

Femoral Hernia Appendicitis: A Case Report and Management of a De Garengeot's Hernia

D. Van de Hoef^{1,2*},
Kamil²,
AM. Hogan²

¹National University of Ireland Galway

²Department of Surgery, University Hospital Galway, Saolta Group, Newcastle Road, Co. Galway, Ireland.

*Corresponding Author:

Dayna van de Hoef

Author Email: D.vandehoef1@nuigalway.ie

Article Type: Case Report

Received Date: Oct 30, 2021

Accepted Date: Nov 16, 2021

Published Date: December 12, 2021

Keywords: de Garengeot's hernia, Incarceration, Femoral hernia, Appendicitis

Abstract

A De Garengeot's hernia is rare surgical phenomenon in which a femoral hernia contains the appendix. It can be asymptomatic or present as a tender lump, and may predispose to a hernia-contained case of appendicitis. We present the case of a 76-year-old female who presented to our outpatient department complaining of a tender right-sided groin lump. Diagnosis of this rare hernia is often made intra-operatively, but, in this case, a CT scan was performed preoperatively which provided guidance for safe surgical planning.

Introduction

A femoral hernia containing appendicitis is a rare phenomenon and is otherwise referred to as a De Garengeot's hernia. There is no clear consensus about the appropriate surgical approach, but the use of CT is helpful in identification of this event and help with surgical planning. We present this case recently managed at our tertiary referral centre.

Case History

A 76 year old female was referred to our colorectal outpatient department with a three week history of an irreducible lump in her right groin first noticed after lifting some boxes of books. She denied any obstipation, fever,

nausea or vomiting. For the 4 days prior to the outpatient's department appointment, she had increasing RLQ pain and swelling in this lump. The pain had been worsening over the last 4-5 days.

Her past medical history included well-controlled non-insulin dependent diabetes mellitus, a hysterectomy for uterine fibroids. She was otherwise fit and healthy.

Examination

On examination, the patient's vital signs were within normal limits. Her abdomen was soft and non-distended but there was right lower quadrant tenderness and a lump lying inferior and lateral to the pubic tubercle that was non-reducible. It was found the patient had an incarcerated femoral hernia. The decision was made to admit her the following morning for repair.

Pre-operatively

CT Abdomen Pelvis was performed prior to her repair for assessment of her anatomy and to rule out a saphena varix. This demonstrated a fluid-filled hernia sac containing an inflamed appendix; otherwise known as a De Garengeot's hernia. In addition, it highlighted a branch of the femoral vein lying directly anteriorly to the hernia. Her laboratory markers were within normal ranges at this stage. The patient was consented for femoral hernia repair plus or minus laparoscopic appendicectomy.

Surgical Approach

A low approach was favoured to access the femoral hernia. A large traversing branch of the femoral vein (as demonstrated on CT) was identified, ligated and divided (Figure 1). The hernia sac was identified through sharp dissection. (Figure 2) The sac was carefully opened, and the contained fluid was sent for culture and sensitivity. The inflamed and swollen appendix was examined (Figure 3) and returned to the peritoneal cavity, as the base could not be safely delivered via the femoral canal which was 1 x 1cm at its neck. Primary repair of the canal was made using 2-0 Prolene, and closed using 2-0 Vicryl and 4-0 Monocryl. A mesh was avoided to minimize risk of infection.

