and omentum (Picture 4). After thorough inspection of the small bowel length by retraction and exteriorizing through the wound, an omentectomy and small bowel resection was done. Proximal bowel was oedematous and dilated, but had good vascularity. A Cheatle's slit at distal bowel end was done to achieve a good mucosal apposition and hence, the small bowel was repaired in single layer with interrupted polyglactin 3/0 sutures (Picture 5).

Subsequent to the repair, the small bowel was reduced into the abdomen and primary tissue repair for the hernia defect was done in layers. The peritoneum was closed with absorbable sutures in a continuous fashion. The transversus abdominis and internal oblique muscle was closed with horizontal mattress technique utilising 2/0 nylon sutures (Picture 6). This was reinforced with Darning stiches from the inguinal ligament to the lateral border of rectus sheath (Picture 7). The external oblique aponeurosis was approximated with nylon 0 sutures in continuous fashion. The wound was closed

with skin staplers after placement of a subcutaneous vacuumed drain to eliminate the dead space (Picture 8).

Patient did recover well for the first post two **post-operative** days. But on day three, he developed signs of intestinal obstruction. As the possibility of post operative ileus was entertained, he was kept nil by mouth with a nasogastric tube inserted, which produced about 2 litres of bilious fluid. The differentials at this juncture were deep wound dehiscence with bowel herniation or anastomotic stenosis. CT scan on **4<sup>th</sup> post-operative day**, showed dilated small bowel with a transition point at terminal ileum and no features of herniation or anastomotic leak (Picture 9).

Hence, he was re-explored via a midline laparotomy on the same day. At laparotomy, the small bowel was kinked due to fibrinous adhesion at the terminal ileum distal to the anastomosis, hence resulting in dehiscence of the anastomosis at the mesenteric border (Picture 10). The anastomosis was taken apart and both ends of the bowel **were** brought out as end double barrel ileostomy. The hernia repair was intact, hence was not disturbed.

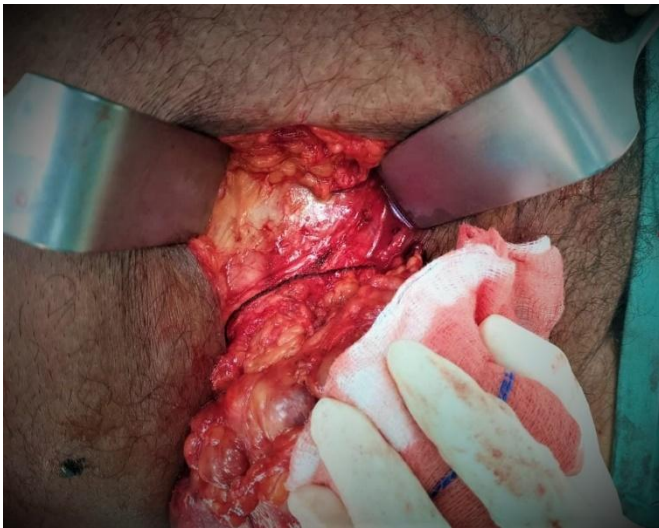
He made a slow recovery thereafter in the Intensive Care Unit, and was discharged home well after 2 weeks of hospital stay.



**Picture 1:** A 15 x 7 cm tender right iliac fossa mass was found on abdominal examination.



**Picture 2:** The hernia breached the external oblique aponeurosis to lie in the subcutaneous plane.



**Picture 3:** Neck of the hernia measures 5 x 7 sq. cm.



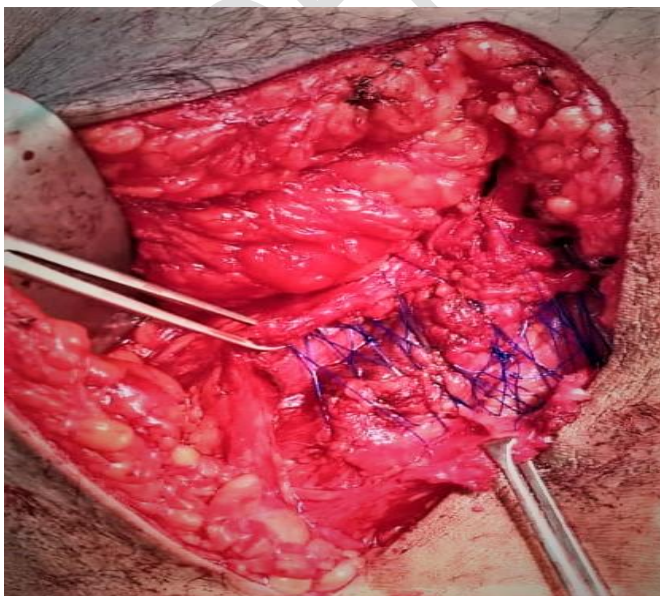
**Picture 4:** Strangulated small bowel within the hernia sac.



