

**DE GARENGEOT'S HERNIA - A CASE REPORT AND REVIEW OF LITERATURE**

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**ABSTRACT**

The French surgeon Rene Jacques Croissant de Garengot first described the presence of an appendix in a femoral hernia sac in 1731. We present the case of a 97year old lady with an incarcerated right femoral hernia that contained small bowel and the appendix vermiformis. The treatment of choice of this rare condition is emergency surgery with hernia repair and synchronous appendectomy. A suture or mesh repair of the femoral hernia may be undertaken, the choice of which depends on surgeon preference, the age of the patient and the intra-operative findings.

**KEYWORDS:** Femoral hernia; De Garengot's hernia; McEvedy, Lockwood Approach, Appendectomy.**INTRODUCTION**

The presence of the vermiform appendix in a femoral hernia sac was first described by Rene Jacques Croissant de Garengot in 1731 and has become known as de Garengot's hernia.<sup>[1]</sup>

The presence of an appendix in a femoral hernia is an incidental finding occurring in 0.9% of femoral hernia repairs.<sup>[2]</sup> An inflamed appendix is an even less common finding, with an incidence of 0.08-0.13%.<sup>[3]</sup> De Garengot's hernia is a very rare clinical presentation. It is more common in females than in males.<sup>[3]</sup> Pre-operative diagnosis of de Garengot's hernia is difficult; however when present, it requires emergency surgery.<sup>[3]</sup>

We report a case of incarcerated femoral hernia occurring in a 98year old lady with small bowel and a non-inflamed appendix contained within the hernia sac.

**CASE REPORT**

A 97year old woman was admitted with a 5day history of vomiting, constipation and abdominal distension and colicky peri-umbilical pain. She had presented to her GP on the day of admission and anti-emetics and laxatives were suggested. When this treatment failed to alleviate her symptoms, she was referred to the acute surgical team for further assessment. This lady had a significant past medical history; that included hypertension, chronic kidney disease and bronchogenic carcinoma (treated with radiotherapy with palliative intent). On admission observations demonstrated oxygen saturations of 94% on room air) and a tachycardia of 105bpm, observations

were otherwise normal. On examination the patient was of low body mass index with evidence of recent weight loss. Abdominal examination demonstrated distension and tenderness overlying a palpable right groin lump. Admission bloods demonstrated a neutrophil leucocytosis, deranged renal function and a slight elevation in the serum lactate. Abdominal X-ray demonstrated dilated small bowel loops. The diagnosis was felt to be small bowel obstruction secondary to an incarcerated right femoral hernia. The patient received IV fluids, was kept nil orally with a nasogastric tube inserted. Parenteral analgesia was administered and urine output recorded. Once the renal function was optimised a Computerised Tomography (CT) was arranged. The CT confirmed the clinical diagnosis with a small bowel obstruction secondary to an incarcerated right femoral hernia (Figure 1). The patient subsequently underwent a femoral hernia repair using a high McEvedy approach.

The right femoral hernia was confirmed intra-operatively. When the hernia sac was opened a 5cm section of viable small bowel was present, however a congested and ischaemic appendix was also found (Figure 2). An appendectomy was performed; the small bowel reduced into the abdomen a suture repair of the femoral hernia undertaken. Histopathological analysis of the specimen confirmed a non - inflamed but ischaemic appendix. Following surgery the patient had an uneventful recovery and was discharged home on day five post-operatively.



