

SINGLE INCISION LAPAROSCOPIC SPIGELIAN HERNIA REPAIR – AN APPROACH WITH STANDARD INSTRUMENTARIUM

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SUMMARY – Spigelian hernia is a rare type of abdominal wall ventral hernia caused by defect in the spigelian fascia and presented with pain and/or palpable mass. This diagnosis is an indication for surgical procedure due to the high risk of incarceration. There are two surgical approaches (open and laparoscopic), both using two methods of repair (mesh-free primary closure and tension-free mesh repair), depending on the hernia ring size. We present a case of a 62-year-old woman with a palpable mass localized in the left spigelian hernia belt, verified by ultrasonography as a spigelian hernia. A single incision intra-abdominal laparoscopic approach with a tension-free underlay mesh-repair technique was used to treat the condition. Operating time was 40 minutes and the procedure was completed without complications. Postoperative recovery was uneventful as well as 1-week and 2-month follow up. To our knowledge, this is the first report of spigelian hernia repair by single incision laparoscopic surgery. Although this approach is more demanding in comparison to multiport laparoscopy, it proved to be safe and feasible for experienced laparoscopic team. Besides cosmetic improvement, the single incision approach reduces to minimum the risk of bleeding, organ injury and incisional postoperative hernia. To determine optimal indications and limits of this approach, further data collection and follow up are required.

Key words: *Hernia, spigelian; Hernia, ventral – surgery; Laparoscopy – methods*

Introduction

Spigelian hernia is a very rare type of abdominal wall hernias, with a prevalence of 2%¹. It is a lateral ventral hernia localized in the spigelian fascia (the aponeurotic layer between the rectus abdominis muscle medially and the semilunar line laterally), almost always below the semicircular line of Douglas where the posterior rectus sheath is missing.

Clinical presentation of spigelian hernia varies^{1,2}. The most common symptom is localized pos-

tural pain. Palpable, reducible swelling that facilitates the diagnosis is present in only few cases because these interparietal hernias are penetrating between the muscles of the abdominal wall.

Besides physical examination, the standard in verification of the diagnosis is ultrasonography, seldom computed tomography (CT) scan³, and recently laparoscopy^{4,5}.

Hernial orifice is usually small, so it carries a high risk of bowel obstruction caused by incarceration (17%) and strangulation (10%)⁶. Therefore, once diagnosed, spigelian hernia is an indication for surgical repair^{2,6}. There are two surgical approaches, open and laparoscopic repair procedures, both using mesh-free primary aponeurotic closure or tension-free mesh repair methods, extraperitoneal on-lay repair with poly-

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Received May 17, 2012, accepted August 23, 2012

propylene mesh and transabdominal underlay repair with composite mesh. The less invasive laparoscopic procedure has been shown to have advantages over open procedures in reducing hospital days, postoperative pain, wound complications and recovery time⁷.

Since the first laparoscopic intra-abdominal correction of spigelian hernia performed by Carter and Mizes⁴, the approach has been proved to be safe in both elective surgery procedures⁸ and in incarcerated spigelian hernias⁹.

As evolving, laparoscopic surgery has offered and developed a new alternative approach called single port, single incision access, or laparoscopic single site (LESS) technique with the central idea of reducing the number of incisions while maintaining the standard laparoscopic procedures and instrumentarium. It is defined as performing a standard laparoscopic procedure using a single small incision that can either have multiple ports (2-4 of 5 mm and 11 mm) placed through it or a specifically designed port that allows for placement of multiple trocars or instruments¹⁰. Herein, we report a case of single incision laparoscopic (SIL) spigelian hernia repair.

Case Report

A 62-year-old woman presented with a painless, palpable mass in the left lower abdominal quadrant in the area of the spigelian hernia belt. Although her past surgical history included laparoscopic transabdominal umbilical hernia repair in 2006, this swelling did not seem to be an incisional hernia from the previous sur-

gery when trocars were placed in midclavicular line at the umbilical level and in the anterior axillary line at the level of Palmers point and at the level of the anterior superior iliac spine. Correlating to clinical presentation, the diagnosis of spigelian hernia was confirmed by ultrasound that showed a defect on the left spigelian aponeurosis measuring 2.5 cm in diameter (Fig. 1). Elective surgical treatment was indicated.

We opted for single incision intra-abdominal laparoscopic approach with the tension-free underlay mesh repair technique.

The patient was in supine position. Pneumoperitoneum was created by insufflating carbon dioxide to the pressure of 12 mm Hg through a Veress needle. A vertical skin incision approximately 2 cm in length was made 2 cm superior to the umbilicus in the right anterior axillary line. Twelve-mm optical trocar (Endopath XCEL, Ethicon Endo-surgery, Cincinnati, OH) and 30-degree laparoscope (Aesculap Full HD, Aesculap Ag & Co. KG, Tuttlingen, Germany) were inserted. The mesh previously placed to repair the umbilical hernia defect was unremarkable. A defect in the left spigelian aponeurosis was observed. Although there was no content in it, we believe that the hernia was reduced by separation of the anterior abdominal wall from the abdominal contents during the creation of the pneumoperitoneum.

