

Epigastric hernia complicated with bowel ischaemia

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Abstract

Epigastric hernia, a form of abdominal ventral hernia, accounts for 0.5 – 10.0% of all abdominal wall hernias. These may be congenital due to incomplete midline fusion of developing lateral abdominal wall domains or acquired. It usually occurs in individuals in the age groups of 20 to 50 years and infants. It is rarely large enough to admit more than a small amount of extra-peritoneal fat. We discuss an epigastric hernia known only for a little more than 4-hours, presented strangulated, leading to ischaemia of small bowel requiring resection and review literature on epigastric hernias and their complications.

Introduction

Bowel Ischemia is a rare complication of an epigastric hernia. At present, surgery is the treatment of choice for bowel ischemia irrespective of the cause. This paper discusses the diagnosis and management of a patient with complicated epigastric hernia and reviews literature while elaborating the current treatment and direction of the futuristic approach.

Case presentation

A 60-year-old, female presented with acute continuous epigastric pain and nausea for 4 hours. This was her first presentation and denied noticing any epigastric abnormality before. She had no comorbidities or allergies.

The patient had a tender, irreducible epigastric swelling. Abdominal X-ray revealed distended bowel loops while Ultrasonography [USS] confirmed a lack of peristalsis. However abdominal USS was imprecise to identify bowel ischemia. Radiological findings favoured a bowel obstruction.

Her haematological and biochemical investigations including serum lactate levels remained normal. Conservative methods



Figure 1. Small bowel ischemia

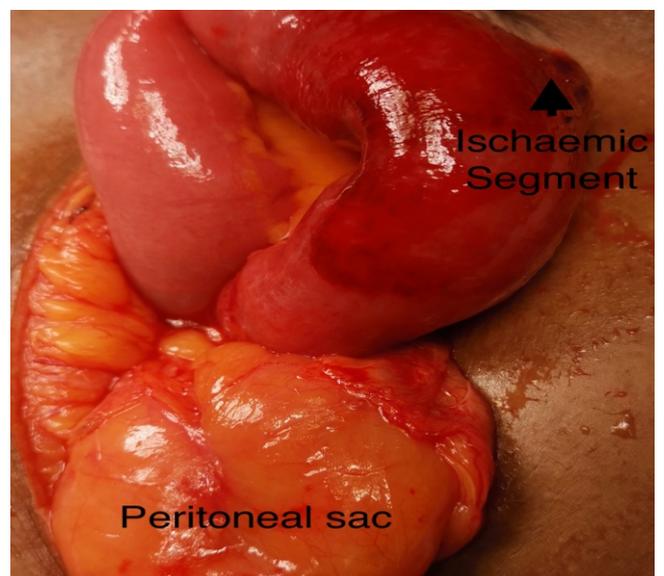


Figure 2. Peritoneal sac [true epigastric hernia]

were attempted with intravenous fluid resuscitation, pain relief, muscle relaxants, nasogastric tube drainage and the local application of ice packs. However, conservative attempts failed to reduce the epigastric hernia and worsening of symptoms prompted surgery. At surgery, an epigastric hernia had a thick peritoneal sac and a narrow neck leading to ischemia of a herniated small bowel loop.

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The strangulated ischemic small bowel was resected and continuity was restored during surgery. Ischemia was histologically confirmed. Surgery was completed with an anatomical hernia repair. The patient had an uneventful recovery.

Literature review

Epigastric hernia

An epigastric hernia occurs due to a small fascial defect along with the linea alba abdominals, between 3cm below the xiphoid process and 3cm above the umbilicus in the midline [1]. These may be congenital due to incomplete midline fusion of developing lateral abdominal wall domains or acquired by heavy manual work, extreme weight gain or persistent coughing. With a prevalence of 0.5 -10%, common among the 20-to-50-year age group and in infants. It rarely occurs between the 1–18-year age group [2]. Though older studies show male predominance [3], recent studies show equal gender distribution due to women being involved in heavy physical activities [4,5].

Microscopic studies have indicated that reduced Type I collagen and higher elastin composition in abdominal wall architecture predispose to epigastric hernia [6,7]. An extra-peritoneal weak space is formed between the transversalis fascia and parietal peritoneum by perforating small blood vessels causing herniation at these weakened areas due to ongoing chronic or intermittent intra-abdominal pressures [8,9]. Any condition that increases the intra-abdominal pressure can cause the protrusion of intra-peritoneal fat and other visceral parts through the areas of ruptured or weakened linea alba resulting in epigastric hernia formation [10].

