

A. Moreno-Egea · B. Flores · E. Girela · J.G. Martín  
J.L. Aguayo · M. Canteras

## Spigelian hernia: bibliographical study and presentation of a series of 28 patients

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**Abstract** Spigelian hernias are rare defects of the abdominal wall. Our aim is to analyse the bibliography and present a series of 28 patients. A Medline bibliographical study was performed between 1970 and 2000 with analysis of the number of cases, series, ratio of cases to year and type of journal. We also present a personal study and analyse epidemiological, diagnostic, and treatment factors. There are 159 articles, 479 cases, and 19 series of more than five patients published in 85 journals (42.3% medical). Our diagnosis was preoperative in 75%, and programmed surgery was 3.6 times more common than emergency surgery. We found a significant relationship between hospital stay and type of surgery ( $P < 0.02$ ) and surgical technique used ( $P < 0.001$ ). We found that spigelian hernias have a multidisciplinary interest; they are given almost equal treatment in medical and surgical journals; preoperative diagnosis can be established in 75% of cases; and the best results are offered by the extraperitoneal laparoscopic approach.

**Keywords** Spigelian hernia · Treatment · Laparoscopy

### Introduction

A spigelian hernia is an abdominal wall defect located on the outer edge of the crescent line, the area between the fascia of the anterior rectus muscle and the sheathes of the wide muscles of the abdomen. The aetiological

factors classically associated with this defect are obesity, chronic obstructive pulmonary disease, prior surgery, and abdominal trauma. Diagnosis appears to be characterised by the scarcity and non-specificity of clinical features, and treatment by a lack of systematisation [13,14]. Our aim is to analyse the existing bibliography and report on a series of 28 of our patients.

### Patients and methods

#### Patients

Between January 1994 and December 2001, 28 patients underwent surgery for spigelian hernia at the J.M<sup>a</sup>. Morales Meseguer University Hospital. In 1998, a specific abdominal wall unit was created, and the laparoscopic technique was introduced as a therapeutic option in programmed surgery. Twenty patients (71%) were females, and eight were males, with a median age of 61 years (range: 17–92).

#### Methods

##### *Review of literature*

We analysed publications on the Medline database using “spigelian hernia” as a search criterion and 1970–2000 as a time interval. The following were analysed: number of articles, number of total cases, number of series, ratio of cases to article and cases to year, and number and type of journal featuring the publications.

##### *Personal experience*

A retrospective study was done of all the patients diagnosed with and treated for spigelian hernias at our hospital. The parameters assessed were as follows: clinical (age, gender, associated diseases, prior abdominal surgery, location, and other associated hernias), method of diagnosis (clinical, radiological, or postoperative), type and form of treatment (emergency or programmed herniorrhaphy, hernioplasty, or laparoscopy), intra-operative complications, postoperative morbidity, hospital stay, and rate of recurrences. Follow-up averaged 3.4 years (range: 1–6 years) and was complete in 100% of the patients. The statistical study was done using the Pearson  $X^2$  and Fisher exact tests, considering a value of  $P < 0.05$  as a level of significance.

A. Moreno-Egea (✉) · B. Flores · E. Girela · J.G. Martín  
J.L. Aguayo · M. Canteras  
Abdominal Wall Unit, Department of General Surgery,  
J. M<sup>a</sup>. Morales Meseguer Hospital, Murcia, Spain  
E-mail: amorenoe@worldonline.es  
Tel.: +34-96-8619299  
Fax: +34-96-8232484

*Correspondence address:* A. Moreno-Egea  
C./Río Chicamo 18 (Urb. La Alambra), La Alcayna,  
Molina de Segura, 30500 Murcia, Spain

## Results

### Review of literature

Over the three decades analysed, there were 159 articles published about spigelian hernia, with 479 reported cases and 19 series with more than five patients. The series account for 12% of the publications. The number of journals featuring these publications is 85, of which just 34 are in the field of surgery (40%), with 79 of the articles (53%). Therefore, up to 42.3% of the papers are published in medical journals. The United States is the country with the highest number of publications (35.6%), followed by Italy, with 20%; Italy is the European country with the most publications, with three journals among the five most common, and with a higher articles to journal ratio than the USA (4.3 vs 1.7) (Table 1).

