CASE REPORT

De Garengeot hernia: A case report and review of the literature

OLGA V. TEPLYAKOVA, VALENTINA A. BAHSHYAN, VALERIA E. TEPLYAKOVA

Department of General Surgery named after Professor M. I. Gulman, Professor V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, Krasnoyarsk, Russian Federation

ABSTRACT

The earliest description of the appendix protruding through a femoral hernia is by the French surgeon De Garengeot in the 18th century. He reported a female patient with irreducible, painful thigh swelling that progressed to skin redness. Surgery, intended to drain an abscess, instead found a strangulated femoral hernia with purulent material and an appendix-like structure. Management involved reducing the appendix and allowing the wound to granulate. Later, in 1735, Claudius Amyand recorded the first appendectomy via an inguinal hernia, and in 1785, Hévin authored the initial paper on operating for femoral appendicitis. Akopian and colleagues later coined the term "De Garengeot hernia" to honor this first description. These hernias are uncommon, with an incidence of 0.15% to 5% among femoral hernias. The diagnosis is always mistaken for an incarcerated groin hernia. This is partially due to the difficulties in diagnosing the hernia and also due to its propensity for incarceration because of its anatomy. During surgery, the appendix itself, either perforated or strangulated, is most commonly encountered within the hernia sac. In very rare cases, only appendiceal pus is found in the hernia sac. We report a rare case of De Garengeot's hernia of a 72-year-old woman diagnosed with acute appendicitis with obstruction in the femoral canal. (www.actabiomedica.it)

Key words: femoral hernia, de Garengeot hernia, acute appendicitis, anatomical repair, pus-containing femoral hernia

Received: 29 November 2025 | Accepted: 29 December 2025

Correspondence: Olga Valerievna Teplyakova, MD, Professor,
Address: Department of General Surgery named after Professor M. I. Gulman, Professor V.F. Voino-Yasenetsky Krasnoyarsk State Medical University, 1, P. Zheleznyaka Str., Krasnoyarsk, 660022, Russian Federation
E-mail: teplyakova-olga@ya.ru
ORCID: 0000-0003-0005-3316

Introduction

De Garengeot's hernia is an infrequent complication of acute appendicitis. It is most frequently presented with a mistaken diagnosis of a strangulated femoral hernia. It has been estimated there are between 100 and 200 patients in the literature (1, 2), but the exact figure is difficult to calculate. A frequency of 0.8%, accounting for 0.13% of all appendicitis, as reported in the literature, therefore, appears too high (3, 4). Thus, extensive register data are needed to assess the true incidence of de Garengeot's hernia. Whereas femoral hernias can occur in both the male and female populations, almost all of them develop in women because of the wider bone structure of the female pelvis.

The entrance to the femoral canal, the femoral ring, is located posterior to the inguinal ligament, anterior to the pectineal ligament, lateral to the lacunar ligament, and is medial to the femoral vein. The femoral ring is narrow, fibrotic, and the limited space within the hernia increases the risk of incarceration (5, 6). Incarceration of the appendix in a femoral hernia may be promoted by a large caecum, a caecum positioned low in the pelvis, or an abnormal intestinal rotation (1, 7). Physical effort is reported to precede a de Garengeot's hernia and excessive weight loss and vaginal delivery or coughing also precede the incarceration (4, 5). The appendicitis is caused more by incarceration at the hernia neck than by appendicoliths (6, 8). Because of its rarity, we present a case report of a 72-year-old female diagnosed to have acute appendicitis with obstruction in the femoral canal with a brief review on the literature. The work aimed to present such a rare clinical case as De Garengeot's hernia of an elderly woman in the context of world literature.

