

Spigelian hernia

Our experience and review of the literature



Ann. Ital. Chir., 2013 84: 649-653

Published online 9 November 2012

pii: S0003469X12019859

www.annitalchir.com

Hamza Cinar*, Ayfer Kamali Polat*, Kasim Caglayan**, Gokhan Selcuk Ozbalci*,
Hüseyin Koray Topgül*, Cafer Polat*

*Ondokuz Mayıs University Medical Faculty, Department of General Surgery, Samsun, Turkey

**Bozok University Medical Faculty, Department of General Surgery, Yozgat, Turkey

Spigelian hernia. Our experience and review of the literature

BACKGROUND: *Spigelian hernia is an uncommon and rare abdominal wall defect. We present our series of patients with Spigelian hernia and a literature review.*

METHODS: *We carried out a retrospective review of patients operated on from 2005 to 2011 at Ondokuz Mayıs University Medical Faculty Department of General Surgery. Epidemiological aspects, diagnostic methods, surgical techniques, morbidity, hospital stay, recurrences and follow up were analyzed.*

RESULTS: *We have treated 9 patients, 7 female and 2 male, with a mean age of 64 (range 47-81) years. Right side was the most frequent location. Risk factors were present in 77.8% of patients. Diagnosis was made clinically in 7 of 9 cases but preoperative imaging was made in all patients for obtain detailed information about the defect. Open hernioplasty with polypropylene mesh placed over the external oblique aponeurosis constitutes the most frequent technique (44.5%) used by repair with a primary suture (33.3%). The remaining 22.2% of cases were laparoscopic hernioplasty placing intraperitoneal position a mesh (22.2%). Mean hospital stay was 5.1 days (range 2-9), however if we look the laparoscopic cases the time decreased to 2.5 days. One recurrence was noted during the 15th month of follow-up, which has already been operated on. The mean follow-up period of this study was 58 months. No mortality was observed among patients.*

CONCLUSIONS: *Spigelian hernia is rare and requires a high index of suspicion given the lack of consistent symptoms and signs. The physician should secure the diagnosis combining a proper history and physical examination with the preoperative imaging. Surgical technique depends on patient characteristics, type of hernia and surgeon experience.*

KEY WORDS: Hernioplasty, Mesh, Spigelian hernia

Introduction

The Spigelian hernia (SH) was emerged from the French anatomist Adriaan van Spieghel, who described the semilunar line for the first time in 1645. However Klinkosch was the first who described a spontaneous lateral ventral hernia at the level of Spieghel's semilunar line in 1764¹⁻³. It is also called spontaneous lateral ventral her-

nia, hernia of semilunar line, hernia of the conjoint tendon or interstitial ventral hernia. Spigelian hernia is rare, and represents 0.1-2% of all abdominal wall hernias⁴. The hernia appears to peak in the 4th to 7th decades. The male to female ratio is 1:1.18⁵. Different surgical techniques including suture or mesh repairs via open or laparoscopic approaches have been performed for the repair of Spigelian hernia in our hospital. We present the results of our own series and a literature review.

Patients and methods

We carried out a retrospective review of patients operated on from 2005 to 2011 at Ondokuz Mayıs University Medical Faculty Samsun Hospital. The assessed parameters were as follows: epidemiological

Pervenuto in Redazione Maggio 2012. Accettato per la pubblicazione Luglio 2012

Correspondence to: Hamza Cinar, MD, Ondokuz Mayıs Üniversitesi Tıp Fakültesi, Genel Cerrahi Departmanı, Samsun, Turkey (E-mail: dok-torhamza@yahoo.com)

aspects (age, gender), associated risk factors (obesity, chronic obstructive pulmonary disease, previous abdominal surgery, other associated hernias), symptoms of presentation, diagnostic methods (clinical or radiological), surgical technique characteristics (elective or emergency operation, hernioplasty or primary suturation, open or laparoscopic approach) morbidity, hospital stay, recurrences and follow-up.

Operative Procedure

OPEN SURGERY

A transverse incision is sited over the protrusion. External oblique aponeurosis was incised in the direction of its fibers to expose the peritoneal sac. Most surgeons simply invert the sac alone. The aponeurosis of external oblique muscle was closed by interrupt suture and a polypropylene mesh was placed over the aponeurosis of external oblique muscle and then fixed with interrupt suture.

