Case report

DIAGNOSTIC PITFALLS OF SPIGELIAN HERNIA – CASE REPORT

ABSTRACT

Aims: Spigelian hernias are rare type of ventral hernias. They account for 0.1- 2% of all abdominal wall hernias. As they are interparietal, only 50% of patients are diagnosed clinically.

Presentation of Case: 60-year-old woman presented with acute lower abdominal pain of two hours duration. For the last four years, she experienced similar episodes of pain lasted around thirty minutes. Pain subsided spontaneously on arrival to hospital each time. Though she was evaluated on multiple occasions, definitive cause was not identified. During this admission, there was a tender abdominal lump on palpation. On USS abdomen, an obstructed spigelian hernia was found. The patient was taken to operation theatre for emergency laparotomy. While waiting for the surgery, her abdominal pain got better and hernia reduced spontaneously. So, we postponed her surgery and later, the patient underwent hernial repair under routine theatre list.

Discussion: Clinical diagnosis of spigelian hernia is challenging because it is rare, small and difficult to palpate. Dynamic Ultrasonography and CT abdomen are useful in confirming the diagnosis. Surgical exploration remains the mainstay of treatment.

Conclusion: Clinicians should have a high index of suspicion for spigelian hernia in patients presenting with nonspecific abdominal pain without palpable mass. Early diagnosis and prompt management help to reduce acute life-threatening complications such as incarceration and strangulation.

Key word: Spigelian hernia, surgical exploration, incarceration, Spigelian fascia

1. INTRODUCTION

Hernias appearing through the anterior abdominal wall are considered ventral hernias. Spigelian hernia is a rare form of ventral hernia (1) that accounts for 0.1- 2% of all abdominal wall hernias (2). Although the incidence of Spigelian hernia in men and women is nearly equal it is found frequently in women between their 4^{th} and 7^{th} decade of life (3).

In 1645, Adriann van der Spieghel, a Flemish anatomist, was the first to describe the semilunar line (linea semilunaris/linea Spigeli). In 1764, Josef Klinkosch defined the Spigelian hernia as a defect in the semilunar line (4).

Musculoaponeurotic junction of transversus abdominis muscle forms linea semilunaris that is an imaginary line between ninth intercostal cartilage and pubic tubercle. Lateral edge of the rectus sheath runs from the costal margin to pubis. Spigelian hernia occurs through the spigelian fascia that is lined medially by the lateral border of the rectus sheath and laterally by linea semilunaris. Spigelian hernia occurs through spigelian fascia/aponeurosis that is anatomically the medial part of the fused aponeurosis of transversus abdominis and internal oblique. The hernia can occur at any point through the spigelian fascia (2,4,5).

Spigelian fascia is overlapped by fibres of internal and external oblique and transverse abdominis muscles. Hence, they are generally interparietal (6). For a spigelian hernia to get palpable, it has to penetrate transverse abdominis and internal oblique muscle and further glide in between the both oblique muscles. Only 50% of patients can be diagnosed preoperatively (7). Most Spigelian hernias (>90%) are located in the “Spigelian belt”, a transverse zone of 6cm, above the interspinal plane in the lower abdomen where the spigelian fascia is widest and therefore potentially weakest (4,8,9).

Spigelian hernias can be congenital or acquired. Their formation can be predisposed by obesity, chronic obstructive pulmonary disease, pregnancy, prior abdominal surgery, abdominal trauma and other causes of increased intrabdominal pressure (2). Though small

intestine is mostly the major content of spigelian hernia, caecum, omentum, appendix and sigmoid colon can also be seen (9).

Spigelian hernias can be diagnosed by Ultrasound scan (USS) abdomen and Computed Tomography (CT) abdomen (3). It possesses a high risk for strangulation because of its relatively small size of fascial or aponeurotic defect, usually 1-2 cm. Therefore, surgical exploration is the definitive treatment option (10). Surgery can be done by either conventional open approach or laparoscopy.