### Own series

The features of the patients receiving surgery for spigelian hernia are given in Table 2. Fifty percent of the patients were in the fifth and sixth decade of life. Twenty-five percent of the patients were over 70 years old, and only 7.1% were under 40. Spigelian hernia was more common in women range to (71.4%) and on the left side (64.3%). No risk factors were detected in seven patients (25%). Diagnosis was preoperative in 21 patients (75%), exclusively clinical in 12, and confirmed by imaging techniques in ten. The remaining seven who received surgery without an aetiological diagnosis (25%) were programmed as inguinal hernias. Programmed surgery was 3.6 times more common than emergency surgery. In 1998, we introduced the totally extraperitoneal laparoscopic technique, having used this approach

**Table 2.** Clinical and surgical features of patients operated on for spigelian hernias. Data are expressed as absolute values (percentages). (SWA = surgery without admission; M = male; F = female; COPD = chronic obstructive pulmonary disease)

| Mean age (years)   | 59.9 [17–92]         |
|--------------------|----------------------|
| < 40 years         | 2 (7.1)              |
| 41–50              | 5 (17.8)             |
| 51–60              | 8 (28.5)             |
| 61–70              | 6 (21.4)             |
| 71–80              | 5 (17.8)             |
| > 80 years         | 2 (7.1)              |
| Gender (M/F)       | 8 (28.6) / 20 (71.4) |
| Location           |                      |
| Right              | 10 (35.7)            |
| Left               | 18 (64.3)            |
| Associated factors |                      |
| Prior surgery      | 6 (21.4)             |
| Traumatism         | 6 (21.4)             |
| Obesity            | 6 (21.4)             |
| COPD               | 3 (10.7)             |
| Another hernia     | 6 (21.4)             |
| Diagnosis          |                      |
| Preoperative       | 21 (75)              |
| Postoperative      | 7 (25)               |
| Type of surgery    |                      |
| Emergency          | 6 (21.4)             |
| Programmed         | 22 (78.5)            |
| Technique          |                      |
| Anterior-open      | 17 (60.7)            |
| Laparoscopy        | 11 (39.3)            |
| Hospital admission |                      |
| Admitted           | 18 (64.3)            |
| SWA                | 10 (35.7)            |
| Morbidity          |                      |
| Haematoma          | 1 (3.5)              |
| Wound abscess      | 1 (3.5)              |
| Prolonged ileus    | 2 (7.1)              |

in ten patients without hospital admission (35.7%) and the intra-abdominal approach to associate cholecystectomy in one. Although there were few postoperative complications (Table 3), they were more frequent with

**Table 1.** Bibliographical study, according to the journals, with publications on spigelian hernias over three decades (1970–2000). Data are expressed as absolute values with percentages in parentheses

| Journals                  | Medline   | Journals | Articles | Ratio |
|---------------------------|-----------|----------|----------|-------|
| Total number              | 85        |          |          |       |
| Field of surgery          | 34 (40)   |          |          |       |
| On imaging techniques     | 15 (17.6) |          |          |       |
| Field of medicine         | 36 (42.3) |          |          |       |
| Distribution by journal   |           |          |          |       |
| Minerva Chir              |           | 14       | (9.4)    |       |
| Am Surg                   |           | 6        | (4)      |       |
| Ann Ital Surg             |           | 5        | (3.3)    |       |
| G Chir                    |           | 5        | (3.3)    |       |
| Arch Surg                 |           | 4        | (2.7)    |       |
| Chirurg                   |           | 4        | (2.7)    |       |
| Distribution by country   |           |          |          |       |
| USA                       |           | 31       | 53       | 1.7   |
| Italy                     |           | 7        | 30       | 4.3   |
| Germany                   |           | 6        | 12       | 2     |
| England                   |           | 5        | 9        | 1.8   |
| Switzerland               |           | 4        | 6        | 1.5   |
| France                    |           | 3        | 5        | 1.6   |
| Distribution by continent |           |          |          |       |
| America                   |           |          | 55 (37)  |       |
| Europe                    |           |          | 85 (57)  |       |
| Asia                      |           |          | 7 (4.7)  |       |
| Oceania                   |           |          | 2 (1.3)  |       |

