PERFORATED GASTRIC ULCER IN THE RIGHT INGUINOSCROTAL HERNIA SAC WITH INTRASACULAR PERITONITIS – A CASE REPORT AND SYSTEMATIC REVIEW OF THE LITERATURE

Alexandru Munteanu[1], Ștefan Pătrașcu[2], Valeriu Șurlin[2], Adrian Dobrinescu[3]

[1]3rd Clinic of General Surgery, University of Medicine and Pharmacy of Craiova, Romania
[2]1st Clinic of General Surgery, University of Medicine and Pharmacy of Craiova, Romania
[3]Clinic of Thoracic Surgery, University of Medicine and Pharmacy of Craiova, Romania

CASE REPORT

Doi: 10.33695/rojes.v5i1.77
Accepted: 10.12.2023

Corresponding author:
Ștefan Pătrașcu
stefan.patrascu@umfcv.ro

Abstract

Inguinal hernia (IH) is the most common abdominal wall hernia and herniorrhaphy represents one of the most frequent surgical interventions worldwide. Giant IH are rare conditions in developed countries and due to the extreme dimensions represent a surgical challenge. We report a rare case of giant right inguinal-scrotal hernia in a patient with clinical signs of intrasaccular peritonitis that required urgent surgical intervention. With the suspicion of intestinal perforation, the patient underwent immediate surgical intervention. Uniquely, in the hernia sac, the stomach was protruding and we could identify a perforated antral ulcer. Although the patient survived the surgical intervention, the severe anemia and septic shock led to the existus of the patient after 10 hours.

Keywords: giant hernia, perforated ulcer, stomach

Introduction

Hernia is a surgical condition that occurs when an abdominal-pelvic viscera protrudes outside the abdominal cavity, through an area or weak spot in the abdominal wall called the hernia sac. The surgical dogma states that, except for the pancreas, any abdominal viscera can be found in the hernial sac.

Depending on the location, there are different types of hernias, including inguinal hernias, umbilical hernias, hiatal hernias (involving the diaphragm), and incisional hernias (resulting from a surgical incision) [1].

Inguinal hernia (IH) accounts for more than 75% of abdominal wall hernias and is referred to as direct when the protrusion occurs directly through the rear of the inguinal canal or indirect when the visceral organ enters via the internal inguinal ring [2].

The inguinal hernia can reach important dimensions until the impossibility of reducing the content in the abdomen without consequences of acute respiratory distress. A giant hernia is defined as a hernia that extends below the midpoint of the thigh while standing [3,4].

We present a case of a giant S3 right inguinal-scrotal hernia in a patient that was hospitalized through the emergency department with clinical signs of intrasaccular peritonitis. To identify relevant articles, we searched in PubMed or Google Scholar using as search terms *giant hernia* and *perforated ulcer*, excluding articles that were not written in English.

Case presentation

A 67-year-old male patient with a history of cardiovascular disease (arterial hypertension, previously documented myocardial infarction), and sequelae of pulmonary tuberculosis was transferred to the emergency department of the County Hospital of Craiova from a lower-ranking hospital with clinical signs of acute surgical abdomen. No other data regarding previous clinical conditions could be obtained. Moreover, the patient could not provide information regarding the age of the hernia.

At the admission, the patient was in a generally altered state, cachectic, with pale teguments, blood pressure of 90/50 mmHg, and tachycardic (heart rate between 100-110 bpm). The objective examination revealed a giant right inguinal scrotal hernia that descended below the knee level in the standing position (Figure 1 and Figure 2), and a large left inguinal-scrotal hernia, both irreducible. The penis was not visible, being buried by the expanded scrotal sac.

Figure 1 - Giant right scrotal hernia and a smaller left inguinal hernia

The standard blood tests obtained in the emergency department were within normal ranges except for a lower level of hemoglobin (7.4 g/dl), leukocytosis (11,520 cells/mm3), and elevated creatinine (1.2 mg/dl).

Figure 2 - View of the giant hernia from the patient feet

Although a careful preoperative investigation using either magnetic resonance imaging or computed tomography is fundamental for the planning of treatment of patients with giant hernias, due to the very altered general condition, we chose not to delay the surgical intervention thus no imaging examinations were performed.

Preoperatively, we administered the patient antibiotic prophylaxis with cefoperazone and metronidazole. Under general anesthesia with oro-tracheal intubation, a pubo-umbilical incision of approximately 12 cm was made and a cloudy, fetid liquid was identified. Exploration reveals the lower part of the stomach on the right side hernia. An incision was then made in the right inguinal region, where a gastric perforation due to a preexistent ulcer (Figure 3) was identified at the level of the antrum of approximately 3 cm (Figure 4). Through the perforation, approximately 2 liters of gastric fluid drained into the hernia sac.

Next, we sutured the perforation, washed the peritoneal cavity and the hernia sac abundantly with saline, and drained the peritoneal cavity, both the Douglas sac and the hernia sac. Nonetheless, the replacement of the stomach in the peritoneal cavity was impossible due to „the loss of domain".