Most epigastric hernias are asymptomatic, while minority symptomatic patients usually complain of epigastric mass or swelling and epigastric pain aggravated by cough or physical training [11]. Pain is localized, varying from constant pain to acute colicky pain and can be radiated in any direction. Lying down could relieve the pain but may get aggravated by gravitational traction on irreducible content [12]. The common accompanying symptoms are nausea, vomiting, constipation, and dyspepsia [13].

Differential diagnoses of epigastric hernia are peptic ulcer disease, gallstone disease, proximal small bowel obstruction and hiatus hernia [14]. Diagnosis is mainly by physical examination, irreducible tender mass with midline defect on palpation between xiphoid and umbilicus are diagnostic clinical features of epigastric hernia, while decreased bowel sounds are a feature of strangulation or obstruction [15,16]. The masses are frequently observed in small dimensions, occasionally voluminous epigastric hernias up to 5-10 cm had

been reported. There is a 20% chance of these being multiple due to more than one defect on the linea alba [17].

Epigastric hernias are categorized as false epigastric hernias, occurring commonly, contain extraperitoneal fat without a peritoneal sac protruding at defects of the linea alba. True epigastric hernias are rare and contain extraperitoneal fat lined protruding peritoneal sac, with or without abdominal viscera of intestines or omentum [7] like in our patient with ischaemic intestines which is even rare a presentation. If the defect is large, the peritoneal pouch may contain omentum, or other intra-abdominal viscera other than the peritoneal fat [18,19].

Incarceration of an epigastric hernia if occurs, very rarely could lead to strangulation at the neck of the peritoneal pouch, due to a narrow, tight neck at the linea alba. It is important to rule out bowel ischemia due to a closed-loop within the hernia sac when the afferent and efferent bowel loops are obstructed compromising blood supply to the bowel [18,20].

Commonly available USS is very effective in the diagnosis of epigastric hernia while X-ray may detect signs of mechanical ileus. Computed tomography [CT] is useful in identifying bowel complications due to incarceration, strangulation and ischaemia [4].

Surgical intervention

Epigastric hernias do not spontaneously disappear, and complications will eventually require surgery [29]. Surgery is the only recommended treatment to repair an epigastric hernia, due to the risk of the hernia enlarging and causing additional complications such as pain and tenderness, bowel obstruction, loss of domain; in which the hernia becomes so large that's nearly impossible to repair even with a mesh [30]. A complicated hernia is challenging as they have increased morbidity and mortality compared to uncomplicated hernias [31].

Epigastric hernia with bowel obstruction causing intestinal ischemia can progress to non-traumatic perforation or ischemic necrosis [32]. Repairing the hernia needs reduction of the obstruction, adhesiolysis or resection of the bowel segment. The surgery can be performed laparoscopically or as an open procedure [33]. Surgical repair of the strangulated epigastric hernia depends on the skill and choice of the operating surgeon, available resources, and the patient's general condition too. Literature has demonstrated success with laparoscopic or robotic techniques to evaluate strangulated bowel with direct visualization or more objectively with Intravenous Indo Cyanin Green [ICG] and infrared visualisation cameras to assess circulation [34,35].

Discussion and conclusion

Epigastric hernia can become a diagnostic dilemma at times. Having an open mind in assessing any clinical presentation becomes important in arriving at a working diagnosis. Clinical suspicion of a strangulated epigastric hernia, which is a rare condition led us to intervene on time. This patient being a heavy manual worker, epigastric herniation was considered in the differential diagnosis of abdominal pain owing to its location.

This patient's serum lactate levels may have remained within normal parameters due to relatively short duration of symptoms, a small segment of ischemia with full-thickness involvement or may be due to complete cessation of circulation preventing venous blood flow.

We do not have documented incidence of epigastric hernia in the Sri Lankan population, while our experience in dealing with them is limited compared to common abdominal wall hernias. Anecdotally the incidence may be less than 10% reported maximally in literature but needs to assess and report properly in the future. In addition to the rarity of the presentation of this complicated epigastric hernia without prior knowledge of its existence, low incidence of true epigastric hernias [7] and strangulation of an epigastric hernia leading to bowel ischaemia [36] led us to write this review to help surgeons not to miss this diagnosis. Clinical diagnosis and prompt intervention at the earliest following resuscitation can make a huge difference in the outcome for such a patient.

All authors disclose no conflict of interest. The study was conducted in accordance with the ethical standards of the relevant institutional or national ethics committee and the Helsinki Declaration of 1975, as revised in 2000.

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