



SURGICAL AUDIT

SPIGELIAN HERNIA REPAIR: EVALUATION OF PERSONAL EXPERIENCE

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Aim: This retrospective study was undertaken to evaluate a Personal Experience of repair of Spigelian hernia.

Methods: Medical records of six patients operated for a spigelian hernia over 4 years were studied and analyzed retrospectively.

Results: two males (33.3%) and four females (66.7%), whose ages ranged from 42–67 years received surgical treatment for six spigelian hernias. Pain was the main presenting complaint in all patients. Intermittent palpable mass in five patients and two patients presented with painful mass associated with signs suggesting bowel obstruction. Three patients had previous surgery. Accurate preoperative diagnosis was possible in five patients confirmed with imaging. Open direct repair was undergone for two patients and preperitoneal mesh repair was applied for four patients. Follow up our patients for an average of 12 months revealed one patient developed seroma but with no recurrence or fistula formation. The average length of hospital stay was 4.1 days. They returned to normal daily activity on the 15th postoperative day.

Conclusion: Although spigelian hernia is a rare condition, diagnosis is not difficult once remembered. The condition requires a surgical repair because of its high risk of complications. Surgical repair seems to cause few complications but it is simple, effective in the long term and well tolerated.

Keywords: Ventral, intestinal obstruction, seroma.

INTRODUCTION

Spigelian hernia (SH) can be defined as the protrusion of preperitoneal fat or a peritoneal sac containing or not containing an intra-abdominal organ, across a congenital or acquired defect in the Spigelian line.⁽¹⁾ These hernias are also known as “spontaneous lateral ventral hernias,” “hernia of the semilunar line,” or “hernias through the conjoint tendon”.⁽²⁾ Spigelian hernias constitute from 0.12% to 2% of all abdominal wall hernias.^(3,4) This type of hernia defect usually arises during the fifth and sixth decades of life and is most frequently localized on the right side.^(5,6) This increase in incidence is most likely due to the improvement in diagnostic imaging techniques. It may develop anywhere in the swordblade-shaped area between the lateral border of the rectus abdominis muscle and the medial border of the transversus abdominis muscle.⁽⁷⁾ However, the majority (90 per cent) occur within a 6-cm

area distal to the umbilicus where the spigelian aponeurosis is widest (Fig. 1). When it is considered, the diagnosis is not as difficult as it had once been thought.^(8,9) The condition requires a surgical repair because of its high risk of complications.^(10,11) Beside the conventional repair by direct approximation of the neighboring muscular tissues, some alternative open mesh and laparoscopic modalities of repair have been reported in recent years.⁽¹²⁻¹⁴⁾ Could the concept of open posterior preperitoneal repair technique that has been successfully used in inguinal and some ventral hernias be applied to the repair of spigelian hernia defects with favorable early and late results?^(15,16) In this retrospective study, clinical trial of repair of Spigelian hernia, as a personal experience, has described.

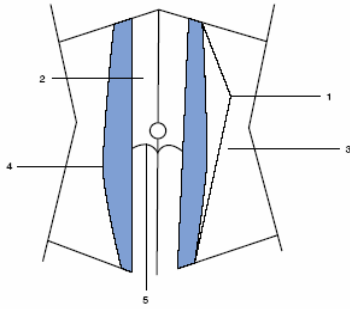


Fig 1. Anatomy of abdominal wall, 1; Linea semilunaris (spigelian) 2; rectus abdominis muscle 3; transversus abdominal muscle 4; spigelian aponeurosis 5; linea semicircularis.

PATIENTS AND METHODS

Surgical and medical records of patients operated on for a spigelian hernia over 4 years period were analyzed retrospectively. The data collection expanded for another year to fulfill the criterion of at least 1 year of follow-up after surgical repair.

The records were reviewed for patient characteristics (age, gender, and body mass index), medical history, prior abdominal surgery, hernia location, presenting complaint of the patient, concomitant inguinal/femoral/umbilical hernias or history of previous hernia repair operation diagnostic evaluation, surgical treatment and long-term outcome. The principal outcome measures were the surgical repair technique, type of the anesthesia; early and late complications, hospital stay, and return to normal daily activities (NDA). Patients were interviewed and examined in the outpatient clinic. Some additional information was retrieved from relatives or through the phone inquiry. Follow-ups at 1, 3, 6, and 12 months postoperatively were done.

RESULTS

A total of 6 patients, 2 male (33.3%) and 4 female (66.7%), whose ages ranged from 42–67 years received surgical treatment for 6 spigelian hernias. Five patients were healthy without significant co-morbidity and one patient (16.7%) had chronic obstructive pulmonary disease Table 1. Three patients had undergone previous operations for a total of three other hernias: one inguinal, two umbilical. Two patients had undergone surgery for urological or gynecological conditions; one of these operations was performed using laparoscopic techniques. All six patients referred with pain, and five reported an intermittent lump at the site of hernia. Pain was described as local, intermittent and postural and increasing with exertion. Four patients had experienced symptoms for

more than 6 months. Spigelian hernia was situated on the right side in four (66.6%) patients and on the left in two (33.3%) patients. An incarcerated spigelian hernia was diagnosed in two patients (33.3%).

