

A CASE OF INCARCERATED EPIGASTRIC HERNIA IN AN ADULT MALE

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PRESENTATION OF CASE

A 45-year-old, male patient was admitted to our hospital 3 hours after the sudden onset of abdominal pain. His epigastric region had a swelling and he was diagnosed with an irreducible epigastric hernia.

On ultrasonography, there was a 25 x 17 mm² sized anechoic lesion with internal echoes in anterior abdominal wall with about 24 mm sized anterior abdominal wall muscle defect in the epigastric region. Through this defect herniation of omental fat occurred on coughing.

CLINICAL DIAGNOSIS

Acute Incarcerated Epigastric Hernia

DIFFERENTIAL DIAGNOSIS

1. Peptic Ulcer Disease.
2. Biliary Colic.
3. Acute Intestinal Obstruction.

PATHOLOGICAL DISCUSSION

Linea alba is a strong fibrotendinous raphe running vertically in the midline between the left and right rectus abdominis muscles, a relatively avascular layer of fascia that extends from the xiphoid process to the symphysis pubis. An epigastric hernia occurs when a defect in the linea alba allows preperitoneal fat to protrude through it.^[1] Many of these hernias are asymptomatic and are found only on physical examination. Paradoxically, unlike small hernias, large epigastric hernias cause pain infrequently and rarely become incarcerated.

This patient's reducible hernia had existed for some time; only the onset of pain prompted him to seek medical evaluation when the hernia became incarcerated. The hernia was repaired; the patient's recovery was uneventful.



Epigastric herniation is a rather common condition with a reported prevalence up to 10 %.^[2] Only a minority is symptomatic, presumably the reason for the scarce literature on this subject. Epigastric hernias are the second most common type of linea alba abdominalis defects in adults.^[3] They occur from the xiphoid process to the umbilicus and represent 1.6– 3.6 % of all abdominal hernias and 0.5–5 % of all operated abdominal hernias.^[4] Epigastric hernias are 2–3 times more common in men, with a higher incidence in patients from 20 to 50 years. Indeed, pathology studies report a prevalence of 0.5–10 %.^[5] These specific features of the epigastric hernias, such as the high proportion of asymptomatic occurrence, the male predominance and the fact that they only occur above umbilical level, cannot be explained by general theories on hernia formation alone.^[6]

The anterior abdominal wall aponeurosis consists of closely interwoven sheaths that pass freely from one side to the other side of the abdominal wall. Two types of these sheaths are present in the abdominal wall: the anterior rectus sheath and the posterior rectus sheath.^[7]

The anterior rectus sheath forms the major and most conspicuous part of the anterior abdominal wall. This sheath contains three strata: the superficial stratum, the middle stratum and the deep stratum. The superficial stratum has tendinous fibres that run downward and laterally and, when followed, will come from the external oblique aponeurosis of the other side. In the middle stratum, the tendinous fibres run downward and medially at right angles to those of the superficial stratum; these are the tendinous fibres of the

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external oblique muscle of the same side. In the deep stratum, the tendinous fibres run upwards and medially, and these fibres originate from the anterior lamina of the internal oblique aponeurosis. Due to these anatomical structures, a triple criss-cross layer pattern is formed. The tendinous fibres in these three strata are bound together by loose tissue that facilitates their movement.^[8]

In the posterior rectus sheath, a similar triple-layer pattern is seen. It is formed by the posterior lamina of the internal oblique aponeurosis together with two other strata, which originate from the transversus aponeurosis. The triple-layer criss-cross pattern offers firmness to the texture of the aponeurosis in both the anterior and the posterior rectus sheaths and therefore makes them less liable for herniation. The tendinous fibres from all the strata of the anterior and posterior rectus sheaths decussate with the fibres from the opposite side. In the midline, these two decussating sheaths form the linea alba abdominalis. This crossing pattern can be seen on both the anterior and the posterior surfaces of the linea alba. Patterns of midline decussation of the aponeuroses can vary. [Figure 1]