3. PRESENTATION OF CASE

60-year-old woman admitted to emergency unit with the history of acute onset of right sided lower abdominal pain without nausea or vomiting of 2 hours duration. There was no radiation of pain. The patient suffered on and off similar episodes of pain for less than 30 minutes for the past four years. Each episode of pain subsided before the arrival to hospital. She was evaluated in various medical institutions. Her previous X-ray KUB(Kidney-Ureter-Bladder), USS-abdomen and colonoscopy reports were normal.

On examination, there was a tender and firm abdominal wall lump in the right lower quadrant. USS-abdomen revealed an obstructed right side spigelian hernia of 5x5 cm, containing bowel loops and fat (Figure 1). An emergency laparotomy was planned. Prior to induction of anesthesia, general appearance of the patient improved, abdominal pain subsided and the hernial sac disappeared spontaneously. Therefore, she was prepared for a routine surgery.

During surgical exploration, an oblique skin incision was directly made over the hernial region. External oblique aponeurosis was divided along its direction. A 5x8cm hernial sac was visualized (Figure 2&3). Small bowel loops and omentum were found protruding through the aponeurotic defect. Weakened wall was repaired anatomically followed by polypropylene mesh repair. She had an uneventful postoperative recovery and was discharged home after three days of surgery.

4. DISCUSSION

Spigelian hernia is often small in size and its fascial defect is usually smaller than the sac. Therefore, it has a high chance of incarceration that warrants emergency laparotomy in patients up to 24% (10).

Spigelian hernia may mimic many intra-abdominal pathologies such as acute appendicitis, twisted ovarian cyst, tubo-ovarian pathologies, mesenteric lymphadenitis, biliary colic, mesenteric ischemia, pancreatitis etc (2). If a patient presents with abdominal pain and reducible abdominal lump, the diagnosis can be easily made. In a patient presenting with nonspecific abdominal pain without an abdominal lump, the clinician has to consider spigelian hernia as one of the differential diagnoses. He should also be vigilant in excluding other serious intrabdominal pathologies. Clinically occult spigelian hernias can be assessed with radiological investigations (11).

The diagnosis of Spigelian hernia was challenging in our case because the patient remained subclinical for four years. When the patient experienced abdominal pain each time, it subsided before the clinical and USS examination because the hernia was easily reducible. Fortunately, abdominal pain lasted for a long time during the last presentation. Therefore, it aided us in proper diagnosis. As we arrived at a diagnosis with the help of USS abdomen, CT-abdomen and diagnostic laparoscopy had no place in our work up. Even though, laparoscopic surgery has more advantages than open approach, we proceeded with open surgical exploration due to the availability of limited resources in our hospital.

Ultrasound scan - abdomen is the investigation of choice and considered to be the first line imaging. It should be done in patients with severe abdominal pain and it can identify hernial defect, sac and its contents. USS can also show real-time images that help in deciding the time and mode of surgery (2). CT abdomen can provide the location and size of hernial sac and its contents and helps to rule out other abdominal pathologies. When these two investigations fail in arriving at a diagnosis, clinicians can proceed with diagnostic

laparoscopy in symptomatic patients and can repair simultaneously when the findings are positive (10,12). Laparoscopy offers nearly 100% diagnostic accuracy (13).

European Hernia Society (EHS) classification guides the clinicians in deciding the mode of surgery (10). It includes the anatomy of hernia and clinical features of the patient and according to them, the treatment options are stated.

Surgical exploration is the definitive treatment option for Spigelian hernia as it is more prone to incarceration and strangulation (10,11). Decision of open approach or laparoscopic approach depends on surgical expertise. Whether open approach or laparoscopy, it is advisable to repair the hernia with the use of mesh as it may reduce the long-term recurrence rate (10,12,14). Laparoscopic approach is desirable because it is a minimally invasive surgery with less morbidity and warrants a shorter hospital stay with an early return to normal activities (2,10). There are various approaches in laparoscopic surgery such as Intraperitoneal Onlay Mesh (IPOM) technique, Total extraperitoneal Patch (TEP) approach and Transabdominal Preperitoneal (TAP) approach (3).