Table 1. Clinical and anatomical features of 6 spigelian hernia patients.

Parameter	statistics
Mean age, years (range)	54(42–67)
Gender, male/female (ratio)	2/ 4(1:2)
Mean BMI (range)	26(19–33)
Concomitant disease, n (%)	1(16.7%)
Prior abdom. surgery, n (%)	5(83.3%)
History of hernia op., n (%)	3(50.0%)
-Inguinal	1(16.7%)
-Umbilical	2(33.3%)
Main complaint, n (%)	6(100%)
-Pain	5(83.3%)
-Mass	5(83.3%)
-Pain and mass	5(83.3%)
Hernia location, n (%)	4(66.6%)
-Right side	2(33.3%)
-Left side	2(33.3%)
Method of diagnosis, n (%)	
-Preoperative diagnosis	2(33.3%)
-Physical examination	5(83.3%)
-Imaging technique	
-Intraoperative diagnosis	1(16.7%)
-Exploration	0
-Incidental	2(33.3%)
Incarcerated at diagnosis, n (%)	2(33.3%)

Presence of hernia was reached preoperatively in five patients (83.3 %), exclusively clinical in three, and confirmed by imaging techniques (ultrasound and CT scan) in two (Fig. 2). After diagnosis of spigelian hernias, open primary repair was done under general anesthesia for five patients and spinal anesthesia for one patient.



Fig 2. Computed tomogram (CT) of anterior abdominal wall showing a spigelian hernia (arrow).

Table 2 shows the surgical outcomes of six spigelian hernias, operations were done electively in four patients and under emergency conditions in two, one man, aged 62 and one woman 56 years, presented with an acute abdomen. Spigelian hernias in both harbored incarcerated omentum, which were released and the hernial defects were repaired using an open preperitoneal mesh repair. The two patients recovered without major morbidity. Two patients underwent open repair with primary closure of the hernia for the small defects. In the remaining four patients a large hernia was repaired using an open preperitoneal mesh repair with mesh technique. Laparoscopic techniques were not used.

Table 2. Surgical outcome statistics of 6 spigelian hernia cases.

Feature	statistics
Type of operation, n (%)	4(66.6%)
-Elective	2(33.3%)
-Emergency 4 (12)	
Type of anesthesia, n (%)	5(83.3%)
-General 28 (84)	1(16.7%)
-Spinal 1 (3)	
Type of repair technique, n(%)	2(33.3%)
- primary suture repair	4(66.6%)
- preperitoneal mesh repair	4.1 (1-7)
Hospital stay (mean and range in days)	15.6(7-25)
Return to NDA (mean and range in days)	
Complications	
-Early	1(16.7%)
-Seroma	
-Late	1(16.7%)
-Chronic pain	0
-Recurrence	0
-Fistula formation	

The primary closure involved opening of the external oblique aponeurosis along the line of its fibers, in a so-called gridiron approach. The sac is excised, and its neck is closed with a suture. Posterior rectus sheath is then approximated with nonabsorbable sutures transversely, which constitutes the repair. The external oblique aponeurosis is then closed with nonabsorbable suture material. The second method was used in patients with big defect by using a flat sheet of polypropylene placed in the preperitoneal space in an underlay position and sutured there with an overlap of about 3 cm. The mesh is secured with polypropylene sutures passed through the anterior and posterior rectus sheaths together with the muscle.

Early and late postoperative complications occurred in a total of one patient (33.3%). The early complication seen in one patient (16.7%) was seroma, and the late complication

was seen in one patient had chronic pain. No recurrence or fistula formation was detected during a mean follow-up in any of the patients. All the patients were examined 1 week after the operation as the first postoperative control, and follow up at 3, 6, and 12 months from surgery was planned. The mean hospital stay in the whole series was 4.1 days, ranging from 1 to 7 days. Mean time elapsed before return to normal daily activity (NDA) was 15.6 days (range 7–25).

DISCUSSION

A spigelian hernia is defined as a hernia occurring through the spigelian aponeurosis. It may develop anywhere in the longitudinal area between the lateral border of the rectus abdominis and the medial border of the transversus abdominis muscles. The majority occur within the spigelian hernia belt, the 6-cm area of spigelian aponeurosis that lies cephalad to the interspinal plane.⁽¹⁷⁾ However, hernias above and below this level have been reported. Spigelian hernias that develop below the crossing of the inferior epigastric vessel and Spiegel's line are called low spigelian hernias.

