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Case Report

Femoral hernia in a 37-year-old male with COVID-19: a case report

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ABSTRACT

Left sided femoral hernias in male patients are considered very uncommon, with femoral hernia's accounting for less than 5% of abdominal wall hernias and 4:1 female to male ratio of occurrence. This case report will discuss a 37-year-old male who presented with a symptomatic incarcerated left femoral hernia following coughing in the setting of an active coronavirus 19 infection. Emergency surgical repair was pursued given incarcerated presentation of the femoral hernia. Whilst rare in men the diagnosis of femoral hernia is important for clinicians to consider ensuring appropriate surgical management is undertaken in a timely manner.

Keywords: Femoral hernia, Coronavirus, Incarcerated, Strangulated

INTRODUCTION

Femoral hernias in male patients are uncommon and can be challenging to diagnose. Femoral hernias present with a wide range of differential diagnoses and may be inadvertently misdiagnosed.[1] One of the most common diagnoses is considered to be that of an inguinal hernia. Misdiagnosis is problematic as the surgical approach for femoral and inguinal hernias differs and may lead to the true pathology not being appropriately addressed. Whereby allowing for a femoral hernia to unknowingly persist along with the associated increased risk of morbidity and mortality secondary to incarceration and strangulation To avoid misdiagnosis a sound knowledge of anatomy along with consideration of medical imaging, and possible surgical approaches is essential.

CASE REPORT

A slim 37-year-old male with an active corona virus 19 infection presented to the emergency department with a one-hour history of an irreducible tender lump to the left groin following a coughing episode. Past medical and surgical history was negative with the exception of previous orthopaedic surgical procedures. A physical examination performed demonstrated an irreducible tender lump below the left inguinal ligament and lateral to the pubic tubercle, consistent with an incarcerated and strangulated left femoral hernia. To assess contents and confirm anatomical location of the hernia a computed tomography (CT) scan of the abdomen and pelvis was performed. The CT scan demonstrated a left femoral containing incarcerated fat, this confirming suspected physical examination findings.

An emergency open inguinal (Lotheissen) approach left femoral hernia surgical repair was undertaken. Intraoperatively a left incarcerated femoral hernia with necrotic omentum protruding via a small femoral canal defect were identified. The necrotic omentum was ligated, divided, and reduced. The femoral defect was primarily repaired with non-absorbable sutures. Given the presence of necrotic omentum laparoscopy was immediately performed to ensure all necrotic omentum had been removed. On laparoscopy a small remnant of further necrotic omentum was identified and excised via the umbilical port site. Post operatively the patient made an uneventful recovery and was discharged the following

day. Subsequently, the patient has been followed up in the surgical outpatient department and continues to make an uncomplicated recovery.