4. CONCLUSION

Spigelian hernias are under- diagnosed because they are rare and often present with nonspecific symptoms. As they lie in the interparietal plane, it is difficult for palpation. Therefore, clinicians should consider Spigelian hernia as a differential diagnosis in a patient presenting with nonspecific abdominal pain without abdominal lump. Dynamic ultrasonography and CT abdomen will assist in diagnosis. In our case, delayed presentation of the patient to hospital and easy reducibility during the initial course of illness made the diagnosis more challenging. CT abdomen may have given some clues when the hernia was at its reducible phase. Early diagnosis of Spigelian hernia and prompt surgical approach will drastically reduce catastrophic complications such as incarceration and strangulation and improve the quality of life of the patient by reducing the recurrence.

ACKNOWLEDGEMENT

I would like to express my deepest appreciation to general surgical and anesthesia team of Base Hospital, Marawila, Sri Lanka.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

11. REFERENCES

1. Houlihan, T. J. (1976). A review of spigelian hernias. *The American Journal of Surgery*, *131*(6), 734–735.
2. Giri Goswami, A., Huda, F., Kumar Singh, S., Kumar, N., & Basu, S. (2022). Spigelian Hernia: Clinical Features and Management. *Hernia Surgery*.
3. Haji Rahman, R., Punjwani, A., Notario-Ringwald, J., Taneja, S., Fahim, S., Varghese, R., & Tiesenga, F. (2022). Non-strangulated Spigelian Hernia: A Case Report. *Cureus*.
4. Skandalakis, P. N., Zoras, O., Skandalakis, J. E., & Mirilas, P. (2006). Spigelian Hernia: Surgical Anatomy, Embryology, and Technique of Repair. *The American Surgeon*, *72*(1), 42–48.
5. Webber, V., Low, C., Skipworth, R. J. E., Kumar, S., de Beaux, A. C., & Tulloh, B. (2017). Contemporary thoughts on the management of Spigelian hernia. *Hernia*, *21*(3), 355–361.
6. Bhatia, T., Ghimire, P., & Panhani, M. (1970). Spigelian hernia. *Kathmandu University Medical Journal*, *8*(2), 241–243.

7. Slaiki, S., Hamdane, A., El Bouhaddouti, H., Ousadden, A., Taleb, K. A., & Benjelloun, E. B. (2020b). Spigelian hernia case report and review of literature. *International Surgery Journal*, *7*(3), 880.
8. Lucien, W., Sikakulya, F. K., Peter, K., & Vincent, A. (2019). Large Strangulated Spigelian Hernia: Management of an Uncommon Presentation of Abdominal Hernias in Central Uganda. *Case Reports in Surgery*, *2019*, 1–4.
9. Foster, D., Nagarajan, S., & Panait, L. (2015b). Richter-type Spigelian hernia: A case report and review of the literature. *International Journal of Surgery Case Reports*, *6*, 160–162.
10. Hanzalova, I., Schäfer, M., Demartines, N., & Clerc, D. (2021). Spigelian hernia: current approaches to surgical treatment—a review. *Hernia*.
11. Light, D., Chattopadhyay, D., & Bawa, S. (2013). Radiological and clinical examination in the diagnosis of Spigelian hernias. *The Annals of the Royal College of Surgeons of England*, *95*(2), 98–100.
12. Henriksen, N. A., Kaufmann, R., Simons, M. P., Berrevoet, F., East, B., Fischer, J., Hope, W., Klassen, D., Lorenz, R., Renard, Y., Garcia Urena, M. A., & Montgomery, A. (2020). EHS and AHS guidelines for treatment of primary ventral hernias in rare locations or special circumstances. *BJS Open*, *4*(2), 342–353.
13. Rankin, A., Kostusiak, M., & Sokker, A. (2018). Spigelian Hernia: Case Series and Review of the Literature. *Visceral Medicine*, *35*(2), 133–136.
14. Takayama, Y., Okada, S., Nakatani, K., Matsumoto, R., Suganuma, T., & Rikiyama, T. (2021). The advantage of laparoscopic surgery in the treatment of Spigelian hernia: A report of two cases. *International Journal of Surgery Case Reports*, *82*, 105903.