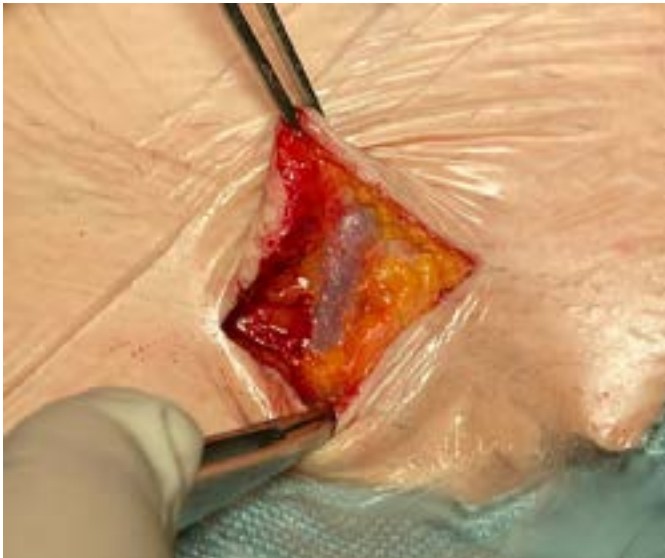


Figure 1: Branch of femoral vein

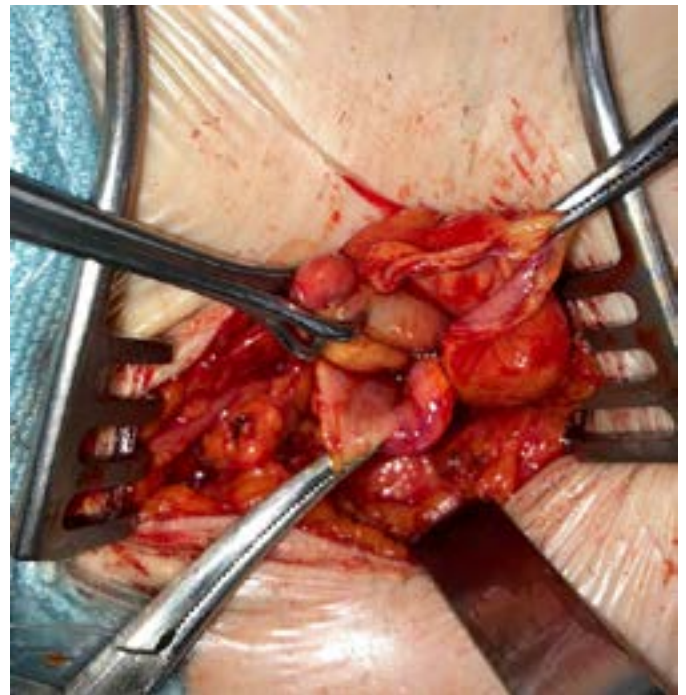


Figure 3: Inflamed appendix within opened hernia sac

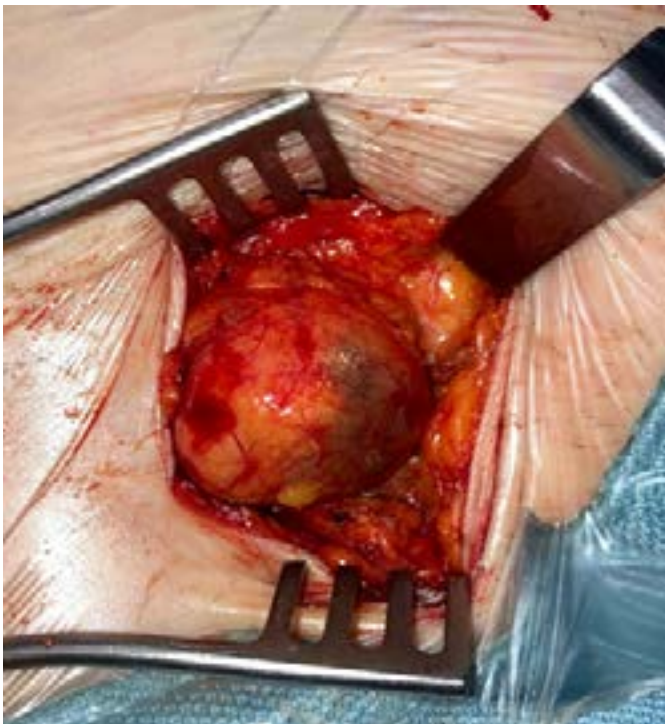


Figure 2: fluid-filled hernia sac

A standard laparoscopic appendicectomy was subsequently performed (Fig 4).



Post-operatively

The patient was admitted overnight for analgesia and monitoring. She was discharged the following day with a plan for outpatient review in six weeks.

Discussion

The incidence of acute appendicitis in a hernial sac is a rare phenomenon, but the appendix has been described in many forms of external hernia. The most commonly described are the eponymous Amyand's and de Garengeot's hernias, where the appendix is located in the inguinal and femoral canals respectively. A De Garengeot's hernia was first

described by Rene Jacques Croissant De Garengot in 1731, 5 years before the first appendectomy¹. The true incidence is hard to define due to a relative paucity of cases in the literature and lack of official recount.

When incarcerated, de Garengot's hernias present acutely and are often indistinguishable from a typical incarcerated femoral hernia. Thus, a de Garengot's is often an incidental finding at the time of surgery². The typical approach to a tender lump inferior to the inguinal ligament is surgical management based on clinical examination, with the most likely differential in this case being an incarcerated or strangulated bowel in a femoral hernia. Clinical findings are generally nonspecific, and if there is local inflammatory signs, peritonism is atypical as the narrow diameter of the femoral ring is thought to confine the process to within the hernia sac³. In addition to this, it is likely the etiology of appendicitis in these cases is more likely due to neck incarceration rather than faecolith. It has been theorised at other centres that the relatively narrow and rigid confines of the femoral canal predispose to this extraluminal compression⁴. At operation, it is described about 84% of de Garengot's hernias contain acute appendicitis, however only 13% of patients are found to be febrile⁵.