Case report

A 72-year-old woman suffering from hypertension, was admitted to the surgical department No. 1 of the Road Clinical Hospital in Krasnoyarsk on October 23, 2025 at 10:20 20 hours after the onset of the disease with complaints of pain in the right inguinal region and lower abdomen, dry mouth. During the examination at the department, her temperature was 36,8°C, Pulse rate 84 beats / min, blood pressure 140/80 mm Hg. Upon admission, the patient's general condition was moderate. Tongue was wet, lined with white coating. The abdomen was not swollen, symmetrical, and participated in the act of breathing. Physical examination revealed the soft abdomen, painful in the lower sections; there were no symptoms of peritoneal irritation. Peristalsis was heard. Urination was free and painless. In the right inguinal region under the inguinal ligament, a sharply painful tumor like formation 4×6 cm in size had been determined, dense, not reducible into the abdominal cavity. The skin above it and perifocally was not changed. The blood test revealed: haemoglobin content – 117 g/l, leukocytes – 8.7x109, ESR – 15 mm/h. October 23, 2025, at 11:45 a.m., under general anaesthesia, the operation of hernia repair of the femoral hernia on the right was performed. When the hernial sac had been opened, a cloudy serous-hemorrhagic exudate with a volume of up to 50 ml was found. The content of the hernia was an appendix of dark purple colour with a clear strangulation at the base and an area of necrosis at the apex and mesentery (Figure 1). A typical appendectomy was performed according to Volkovich-Dyakonov's method. During revision of the caecum and terminal ileum, no pathological changes were noted. The abdominal cavity was drained with silicone tubing. The operation was completed with femoral canal plasty according to Bassini.

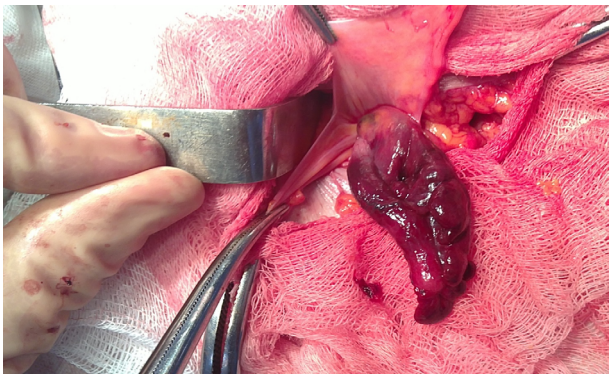

Figure 1. Macropreparation: removed appendix 8.0 cm in length, up to 0.8 cm in thickness, dark purple in color with an area of necrosis of the apex and mesentery

According to the conclusion of the histopathological examination, the preparation shows an appendix with obliteration of the lumen, areas of necrosis and haemorrhages in the mucous membrane and submucosal layer, and leukocyte infiltration extending to all layers. Taking everything into account, clinical diagnosis can be confirmed: right-sided strangulated femoral hernia with strangulated appendix. The postoperative period was uneventful, the wounds healed by primary intention. The patient was discharged from the hospital on the 6th day after the operation in satisfactory condition.

Discussion and review of literature

According to the analysed literary sources, Garengeot's hernia (GH) was first described in 1731 by René Jacques Croissant de Garengeot, and it accounts for 0.9 % of femoral hernia repairs. Moreover, acute appendicitis inside the sac is found in 0.08-0.13 % of femoral hernias (1, 3). Two possible aetiologies have been proposed. According to the first theory, the appendix may be in an abnormal anatomical position owing to different degrees of intestinal rotation during embryological development, or to variations in caecal attachments. The second theory suggests that an anatomically large caecum forces the appendix into the pelvis, thereby increasing the risk of it entering a hernial sac from the pelvic peritoneum (4, 6). Clinical presentation usually takes the form of a strangulated femoral hernia and a painful groin mass. Because of the rarity of the entity and the absence of the typical symptoms associated with acute appendicitis, achieving preoperative diagnosis is very difficult. Most GH are diagnosed intraoperatively (4, 9). Preoperative diagnosis by CT has been reported only in isolated cases. In our review, one more case was diagnosed using ultrasound (9). In CT findings, GH should be considered when intramural air is present in an incarcerated femoral hernia sac without signs of bowel obstruction (10, 11). The treatment of this disease is emergency surgery. Due to the rarity of the condition, there is no standard procedure. The options available include laparoscopic or open approaches, either with a mesh or simple herniorrhaphy, with or without appendectomy (8, 13). In our review, most cases were performed via an open approach. Appendectomy via the hernial sac is considered appropriate; in case of perforation and abscess formation, a transabdominal access is preferred. A combined approach was used in only three cases. In two of them, the appendix was removed laparoscopically, and the femoral hernia was repaired via a laparotomic approach (8, 13). The appendectomy procedure is also controversial. It has been suggested that in the case of a normal appendix, appendectomy is not required. However, the surgery is not excessively complicated, and even in the absence of macroscopic inflammation the presence of microscopic inflammation from compression and ischemia within the hernia neck cannot be ruled out; for this reason, appendectomy should be performed. In our review, the appendix was left in place in only one case (3, 6). Another controversial point is the use of a mesh, which was reported in only 8 cases in our review; in 15 a herniorrhaphy was performed. In the absence of abscess formation or perforation, the implantation of a mesh has been described as the hernia repair of choice. In this case, as purulent fluid was evacuated, a herniorrhaphy was preferred (9). The most important contributing factor to the increase in wound infection is delayed diagnosis. The reported infection rates reached 29 %, while severe complications such as necrotizing fasciitis and death were only rarely described (1, 5).