Figure 3 - Intraoperative view of scrotal hernia repair. Note the two incisions and the perforated antral ulcer

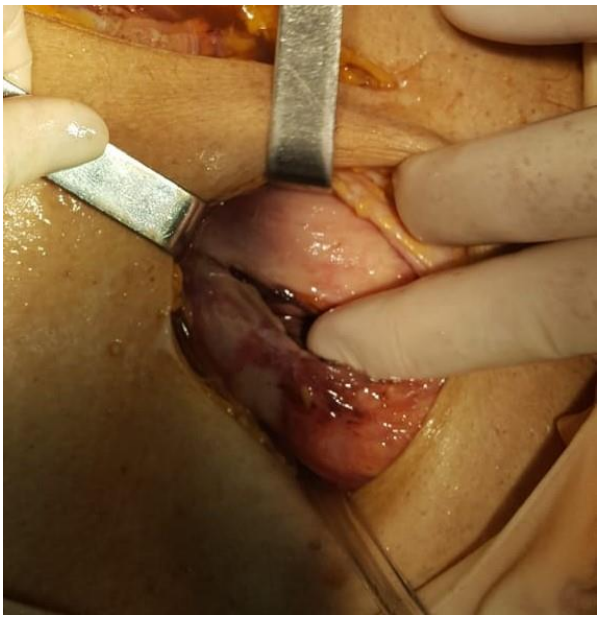

Figure 4 - Perforated antral ulcer - close view

The overall surgery time was around 60 minutes. The patient was transferred to the Intensive Care Unit, where he remained intubated and mechanically ventilated. The biological tests showed a severely deteriorated state, metabolic acidosis (Ph = 6.1), highly elevated liver enzymes (GOT=2400 U/I, GPT=1628 U/I), high INR (2.8), and elevated creatinine (2.8 mg/dl). Approximately 10 hours after the intervention the patient had a cardiac arrest and could not be resuscitated.

Discussions

Due to early diagnosis and treatment of inguinal hernia, the scrotal hernia has become a rare condition. The extreme dimensions make the surgical repair technically challenging and each case requires an individualized approach. To further delineate this surgical condition and to facilitate optimal surgical treatment, the HerniaSurge Collaboration has recently introduced a new classification adapted specifically for scrotal hernias. [5] The new classification distinguishes three types of scrotal hernias based on their location relative to the thigh: S1 designates hernias limited to the upper third of the thigh, S2 denotes those reaching for the middle third thigh, and S3 represents the cases extending to the lower third thigh or below.
Although most commonly the omentum and the small intestine are contained in the hernia sac, organs such as the urinary bladder, stomach, ovaries, and colon segments were also reported [6-9].

The presence of the stomach in the hernia sac is exceptionally rare being reported in a very small number of cases [10-12]. Moreover, most cases presented as a rupture of the stomach in the hernia sac. The mechanism was either traction of the organ in the sac or secondary to incarceration.

The treatment of scrotal hernia is complex. The size of the sac and the irreducibility of its content advocate for an open approach technique. Irreducibility by itself observed at the initiation of the surgery leads to a prolonged operation time and typically adds more complexity to the procedure [13, 14]. This instance usually involves sliding hernias, the entanglement of abdominal viscera, or substantial omental presence, often requiring the excision of a significant amount of omentum. When it comes to the management of the hernia defect, certain authors advise against narrowing it with sutures due to the potential risks associated with nerve entrapment [5, 15, 16].

The latest guidelines set forth by HerniaSurge recommend for the utilization of mesh in the repair of L3/M3 hernias. Larger and heavyweight mesh should be considered in case of larger defects, in order to adequately cover the inguinal space. However, the presence of contaminated content in the hernia sac makes this approach virtually impossible.
The uniqueness of our case was the presence of the perforated antral ulcer in the hernia sac which increased the complexity of the procedure, obliging the surgeon to make a critical decision between addressing the immediate issue of suturing the ulcer or pursuing comprehensive solution, namely the complete repair of the hernia [10]. In the present case, this could not be resolved due to to the patient's critical condition and the hernia's "loss of domain". In one reported case, Sayad et al proposed a two-step approach that consisted of an initial suture of the stomach perforation followed a few months later by the repair of the hernia [10].

Although the surgical intervention was uneventful, the general state of the patient deteriorated in the Intensive Care Unit, with acute liver and renal failure in the context of severe sepsis. The patient died approximately 10 hours after the surgical intervention.

While elective hernia surgery typically poses a minimal perioperative risk, emergency procedures associate a notable mortality, particularly in cases where bowel integrity is compromised [17, 18]. Moreover, an increased American Society of Anesthesiologists (ASA) score alongside concomitant morbid conditions demonstrates a direct correlation with elevated mortality risk [19]. Our case posed even greater challenges, as the presence of sepsis stemming from the perforated peptic ulcer and the considerable size of the hernia sac hindered the viability of a more conventional hernia repair and severely disrupted the postoperative progression of the case.

