Brief Communication
Communication abrégée

Strangulated femoral hernia containing a perforated appendix

Eric T. Nguyen, MD; Ian K. Komenaka, MD

Approximately 27 000 cases of femoral hernia occur yearly in the USA, accounting for 3% of all hernias. The hernial sac may contain preperitoneal fat, omentum, small bowel or colon and, rarely, the appendix, reported to occur in 0.8% of femoral hernias. To date, only 12 cases of perforated appendicitis in a femoral hernia have been documented, none in the past 13 years. Because of the unusual, rare presentation, management is not well defined. Based on our experience and on previously reported cases, we present relevant trends in diagnosis and management of this rare clinical entity.

Case report

An 88-year-old man presented with a 2-day history of a painful mass in his right groin. Abdominal examination disclosed mild tenderness in the right lower quadrant. A 6-cm right inguinal mass was palpated that was non-reducible and exquisitely tender to palpation. The leukocyte count was 13.4 × 10^9/L. The preoperative diagnosis was strangulated inguinal hernia. At laparotomy, a large, edematous, inflamed femoral mass, medial to the femoral vein, was identified. The anterior surface was opened, and purulent fluid was drained. The hernial sac was found to contain a perforated appendix. After appendectomy, the sac was closed at its base, and the redundant portion was amputated. The femoral hernia was repaired by suturing the iliopubic tract to Cooper’s ligament. Pathological examination of the excised specimen demonstrated acute and chronic appendicitis with perforation of the appendix and periappendicitis in the hernial sac. Postoperatively, the patient was given a 4-day course of antibiotics intravenously.

Comment

The rare occurrence of a femoral hernia containing the appendix may be attributed to abnormal anatomical positions, possibly from different degrees of intestinal rotation during development or from variations in its attachment to the cecum. It has also been speculated that a very large cecum, extending into the pelvis, can give rise to the appendix entering a hernial sac. Ultimately, compression of the neck of the femoral hernia and eventual strangulation may result in acute appendicitis and eventual perforation.

The diagnosis of appendicitis in a femoral hernia, however, is extremely challenging and is almost never made preoperatively. To date, only 1 such case has been incidentally diagnosed preoperatively, by computed tomography (CT). Clinical symptoms, which are commonly indicative of incarcerated femoral hernia, include vague abdominal pain, painful swelling and erythema of the right groin, reported in many series. The duration of these symptoms varies widely, from 2 days to 15 years (Table 1). Signs and symptoms of acute appendicitis, however, are often overshadowed by findings of an incarcerated femoral hernia. General abdominal peritonitis is usually absent despite perforation because the tight

Table 1

<table>
<thead>
<tr>
<th>Report</th>
<th>Year</th>
<th>Patient age, yr</th>
<th>Gender</th>
<th>Duration of symptoms</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waring</td>
<td>1891</td>
<td>46</td>
<td>F</td>
<td>2 yr chronic, 1 d acute</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Hodgson</td>
<td>1925</td>
<td>70</td>
<td>F</td>
<td>8 mo</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Holliday and White</td>
<td>1953</td>
<td>57</td>
<td>F</td>
<td>2 wk</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Carey</td>
<td>1967</td>
<td>48</td>
<td>M</td>
<td>5 mo chronic, 5 d acute</td>
<td>Wound infection</td>
</tr>
<tr>
<td>Gerami et al</td>
<td>1970</td>
<td>71</td>
<td>M</td>
<td>5 mo</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Voitk et al</td>
<td>1974</td>
<td>59</td>
<td>F</td>
<td>15 yr</td>
<td>Uncomplicated Died</td>
</tr>
<tr>
<td>Cuotolo et al</td>
<td>1978</td>
<td>73</td>
<td>F</td>
<td>6 mo</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Watkins</td>
<td>1981</td>
<td>72</td>
<td>F</td>
<td>1 wk</td>
<td>Wound infection</td>
</tr>
<tr>
<td>Rose and Cosgrove</td>
<td>1988</td>
<td>86</td>
<td>F</td>
<td>2 d</td>
<td>Uncomplicated</td>
</tr>
<tr>
<td>Guirgis et al</td>
<td>1997</td>
<td>80</td>
<td>F</td>
<td>5 d</td>
<td>Necrotizing fasciitis</td>
</tr>
<tr>
<td>Nguyen</td>
<td>2004</td>
<td>88</td>
<td>M</td>
<td>2 d</td>
<td>Uncomplicated</td>
</tr>
</tbody>
</table>

From the Department of Surgery, New York Methodist Hospital, New York, NY
Accepted for publication Mar. 31, 2003.
Correspondence to: Dr. Ian K. Komenaka, Columbia-Presbyterian Medical Center, Milstein Hospital Building-7SK-12, 177 Fort Washington Ave., New York NY 10032; fax 212 342-0234; ikk2001@columbia.edu
hernia neck contains the purulent content. This suggests that acute appendicitis in femoral hernia may be a consequence of incarceration and strangulation of the appendix rather than the usual internal obstruction due to lymph node hypertrophy or an appendicolith. This presentation occurs more commonly in femoral hernia than in other hernia types due to the narrowness and rigidity of the femoral canal.12

The combined data from all cases cited showed that femoral hernias occur more frequently in women than men, in a ratio of slightly less than 2:1. Femoral hernias containing perforated appendices also show a predisposition in women, in a ratio of greater than 3:1 (77% women v. 23% men). The mean age of patients is 69 years, demonstrating a trend toward presentation in the elderly population.

Due to the paucity of cases, no standard treatment exists, and options tend to vary widely. Management in reported cases has included incision and drainage with delayed appendectomy6 or immediate appendectomy followed by hernia repair.8 The repair techniques have also been diverse and include Cooper’s ligament repair4 or use of the preperitoneal approach.9 Despite the available treatment options, the rate of wound infection is 5-fold greater than that of intraperitoneal perforated appendicitis (23% v. 4.7%).13 Using combined data, we found that factors contributing to the increased incidence of infection are related to the delay in diagnosis of these patients, multiple tissue planes involved in the repair, poor nutritional status and older age of these patients. These factors likely also contribute to the reported grave complications of necrotizing fasciitis and death.10

In conclusion, perforated appendicitis in a femoral hernia remains a challenging diagnosis due to its extremely rare occurrence. The diagnosis depends on sound clinical judgement and should be considered in elderly women presenting with signs of a strangulated hernia. Diagnostic imaging, such as CT, can be helpful. The potential for complication in these cases is great and does not appear to be affected by different operative strategies. Acute awareness and early operation appear to be the key to preventing this rare condition and its potentially drastic ramifications.

Competing interests: None declared.

References


Correction