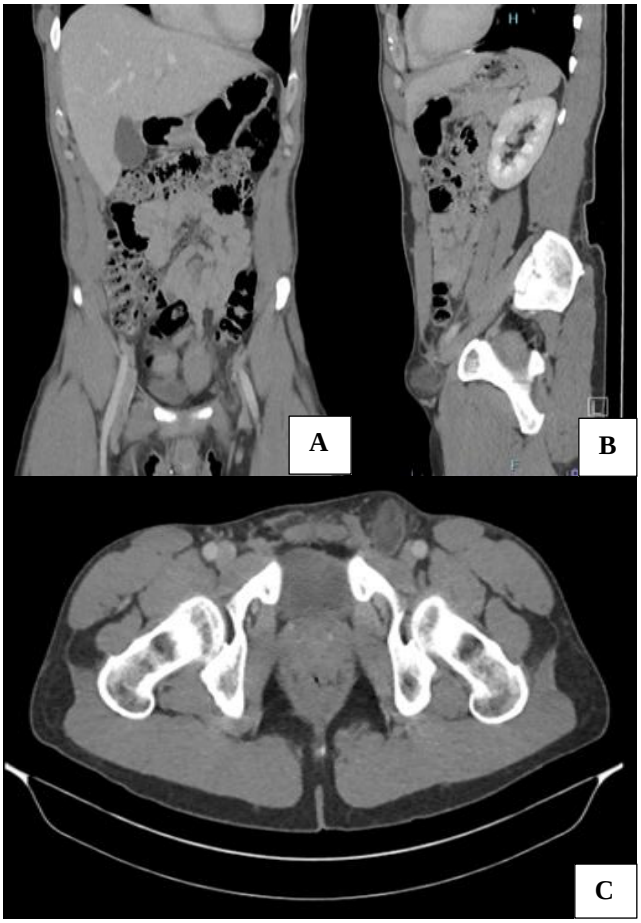

Figure 1 (A-C): CT abdomen and pelvis: left femoral hernia containing incarcerated fat.

DISCUSSION

The femoral canal is in the most medial aspect of the femoral sheath with the widest point lying at the abdominal or proximal end of the femoral canal, known as the femoral ring.[5] The most inferior ring of the femoral canal is the saphenous opening.[5,6] The femoral canal landmarks include the lacunar ligament medially, inguinal ligament anteriorly, thin septum laterally, and with the iliopectineal ligament, pectineal fascia, and pubic bone located posteriorly.[6] A femoral hernia is defined as the protrusion of intraabdominal contents such as omentum or bowel through the femoral ring into the femoral canal.[2,5,6] Femoral hernia can either protrude into the femoral canal alone, protrude through the saphenous opening, or on occasionally through the lacunar ligament itself.[6]

The femoral hernia in this case report is unique as it has occurred in a male and is left sided.[1-4,7] The incidence of femoral hernias can be considered as uncommon, accounting for less than a total of 5% of abdominal wall hernias.[1,2] With femoral hernias more commonly favoured in the female population and sources citing a 4:1 female to male femoral hernia ratio.[2,3] Additionally, within the cohort of femoral hernias ~30% have been identified as concurrently unilateral and left sided.[1,3] It has been suggested unilateral left femoral hernias may be less common than their unilateral right sided counterparts as the position of the sigmoid colon is considered to act as a tamponade to the left femoral canal.[3,4]

Femoral hernias can be challenging to diagnose when presenting as a palpable groin mass.[2] A challenging diagnosis may be attributed to the low incidence of femoral hernias and thereby the infrequency in which a clinician may have previously observed a femoral hernia.[3] In the setting of a palpable groin mass other differential diagnosis such as inguinal hernia, pseudoaneurysm, psoas abscess, enlarged inguinal lymph nodes, or soft tissue masses need to be considered.[1,2] Perhaps one of the most common misdiagnoses of femoral hernias is that of an inguinal hernia.[2] On examination femoral hernias can be clinically identified as posterior and inferior to the inguinal ligament and lateral to the pubic tubercle.[2,5] Whilst inguinal hernias are superiomedially to the pubic tubercle.[2] In patients with an increased body mass index defining this anatomy can be challenging and for this reason femoral hernias can be inadvertently misdiagnosed as inguinal hernias.[2]

The surgical approach for both femoral hernias and inguinal hernias differs.[2] For this reason, correct diagnosis of a femoral hernia is essential.[2] Misdiagnosis may result in the incorrect surgical intervention being performed.[2] Whereby allowing for a femoral hernia to unknowingly persist along with the associated increased risk of morbidity and mortality secondary to incarceration and strangulation.[2] To avoid misdiagnosis, it is important to consider the use of medical imaging.[4] The use of ultrasound (USS) and CT are recognised to provide a high specificity and sensitivity in diagnosis of femoral hernias.[4]

Femoral hernias are at a high risk of incarceration and strangulation given the small size of the femoral ring, small space within the femoral canal, or expansion following protrusion through either the saphenous opening or lacunar ligament.[5,6] With incarceration and strangulation risks reported as high as 44% and 86% the treatment of femoral hernias is surgical repair.[3] The only exception to this being the risk of surgical invention significantly outweighing that of hernia incarceration and strangulation.[1] In this case study the patient was a healthy 37-year-old male with no comorbidities other than an active coronavirus 19 infection and it is for this reason surgical intervention was emergently pursued.