Conclusions

It is therefore imperative to intensify our endeavors aimed at increasing the early identification and surgical management of those individuals with incarcerated or strangulated hernias to reduce the morbidity and mortality associated with this condition.

References

[1] Muysoms FE, Miserez M, Berrevoet F, Campanelli G, Champault GG, Chelala E et al. Classification of primary and incisional abdominal wall hernias. Hernia. 2009 Aug;13(4):407-14.
[2] Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. Lancet 2003; 362(9395): 1561–1571
[3] Hodgkinson DJ, McIlrath DC. Scrotal reconstruction for giant inguinal hernias. Surg Clin North Am. 1984 Apr;64(2):307-13.
[4] Cavalli M, Biondi A, Bruni PG, Campanelli G. Giant inguinal hernia: the challenging hug technique. Hernia. 2015 Oct;19(5):775-83.
[5] Tran HM, MacQueen I, Chen D and Simons M (2023) Systematic Review and Guidelines for Management of Scrotal Inguinal Hernias. J. Abdom. Wall Surg. 2:11195. doi: 10.3389/jaws.2023.11195
[6] Ishii K, Numata K, Seki H, Yasui N, Sakata M, Shimada A, Matsumoto H. Duodenal rupture due to giant inguinal hernia: A case report.Int J Surg Case Rep. 2017;38:142-145.
[7] Caprino P, Sacchetti F, Schena CA et al. Total Colon “Collapse” in Giant Left-Sided Inguino-Scrotal Hernia: Double-Mesh Plastic Repair. Indian J Surg 2020, 82, 427–429.
[8] Tarchouli M, Ratbi MB, Bouzroud M, Aitidir B, Ait-Ali A, Bounaim A, Sair K. Giant inguinoscrotal hernia containing intestinal segments and urinary bladder successfully repaired by simple hernioplasty technique: a case report. J Med Case Rep. 2015 Nov 28;9:276.
[9] Tahir M, Ahmed FU, Seenu V. Giant inguinoscrotal hernia: case report and management principles. Int J Surg. 2008 Dec;6(6):495-7.
[10] Sayad P, Tan AZ. A case report of a gastric perforation in a giant inguinoscrotal hernia: A two-step approach. Int J Surg Case Rep. 2019;55:174-178.

[11] Gue S. Spontaneous rupture of stomach. A rare complication of inguinal hernia. Br J Surg. 1970 Feb;57(2):154-5.
[12] Walgenbach KJ, Lauschke H, Brünagel G, Hirner A. Eine ungewöhnliche Form der Magenruptur bei riesiger Skrotalhernie [An uncommon form of gastric rupture in giant scrotal hernia]. Zentralbl Chir. 2001 Dec;126(12):1015-7.
[13] Kockerling, F, Hantel, E, Adolf, D, Kuthe, A, Lorenz, R, Niebuhr, H, et al. Differences in the Outcomes of Scrotal vs. Lateral vs. Medial Inguinal Hernias: a Multivariable Analysis of Registry Data. Hernia. 2020;03:1169, 81. doi:10.1007/s10029-020-02281-9
[14] Leibl, BJ, Schmedt, CG, Kraft, K, Ulrich, M, and Bittner, R. Scrotal Hernias: a Contraindication for an Endoscopic Procedure? Results of a Single-Institution Experience in Transabdominal Preperitoneal Repair. Surg Endosc (2000) 14(3):289–92. doi:10.1007/s004640000045
[15] Andresen K, Rosenberg J. Management of chronic pain after hernia repair. J Pain Res. 2018 Apr 5;11:675-681. doi: 10.2147/JPR.S127820.
[16] Shadhu, K., Ramlagun, D., Chen, S. et al. Neuralgia due to iliohypogastric nerve injury after inguinal hernioplasty: a case report. BMC Surg 18, 59 (2018). https://doi.org/10.1186/s12893-018-0391-6
[17] Lebeau R, Traoré M, Anzoua KI, Kalou IL, N'Dri AB, Aguia B, Kakou AG, Diané B. Prognostic Factors of Postoperative Morbidity and Mortality of Adult Strangulated Groin Hernia. Indian J Surg. 2016 Jun;78(3):192-6. doi: 10.1007/s12262-015-1343-3.
[18] Liu D, Zhu L, Wang M. Trauma to an inguinal hernia resulting in bowel rupture: A case report and literature review. Int J Surg Case Rep. 2017 Nov 24;41:495-497. doi: 10.1016/j.ijscr.2017.11.039.
[19] Nilsson H, Stylianidis G, Haapamäki M, Nilsson E, Nordin P. Mortality after groin hernia surgery. Ann Surg. 2007 Apr;245(4):656-60. doi: 10.1097/01.sla.0000251364.32698.4b.