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clinical practice

# De Garengeot hernia with acute appendicitis

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SUMMARY: **De Garengeot hernia with acute appendicitis.**

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Aim. *The presence of the appendix within a femoral hernia sac is a rare condition known as De Garengeot hernia. We report a case of De Garengeot hernia with concomitant appendicitis and a brief review of the literature on the pathogenesis, diagnosis and treatment of this uncommon condition.*

Case report. *A 33 year-old woman was admitted to our Surgical Unit with acute-onset pain and swelling in the right groin region. Clinical signs and ultrasound imaging suggested the presence of a strangulated femoral hernia and the patient was operated on in emergency setting. An inflamed appendix was discovered within the hernia sac. Appendectomy via McBurney incision and prosthetic repair of the femoral ring were performed. The postoperative course was uneventful and at the 2 week and 1 year follow-up no signs of wound infection and no hernia recurrence were found.*

Conclusion. *Since clinical signs are non-specific and radiological findings may often be misinterpreted, appendicitis within a femoral hernia sac is often an incidental finding during an emergency operation for strangulated femoral hernia. Appendectomy-associated hernia repair may be performed with or without prosthesis depending on the extent of surgical field contamination.*

KEY WORDS: Femoral hernia - Acute appendicitis - De Garengeot hernia.

## Introduction

The presence of the appendix within a femoral hernia sac is a rare condition known as De Garengeot hernia, from the name of the French surgeon who first described it in 1731 (1). Incidence is estimated between 0.15% and 5% (2-8) and acute appendicitis is considered uncommon in this context (2-12). However, over the last two decades, De Garengeot hernia with acute appendicitis has been reported more frequently in the literature, perhaps owing to increasing awareness of hernia management and to the more widespread employment of diagnostic tools such as ultrasound (US) and computed tomography (CT) in emergency settings (11, 13-17). However, a correct preoperative diagnosis remains a challenge, since the signs and symptoms are non-specific and imaging can often be misinterpreted. As regards the surgical treatment, there is a degree of controversy about how to treat the appendix and perform hernia repair (2, 7, 9, 12, 16, 18). We present a case of De Garengeot hernia associated with acute appendicitis and a brief update on the pathogenesis, diagnosis and treatment of this rare condition.

## Case report

A 33 year-old woman was admitted in Emergency Room complaining of sudden-onset pain and swelling in the right groin region for the past 7 hours. She denied fever, nausea, vomiting or abdominal pain. Physical examination revealed a painful, irreducible lump, 3.8 cm in size, below the inguinal ligament. The WBC count was in the normal range, and the abdominal X-ray showed no signs of bowel obstruction. The US showed a fluid-filled sac, located medially to the right common femoral vein, with an image mimicking an incarcerated intestinal loop (Fig. 1). The color-Doppler study, which we perform routinely before and after surgery on all patients with femoral hernia, showed a significant impairment of blood flow in the right femoral vein caused by compression of the hernia. These findings were consistent with a strangulated right femoral hernia and therefore emergency surgery was immediately scheduled.

Antibiotic therapy was administered preoperatively. The procedure, started under local anaesthesia, via an infrainguinal incision. A hernia sac was identified, prepared up to the femoral orifice, and

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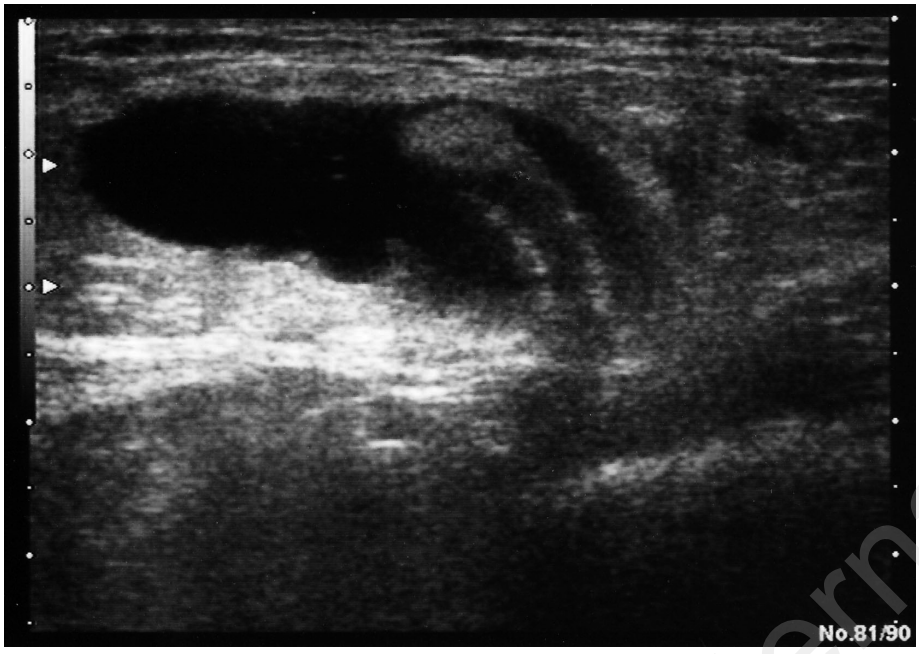


**Fig. 1 - Preoperative US of the right groin showing a fluid-filled hernia sac with an intestinal loop-like image inside.**

opened. Clear fluid was evacuated and an inflamed appendix without any evidence of perforation was identified. The engorgement was limited to the distal third of the appendix, corresponding to the site of strangulation due to the neck of the sac (Fig. 2). Since it was impossible to control the base of the appendix through the infrainguinal incision, a typical appendectomy under general anaesthesia was performed via McBurney incision. Subsequently, the femoral defect was irrigated with Povidone-iodine and repaired using the Lichtenstein-Amid procedure (19).