**Figure 1: CT abdomen and pelvis. Transverse view: appendix (red arrow) inside the femoral ring (white arrow), medial to the femoral vein (white asterisk) and femoral artery (red asterisk).**



**Figure 2: Intra-operative image of the appendix within the femoral hernia.**

## DISCUSSION

Rene Jacques Croissant de Garengot first described the presence of the vermiform appendix in a femoral hernia sac in 1731.<sup>[1]</sup>

De Garengot's hernia is a rare finding, and is seen more frequently in females than in males, by a ratio of 3:1.<sup>[2]</sup> The incidence of this disease is estimated to be 0.9% during femoral hernia repairs and the mean age of patients with this condition is 55 years.<sup>[3]</sup> Many theories have been suggested for the pathogenesis of de Garengot's hernia. The most widely accepted of these is the congenital theory, where pelvic localization of the appendix and a rigid femoral ring predispose to its development.<sup>[4]</sup> The evolution of inflammation in the appendix is thought to be secondary to the engagement of the appendix in the hernia sac.<sup>[5]</sup> Although there are occasional cases diagnosed pre-operatively, typically the appendix is found incidentally during repair without any pre-operative signs or symptoms as in the case presented.<sup>[6]</sup>

The clinical picture of this condition is one of incarcerated femoral hernia and includes vague abdominal pain and tenderness and an erythematous groin lump.<sup>[7]</sup> The signs of appendicitis are overshadowed by a tight femoral hernia neck and pelvic rigidity; this anatomical feature prevents the spread of inflammation to the peritoneal cavity.<sup>[8]</sup> Abdominal X-ray does not aid in the diagnosis of de Garengot's hernia, however in the case presented, the abdominal X-ray did demonstrate dilated small bowel loops as there was also small bowel within the femoral hernia.

De Garengot's hernia is usually diagnosed intra-operatively as was the case in this study; however, CT and ultrasound have been successfully used for pre-operative evaluation. CT has been reported to have 98% specificity and sensitivity for confirming or excluding appendicitis in Garengot's hernia.<sup>[9]</sup>

The treatment of choice for de Garengot's hernia is resuscitation of the patient and when optimised emergency surgery should be performed. The hernial sac should be opened and its contents inspected. In the case presented, small bowel was also present within the sac. This was viable and was reduced into the abdomen; the appendicectomy was then performed. A High McEvedy approach, as performed in this case provides adequate exposure for both the femoral canal exploration and intra-abdominal access; however, alternative approaches, such as Cooper's ligament repair and a low Lockwood approach have been described in the literature.<sup>[10]</sup>

Once the appendicectomy has been performed, the surgeon must decide how best to fix the femoral hernia. A prosthetic mesh should be avoided in a contaminated field due to the obvious risk of infection but a few reports have described mesh repair even in the presence of an inflamed appendix with no post-operative infection.<sup>[11]</sup> The risk versus benefit of mesh repair must be considered especially in cases with large hernia defects to reduce the risk of hernia recurrence; however, if the appendix has perforated, the use of mesh for repair of the hernia defect is contraindicated.<sup>[11]</sup>

Recent studies have supported prosthetic mesh repair, as there is less recurrence of the hernia and no increased rate of wound infection but only in the absence of appendiceal perforation or abscess formation. In the presence of perforation or abscess, the femoral hernia is repaired with non-absorbable sutures and the increased risk of hernia recurrence is accepted.<sup>[3]</sup>

The most common complication of de Garengot's hernia repair is wound infection with a rate as high as 29%.<sup>[3]</sup> Some cases of necrotizing fasciitis and even death have been reported but these are most likely related to the delay in diagnosis and the older age and other comorbidities of these patients.<sup>[6]</sup>

## CONCLUSION

Although the incidence of de Garengeot's hernia is extremely low, its possibility must be considered in cases of femoral hernia and systemic signs of inflammation given the lack of abdominal signs of appendicitis as this is a serious and potentially lethal complication and always requires emergency surgery. CT can be useful in the diagnosis of de Garengeot's hernia in the absence of clinical signs of appendicitis but this should not cause an delay in the surgical management of this condition.

Early clinical diagnosis and surgical intervention are the best way to reduce the potential complications of this condition. Appendectomy with mesh-free hernia repair is an acceptable treatment for de Garengeot's hernia but in cases of large hernia defects or in older patients, mesh repair of the hernia can be considered but only in the absence of perforation.

## CONFLICTS OF INTEREST

We have no conflict of interest to declare.

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