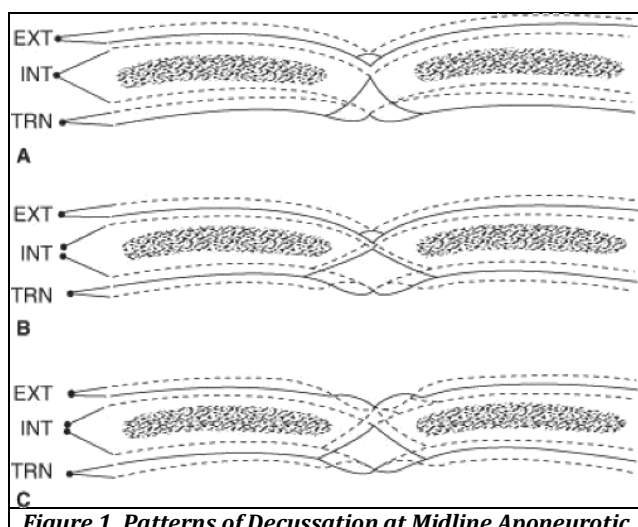


Figure 1. Patterns of Decussation at Midline Aponeurotic Area (linea alba). A: Single Anterior and Single Posterior Lines of Decussation (30%). B: Single Anterior and Triple Posterior Lines of Decussation (10%). C: Triple Anterior and Triple Posterior Lines of Decussation (60%). EXT, External Oblique; INT, Internal Oblique; TRN, Transversus Abdominis. (From Askar OM. *Surgical Anatomy of the Aponeurotic Expansions of the Anterior Abdominal Wall. Ann R Coll Surg Engl 1977;59:313-21.*)

Controversy has surrounded the aetiology of epigastric herniae, and the 2 main hypotheses are the vascular lacunae hypothesis and the tendinous fiber decussation hypothesis.^[9] The first descriptions of the former were by Moschcowitz in 1914.^[10] He theorized that vascular lacunae formed when small blood vessels penetrated the linea alba. These left a small space where preperitoneal fat from the falciform ligament could begin to herniate and enlarge over time. He found that a perforating blood vessel could always be found in the course of the dissection of epigastric hernias. The decussation hypothesis was popularized by Askar in 1978. He found that epigastric herniae occur exclusively in patients who do not have triple lines of decussation, and this is what predisposes patients to develop an epigastric hernia. Most

likely, an element of both hypotheses likely predisposes certain patients to an epigastric hernia.

Recent microscopic anatomical studies show that not only the macroscopic anatomy of the linea alba is important in epigastric hernia pathology, but that the microscopic aspects should also be considered.^[11,12] In the abdominal wall, damaged collagen fibres are continuously repaired in the progress of proliferation and remodelling. The normal turnover of collagen is very slow, and it may take many years before the collagen is degraded and replaced.^[13] Fachinelli et al^[11] showed that patients with ventral hernias have a significant less amount of total collagen in the abdominal wall compared to controls without ventral hernias. Acutely incarcerated epigastric hernias range from life-threatening conditions requiring emergent operation, to simple reduction of the hernia in outpatient department. It is important to keep in mind that the typical patient goal of treatment of an acutely incarcerated hernia is pain relief, and there is also a desire to fix the problem, so it does not recur.^[14]

DISCUSSION OF MANAGEMENT

We attempted but were unable to reduce the hernia with a manipulative procedure. An emergency open hernia repair was done. Incarceration of the omental fat was found, which had caused the acute episode of pain. There was no evidence of bowel strangulation. The size of the hernial orifice was about 2 × 2 cm². We used a 15 × 15 cm² polypropylene mesh to cover the hernia defect. The surgical procedure was uneventful, and the total operation time was 110 minutes. The patient recovered uneventfully and was discharged on ninth postoperative day.

Acutely incarcerated epigastric hernias range from life-threatening conditions requiring emergent operation, to simple reduction of the hernia with outpatient follow-up. It is important to keep in mind that the typical patient goal of treatment of an acutely incarcerated hernia is pain relief, and there is also a desire to fix the problem, so it does not return.

It appears that mesh implantation can be safe, even in an acutely incarcerated hernia, and should always be considered to decrease recurrence rates. Further research and analysis regarding type of prosthetic and prosthetic placement technique are warranted to improve outcomes even further.

FINAL DIAGNOSIS

Incarcerated Epigastric Hernia*

(*Incarcerated hernia- hernia in which the constriction cannot be easily reduced^[15])

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