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Case report

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Massimiliano Cinalli*/***, Federico Selvaggi*, Vincenzo Casolino*, Michele Fiordaliso**, Maira Farrukh***, Felice Mucilli***/°, Rossana Percario*, Paolo Panaccio*

**Unit of General Surgery, Renzetti Hospital, Lanciano, Italy*
***Department of Surgery, Erbach General Hospital, Germany*
****Department of Medical, Oral and Biotechnological Sciences, "G. d'Annunzio" University of Chieti-Pescara, Italy*
°General and Thoracic Surgery, "SS Annunziata" Hospital, Chieti, Italy

Strangulated richter's hernia with caecum necrosis. Case report

AIM: *Describe a rare case of Richter's hernia with caecum incarceration into a right femoral hernia and provide a narrative literature review about its surgical management.*
MATERIAL AND METHODS: *A 46-year-old woman presented to the Emergency Department and to our surgical unit with a two-days history of worsening abdominal pain in the right lower quadrant without nausea or vomiting, associated with an irreducible lump. Computed tomography of the abdomen described a right inguinal hernia containing small bowel with perivisceral fluid in it without signs of small bowel occlusion nor perforation.*
RESULTS: *A Richter 's femoral hernia with necrotic caecum wall was found but the appendix was not involved. Through a mini-laparotomy, tangential caecal resection and appendectomy were performed. The femoral defect was repaired with a polypropylene mesh-plug placed in the pre-peritoneal space. Postoperative period was uneventful and the patient was discharged on the fifth post-operative day.*
DISCUSSION: *Femoral hernias account for only 2-4% of all groin hernias and occur through a small fascial defect in the femoral canal. Due to its narrowness, it leads to a high risk of incarceration and strangulation thus explaining the increased mortality in the emergency setting (up to 10 fold compared with the elective repair). In some cases, symptoms are no specific and uncommon findings have been reported. Surgical exploration is mandatory in the presence of signs of bowel strangulation or perforation and different approaches (either open or laparoscopically) have been described in literature.*
CONCLUSIONS: *Caecum wall necrosis secondary to an incarcerated Richter's femoral hernia is a rare but dangerous event. Surgical approach is selected on surgeon's expertise. The use of prosthetic mesh is always recommended.*

KEY WORDS: Bowel necrosis, Emergency surgery, Hernia repair, Richter's hernia

Introduction

Despite the fact that femoral hernias account for only 2-4% of all groin hernias, their timely and correct diagnosis is vital due to the increased mortality (up to 10 fold greater compared with the risk of an elective repair) associated with emergency surgery. Femoral hernias are more often found in females (with a male to female ratio of 1:1.8) who are also more susceptible of lifesaving surgical repair and are usually diagnosed on the right side of the abdomen (63,1%) [1]. Nonetheless, femoral hernia is difficult to diagnose both on clinical and radiological examination.
Dahlstrand et al., who published the largest series of femoral hernia repairs to date, reported that out of 3,980 femoral hernia repairs, 1430 (35.9%) were emergencies, compared to just 5.4% for inguinal cases [2]. In an acute scenario, bowel resections were required in a quarter of cases compared to 5.4% for inguinal hernias.

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Correspondence to: Paolo Panaccio, Unit of General Surgery, Renzetti Hospital, Lanciano (Ch) 66034, Lanciano (Italy), (e-mail: paolo.panaccio@gmail.com)

A Richter's hernia is a herniation of the anti-mesenteric portion of the bowel through a fascial defect and it gets its name from August Gottlich Richter, who described this hernia as a "partial enterocele" in 1785 [3]. Afterwards, the Italian surgeon Antonio Scarpa accurately defined its pathophysiology.
The aim of this paper was to report a very rare Richter's hernia with incarcerated caecum without appendix's involvement requiring an emerging surgical resection after a misleading preoperative diagnosis.