There has yet to be a consensus formed on correct workup, imaging and management of a de Garengot's hernia. Pre-operatively Computed Tomography scan is widely recommended for definitive diagnosis and pre-operative planning but is rarely done^{6,7}. In the present case, de Garengot's hernia was identified pre-operatively, but CT findings are dependent on radiologist interpretation and thus computed tomography may not invariably demonstrate the diagnosis clearly⁸. Pre-operative diagnosis enabled safe surgical planning, including informed consent for the patient and early decision-making of surgical approach while having the patient's safety in mind. Surgical management often involves a femoral hernia repair and appendectomy⁹. Rarely, with a macroscopically normal appendix the hernia repair is made with the appendix returned intra-abdominally, however we would not recommend this.

Several reported cases describe performing the appendectomy through the femoral canal, but it was felt the safest way in the present case was to proceed with a secondary laparoscopy to avoid a large appendiceal stump. There have been other cases in the literature reporting using secondary laparoscopy as an alternative, even one utilizing the hernia defect as a port site^{10,11}. In a recent meta-analysis looking at 90 de Garengot's cases reported in the literature, 64% reported using solely an inguinal approach,

whereas 3% took a combined laparoscopic and inguinal approach, and 6% using a combined inguinal approach with laparotomy⁵. There has only been one other case in the literature reporting use of laparoscopy in combination with an inguinal approach as a result of the caecum not being accessible⁴. There is great variation in surgical approach to a de Garengot's hernia, particularly as these operations tend to be performed as emergency operations. To our present knowledge, this case is one of three cases operated on electively¹².

Conclusions

De Garengot hernias remain a rare presentation of a femoral hernia, and additionally an inflamed, and incarcerated appendix provides a challenging surgical approach to which there is no gold standard. Additional reporting of presentations and approaches to management provides the surgical community with ideas of how to best overcome this presentation in future.

Competing interest

Ms. Aisling Hogan serves as a consultant to Dr. Dayna van de Hoef and Dr. Ahmed Kamil.

Declarations

Ethics approval and consent to participate - Consent was obtained from the patient for the operation preoperatively

Consent for publication - Consent was obtained from the patient for writing and publishing the case study, including taking and publishing the associated photography

Availability of data and material - Data and material are available upon request

Competing interest - Ms. Aisling Hogan serves as a consultant to Dr. Dayna van de Hoef and Dr. Ahmed Kamil.

Funding - No sources of funding were used in the development of this case report

Authors Contributions

1. Ms Aising Hogan contributed through writing of the manuscript and editing.
2. Dr. Dayna van de Hoef contributed to the writing of the manuscript and editing.
3. Dr Ahmed Kamil contributed to the writing of the manuscript

Acknowledgements - none

References

1. Bertrandi GAM, de la Romillais S. *Traité des opérations de chirurgie: chez Théophile Barrois le jeune*; 1784.
2. Shum J, Croome K. Management of appendicitis in a femoral hernia. *Int J Surg Case Rep.* 2012; 3:10-1.
3. Jackman J, Aswad MG, Chowdhury A. Symptomatic lump during lockdown – A case of de Garengeot's hernia. *Int J Surg Case Rep.* 2020; 76:107-10.
4. Ramsingh J, Ali A, Cameron C, Al-Ani A, Hodnett R, Chorushy C. De Garengeot's hernia: diagnosis and surgical management of a rare type of femoral hernia. *J Surg Case Rep.* 2014; 2014.
5. Linder S, Linder G, Månsson C. Treatment of de Garengeot's hernia: a meta-analysis. *Hernia.* 2019; 23:131-41.
6. Ash L, Hatem S, Ramirez GA, Veniero J. Amyand's hernia: a case report of prospective ct diagnosis in the emergency department. *Emerg Radiol.* 2005; 11:231-2.
7. Sharma H, Jha PK, Shekhawat NS, Memon B, Memon MA. De Garengeot hernia: an analysis of our experience. *Hernia.* 2007; 11:235-8.
8. Georgiou GK, Bali C, Theodorou SJ, Zioga A, Fatouros M. Appendiceal diverticulitis in a femoral hernia causing necrotizing fasciitis of the right inguinal region: report of a unique case. *Hernia.* 2013; 17:125-8.
9. Kalles V, Mekras A, Mekras D, Papapanagiotou I, Al-Harethee W, Sotiropoulos G, et al. De Garengeot's hernia: a comprehensive review. *Hernia.* 2013; 17:177-82.
10. Snoekx R, Geyskens P. De Garengeot's hernia: acute appendicitis in a femoral hernia. Case report and literature overview. *Acta Chir Belg.* 2014; 114:149-51.
11. Simpson FJ, Fay K, Wang V, Elwood D. A Novel Approach to Managing a Strangulated De Garengeot's Hernia. *Am Surg.* 2021; 87:83-5.
12. Rossi SH, Coveney E. Type 4 appendiceal diverticulum within a de Garengeot hernia. *Ann R Coll Surg Engl.* 2016; 98:e141-2.