LAPAROSCOPIC SURGERY

Intraperitoneal access was performed using veress needle. Once abdominal access was obtained, site of hernial orifice is readily identified and ports are placed at least 10 cm away from the hernia defect in the form of an arc of a circle whose center is the hernial defect. Contents were reduced from the sac and adhesiolysis was performed if required to obtain an overlap of 5 cm around the defect for a synthetic mesh. The mesh is fixed using a combination of transabdominal sutures.

Results

Between January 2005 and December 2011, 9 patients underwent surgery for Spigelian hernia. Seven patients (77.8%) were female and 2 patients (22.2%) were male. The mean age was 64 years (range 47-81). There were slightly more right-sided hernias than left-sided ones, 5 patients (55.6%) had right and four patients (44.4%) had a left Spigelian hernia. Risk factors were present in 77.8% of patients and a history of previous abdominal operation was the most frequent one (Table I). In two patient (22.2%) the Spigelian hernia appeared concomitantly with other type of abdominal wall hernia (umbilical and inguinal hernia). The most frequent symptom was pain and it was reported in 4 of our 9 patients (44.4%). In 2 of 9 (22.2%) an abdominal lump was present, in 2 of 9 (22.2%) an abdominal lump and pain was present and only one (11.2%) had bowel obstruction symptoms. Out of 2 patients with radiological preoperative examinations, diagnosis was made clinically based on anamnesis and physical examination in 7 cases (77.8%) but preoperative imaging was made all patients for obtain detailed information of hernia sac. We performed operations electively in 8 patients and under emergency con-

TABLE I - Clinical characteristics of 9 patients with Spigelian hernia

	N
<i>Average age (years)</i>	64 (47-81)
<i>Sex (M / F)</i>	2/7
<i>Localization</i>	
Right	5
Left	4
<i>Predisposing factors</i>	
Previous surgery	4
Obesity	1
Chronic bronchopathy	1
Multiparity	1
<i>Preoperative diagnosis</i>	8
<i>Emergency surgery</i>	1
<i>Relapse</i>	1
<i>Type of Operation</i>	
Laparoscopic hernioplasty	2
Open mesh repair	4
Open primary suture repair	3
<i>Mean hospital stay (day)</i>	5.1
<i>Mean followup (month)</i>	58
<i>Complications</i>	
Wound infection	1
Seroma	1

ditions in one patient due to a bowel obstruction. Open hernioplasty with polypropylene mesh placed onlay of the external oblique aponeurosis constitutes the most frequent technique (44.5%), followed by repair with a primary saturation (33.3%). The remaining 22.2% of cases were laparoscopic hernioplasty placing a bilaminar mesh with intraperitoneal position. In one patient bowel resection was needed because of incarceration. The 22.2% of patients required surgical repair of another abdominal wall hernia during the operation for Spigelian hernia (one umbilical and one inguinal hernioplasty). During the postoperative care one patient had wound infection and one patient had seroma. There was neither serious morbidity nor mortality. Mean hospital stay was 5.1 days (range 2-9) however if we look the laparoscopic cases the time falls to 2.5 days. One recurrence (11.1%) was noted during the 15th month of follow-up, which has already been operated on. The mean follow-up period of this study was 58 months (range 6-76). We did not observe any mortality throughout the study.

Discussion

Spigelian hernia occurs most often in a paramedian region lying 0 to 6 cm cranial to a line running between both anterior superior iliac spines, referred to as the "Spigelian hernia belt" ⁵. In the initial stages of development, Spigelian hernias are often difficult to diagnose by physical examination because the hernia originates inferior to an intact external oblique aponeurosis ⁶

Clinical presentation varies, depending on the contents of the hernia sac. Pain which is exacerbated by contraction of the abdominal musculature is the most common symptom associated with Spigelian hernia and is described by over 60% of patients. The second most common clinical feature is a palpable abdominal mass which is present in approximately 35% of cases⁷. Spigelian hernia characteristically possess a narrow neck (0.5-2 cm in diameter) and at presentation approximately 20% of hernias are incarcerated and 14% are strangulated⁸. In most cases, the hernia sac contains the omentum but may also contain the small intestine or colon⁹.