12. FIGURE

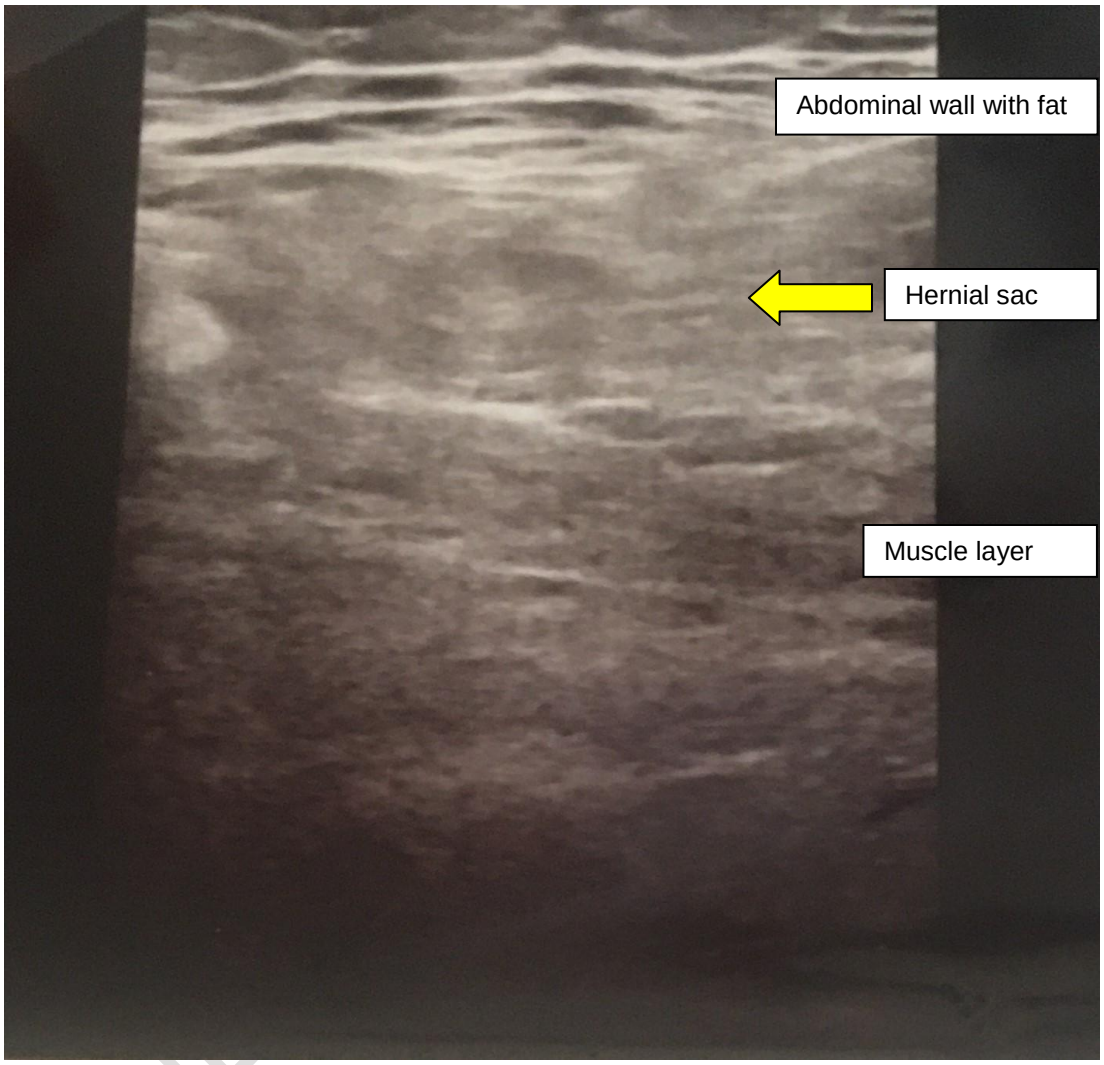

Figure 1: Ultra sound scan image of Spigelian hernia

