



Case report

De Garengot hernia doubly complicated: A case report

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Introduction: A strangulated De Garengot's hernia with appendicitis is an extremely rare surgical presentation. Therefore, the diagnosis is challenging, and there are no recommendations regarding a specific surgical approach.

Presentation of case: We present the case of a 56-year-old woman with a De Garengot's hernia doubly complicated: strangulated and with appendicitis in the hernia sac. The diagnosis was made intraoperatively, and it was managed fully through a single inguinal incision. No postoperative complication was presented, and the patient was discharged 48 h after.

Discussion: The clinical presentation of this sub-type of hernia is non-specific. Precise knowledge of the hernia sac content preoperatively is not mandatory, and it should not delay prompt emergency surgery. As long as there are no local signs of complicated appendicitis, a single inguinal incision may be sufficient to perform appendectomy and hernia repair. In the event of complicated appendicitis, an exploratory of the abdominal cavity is mandatory, and hybrid approaches are recommended. For an experienced surgeon, the laparoscopic approach (TAPP), including the treatment of the two pathologies and the exploration of the peritoneal cavity, represents the surgical technique of choice.

Conclusion: De Garengot's strangulated hernia with appendicitis is an exceedingly rare double surgical emergency. When uncomplicated appendicitis, a single inguinal incision is sufficient to treat both appendicitis and abdominal wall defect. Hernia reduction, which young surgeons in the emergency room commonly attempt, should be abolished.

1. Introduction

De Garengot's hernia is an exceedingly rare type of femoral hernia. It is defined as the presence of the vermiform appendix within the femoral hernia sac. It was first described by Rene Jacques Croissant De Garengot in 1731 [1]. It represents 0.5–5% of all femoral hernias [2]. It is more frequent in women with a sex ratio of 6:1, and it mainly affects the elderly population [1,3]. The incidence of appendicitis in femoral hernia is further exceptional, and it is as low as 0.08–0.13% of all De Garengot's hernias [1,3,4].

We present the case of a patient with a doubly complicated De Garengot's hernia treated using a single inguinal incision.

This case report has been reported in line with the SCARE Criteria 2020 [5].

In this article, we intend to enrich the surgical literature and guide

young surgeons through the different surgical approaches.

2. Presentation of case

A 56-year old white woman presented to the emergency department with a two-day history of painful swelling (6 × 4 cm diameter) in the right groin. The patient denied nausea or vomiting. She did not have symptoms of bowel obstruction or fever. The patient was a non-smoker female school janitor with no medical history nor illicit drug use. Her body mass index was 27,3 kg/m². She never underwent surgical procedures in the past. She reports a right inguinal tumefaction evolving paroxysmally for a year. On examination, her temperature was 37.4 °C, her heart rate was 90 bpm, her blood pressure was 110/76 mmHg, and her respiratory rate was 16 breaths per minute. A 6 cm diameter right groin bulge below the inguinal ligament was detected. It was tender to

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palpation, non-reducible, and without any associated skin changes. Laboratory data showed the white blood cell (WBC) count of $7.54 \times 10^3/\mu\text{L}$ (Normal range: $4 \times 10^3/\mu\text{L}$ to $10 \times 10^3/\mu\text{L}$) and C-reactive protein of 2.35 mg/L (Normal range: less than 10 mg/L). The serum electrolytes tests and the kidney function test were within normal limits. The diagnosis of strangulated femoral hernia was confirmed, and emergency surgery to repair the hernia defect was performed. A senior surgeon with 10 years of surgical specialty experience conducted the surgery which lasted about 100 min. Under general anesthesia, a right inguinal incision was made. No inguinal hernia was found. Yet, under the inguinal ligament, an incarcerated femoral hernia was readily visualized. The hernial sac was dissected and opened. A gangrenous appendix (the base is spared) and a serous fluid without signs of abscess or perforation were observed. An appendectomy was performed after identifying the caecum, which was reduced back into the peritoneal cavity. The hernia underwent Mac Vay's herniorrhaphy with interrupted 0-Vicryl sutures (Fig. 1).

Except the fastidious hernial sac dissection, there were no other encountered surgical difficulties. A final intraoperative diagnosis of De Garengeot's hernia was made.

Postoperative course was uneventful. Oral tolerance was initiated 24 h after, and the patient was discharged on the second postoperative day in good general condition. She was seen in the outpatient clinic two weeks later with no complaints and a well-healed wound. The histopathological examination concluded acute gangrenous appendicitis with no malignancy signs (Fig. 2).

3. Discussion

De Garengeot's hernia is a rare variety of a femoral hernia with a low occurrence among abdominal hernias and overall two hundred twenty-two cases in the literature have been reported [6]. An abnormal embryological rotation, an abnormally low position of the gut in the pelvis, and increased mobility of the caecum pushing the appendix into the femoral ring represent the main predisposing factors [7,8].

The preoperative diagnosis remains challenging since the clinical manifestations of De Garengeot's hernia are non-specific [9], and generally, the diagnosis is incidentally made intra-operatively. Physical findings include a non-reducible inguinal bulge associated with abdominal pain [7,10], and local inflammatory signs are reported in one-third of the cases [11]. The peritonism signs are atypical since the narrow diameter of the femoral ring keeps the inflammatory process limited within the hernia sac [8].