Materials And Methods. Case Report

A 46-year-old woman presented to the Emergency Department and to our surgical unit with a two-days history of worsening abdominal pain in the right lower quadrant without nausea or vomiting.
A sudden appearance of a firm and non-reducible mass of in the right groin with overlying normal skin was reported. Past medical history included previous right femoral hernia repair several years ago, breast cancer treated with radical mastectomy and axillary dissection. Biochemical investigation revealed a normal white blood cell count of 6,86 x 10^3/uL and a normal C-reactive protein of 0,24 mg/L. A Computed Tomography (CT) scan of the abdomen showed a "right inguinal hernia containing small bowel with a sac of 4.5x2.5 cm with perivisceral fluid in it without signs of small bowel occlusion or perforation" (Fig. 1).
Surgical exploration was carried out through a skin incision over the palpable mass. An open oblique incision was made over the right femoral groin area. At the surgical exploration, below the inguinal ligament a necrotic hernial sac as for a femoral hernia (relapse 5 years after the first operation) was detected. At the opening, the hernial sac holded a small amount of bloody fluid and a portion of bowel with clear signs of irreversible ischemia (Fig. 2).
Following hernia's content reduction and resection of the sac, we performed a polypropylene mesh-plug hernia repair. In order to evaluate small and large bowel status, a lower mini-laparotomy was performed. According to Bendavid, a type II viscero-mesenteric sliding femoral hernia (in which the mesentery forms part of the wall of the peritoneal sac) containing the caecum and its mesentery, was found [9]. Following bowel's permanent ischemia, tangential caecum resection with linear mechanical stapler and conventional appendectomy were accomplished. Post-operative course was uneventful. The patient started soft oral diet on second post-operative day and was discharged on fifth post-operative day. No local or general complication occurred in the short period. The patient was seen in the follow up without any sign of hernia recurrence or quality of life changes.

Discussion

By definition, a Richter's hernia is a herniation of the anti-mesenteric portion of the bowel. These hernias often occur in female patients through areas of small fascial defects. The defect must be large enough for a portion of the bowel (typically more than two-thirds) to protrude through, but not large enough to accommodate the entire circumference of the bowel. The most common site for a Richter's hernia is the femoral canal (36 to 88%) followed by the inguinal canal (12 to 36%) and the abdominal wall (4 to 25%) [4]. The femoral canal, located below the inguinal ligament and laterally to the pubic tubercle, is bounded posteriorly by the pectineus muscle, laterally by the femoral vein and anteriorly by the cribriform fascia. Due to its narrow and minimally expansible nature, it leads to a high risk of incarceration and strangulation thus causing impairment of the blood supply to the portion of the bowel wall involved followed by venous congestion, ischemia and segmental necrosis [5]. In addition to clinical examination, abdomen ultrasound [6] and computed tomography (CT)[7] are the best options to aim for the correct diagnosis. Regardless, there aren't many helpful radiological criteria: on CT scan images, for example, the presence of the femoral vein compression sign combined with the anatomical relation between the hernia sac and the pubic tubercle (located laterally in the femoral hernias) might be very useful to recognize inguinal from femoral hernias [7]. The "speech bubble" figure is also an important sonographic appearance to facilitate identification of femoral hernias

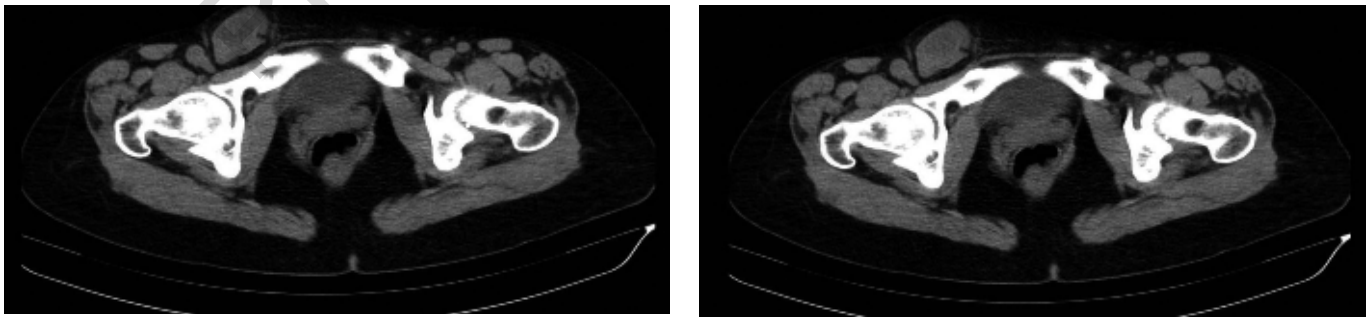

Fig. 1: CT-scan demonstrates a "right inguinal hernia containing small bowel with perivisceral fluid in it without signs of small bowel occlusion or perforation": a misleading diagnosis.