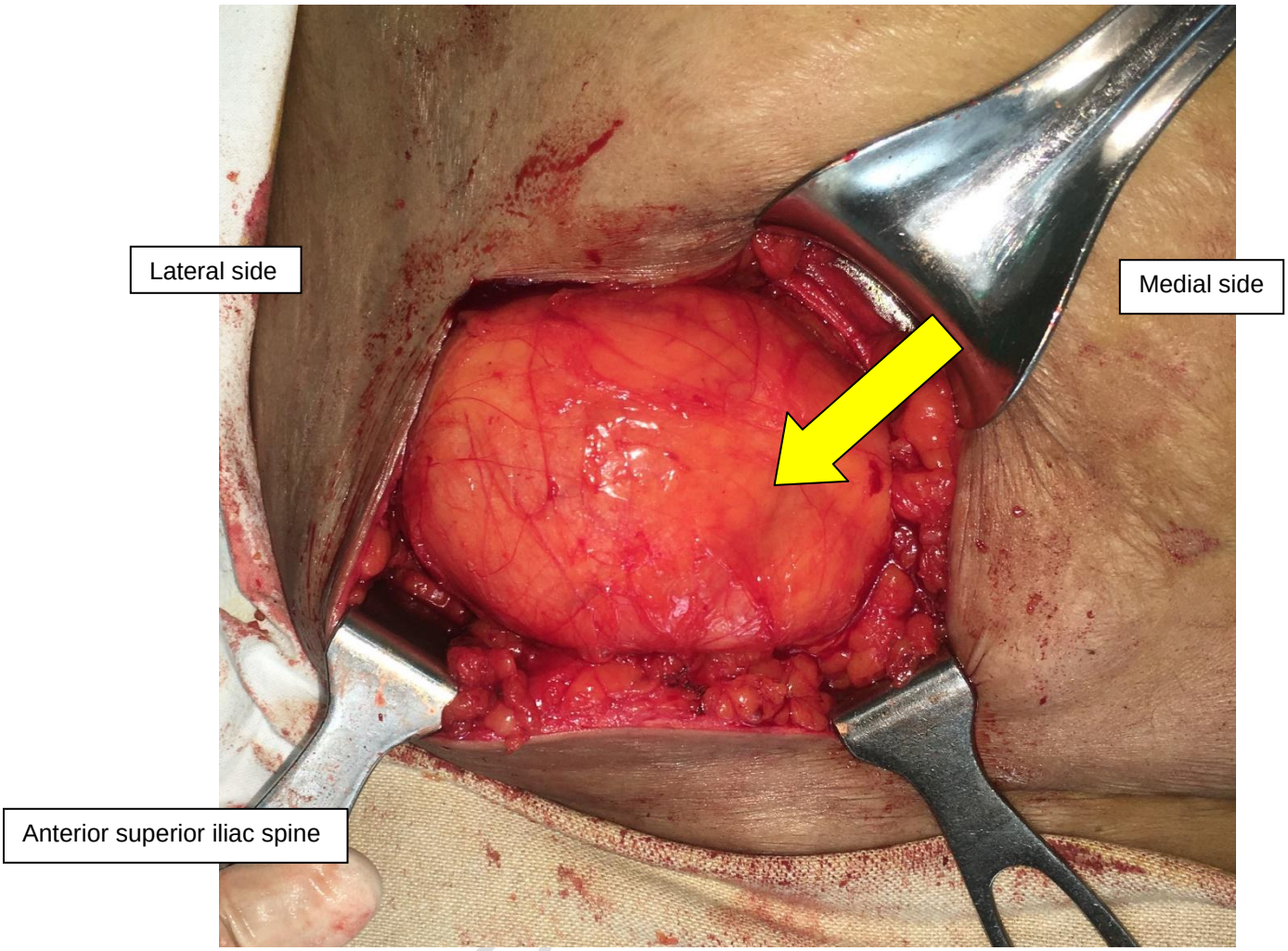

Figure 2: Arrow shows intraoperative image of hernial sac in the spigelian belt region