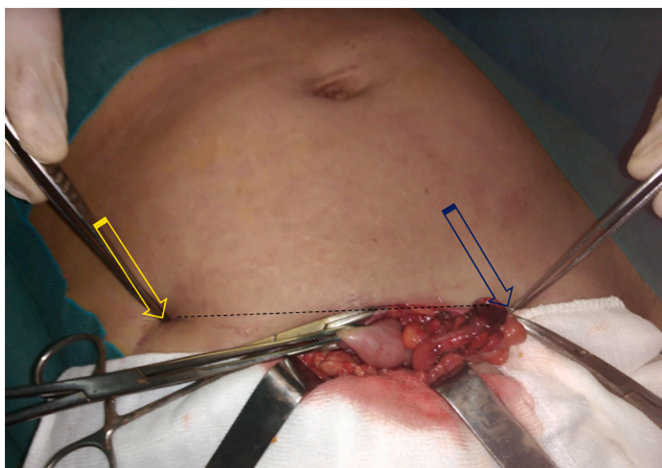


Fig. 1. Intraoperative view showing a gangrenous appendix with a spared base (yellow arrow) within a femoral hernia. The blue arrow marks the anterior superior iliac spine. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

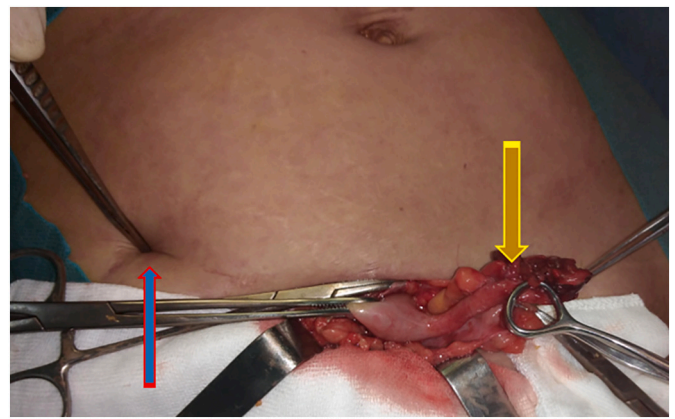


Fig. 2. Intraoperative view showing a femoral hernia occurring just below the inguinal ligament (dashed line). The blue arrow marks the anterior superior iliac spine and the yellow arrow marks the pubic tubercle. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Performing an abdominal CT scan as a standardized imaging tool is not justified in the case of an incarcerated hernia [11] since the latter represents a surgical emergency. Furthermore, an abdominal CT scan may provide the preoperative diagnosis in only 44% of cases due to its non-specific findings [12].

Despite of the low sensitivity of abdominal CT scan in preoperative diagnosis of De Garengeot's hernia (61%), it offers a better investigation of abdominal cavity, a lower complication rate and a better length of hospital stay, especially win the case of infection or peritonism signs [6].

While there is no consensus or clear recommendations about the best surgical approach to be carried out [10] due to the literature scarcity related to this subject, appendectomy and hernia repair remain the gold standard [13].

Surgical management includes an entire laparoscopic approach, an open approach with or without mesh placement, and hybrid surgical approaches [7]. The entire laparoscopic approach is the best choice, especially if the diagnosis is made preoperatively [14,15], as it offers some clear advantages, such as complete abdominal exploration, easy appendectomy, and abdominal wall reparation (Transabdominal Preperitoneal) [15]. However, it is less well used since it requires advanced surgical skills [15]. In fact, even when laparoscopic appendectomy has been successfully conducted, a conversion will be needed to repair the hernia sac if a trained surgeon in this approach is not available [11]. The open approach is widely accepted because it shortens the operative time and allows simple herniorrhaphy without a high level of technical skills [12].

Mac Vay's technique is highly advocated when signs of active infection are present, and prosthetic mesh placement remains debatable [12].

Hybrid surgical combined procedures include inguinal incision associated with sub umbilical midline laparotomy and inguinal incision followed by laparoscopic appendectomy [11]. They have to be considered in complicated appendicitis to explore the abdominal cavity better [7]. In this case, a hybrid open –laparoscopic approach is preferred [12]. Hernia reduction, which young surgeons in the emergency room commonly attempt, should be abolished since reducing acute appendicitis into the peritoneal cavity is life threatening.

Overall, decision-making is multifactorial and is dependent on the individual surgeon's laparoscopic expertise, intraoperative findings, and patient's comorbidities. In the case of non-complicated appendicitis, we highly advocate the consideration of a single inguinal incision approach.

4. Conclusion

Although rare, all general surgeons should know that every strangulated femoral hernia could be a De Garengeot's hernia.

The single incision procedure should be considered the technique of choice when uncomplicated appendicitis, especially for inexperienced surgeons.

Furthermore, hernia reduction must be avoided. This case can enrich the surgical literature and helps the young surgeons to be familiar with this entity to plan the appropriate surgical procedure.

Abbreviations

TAPP	transabdominal preperitoneal
WBC	white blood cells
CT	computed tomography

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An ethical approval was obtained from Jendouba Regional Hospital Medical Ethics Committee N° JH 96Y21. We confirm that all methods were performed in accordance with the ethical guidelines of the 1975 Declaration of Helsinki.

Consent

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Authors' contributions

Conceptualization: AM.

Data curation: JR.

Supervision and performing surgery: AM.

Writing - original draft: AO.

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