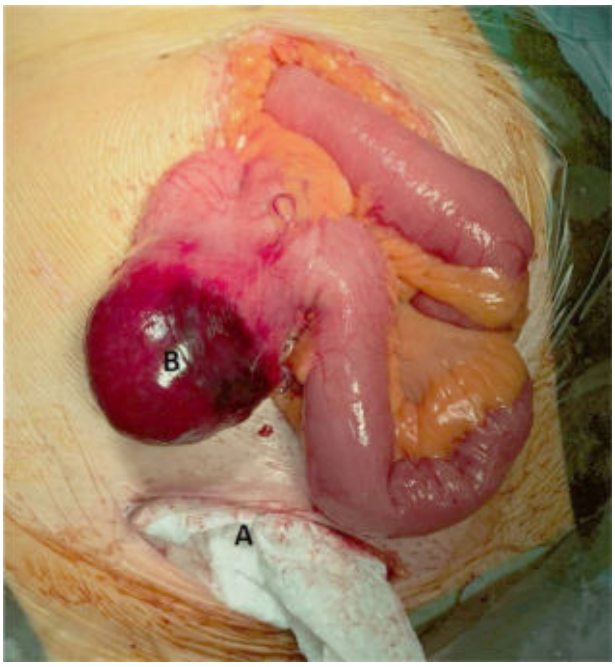

Fig. 2: Intraoperative findings: A) right sub-inguinal incision; B) caecum necrosis without appendiceal involvement.

from other groin pathologies [6]. Nevertheless, in a patient with a lump in the groin, a femoral hernia may resemble an inguinal hernia and the correct diagnosis might be very challenging [8]. Differential diagnosis often include: groin abscess, lymphoadenopathy, neoplasms, hydrocele/varicocele, cyst of the canal of Nuck, hematoma.
Femoral hernias usually contain small intestine or omentum but uncommon findings like appendix (De Garengeot hernia), Meckel's diverticulum (Littré hernia) and caecum were reported. Bendavid in 2002 reviewed the literature and proposed a classification that included three types of sliding hernias: he found that the I type (described as any hernia in which part of the peritoneal sac is made up by the wall of an abdominal organ) is the commonest, accounting for almost 95% of all sliding hernias [9]. Strangulated femoral hernias vary significantly as to the contents and pattern, but caecum with or without appendix are quite rare. Frankau analysed 1487 cases of strangulated hernias, 680 of which were femoral (45.7%), but he only found caecum and appendix in 4 cases and only one case of Richter's femoral hernia with caput caecum, but not involving the appendix [10]. Dwyer et al., in 1958, described the case of a 47-year-old woman diagnosed with a Richter's femoral hernia contaning the caecum but not the appendix [11].
For patients presenting with clear signs of acute abdomen, an immediate surgical exploration is mandatory. Surgery of femoral hernias is performed either open or laparoscopically: in the emergency setting, the minimally invasive approach, transabdominal preperitoneal (TAPP) or totally extraperitoneal (TEP), can be an hazard because it requires a very experienced and skilled surgeon and a careful patient selection [12]. The presence of signs of bowel perforation or strangulation, the need to perform bowel resection and anastomoses, the impossibility to determine the exact site of bowel obstruction are associated with high conversion rate (up to 33%) [12]. For these reasons, the open mesh repair is more recommendable in the acute patient even in a contaminated field [13]. Open surgery is performed through the "umbrella" technique: after having reduced the hernia sac, a polypropylene plug-mesh is folded in an umbrella shape, inserted in the preperitoneal space, fixed to the Cooper's ligament with the transversalis fascia sutured over it [14]. Three different approaches are classically described: Lotheissen's (over the inguinal ligament), Lockwood's (infrainguinal), McEvedy's (preperitoneal with a transverse incision) [15]. In the Lotheissen's repair (that can be used for both inguinal and femoral hernias) the inguinal canal needs to be opened in order to reach the femoral ring, leading potentially to inguinal hernias in the following postoperative period; the Lockwood's repair, first described in 1893, is generally used in the elective setting but carries the great disadvantage of an inadequate exposure in an emergency scenario [16]. The preperitoneal approach (McEvedy's repair) is regarded to be the most appropriate in the acute setting as it offers an adequate view of the abdomen contents and their status therefore giving an excellent alternative to perform intestinal resection in a relative safe way, eluding the morbidity associated with additional laparotomies [15-16]. Among others, the Nyhus-Condon's repair (a newer preperitoneal technique carried out through a transverse incision lateral to the rectus sheath) offers better clinical outcomes, good cosmetic results and lower rates of postoperative incisional hernias[16].
Although femoral hernia is a relatively uncommon pathology accounting for only 2-4% of all groin hernias [17], it is of paramount importance its prompt recognition as more than one-third presents as surgical emergency with strangulation, resulting in increased morbidity and mortality. In a retrospective Swedish study, Haapaniemi et al. investigated mortality following elective and emergency groin hernia surgery. They prospectively recorded informations about over 570 patients who underwent femoral hernia repair in a period of six years and their overall 30 – days mortality after surgery: while elective surgery is demonstrated to be a safe procedure with no significant perioperative risk, mortality associated with emergency femoral hernia repair (35.2% of cases) appeared to be increased 5 to 10 fold compared to the 30-day mortality in general population, depending on the need to perform bowel resection in 22.7% of cases [2-18].