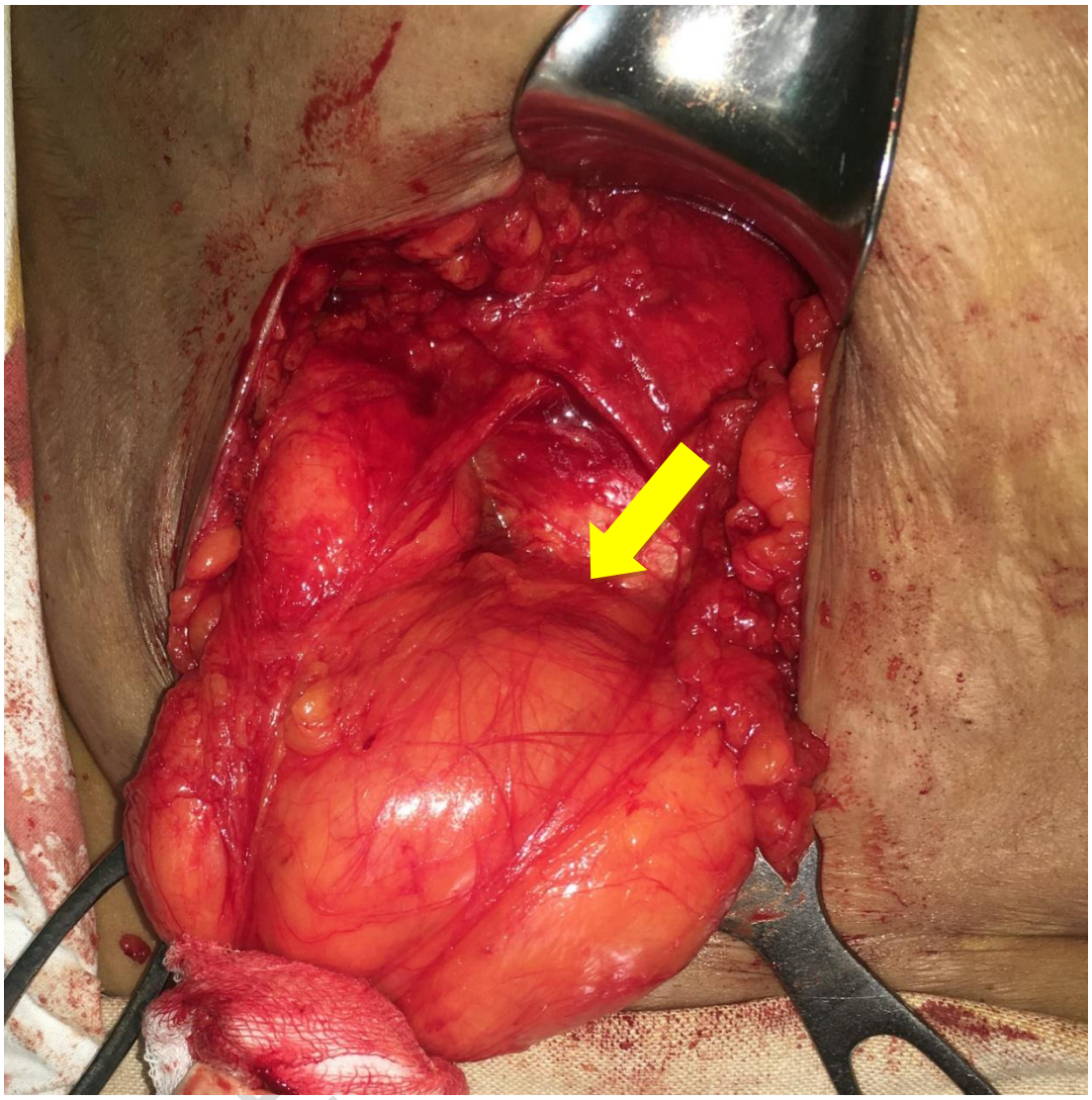

Figure 3: Hernial sac protruding through the internal oblique and transversus abdominis muscles (arrowed)