The diagnosis of a Spigelian hernia is difficult; few surgeons suspect it, it has no characteristic symptoms, and the hernia may be interparietal with no obvious mass on inspection or palpation. Only 50% of cases are diagnosed preoperatively¹⁰. Diagnosis is not possible in some cases. Of those cases with undoubt diagnostic are advisable to perform sonography or tomography¹¹. These imaging techniques can help to get the diagnosis and specially can provide data on the exact location of the defect, size, surrounding tissue and hernia sac content. The use of imaging techniques ranged from 30% to 100% in different series^{12,13}. Morenilla LM et al. analyzed 162 cases of Spigelian hernia and reported that ultrasound and computed tomography could give the detail information of the content of hernia sac and both of them were helpful diagnostic tools¹⁴.

Despite all this helpful information imaging techniques offer commas a small percentage of patients emergency surgery required: 21% for Moreno-Egea¹⁵, the same as Artioukh¹⁶, 33% for Popovici¹⁷ and over than 40% for Moles Morenilla¹⁴.

Predisposing factors of Spigelian hernia include obesity, rapid weight loss, multiple pregnancies, chronic obstructive pulmonary disease (COPD), chronic constipation, ascites, traumas, and previous surgery; these conditions do not only determine an increase in the endoabdominal pressure but also cause a greater weakness of the wall^{15,18-20}. Spigelian hernia can be congenital or acquired²¹. Spigelian hernia has been described as a complication of chronic ambulatory peritoneal dialysis (CAPD)²². Care must be taken not to create iatrogenic Spigelian hernias when using laparoscopy trocars or classical drains in the Spigelian aponeurosis²³.

The differential diagnosis of Spigelian hernia includes appendicitis and appendiceal abscess, a tumor of the abdominal wall or a spontaneous hematoma of the rectus sheath or even acute diverticulitis²⁴.

The treatment of Spigelian hernia is surgical and can be performed either by classic open or laparoscopic technique. Traditionally, spigelian hernias have been repaired with an open surgical technique. Open approach follows the usual principles of any hernia repair. The different options include primary closure or mesh repair in cases of atrophic aponeurosis, wide defect or recurrences²⁵.

However, in the past few decades, laparoscopic repair has become a promising alternative for repair after Carter and Mizes performed first intraabdominal laparoscopic repair of Spigelian hernia in 1992²⁶. After laparoscopic approach has been widely described in literature²⁷; two treatment modalities can be used, transperitoneal so called intra-abdominal and extraperitoneal. The first one allows to explore the contralateral side as well as the abdominal cavity and for some authors is the recommended method when there is another process requiring associated surgery because can be performed in the same intervention²⁸. The second modality of laparoscopic surgery is the extraperitoneal approach that offers the advantage of avoiding general anesthesia so that can be performed easily as an outpatient procedure and also avoids the possible added risk of visceral lesions as demonstrates the only prospective randomized controlled trial comparing conventional versus laparoscopic management of Spigelian hernia²⁹. Generally speaking, laparoscopic approach results in less infection rate, quicker incorporation to activities of daily living, less post-operative pain and specially avoids opening the external oblique aponeurosis and therefore a risk reduction of recurrence¹⁴. In spigelian hernia, open surgery is made when incarceration is present²⁵.

Apart from the type of surgical approach exists discussion about the need of a prosthetic mesh. Some authors obtain without mesh as good results as with it, and they currently recommend mesh-free repair, either for conventional repair like Hsieh³⁰ or for laparoscopy repair like Bittner³¹. Published results with any of the existing techniques are good as regards the low recurrence rate that ranges from 0 to 8%. The number of patients of these studies is very small to find statistical differences^{14,28,32,33}.

Conclusion

Spigelian hernia is a rare condition, which is frequently difficult to diagnose if not suspect it. Due to the relatively high risk of strangulation, all patients with Spigelian hernias should be offered surgery, regardless of symptoms. The type of repair is dependent on the individual situation but primary, mesh, or laparoscopic techniques appear to be viable options.

