

# Appendicitis in disguise: a case of de Garengeot hernia

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Femoral hernias account for approximately 3–5% of abdominal wall hernias, with a higher prevalence in elderly women.<sup>1–3</sup> De Garengeot hernia (DGH), first described by the French surgeon René Jacques Croissant de Garengeot in 1731, is a rare femoral hernia subtype containing the vermiform appendix in the femoral hernia sac. Estimates suggest <1% of femoral hernias include the appendix; acute appendicitis within the sac is even rarer still.<sup>2</sup> Its clinical significance lies in the potential for appendicitis and incarceration, often mimicking strangulated femoral hernias.

Diagnosis can be challenging, and the condition is often discovered intraoperatively. However, with access to computed tomography (CT) we are seeing rising numbers. We report the case of an elderly woman with non-specific abdominal pain, who presented with appendicitis within a femoral hernia. Delayed appendicectomy and hernia repair were performed with good outcome. This report highlights the diagnostic challenges and surgical considerations of this unusual entity.

Pre-operative diagnosis remains challenging but is increasingly achieved with CT. The complexity is introduced with surgical planning. In an uncontaminated field, laparoscopic repair with appendicectomy is feasible in selected patients, while open techniques dominate in emergencies or contamination. Mesh repair is generally favoured in clean fields and avoided with gross contamination. Early operative management tailored to contamination status and surgeon expertise yields excellent outcomes; a laparoscopic-first approach where expertise exists is favoured.

## Case presentation

Mrs X, an 80-year-old, presented with a 1-day history of upper abdominal pain, diarrhoea and dysuria. She was recovering from a recent COVID-19 infection with positive testing 1 week prior. Her background included previous transient ischaemic attack, hypertension, osteoarthritis, iron deficiency anaemia and a total abdominal hys-

terectomy with bilateral salpingo-oophorectomy. Prior to admission, she was fully independent and was grieving the recent passing of her husband.

On examination, Mrs X was tender in the epigastrium but also tender with guarding in the right lower quadrant. All observations were in the normal range. Her history and examination were incongruent but favoured to represent atypical biliary pain with concurrent urinary tract infection. Biochemical analysis revealed a white cell count (WCC) and C-reactive protein (CRP) within the normal range. Her mid-stream urine was negative, and a CT scan revealed acute appendicitis within a femoral hernia, known as a DGH. Repeat examination revealed a very tender swelling in the right groin without overlying skin changes aligning with the CT findings. She was commenced on intravenous antibiotics—cefuroxime and metronidazole—with the plan to manage conservatively and aim for elective appendicectomy and laparoscopic hernia repair to allow for mesh repair in a clean field.

Over the next 3 days, Mrs X remained tender and inflammatory markers rose, with CRP peaking at 97. However, on day 4 she was pain free, eating a normal diet, drinking well and CRP had settled to 23. Her WCC and neutrophils remained within normal range throughout, as did her observations. She was discharged with oral antibiotics and elective waitlisting for repair and appendicectomy, with an interval CT prior to assess for resolution of inflammation.

Mrs X returned for elective laparoscopic appendicectomy, partial caecectomy and trans-abdominal preperitoneal hernia repair with mesh. She had an uncomplicated recovery, discharging day 2 post-operatively. Unfortunately, intraoperative photographs were lost and unable to be restored following the case ceasing.

## Discussion

DGH is an uncommon finding, with an estimated incidence of 0.5–5% among femoral hernias.<sup>2,3</sup> In 2023, fewer than 450 cases had been reported; up-to-date numbers could not be isolated.<sup>4</sup>

Figure 1: Sagittal and coronal views detailing appendix passing into hernia—de Garengeot hernia.