**Picture 5:** Bowel ends were anastomosed with polyglactin 3/0 in a single layer interrupted technique.



**Picture 6:** Transversus abdominis and internal oblique muscle was repaired with horizontal mattress technique.



**Picture 7:** Darning stiches was used to reinforce the repair.



**Picture 8:** Skin was closed with staplers with a vacuum drain placed in the subcutaneous plane.



**Picture 9:** CT scan showed dilated small bowel with the transition point at the terminal ileum.



**Picture 10:** Bowel kink due to adhesion distal to the anastomosis and anastomotic dehiscence at the mesenteric border.

## Discussion

The principles of strangulated Spigelian hernia repair require two important considerations. The first is the ideal **abdominal incision** to facilitate resection and reconstruction of bowel. And the second is the safest method of hernia repair in emergency situation. The choice of access is divided between a midline laparotomy or a lower abdomen transverse incision. A midline laparotomy allows flexible wound extension in situations where access to all four abdominal quadrants is required. This is important especially if a complex resection is required such **as a** hemicolectomy<sup>5,6</sup>. The drawbacks of a midline approach compared to a transverse incision include, more pain and significant **scarring**<sup>6</sup>. A transverse lower abdominal incision gives direct access to the hernia defect facilitating an easy layered tissue repair, but has limited access to the entire abdominal cavity<sup>6</sup>. Nevertheless, resection and anastomosis of small bowel can be achieved by exteriorizing the small bowel and its mesentery from the wound<sup>4,5,7,8</sup>.

Techniques of repair for the hernia defect in emergency setting especially **y**, if bowel resection is involved, is still controversial in the clinical setting. By principle **y**, a tension free tissue repair reduces the risk of bacterial contamination and is faster to perform in emergency setting. In this case, a tension free Darning tissue repair was performed to emulate the success obtained by Ndong *et al* in managing a similar patient<sup>5</sup>. In contrary, studies **involving surgeries of strangulated inguinal and ventral hernia** have shown that mesh placement during surgeries requiring bowel resection produce equal rates of infective complications as tissue repair with a lower recurrence rate<sup>9,10</sup>. An ideal mesh for such setting is either a medium (0.8mm) pored polypropylene mesh or an absorbable mesh<sup>11</sup>. Extrapolating these data, a mesh repair can be considered for cases with bowel resection in a Spigelian hernia repair, as did Lucien *et al.*, who placed a mesh at the preperitoneal space when they repaired a strangulated Spigelian hernia with bowel resection<sup>4</sup>.

Intraperitoneal adhesion is inevitable after an abdominal surgery, especially with emergency surgeries where bleeding, bowel desiccation and in advent tissue trauma is higher than elective surgeries. Early adhesion formation is due to fibrinous exudative process, which are flimsy and are degraded with time by the fibrinolytic process<sup>12</sup>. In this case **y**, the early adhesion formation between the small bowels have

caused the distal small bowel to kink resulting in intestinal obstruction. Techniques to reduce adhesion like preventing tissue desiccation by warm packs and preventing prolonged exteriorization of the bowel, gentle tissue handling, and reduce blood and contamination in the field may reduce adhesion formation.

Small bowel anastomosis in an emergent setting is safe provided patient is physiologically and nutritionally normal<sup>13</sup>. Besides that, the bowel ends should have good microvasculature and the anastomosis must be tension free with good mucosal apposition<sup>14</sup>. Reflecting back on this case, besides the distal obstruction, the anastomotic dehiscence may have been due to tissue strangulation as the sutures was placed on an edematous bowel end.

### Conclusion

Abiding to the core principles of abdominal surgery is important in managing a case of strangulated Spigelian hernia. A tailored approach in managing these patients is important with the intention to normalize patients' physiology with a safest and simplest surgery.

### Consent

Informed consent was taken from the patient for reporting and publishing this case.

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