Conclusion

Although the incidence of de Garengeot's hernia is extremely low, the surgeon has always to keep it in mind in cases with femoral hernias and regional symptoms of inflammation due to the lack of abdominal signs of appendicitis. GH requires prompt treatment to avoid complications. Most GH are diagnosed intraoperatively. Due to the rarity of the clinical cases, there is no standard surgical procedure.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement, etc.) that might pose a conflict of interest in connection with the submitted article.

Informed Consent: Written informed consent was obtained from the patient, and the study was approved by the ethics committee of the institution.

Authors Contribution: O.V.T. acted as the primary treating physician, collected the clinical data, and drafted the manuscript. V.A.B. and V.E.T. performed the literature review and contributed to the interpretation of findings. All authors provided critical revisions and approved the final version to be published.

Declaration on the Use of AI: AI tools were not used in generate manuscript, conduct analyses, interpret data, or preparation of references.

Acknowledgments: We are deeply grateful to the patient for consenting to the publication of this case report, and for her cooperation throughout the diagnosis and treatment process.

References

1. Chatzikonstantinou M, Toeima M, Ding T, Qazi A, Aston N. De Garengeot hernias. Over a century of experience. A systematic review of the literature and presentation of two cases. Acta Chir Belg. 2022;122(1):15-22. doi: 10.1080/00015458.2020.1841484
2. Akopian G, Alexander M. De Garengeot hernia: appendicitis within a femoral hernia. Am Surg. 2005;71(6):526-7.
3. Bhattarai B, Paudel S, Luitel P, Yadav A, Dahal A, Bhattarai A. De Garengeot hernia: a unique presentation of femoral hernia with perforated appendicitis. Int J Surg Case Rep. 2024;122:110173. doi: 10.1016/j.ijscr.2024.110173
4. Kalles V, Mekras A, Mekras D, et al. De Garengeot's hernia: a comprehensive review. Hernia. 2013;17(2):177-82. doi: 10.1007/s10029-012-0993-3
5. Carey LC. Acute appendicitis occurring in hernias: a report of 10 cases. Surgery. 1967;61(2):236-8.
6. Naim AJ, De Robles MS. The de Garengeot hernia chicken-and-egg conundrum: acute appendicitis in an incarcerated femoral hernia, but which came first? A case report. Int J Surg Case Rep. 2023;109:108554. doi: 10.1016/j.ijscr.2023.108554
7. Ebisawa K, Yamazaki S, Kimura Y, et al. Acute appendicitis in an incarcerated femoral hernia: a case of De Garengeot hernia. Case Rep Gastroenterol. 2009;3(3):313-7. doi: 10.1159/000250821
8. McLaughlin JP, Muhammed AH. A case report of a combined laparoscopic and open approach for a De Garengeot hernia. Int J Surg Case Rep. 2023;104:107964. doi: 10.1016/j.ijscr.2023.107964
9. Ahmed ZS, Azam S, Shenton A, Akingboye AA. De Garengeot's hernia in an elderly woman as a diagnostic challenge: a review of literature. BMJ Case Rep. 2021;14(1):e237526. doi: 10.1136/bcr-2020-237526
10. Tiwana S, Kabir SA. De Garengeot hernia: a case report of an incidental finding. Cureus. 2024;16(11):e73817. doi: 10.7759/cureus.73817
11. Fukukura Y, Chang SD. Acute appendicitis within a femoral hernia: multidetector CT findings. Abdom Imaging. 2005;30(5):620-2. doi: 10.1007/s00261-004-0283-3
12. Garcia-Amador C, De la Plaza R, Arteaga V, Lopez-Marcano A, Ramia J. Garengeot's hernia: two case reports with CT diagnosis and literature review. Open Med (Wars). 2016;11(1):354-60. doi: 10.1515/med-2016-0065
13. Couto HS Jr, de Figueiredo LO, Meira RC, et al. Treatment of De Garengeot's hernia using De Oliveira's technic: a case report and review of literature. Int J Surg Case Rep. 2016;26:57-60. doi: 10.1016/j.ijscr.2016.05.042