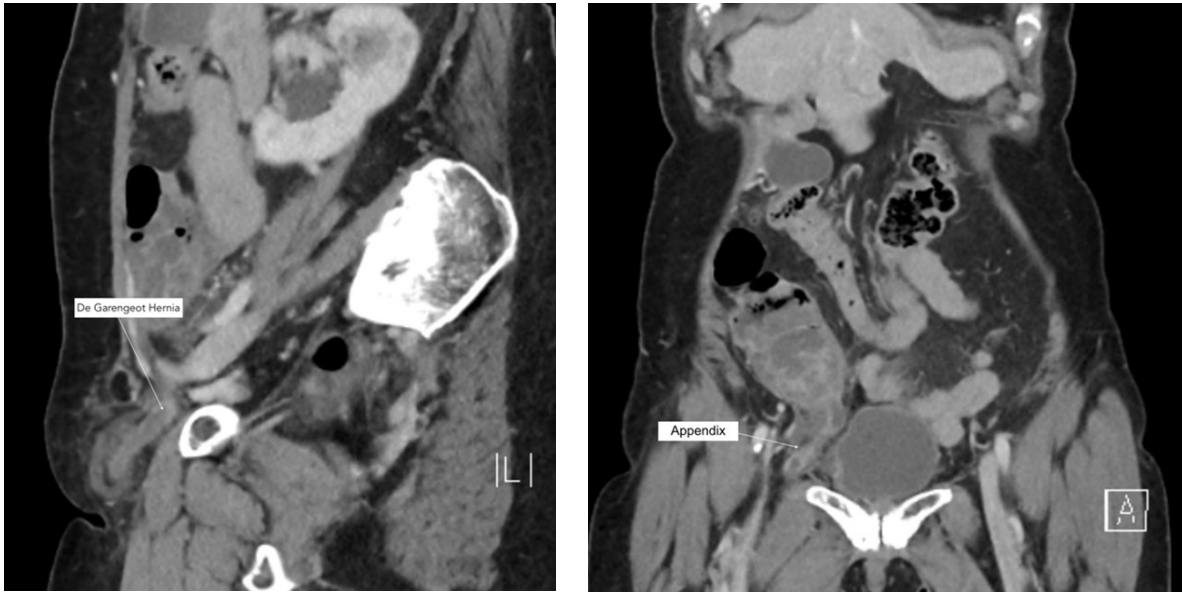
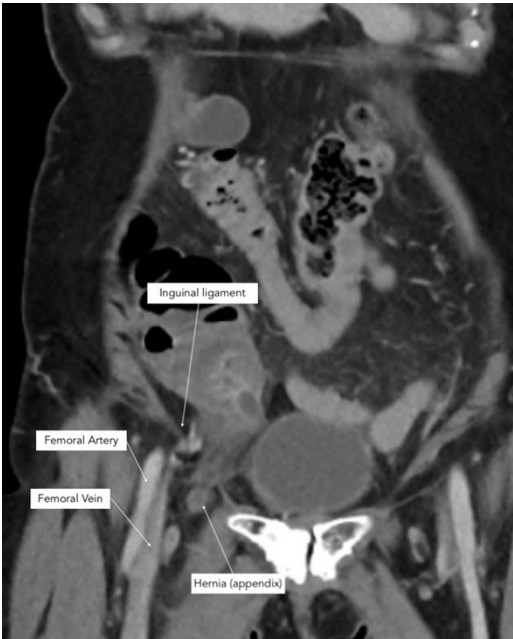


Figure 2: Relevant anatomy.



It is seen more frequently in elderly women, reflecting the demographic distribution of femoral hernias.<sup>5</sup>

DGH presents clinically in a manner similar to an incarcerated or strangulated femoral hernia: a painful, irreducible swelling in the groin, often without systemic symptoms in the early stages. When appendicitis occurs within the sac, fever, raised inflammatory markers and local erythema may develop, though these are not always present.<sup>6</sup> Pre-operative diagnosis may be difficult. While ultrasound can occasionally demonstrate a blind-ending tubular structure within the hernia sac, CT is the most useful imaging modality, yet sensitivity remains limited.<sup>3</sup>

The management of DGH remains primarily surgical. Appendectomy is performed when inflammation is present, and hernia repair is mandatory to prevent recurrence. Mesh repair is generally avoided in the presence of infection, though laparoscopic techniques have been described in selected cases.<sup>7,8</sup> The choice of approach depends on patient factors, intraoperative findings and surgeon expertise. In this case, our patient was elderly and without significant comorbidities. Given the possibility of managing both issues laparoscopically, we opted for conservative management in the acute setting with delayed surgical management to allow for a clean field and mesh placement. In the acute period, pain initially persisted with CRP rising, and an acute operation was briefly considered.

Theoretically, a conservative approach is possible; however, it is not well supported in literature and requires tailoring to a select patient group. Principles involve manual reduction of the hernia sac contents, in the absence of appendicitis, strangulation, perforation or bowel obstruction, and close monitoring for clinical deterioration. Antibiotic therapy alone in those with appendicitis is feasible; however, in a femoral hernia it is rarely advised given high incarceration rates

with risk of necrosis and perforation. Those faced with the option of delayed over emergent surgery must be consented to the increased risks of complications such as perforation and necrosis in the community while awaiting eventual definitive management.

In the acute setting, the choice between immediate and delayed surgical management is primarily determined by patient factors. A septic patient requiring urgent intervention dictates the need for emergency repair. In contrast, appendicitis in a clinically stable patient allows time for a more considered approach.<sup>9</sup> In a contaminated field, primary open suture repair is generally preferred. However, in cases where the appendix is inflamed, erythematous and oedematous but without perforation or necrosis, mesh repair is considered safe and carries a low risk of complications. If there is evidence of perforation or tissue necrosis, suture repair or a delayed definitive repair should be undertaken to reduce the risk of infection and mesh-related morbidity.<sup>10</sup>

It is suggested in literature that cases of DGH have increased over the past decade, with 439 cases reported by 2020, likely due to advanced imaging modalities, technical ability with ultrasonography and better access to CT with respect to diagnostic modalities for abdominal pain presentations.<sup>2,11</sup> Our populations are also ageing. The generation termed “Boomers” are approaching an age where femoral hernias are more common. Improved journal access and reporting of rare and unusual cases is contributing to surgical education and the development of medical literature archives.

Overall, DGH is a rare and diagnostically challenging condition without imaging. Surgeons should maintain a high index of suspicion in elderly women presenting with painful irreducible femoral masses. CT imaging aids diagnosis, and surgical treatment with tailored hernia repair provides excellent outcomes.

**COMPETING INTERESTS**

Nil.

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