At histology, the appendix measured 8 cm in length, and appeared hyperaemic and swollen in its distal part (Fig. 3); when opened, no intra-luminal obstruction was observed. Histology confirmed the diagnosis of acute appendicitis.

Postoperative course was uneventful and the patient was discharged 3 days after surgery. At the 2 week follow-up, no signs of wound infection were found, and US with color-Doppler showed normal blood flow in the right femoral vein. One year after surgery the patient is well without hernia recurrence.

**Fig. 2 - Intra-operative finding of the appendix with inflamed tip protruding through the femoral hernia sac.**

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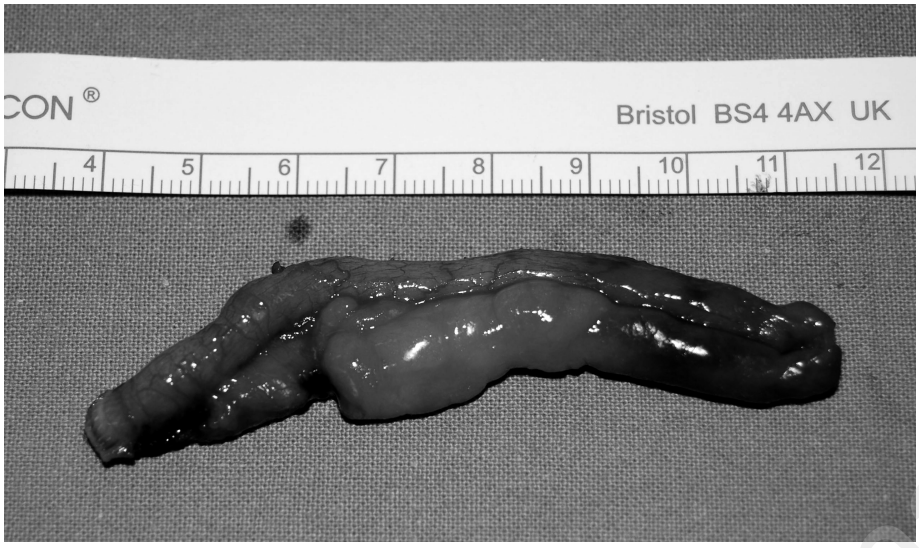


Fig. 3 - The resected appendix.

## Discussion

Femoral hernias represent 3-4% of all hernias and are more common in women. The sac may contain preperitoneal fat, omentum, small or large bowel and, less frequently, the appendix (2-5). The finding of acute appendicitis in a femoral sac is even less common, with only about 100 cases reported to date (2-8,10-12). Pathogenesis seems to be correlated with strangulation of the appendix rather than with the more common intraluminal obstruction (2, 3, 7, 9-12). The signs and symptoms of appendicitis are usually lacking because the narrowness and rigidity of the hernia orifice act as a mechanical barrier against the spreading of sepsis to the whole peritoneum (2-7, 9-12). Therefore in most cases appendicitis is an incidental finding during an emergency operation for strangulated femoral hernia (2-12).

Nowadays, the use of US and CT scans may provide highly distinctive findings, but lack of awareness of this unusual occurrence and the absence of clinical suspicion make preoperative diagnosis very difficult to establish. To date, only six preoperative diagnoses by means of CT scans (5 cases) and US (1 case) have been reported (11, 13-17). In our case, characteristic US signs of De Garengeot hernia, i.e. tubular blind-ended structure within a fluid-filled femoral sac, became identifiable only by retrospective analysis.

As regards the surgical treatment, a normal appendix can be replaced in the abdomen and the femoral hernia repaired with mesh (4, 5). If acute appendicitis occurs, appendectomy can be performed through the infra-inguinal incision if technically feasible or, otherwise, via a traditional McBurney incision (5). In this case the choice of hernia repair is still a matter of debate. Generally a simple herniorrhaphy is preferred owing to the risk of infection (5,12,16), but some authors - similarly to our experience - have reported no post-operative infection following mesh repair (2,7,9). Thus, at present, it would seem reasonable to tailor treatment according to the degree of surgical field contamination, considering a perforated appendix as being the only absolute contraindication to prosthetic repair (5,7).

## Conclusions

Preoperative diagnosis of appendicitis in a De Garengeot hernia remains a challenge. Once intraoperative diagnosis has been established, appendectomy can be performed via the same crural incision or, alternatively, via a McBurney incision. The use of prosthetic devices for femoral hernia repair is advisable unless severe contamination of the operating field has occurred.

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