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Multiple concurrent bilateral groin hernias in a single patient; a case report and a review of uncommon groin hernias: A possible source of persistent pain after successful repair

O.Y. Matsevych*, M.Z. Koto, J.H.R. Becker

Department of Surgery, Sefako Makgatho Health Sciences University, Dr George Mukhari Academic Hospital, Pretoria, South Africa

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ABSTRACT

INTRODUCTION: The wide use of laparoscopy for groin hernia repair has unveiled “hidden hernias” silently residing in this area. During the open repair of the presenting hernia, the surgeon was often unaware of these occult hernias. These patients postoperatively may present with unexplained chronic groin or pelvic pain.

PRESENTATION OF CASE: Rare groin hernias are defined according to their anatomical position. Challenges in the diagnosis and management of occult rare groin hernias are discussed. These problems are illustrated by a unique case report of multiple (six) coexisting groin hernias, whereof five were occult and two were rare.

DISCUSSION: Rare groin hernias are uncommon because they are difficult to diagnose clinically and are not routinely looked for. They are often occult and may coexist with other inguinal hernias, thus posing a diagnostic and treatment challenge to the surgeon, especially if there is persistent groin pain after “successful” repair. MRI is the most accurate preoperative and postoperative diagnostic tool, if there is a clinical suspicion that the patient might have an occult hernia.

CONCLUSION: Preperitoneal endoscopic approach is the recommended method in confirming the diagnosis and management of occult groin hernias. A sound knowledge of groin anatomy and a thorough preperitoneal inspection of all possible sites for rare groin hernias are needed to diagnose and repair all defects. The preperitoneal mesh repair with adequate overlap of all hernia orifices is the recommended treatment of choice.

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1. Introduction

The extensive use of laparoscopy for groin hernia repair unveiled “hidden hernias” silently residing in this area. These occult hernias were commonly overlooked at open repair because they were not clinically diagnosed or apparent. An abdominal hernia is defined as a protrusion of the contents of the abdominal cavity or preperitoneal adipose tissue through a defect in the abdominal wall [1]. An occult hernia is a hernia where physical examination fails to demonstrate a hernia mass or defect, but a hernia is identified on surgical exploration [2]. An occult hernia can be completely asymptomatic or it may present with unexplained chronic groin or pelvic pain. Lateral inguinal, medial inguinal, and femoral hernias most commonly occur in the groin area. They are well described and published in the literature [1]. Other hernias do occur and fall into

the category of “rare hernias”. Their descriptions are limited to the occasional case report and extremely rare small case series. Challenges in diagnosis and management of multiple occult rare groin hernias are illustrated by the following clinical case.

1.1. Case presentation

We report a 68 year old female presenting with a swelling in the right iliac fossa for two years. On examination an 8 × 4 cm reducible swelling was present above the right inguinal ligament (Poupert). The neck of the hernia was 4 cm in diameter located in the region of the right internal inguinal ring. No additional hernias were found. The patient had a history of a vaginal delivery, two caesarian sections and a normal systemic history and examination. Laparoscopic transabdominal preperitoneal (TAPP) repair was planned. During intraperitoneal inspection, the following hernias were observed: a left medial inguinal, a right lateral inguinal and bilateral prevascular femoral hernias (Fig. 1). During extraperitoneal dissection, bilateral femoral hernias were also found (six hernias in total) (Figs. 2 and 3). Repair was done by bilateral extraperitoneal placing of two meshes (13 × 15 cm. Bard® 3DMax™ Mesh) with at least a

* Corresponding author at: Department of Surgery, P.O.Box 231, Medunsa, 0204, South Africa.

E-mail addresses: info@matsevych.com (O.Y. Matsevych), zackkoto@gmail.com (M.Z. Koto), jhr.becker@telkomsa.net (J.H.R. Becker).

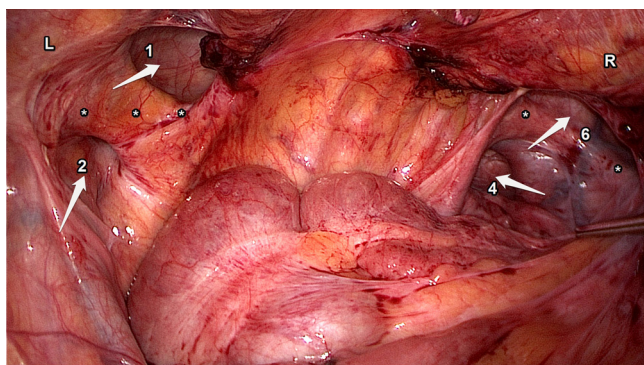


Fig. 1. Intraoperative inspection.
 *: The inguinal ligament; L: Left; R: Right; 1: Medial inguinal hernia; 2: Left prevascular femoral hernia; 4: Right prevascular femoral hernia; 6: Lateral inguinal hernia