Riassunto

L'ernia di Spigelio è un difetto comune e raro della parete addominale. Vi presentiamo la nostra serie di pazienti con ernia di Spigelio e una revisione della letteratura. METODI: Abbiamo condotto una revisione retrospettiva di pazienti operati (2005-2011) presso l'Università Ondokuz Mayıs, Dipartimento Medico Facoltà di Chirurgia Generale. Gli aspetti epidemiologici, i metodi

diagnostici, tecniche chirurgiche, morbidità, degenza ospedaliera, recidive e follow-up sono stati analizzati.

RISULTATI: Abbiamo trattato 9 pazienti, 7 femmine e 2 maschi, con un'età media di 64 (range 47-81) anni. Il lato destro era la posizione più frequente. I fattori di rischio erano presenti nel 77,8% dei pazienti. La diagnosi è stata fatta clinicamente in 7 di 9 casi ma un imaging pre-operatoria è stato fatto in tutti i pazienti per ottenere informazioni dettagliate sul difetto. Apri ernioplastica con rete in polipropilene posto sopra l'aponeurosi obliqua esterna costituisce la tecnica più frequente (44,5%), seguita dalla riparazione con una suturazione primaria (33,3%). Il restante 22,2% dei casi sono state ernioplastiche laparoscopiche collocate in posizione mesh intraperitoneale (22,2%). La degenza media è stata di 5,1 giorni (range 2-9), nei casi laparoscopici questo numero è diminuito a 2,5 giorni. Una recidiva è stata notata nel corso del mese 15 di follow-up, che è già stato operato. La media del follow-up di questo studio era di 58 mesi. Nessuna mortalità è stata osservata tra i pazienti.

CONCLUSIONI: L'ernia di Spigelio è rara e richiede un alto indice di sospetto a causa della mancanza di sintomi coerenti e segni. Il medico deve garantire la diagnosi corretta, combinazione di una storia e l'esame fisico con l'imaging pre-operatoria. La tecnica chirurgica dipende dalle caratteristiche del paziente, dal tipo di ernia e dall'esperienza del chirurgo.