**Table 3.** Clinical and surgical features of patients undergoing elective surgery for spigelian hernia according to surgical approach. Data are expressed as absolute value (percentage) or mean (range)

|                      | Open<br>(n=17) | Laparoscopic<br>(n=11) |
|----------------------|----------------|------------------------|
| Operating time (min) | 45 (27–65)     | 42 (29–56)             |
| Morbidity            | 4 (23.5)       | 0                      |
| Hospital stay (days) | 5.2 (2–9)      | 1                      |
| Recurrence           | 0              | 0                      |

the open technique. During the mean follow-up of 3.4 years, there were no deaths in either group. The statistical study as regards type of surgery (elective or emergency) showed no significant differences for age ( $P=0.44$ ), gender ( $P=0.62$ ), or hernia location ( $P=2.9$ ). Analysis of hospital stay showed a significant relationship to type of surgery and surgical technique in favour of the laparoscopic approach ( $P<0.02$  and  $P<0.001$ , respectively) but not to age, gender, or predisposing factors.

## Discussion

We can establish the following from the bibliographical analysis of spigelian hernias: (a) they are featured in a great variety of journals, (b) their diagnosis involves various specialists and (c) a large number of isolated cases have been published. All of this indicates the multiple forms of clinical manifestation and the difficulty in initial diagnosis. It is worth noting that Italy is the European country with the most publications on this hernia, with three journals among the five most common. The presence of predisposing factors must be regarded as a starting point for correctly orienting clinical history; Artioukh found them in 79% of cases, a figure similar to the 75% in our series [1]. The presence of pain was also inconsistent, ranging in the literature from 31% to 86% of the series [1, 3, 10,14]. After clinical history, physical examination is fundamental for orienting diagnosis, although there is not always a herniating tumour and it is sometimes difficult to refer it correctly to the spigelian fascia [10,14]. All the same, clinical diagnosis is inaccurate on a large number of occasions, up to 50% according to Stirnemann [15]. So although diagnosis must be established clinically in most patients on the basis of a high level of suspicion, a proper clinical history, and a thorough physical examination, it is advisable to perform a sonography or tomography in cases of diagnostic doubt and currently in centres where laparoscopic surgery can be considered [8, 10,12]. Sonography and tomography can provide data on the exact location of the defect, size, environment, and sac contents, i.e. important information for properly choosing the surgical approach. Despite all this, there is still a small percentage of patients requiring emergency surgery: 21% for Artioukh (the same as the 21% in our series) and 33% for Popovici [1,9]. Preoperative

diagnosis was established in 75% of the cases in our series and in the literature ranges from 47% to 92% [1, 3, 13, 14,15]. But if a preoperative diagnosis can be established, it is, therefore, possible to consider treatment and to choose the surgical technique most suited to the characteristics of the patient and the type of hernia.

Results with the classical techniques are good as regards morbidity and mortality [2, 4, 5, 9, 11], but they usually require hospital admission, among other reasons because they require an ample incision and dissection to locate the defect and expose the margins. In 1992, Carter published the first intra-abdominal laparoscopic correction [2], but although the intra-abdominal approach allows us a simple diagnosis and solid repair, it converts parietal surgery into intracavity surgery with the possible added risk of visceral lesions and postoperative obstruction. In 1999, we published the totally extraperitoneal laparoscopic approach, which avoids these inconveniences and repairs the defect at the source on the posterior abdominal wall [7]. The present study shows that the results depend on the chosen surgical technique as regards morbidity and hospital stay. The extraperitoneal laparoscopic approach has proved to be the technique that offers the patient the least morbidity and shortens hospital stay to the extent that it can be performed easily as an outpatient procedure. We currently recommend: the extraperitoneal approach as the technique of choice in patients diagnosed preoperatively with spigelian hernias; the intra-abdominal approach when there is another process requiring associated surgery in the same intervention; and anterior hernioplasty in cases of complication or emergency.

In conclusion:

1. Spigelian hernias have a multidisciplinary interest
2. this pathology features almost equally in medical and surgical journals
3. it can be diagnosed and treated electively in more than 75% of cases
4. in our experience, the extraperitoneal laparoscopic approach gives the best results in the elective surgery.

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