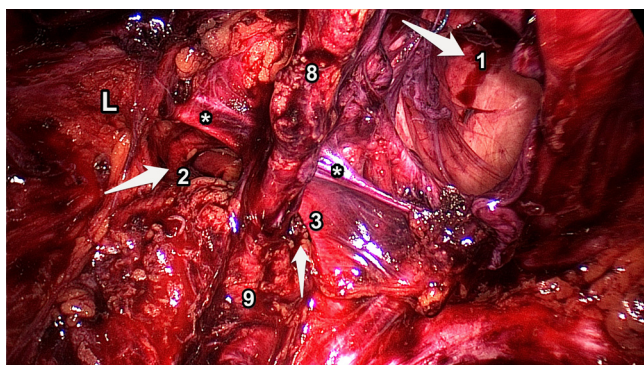


Fig. 2. The extraperitoneal inspection of the left groin.
 *: The inguinal ligament; L: Left; 1: Medial inguinal hernia; 2: Left prevascular femoral hernia; 3: Left femoral hernia; 6: Lateral inguinal hernia; 8: The inferior epigastric vessels; 9: The femoral vessels

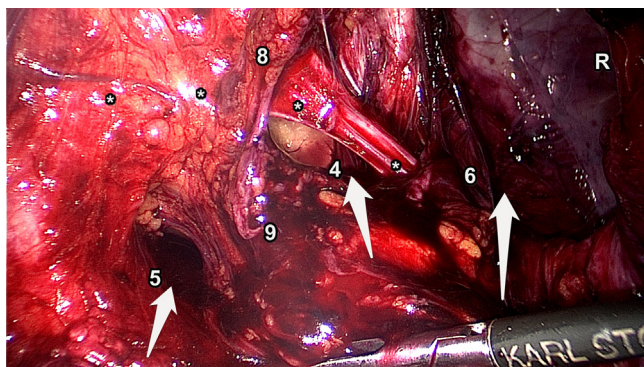


Fig. 3. The extraperitoneal inspection of the right groin.
 *: The inguinal ligament; R: Right; 4: Right prevascular femoral hernia; 5: Right femoral hernia; 6: Lateral inguinal hernia; 8: The inferior epigastric vessels; 9: The femoral vessels
 *: The inguinal ligament; L: Left; R: Right; 1: Medial inguinal hernia; 2: Left prevascular femoral hernia; 3: Left femoral hernia; 4: Right prevascular femoral hernia; 5: Right femoral hernia; 6: Lateral inguinal hernia; 8: The inferior epigastric vessels; 9: The femoral vessels

3 cm overlap. The meshes were fixed with tacks (AbsorbaTack™ 5 mm, Covidien™). The peritoneum was closed with absorbable sutures. The patient had an uneventful recovery and was discharged on post-operative day two. Follow-up at three months showed no complications. There are no reports in the literature of six coexisting groin hernias, moreover, five of them were occult whereof two were rare.

2. Discussion

The frequency of unsuspected contralateral inguinal hernias is estimated to be 11–28% in patients planned for unilateral laparoscopic hernia repair [3]. The incidence of unsuspected femoral hernias in patients undergoing laparoscopic inguinal hernia repair is reported to be 3.8–11.1% [3]. Occult femoral hernia is reported to be 9.2% during recurrent inguinal hernia surgery [3]. Furthermore, 38.1% of women presented with occult femoral hernia at reoperation for recurrent inguinal hernia as opposed to 6.6% in men [3]. The incidence of rare hernias is not exactly known. Koch reported the incidence of hernias other than inguinal or femoral to be 9% in elective and 9.7% in emergency groin hernia repairs [4].