Conclusions

Femoral hernia is an insidious pathological entity: a thorough clinical examination by the surgeon, an accurate radi-

ological study (with ultrasound [19] and/or CT scan of the abdomen [7]) are the mainstay for a correct diagnosis especially in the acute scenario. Strangulation is a frequent and fearsome complication and the surgeon must be aware of the potentially fatal risks of an improper and delayed management. Minimally invasive surgery relies strongly on surgeon's expertise and its advantages in the emergency setting need to be further investigated. The open polypropylene plug- mesh repair, performed through a preperitoneal approach (McEvedy's / Nyhus-Condon's), appears to be the surgical procedure of choice. A Richter's femoral hernia containing necrotic caecum wall is a rare occurrence and should not be excluded among the complications of this type of hernia.

Riassunto

L'ernia crurale rappresenta circa il 2-4% di tutta la patologia erniaria ed insorge in seguito ad un difetto fasciale a livello del canale femorale, situato inferiormente al ligamento inguinale. Si manifesta più frequentemente nelle donne, nelle quali sono assai più frequenti complicanze maggiori come l'incarceramento e lo strangolamento. La presentazione clinica dipende dal contenuto erniario ed il coinvolgimento di visceri endoaddominali quali intestino tenue, appendice, cieco è stato riportato in letteratura. L'ernia crurale si presenta spesso, pertanto, in modo acuto e complicato. Riportiamo il caso di una paziente di 46 anni giunta alla nostra osservazione per l'insorgenza di dolore addominale ingravescente in assenza di nausea e vomito. L'esame fisico ha rilevato la presenza di una massa irriducibile in regione inguinale destra. La TC addome ha diagnosticato un'ernia inguinale destra delle dimensioni di circa 4.5 x 2.5 cm a contenuto ileale in assenza di segni di occlusione o perforazione. All'esplorazione chirurgica, nel sacco erniario era presente parte del fondo ciecale (un raro tipo di ernia di Richter) senza coinvolgimento dell'appendice, con chiari segni di ischemia irreversibile. Pertanto, dopo aver riparato il difetto erniario con un mesh - plug in polipropilene, si è proceduto a resezione tangenziale della porzione di cieco necrotico con suturatrice meccanica lineare. Le elevate mortalità e morbidità associate a questa patologia sono da riferire alla necessità di trattamento chirurgico in urgenza in più di un terzo dei casi (in un caso su quattro si rende necessaria una resezione intestinale). Sebbene l'approccio mininvasivo si sia dimostrato essere tecnicamente fattibile e sicuro in elezione, il suo utilizzo in emergenza è condizionato da numerosi fattori e pertanto non ne è stata ancora riconosciuta la superiorità rispetto all'approccio tradizionale.
In conclusione, l'ernia femorale, in particolar modo quando vi è un pinzamento di un viscere che usualmente non risulta impegnato a causa dei propri mezzi di fissità embriologici (es. colon), non è facilmente inquadrabile né da un punto di vista clinico né radiologico, e soprattutto in presenza di complicanze, talora fatali, si impone un trattamento efficace e tempestivo.

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