Most spigelian hernias are acquired although some are congenital.^(18–20) The incidence of acquired spigelian hernia is generally considered to be low, but Spangenberg diagnosed such defects in 24 patients over 30 months. Moreno-Egea et al.⁽⁹⁾ diagnosed 28 patients in 7 years, whereas Larson and Farley (21) identified four patients per year.

Predisposing factors 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.^(6,9,22,23) Surgery for urological or gynaecological conditions before developing a spigelian hernia was noticed in some patients. A relationship between spigelian hernia and earlier open abdominal surgery has also been suggested previously. However, an earlier laparoscopy also appeared to be a risk factor. This relationship has been noted before and may be attributed to the increased abdominal pressure during pneumoperitoneum possibly creating a tear in the spigelian aponeurosis.⁽²⁴⁾ A spigelian hernia may also be found coincidentally during diagnostic laparoscopy for unexplained abdominal pain or following continuous ambulatory peritoneal dialysis.^(25,26) An intermittent palpable mass and postural pain following open or laparoscopic surgery in the lower abdomen may therefore be suggestive of an acquired spigelian hernia. The gender ratio has been in favor of women in most other series.^(21,27,28) Multiple pregnancies and labor may also play a role in the weakening of the abdominal wall and consequent spigelian hernia development in women. This type of hernia defect usually arises during the fifth and

sixth decades of life and is most frequently localized on the right side.⁽⁶⁾

The hernial orifice is almost always small, with rigid margins, and in a high percentage of cases, obstruction or strangulation are indeed the first clinical signs.^(22,23,29,30) In most cases, the hernia sac contains the omentum but may also contain the small intestine or colon.⁽²¹⁾ Pain with or without a palpable mass was a major presenting symptom in the present patients. The pain varied in type, severity and location, but was often postural and could be provoked by the Valsalva maneuver. Most patients experienced symptoms for at least 2 months before the hernia was diagnosed. This delay was predominantly doctor related as physicians are often not familiar with this defect.⁽⁵⁾ Diagnosing spigelian hernia is not difficult once a palpable and reducible mass is present. The visual finding of a hernia of this type is very uncommon because spigelian hernia is frequently found in particularly overweight subjects,^(6,22) where it is masked by the abdominal adipose component. In these cases, it may even be located in the thickness of the musculoaponeurotic bands of the abdominal wall.⁽⁶⁾ Ultrasonography (US) or Computed Tomography (CT) scanning may also be useful.^(31,32) US is a very accurate means of locating the hernia and its relationship to the abdominal musculature. It can demonstrate the hernia orifice and the sac within the layers of the abdominal wall. Moreover, US show the presence of bowel within the sac.^(33,34,35) Computed tomography is by far the most accurate diagnostic method available, especially if oral contrast is used so that bowel loops are demonstrated.

The bowel can then be seen clearly to transgress the layers of the abdominal wall.^(36,37) Spigelian hernias, being small, have a high incidence of incarceration, which is reported to vary from 14%–24.1%.^(5,38)

A significant proportion of patients present with an incarcerated or even a strangulated hernia. Incarceration may be the first clinical manifestation of the spigelian hernia, and the patient's history did not reveal any previous abdominal mass that could be attributed to its presence. It is advisable to repair a spigelian hernia as strangulation requiring emergency surgery occurs up to 21 per cent of cases.⁽⁴⁰⁾ In the literatures, data showed that most of surgeons preferred open intraperitoneal mesh repair under general anesthesia.

The simplest form of repair is open primary repair especially with small defects is the first option.⁽²¹⁾ The location of the hernia is marked on the abdominal wall with the patient standing, if possible. Although repairs are usually performed under general anesthetic, local anesthetic with moderate sedation may be used in small uncomplicated hernias. A transverse incision is created

over the hernia, and the length of the incision is dictated by the size of the defect. If it is not clear at the time of the operation exactly where the hernia is situated because it has reduced during induction of the anesthetic, it is safer to perform a paramedian incision so that a longer area of the Spigelian fascia can be examined.⁽⁵⁾ This maneuver was done for two patients in our study. The second option is using mesh repair either by mesh plug insertion into the defect and suturing to its edges with interrupted 2-0 polypropylene sutures or using a flat sheet of polypropylene placed in the preperitoneal space in an underlay position and suturing there with an overlap of about 3 cm. The mesh is secured with polypropylene sutures passed through the anterior and posterior rectus sheaths together with the muscle.⁽³⁹⁾

In recent years, laparoscopic intraperitoneal mesh repair of spigelian hernias has improved considerably as well and has become a major alternative to conventional methods.^(14,17,25,40) Laparoscopic techniques were not used in the present study.

In conclusion, although spigelian hernia is a rare condition, its diagnosis is not difficult once considered. It is characterized by an intermittent and palpable painful mass in the lower abdomen. It may be associated with previous open or laparoscopic surgery. It necessitates surgical repair due to the high risk of incarceration or strangulation. The type of repair is dependent on the surgeons' choice, but it has low complication and recurrence rates and an excellent long-term outcome.

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