Once the diagnosis of femoral hernia has been established surgical approach must be considered. Surgical approach is greatly dependent on patient factors and presentation.[1] Open surgical approaches include femoral (Lockwood's)

approach, Inguinal (Lotheissen's) approach, and preperitoneal (McEvedy's) approach.[2,5,6]

The Lockwood approach involves making a transverse incision inferior to the inguinal ligament in the groin crease.[2,6] The hernial sac is dissected onto and opened.[2,6] Where in which the hernial contents are reviewed for viability.[2,6] If hernial contents are deemed non-viable resection is performed. If required, the lacunar ligament can be released medially to facilitate hernial reduction.[6] It is essential to note potential injury to an abnormal obturator artery branch with release of the lacunar ligament.[6] Hernia neck is ligated as superior as possible, and the femoral canal is closed by securing the inguinal ligament to the iliopectineal line.[6]

The Lotheissen approach involves making an incision ~1.25 cm above the medial two thirds of the inguinal ligament.[2,5,6] The inguinal canal is opened followed by mobilisation of the testicular cord to reveal the transversalis fascia.[5,6] The transversalis fascia is opened from the deep inguinal ring to the pubic tubercle, medial to the epigastric vessels.[5,6] The femoral hernia is identified inferior to the incision and reduced.[2,5,6] The sac contents are reviewed for viability and a resection performed as required prior to reduction.[5,6] The hernia neck is closed with sutures and the defect repaired by anchoring the conjoint tendon to the iliopectineal line.[5,6] Following this the testicular cord is replaced and the inguinal canal is closed.[5,6]

The McEvedy approach involves making a lower abdominal incision (either vertical or horizontal) is made at the lateral border of the rectus muscle.[2,6] Following this the anterior rectus sheath is opened and the rectus muscle displaced medially to facilitate dissection in the preperitoneal space.[6] The femoral hernial sac is then identified and contents inspected for viability.[6] The hernial sac is closed with repair performed to the defect in the preperitoneal space.[6]

Of the described open surgical approaches to a femoral hernia repair the Lotheissen and McEvedy approaches are considered most appropriate in the setting of an emergent or complex femoral hernia repair.[2,6] The Lotheissen approach provides adequate exposure to the femoral ring and facilitates control of an injured abnormal obturator artery.[6] The McEvedy approach is advantageous as it allows adequate exposure of sac intraperitoneal contents to facilitate resection if required via an extended peritoneum incision.[2,6] As such within our case report the Lotheissen approach was utilised to ensure adequate exposure and potential control of an abnormal obturator artery if present.

Surgical intervention for groin hernia repairs has a complication rate of ~10%.[8] Common complications experienced include pain, seroma, haematoma, wound infection, and hernia recurrence.[8] More serious complications include hollow viscus and testicular injury.[8] The patient was discharged day two postoperatively and reviewed in the outpatient department six weeks later. Fortunately, the patient made an uneventful and complication free recovery.

CONCLUSION

Femoral hernias are an infrequent occurrence in young males. However, can have detrimental adverse outcomes if the diagnosis of femoral hernia is delayed or missed. Establishing the correct diagnosis in a timely manner is essential to reduce the morbidity and mortality risk associated with misdiagnosis. Reliably determining the diagnosis of femoral hernia on clinical examination alone can be challenging, as such it is important to consider imaging modalities such as USS and CT imaging to provide clarity in a diagnostic dilemma. Subsequently, despite cohort and patient factors femoral hernia should always be considered as a differential diagnosis in a palpable groin mass.

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