A second, 5-mm trocar (Vesaport short RT, Autosuture, United States Surgical Corporation, Norwalk, Connecticut) for dissecting instruments was placed through the same skin incision but a separate fascial incision (Fig. 2). After sharp and blunt dissec-

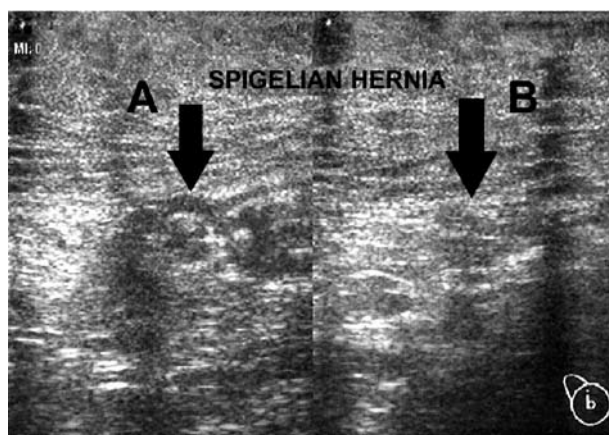


Fig. 1. Ultrasound showing (a) spigelian hernia; (b) the same area after reposition.



Fig. 2. Trocar placement.

tion of the defect and the surrounding tissue, a 10x15 cm composite double-layer oval mesh (Proceed, Ethicon, Johnson and Johnson, Somerville, New Jersey) was inserted through a 12-mm trocar, unfolded near the hernial defect, lifted upwards, placed overlapping the defect by 3 cm and fixed by using a tack fixation device (ProTack™ 5mm, Autosuture, United States Surgical Corporation, Norwalk, Connecticut). We did not use drain. The ports were closed by fascial and skin sutures.

Operating time was 40 minutes. Postoperative recovery was uneventful and the patient was discharged in good condition 48 hours after the surgery. At one-week and two-month follow ups, no complications were observed and the patient resumed her daily activities immediately upon discharge.

Discussion

Herein, we describe our technique of SIL spigelian hernia repair. We have previously performed and reported SIL cholecystectomy¹¹ and single incision laparoscopic total extraperitoneal (SIL TEP) inguinal hernia repair series¹².

Single incision laparoscopy as an approach was first introduced for cholecystectomy in 1996 by Navarra *et al.*¹³. It was followed by reports on successfully performed SIL appendectomy, gastric bending, partial colectomy, fundoplication, ventral and inguinal hernia repair. A few case series of SIL procedures proved them to be as safe and effective as standard multi port laparoscopic procedures for ventral hernia repair^{10,14}, colectomy¹⁵, cholecystectomy¹⁶ and total extraperitoneal (TEP) inguinal hernia repair¹⁷.

By maintaining the same principles of the multi port laparoscopic approach but using the SIL technique we have demonstrated that it is a feasible method for experienced laparoscopic surgeons despite difficulties such as compromised triangulation and crossing instruments. We did not encounter any technical difficulties in this case.

Traditional treatment of spigelian hernia was open herniorrhaphy or mesh-repair open technique¹⁸. Recently, ever more emphasized alternative is laparoscopic repair. This minimally invasive approach offers several advantages: it can be diagnostic and therapeutic at the same time in a patient with painful but occult spigelian hernia^{4,5,19}, or other abdominal pathol-

ogy¹⁹. As shown in a prospective randomized control trial, laparoscopic approach reduces morbidity and hospital stay with statistical significance⁷. Our patient was discharged on the next day and immediately resumed her everyday activities.

Furthermore, Martell *et al.* report that all candidates for the standard laparoscopic procedure are also candidates for the SIL repair¹⁹.

In case of spigelian hernia, which is rare, it will be difficult to justify this approach with large series of data, therefore contribution of each case seems to be relevant to decision making.

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Sažetak

LAPAROSKOPSKA OPERACIJA SPIGELIJEVE HERNIJE KROZ JEDNU INCIZIJU – PRISTUP STANDARDNIM INSTRUMENTARIJEM

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Spigelijeva hernija je rijedak tip ventralne hernije. Uzrokovana je defektom u Spigelijevoj fasciji, a klinički se prezentira kao bolna i/ili palpabilna tvorba. Dijagnoza indicira kirurški zahvat zbog visokog rizika inkarceracije. Kirurški pristup može biti otvoren ili laparoskopski, a u oba slučaja kao metoda reparacije koristi se primarno zatvaranje defekta ili hernioplastika mrežicom, ovisno o veličini hernijskog otvora. Ovim radom predstavlja se slučaj 62-godišnje bolesnice s palpabilnom tvorbom lokaliziranom u lijevom Spigelijevom pojasu, koja je ultrazvučno verificirana kao Spigelijeva hernija. Kao metodu operacijskog liječenja koristili smo intraabdominalni laparoskopski pristup kroz jednu inciziju te učinili hernioplastiku mrežicom. Operacija je trajala 40 minuta i protekla je bez komplikacija. Poslijeoperacijski tijekom bio je uredan, kao i kontrolni pregledi nakon 1 tjedna i 2 mjeseca. Prema našem saznanju ovo je prvi objavljeni slučaj reparacije Spigelijeve hernije laparoskopskom metodom kroz jednu inciziju. Iako je ovakav pristup tehnički zahtjevniji od klasičnog laparoskopskog, pokazali smo da je izvediv za iskusen laparoskopski tim. Uz kozmetsku korist ovaj pristup smanjuje na minimum rizik od krvarenja, ozljede organa i pojave poslijeoperacijske hernije na mjestu incizije. Međutim, da bi se postavile optimalne indikacije i ograničenja ove metode potrebno je dodatno prikupljanje podataka.

Ključne riječi: *Hernija, Spigelijeva; Hernija, ventralna – kirurgija; Laparoskopija – metode*