References

1. Klinkosch JT: *Programma Quo Divisionem Herniarum, Novumque Herniae Ventralis Specium Proponit*. Rotterdam: Benam; 1764.
2. Vescio G, Sommella L, Gallelli G, Battaglia M, Manzo F: *Ernia di Spigelio complicata: nostra esperienza*. Ann Ital Chir, 2000; 71:573-76.
3. Zennaro F., Tosi D, Orio A, Morelli C, Chella B: *Le ernie di Spigelio. Considerazioni anatomo-cliniche e descrizione di 5 casi clinici*. Ann Ital Chir, 2003; 74(2):165-68.
4. Vara R, Rosell J, Guerrero JA, Ruiz A: *Hernias externas simples y complicadas de la pared abdominal del adulto: 1635 casos*. Cirugía Ibero-Americana, 1993; 2:58-64.
5. Spagen L: *Spigelian hernia*. World J Surg, 1989; 13:573-80.
6. Kavic MS: *Abdominal wall hernia: The procedure*. In: Kavic MS(ed): *Laparoscopic Hernia Repair*. Amsterdam: Harwood Academic Publishers, 1997; 83-94.
7. Jain KM, Hastings OM, Kunz VP, et al: *Spigelian hernia*. Am Surg, 1977; 43:596-600.
8. Montes IS, Deysine M: *Spigelian and other uncommon hernia repairs*. Surg Clin North Am, 2003; 83:1235-53.
9. Larson DW, Farley DR: *Spigelian hernias: repair and outcome for 81 patients*. World J Surg, 2002; 26:1277-281.
10. Opson RO, Davis WC: *Spigelian hernia: Rare or obscure?* Am J Surg, 1968; 116:842-46.
11. Mufid MM, Abu-Yousef MM, Kakish ME, Urdaneta LF, Al-Jurf AS: *Spigelian hernia: Diagnosis by high-resolution real-time sonography*. J Ultrasound Med, 1997; 16:183-87.
12. Vos D, Scheltinga M: *Incidence and outcome of surgical repair of spigelian hernia*. Br J Surg, 2004; 91:640-44.
13. Malazgirt Z, Dervisoglu A, Polat C, et al.: *Preperitoneal mesh repair of spigelian hernias under local anesthesia: Description and clinical evaluation of a new technique*. Hernia, 2003; 7:202-05.
14. Moles Morenilla L, Docobo Durantez F, Mena Robles J, de Quinta Frutos R: *Spigelian hernia in Spain. An analysis of 162 cases*. Rev Esp Enferm Dig, 2005; 97:338-47.
15. Moreno-Egea A, Flores B, Girela E, Martín JG, Aguayo JL, Canteras M: *Spigelian hernia: bibliographical study and presentation of a series of 28 patients*. Hernia, 2002; 6:167-70.
16. Artioukh DY, Walker SJ: *Spigelian herniae: presentation, diagnosis and treatment*. J R Coll Surg Edinb, 1996; 41:241-43.
17. Popovici A, Munteanu I: *Spigelian hernias. The authors' own experience and a review of the literature*. Chirurgia, 1997; 92: 179-86.
18. Mosca F, Persi A, Stracqualursi A, Di Mauro D: *Considerazioni etiopatogenetiche e clinico-terapeutiche sull'ernia ventrale di Spigelio. Contributo casistico e revisione della letteratura*. Chir Ital, 2003; 55, 1:93-100.
19. Amodeo C, Immè A, Turrise A, Caglià P, Scamporrino P, Veroux PF, Mio F: *L'ernia di Spigelio*. 1995; *Chirurgia* 8:296-99.
20. Gorgone S, Barbuscia M, Di Pietro N, Rizzo AG, Melita G, Calabrò G: *L'ernia di Spigelio*. Chir Ital, 2001; 53:853-56.
21. Weiss J, Lerner OZ, Nilson S: *Spigelian hernia*. Ann Surg, 1974; 180:836-39.
22. Engeset J, Youngson GG: *Ambulatory peritoneal dialysis and hernia complications*. Surg Clin North Am, 1984; 64:385-92.
23. Skandalakis PN, Zoras O, Skandalakis JE et al.: *Spigelian hernia: Surgical anatomy, embryology and technique of repair*. American Surgeon, 2006; 72:42-48.
24. Rogers FB, Camp PC: *A strangulated Spigelian hernia mimicking diverticulitis*. Hernia, 2001; 5:51-52.
25. A. Ruiz de la Hermosa, I. Amunategui Prats, P. Machado Liendo, et al.: *Spigelian hernia. Personal experience and review of the literature*. Rev Esp Enferm Dig (Madrid), 2010; 102:583-86.
26. Carter JE, Mizes C: *Laparoscopic diagnosis and repair of Spigelian hernia: Report of case and technique*. Am J Obstet Gynecol, 1992; 167:77-78.
27. Antinori A, Moschella F, Maci E, Accetta C, Nunziata J, Magistrelli P: *La chirurgia laparoscopica nelle ernie ventrali primitive della parete addominale: Risultati immediati ed a distanza*. Ann Ital Chir, 2008; 79(6):435-40.
28. Satorras-Fioretti M, Vázquez-Cancelo J, Pigni-Benzo L, Salem AM, Ramos-Ardá A.: *Hernias de pared abdominal de localización poco frecuente*. Cir Esp. 2006; 79(3):180-83.
29. Moreno-Egea A, Carrasco L, Girela E, et al.: *Open vs. laparoscopic repair of Spigelian hernia: A prospective randomized trial*. Arch Surg, 2002; 137:1266-268.
30. Hsieh HF, Chuang CH, Lin Ch, Yu JC, Hsieh CB: *Spigelian hernia: Mesh or not?* Rev Esp Enferm Dig, 2007; 99(9):502-04.

31. Bittner JG 4th, Edwards MA, Shah MB, MacFadyen BV Jr, Mellinger JD: *Mesh-free laparoscopic spigelian hernia repair*. Am Surg, 2008; 74(8):713-20; discussion 720.
32. Mittal T, Kumar V, Khullar R, Sharma A, Soni V, Baijal M, Chowbey PK: *Diagnosis and management of Spigelian hernia: A review of literature and our experience*. J Minim Access Surg, 2008; 4:95-98.
33. Lourcing-Andersen M, Hjerne FP, Skovdal J, Bisgaard T: *Diagnosis and treatment of Spigelian hernia*. Ugeskr Laeger, 2009; 171(48):3518-252.

