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A Painful Protrusion – A Rare Presentation of Appendicitis

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Goals and Objectives

1. Describe a rare case of appendicitis within a femoral hernia.
2. Discuss the imaging findings of a femoral hernia, and furthermore findings when associated with appendicitis, referred to as a De Garengeot hernia.
3. Familiarize the audience with this rare occurrence.

Introduction

Acute appendicitis is a common presenting clinical pathology and imaging diagnosis in everyday practice, as well as indication for surgery. Portal venous phase CT is a sensitive first line imaging modality in assessing abdominal pain and appendicitis in adults, and possible associated complications. Often assessed with ultrasound given the benefit of dynamic maneuvers, hernias are also commonly incidentally noted on CT. Rarely an inflamed appendix may be located within a femoral hernia, referred to as a De Garengeot hernia, of which we present an institutional case.

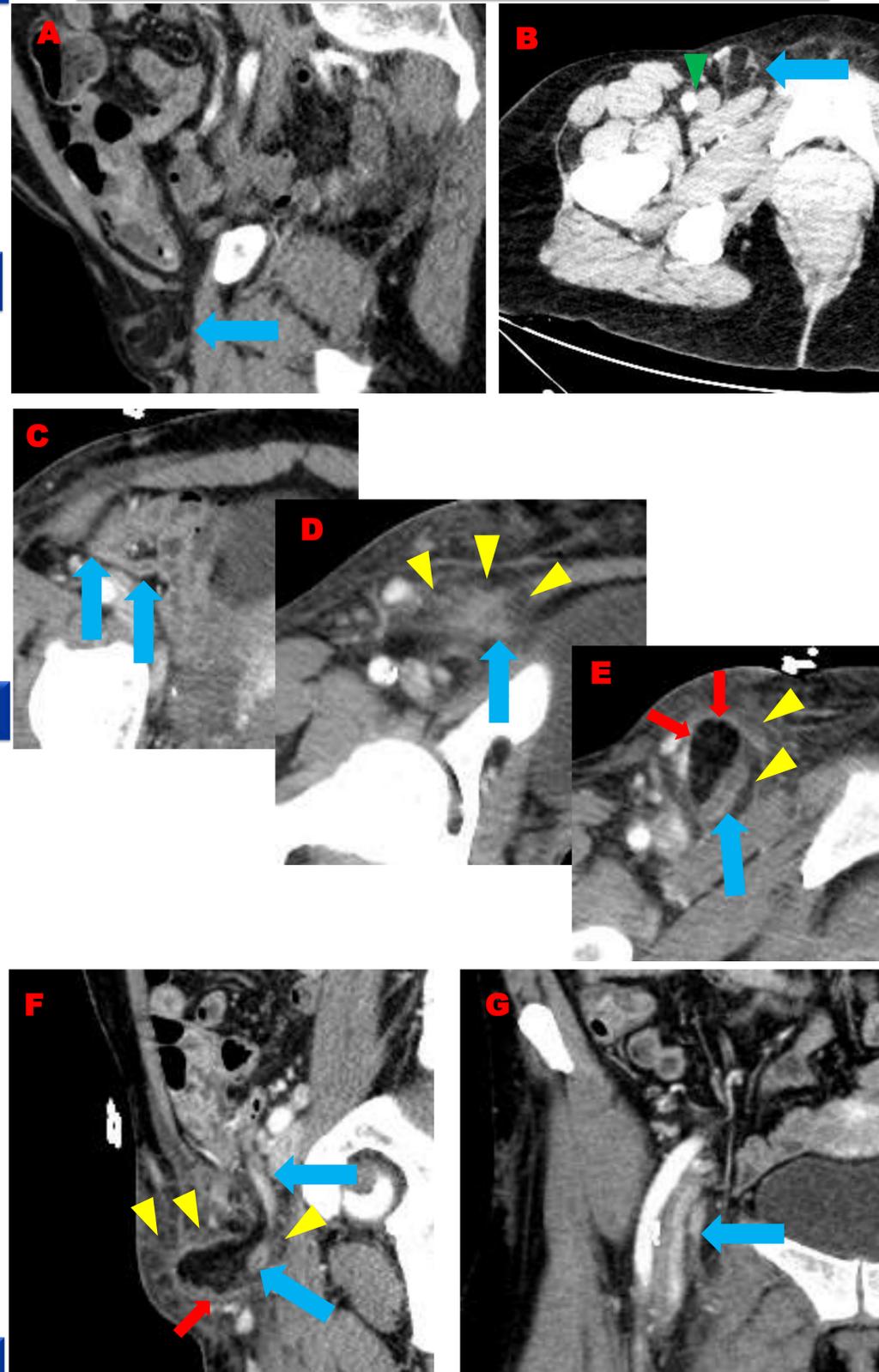
Case Presentation

A 49 year-old female with past medical history notable for pulmonary hypertension on 8 liters home oxygen presented to the ER with complaints of 4 days of worsening right groin swelling and pain. Patient was noted to be febrile with tachycardia, with laboratory studies pertinent for leukocytosis. Initial concern was for an incarcerated/strangulated right inguinal hernia, and given patient medical history, she was transferred to Henry Ford Main for escalation of care. Patient underwent CT upon arrival which demonstrated a right femoral hernia, incidentally noted on remote prior imaging, with a tubular structure within the hernia sac which was new from prior and compatible with a thickened appendix associated with adjacent inflammatory changes. Patient was subsequently taken to the operating room for a laparoscopic appendectomy with right femoral hernia sac excision and femoral hernia repair. Pathologic analysis of the obtained surgical specimen confirmed the diagnosis of acute appendicitis with hernia sac congestion and inflammation.

References

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- Kalles, V., Mekras, A., Mekras, D. et al. De Garengeot's hernia: a comprehensive review. *Hernia*17, 177–182 (2013). <https://doi.org/10.1007/s10029-012-0993-3>

Figures



- Contrast enhanced sagittal (Fig. **A**) and axial (Fig. **B**) CT of the patient 9 months prior demonstrates an incidental right femoral hernia (blue arrows), medial to the right femoral vessels (green arrowhead)
- Sequential cranial to caudal contrast enhanced axial (Fig. **C-E**), sagittal (Fig. **F**), and coronal (Fig. **G**) CT images at time of presentation to the HFH Main demonstrates a tubular structure with wall thickening compatible with the appendix (blue arrows), arising from the cecum (Fig. **C**) with associated fat stranding (yellow arrowheads) within the right femoral hernia (red arrows).