Femoral hernia has an incidence of 1.8% in elective and 16.7% in emergency groin hernia repairs [4]; it is well described and not considered to be a rare hernia. Femoral hernia is a protrusion of tissue through a hernia defect in the femoral canal, below the inguinal ligament, in the lacuna vasorum, between the vena femoralis and the ligamentum lacunare (Gimbernat) [1]. The incidence of prevascular femoral hernia (Velpeau) is reported to be below 2% of all femoral hernias and 0.77% of all groin hernias. The retrovascular femoral hernia (Serafini) is located below the inguinal ligament, in the lacuna vasorum, immediately posterior to the femoral vessels [5–8]. The lacuna musculorum hernia herniates through the lacuna musculorum and is divided into two types, the anterior being Hesselbach hernia and the more posterior one Partridge hernia [9,10]. Lacunar hernia (Laugier, Gimbernat) develops through an opening in the lacunar ligament. The hernia protruding through the pectineal fascia is called Cloquet hernia (Callisen-Cloquet) [11]. The obturator hernia occurs through the obturator canal, which is approximately 2–3 cm long and 1 cm wide. The reported incidence of obturator hernias is 0.07–1.1% of all groin hernias [8,12]. The psoas hernia herniates through a defect in the psoas muscle caused by traumatic rupture of the muscle. It can present with groin pain without any findings on examination [13]. The retrospsoas hernia protrudes directly behind the lateral border of the psoas muscle and presents with chronic groin pain. It is seldom reported with an incidence of 0.09% of all inguinal hernias [8]. Another rare hernia related to the groin is the supravesical hernia that egresses through the supravesical fossa and is divided into internal and external types [14]. The names and anatomical locations of the groin hernia defects are summarized in Table 1 and depicted in Fig. 4. Other rare abdominal wall hernias (Shwalbe, Sciatic, Spigelian, et cetera) are located away from the groin area and will not be discussed in this article.

Most of the above described rare groin hernias are not detected on clinical examination but are the cause of chronic groin pain and can complicate with incarceration or strangulation. Furthermore these hernias will not be detected during an open repair. Only hernias with a peritoneal sac will be detected during intraperitoneal exploration leaving undiagnosed all cases of extraperitoneal herniation. The true incidence of chronic postoperative pain caused by occult rare hernia after “successful” groin hernia repair is unknown. The postoperative pain is often ascribed to nerve injury, foreign body reaction, fibrosis or chronic inflammation.

Concomitant groin hernias are quite common and reported in 22–33% of patients undergoing laparoscopic femoral hernia repair [8]. Reports of concurrent multiple groin hernias are rare and limited to cases reporting three groin hernias in one patient [15,16]. We believe that this case report of a patient with six concurrent groin hernias, is the first in the literature.

Radiologic imaging may be required to diagnose occult groin hernias. Herniography use to be the technique of choice for hernia diagnosis but it is currently infrequently used due to its invasiveness and limitation to peritoneal herniation only. Ultrasound is a poor investigation in the diagnosis of occult groin hernias with a

Table 1
Names and anatomical location of groin hernia defects.

Number ^a	Hernia type	Other names	Location of the hernia defect
1	Lateral inguinal hernia	Indirect, oblique	Lateral to the inferior epigastric vessels, above the inguinal ligament, through the lateral inguinal fossa
2	Medial inguinal hernia	Direct	Medial to the inferior epigastric vessels, above the inguinal ligament, through the medial fossa (the Hesselbach's triangle)
3	Femoral hernia	Typical femoral hernia	through the femoral canal, below the inguinal ligament, in the lacuna vasorum, between the vena femoralis and the ligamentum lacunare
4	Prevascular femoral hernia	Velpeau, Narath, Teale	below the inguinal ligament, in the lacuna vasorum, in front of the femoral vessels
5	Retrovascular femoral hernia	Serafini	below the inguinal ligament, in the lacuna vasorum, immediately posterior to the femoral vessels
6	Lateral anterior femoral hernia	Hesselbach	through the lacuna musculorum anteriorly
7	Lateral posterior femoral hernia	Partridge	through the lacuna musculorum posteriorly
8	Pectineal hernia	Cloquet, Callisen-Cloquet	through the pectineal fascia
9	Lacunar hernia	Laugier, Gimbernant	through an opening in the lacunar ligament
10	Obturator hernia		through the obturator canal
11	Retropsoas hernia		Through the defect directly behind the lateral border of the psoas muscle
12	Psoas hernia		through a traumatic defect in the psoas muscle
13	Supravesical hernia (internal and external types)		through the supravesical fossa

^a The same numbers are used to depict the defect sited in Fig. 4.