Discussion

Appendicitis often presents with right lower quadrant or periumbilical pain, classically localizing to McBurney's point, with associated fever, nausea, or vomiting. Often incidental, the most common hernia symptom is swelling, though rarely exquisite pain and gastrointestinal symptoms may result typically without fever if incarceration or strangulation occurs. A patient presenting with groin pain along with signs and symptoms of infection increases the possibility of a De Garengeot hernia, though still a rare entity. Imaging such as a routine abdomen/pelvis CT can aid in diagnosing appendicitis, hernia, or in the rarely both concurrently. Imaging criteria for the diagnosis of acute appendicitis include appendiceal dilatation, mucosal hyperemia, peri-appendiceal stranding and fluid, presence of an appendicolith, and lack of gas within the appendix. Separately, femoral hernias are relatively rare compared with inguinal hernias accounting for approximately 4% of all groin hernias, more commonly seen in females as was our patient. A femoral hernia lies within the femoral triangle, deep to the deep fascia of the thigh. Anatomically, a femoral hernia is posterior to the inguinal ligament, medial to the femoral artery and vein, and inferior and lateral to the pubic tubercle. The femoral ring is the most proximal part of the femoral canal through which femoral hernias enter, bordered by the above structure as well posteriorly by the pectineal ligament. Typical contents of femoral hernias are loops of small bowel and visceral adipose tissue. De Garengeot hernia is named after the French surgeon who was the first to describe the rare entity. To address, when the appendix is within an inguinal hernia, a more common though still rare occurrence, it known as an Amyand hernia. Acute appendicitis within a hernia sac accounts for only 0.13% of all cases of appendicitis. Once the appendix becomes incarcerated within the femoral hernia sac, the appendix may become inflamed as a primary process or as a result of constriction of the base of the appendix by the narrow femoral ring. De Garengeot hernias are typically seen in elderly women with a several day history of groin swelling, similar to our case presentation.

Conclusion

De Garengeot's hernia is a rare and clinically difficult to diagnose entity. Femoral and inguinal hernias are difficult to differentiate clinically, with nonreducible strangulated hernias associated with swelling and pain. CT imaging is an important tool to aid in the diagnosis and classification of groin hernias, and even more so in assessing for appendicitis and possible complications including the rarely seen De Garengeot hernia.