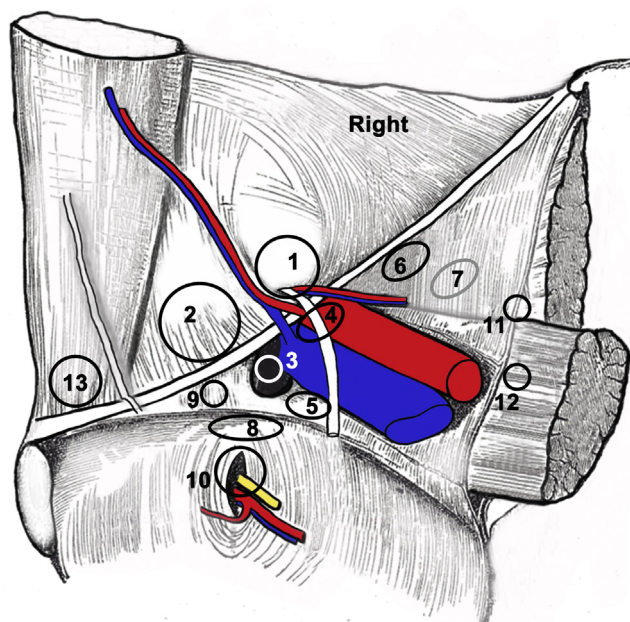


Fig. 4. The anatomical locations of the groin hernia defects.
1: Lateral inguinal hernia; 2: Medial inguinal hernia; 3: Femoral hernia; 4: Prevascular femoral hernia; 5: Retrovascular femoral hernia; 6: Lateral anterior femoral hernia; 7: Lateral posterior femoral hernia; 8: Pectineal hernia; 9: Lacunar hernia; 10: Obturator hernia; 11: Retropsoas hernia; 12: Psoas hernia; 13: Supravesical hernia

positive predictive value of 70% [17]. Computed tomography of the pelvis has a 77% sensitivity and 25% specificity for the diagnosis of groin hernias and its sensitivity decreases to 54% in the diagnosis of occult hernias. Magnetic resonance imaging (MRI) demonstrated the greatest sensitivity (91%) and specificity (92%) in the diagnosis of all groin hernias, including occult [2]. The European Hernia Society (EHS) recommends further diagnostic radiological investigations only in cases of obscure pain and/or a doubtful swelling in the groin. The EHS considers MRI as the most accurate diagnostic tool [1].

Intraoperative laparoscopic or endoscopic preperitoneal exploration of all possible hernia sites in the groin remains the most accurate diagnostic tool. The surgeon must be familiar with all the rare hernias in this area. It is unclear if routine bilateral exploration is justified in every asymptomatic patient undergoing a unilateral groin hernia repair in order to diagnose and treat occult groin hernias. The EHS recommends a preperitoneal (endoscopic) approach in females undergoing a groin hernia repair due to the high rate of occult coexisting femoral hernias. But the guidelines do not address the issue of rare hernias [1].

The surgical management of rare groin hernias is challenging because of the close relationship to neurovascular structures making a tissue repair a more intricate operation. The anterior approach with preperitoneal mesh placement through the defect and repair with a mesh-plug is well described [5,7]. The anterior approach however is not able to address any coexisting occult hernias. Laparoscopic intraperitoneal onlay mesh repair is reported but may leave unnoticed and untreated extraperitoneal herniations [16]. During laparoscopic TAPP and total extraperitoneal (TEP) hernia repair, all the possible rare hernia sites are examined and mesh is placed with an adequate overlap of all the hernia defects [4,8,9,11,13,15]. Although these laparoscopic techniques are comparable we prefer TEP repair. Glue fixation of the mesh may be a good alternative to anchored sutures or tacks placement in this potentially dangerous area [8].

3. Conclusion

Rare groin hernias are uncommon because they are difficult to diagnose clinically and are not routinely looked for. They are often occult and may coexist with other inguinal hernias, posing a diagnostic and treatment challenge to the surgeon, especially if there is persistent groin pain after “successful” repair. MRI is the most accurate preoperative and postoperative diagnostic tool if there is a clinical suspicion that the patient might have an occult hernia. Preperitoneal endoscopic approach is the recommended method in diagnosing and treating groin hernias. A sound knowledge of groin anatomy and thorough preperitoneal inspection of all possible sites for rare groin hernias is needed to diagnose and treat all defects. The preperitoneal mesh repair with adequate overlap of all hernia defects is the recommended treatment of choice.

Conflict of interest statement

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Ethical approval

Ethical approval is not-applicable to this case report.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

OYM and MZK were involved examining the patient, following up the patient. OYM was involved in writing up the manuscript and reviewing the literature. MZC and JHRB were involved in discussion, editing of manuscript and mentoring the manuscript preparation. OYM was the surgeon assigned to the case. All authors read and approve the final manuscript.

Guarantor

OYM is the Guarantor.

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