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## PRACTICE

## EASILY MISSED?

## Femoral hernias

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This is one of a series of occasional articles highlighting conditions that may be more common than many doctors realise or may be missed at first presentation. The series advisers are Anthony Harnden, university lecturer in general practice, Department of Primary Health Care, University of Oxford, and Richard Lehman, general practitioner, Banbury. To suggest a topic for this series, please email us at [easilymissed@bmj.com](mailto:easilymissed@bmj.com).

An overweight 65 year old woman visits her general practitioner with discomfort in her right groin. On examination, the suggestion of a reducible groin lump is noted. She is routinely referred to the surgical outpatient clinic with a possible diagnosis of inguinal hernia. However, two weeks later and before her surgical appointment, she again visits her general practitioner, this time with vomiting, diarrhoea, and colicky abdominal pain. She is immediately referred to the emergency department. An abdominal radiograph shows small bowel obstruction. She is admitted to the surgical ward with a diagnosis of obstructed femoral hernia and has a small bowel resection and emergency hernia repair.

### What is a femoral hernia?

A femoral hernia is the protrusion of a peritoneal sac through the femoral ring into the femoral canal, posterior and inferior to the inguinal ligament. The sac may contain preperitoneal fat, omentum, small bowel, or other structures.

### Why is a femoral hernia missed?

Evidence is scarce as to the reason why femoral hernias are often missed and present as emergencies. Patients may be aware of groin discomfort or a groin lump, but they may not realise its clinical importance and may be reluctant to seek medical help. Initially some patients present to primary care with vague symptoms including groin discomfort that may be attributed to other disease such as osteoarthritis. As femoral hernias are typically small, they may be easily missed on examination, particularly in obese patients. Furthermore, owing to the difficulty in clinically distinguishing groin hernias, femoral

hernias may be mistaken for inguinal hernias and referred for surgical opinion on a non-urgent basis.<sup>3</sup>

In an emergency, patients may present with signs of bowel obstruction, which include colicky abdominal pain, vomiting, and abdominal distension. About a third of patients do not complain of symptoms directly attributable to a hernia,<sup>4</sup> and a groin lump is not always present. Other diagnoses, such as gastroenteritis, enlarged groin lymph node, diverticulitis, or constipation, may be made in error.<sup>↓</sup>

Retrospective studies have observed that about 40% of hernias causing symptoms of acute bowel obstruction are missed owing to a lack of groin examination.<sup>5 6</sup> The researchers concluded that female patients and all patients with femoral hernia were less likely to have a groin examination, despite signs of bowel obstruction being noted.<sup>5</sup>

### Why does this matter?

Although femoral hernias are less common than inguinal, they are associated with higher rates of acute complication. The cumulative probability of strangulation for femoral hernias is 22% three months after diagnosis, rising to 45% 21 months after diagnosis, whereas the probability of strangulation for an inguinal hernia is 3% and 4.5% respectively over the same time period.<sup>7</sup>

Several studies have shown that acute femoral hernias and their subsequent complications are associated with increased morbidity and mortality.<sup>1 2 8-10</sup> Examples of morbidity resulting from acute presentation include increased rates of bowel resection, wound infection, and cardiovascular and respiratory complications.<sup>10</sup> As elective femoral hernia repair has been shown to be a relatively safe procedure (even in patients aged over 80), it is generally accepted that femoral hernias should be referred urgently and repaired electively.<sup>2 10 11 12</sup>

Missed femoral hernia at emergency presentation delays time to surgery.<sup>5</sup> One study has shown an increased likelihood of bowel resection if surgery is undertaken more than 12 hours after the onset of acute symptoms.<sup>13</sup> Preoperative delay is clearly

**How common are femoral hernias?**

- About 5000 femoral hernia repairs are carried out in the United Kingdom each year
- Femoral hernias account for a fifth of all groin hernias in females but less than 1% of groin hernias in males
- The 40% of femoral hernias that present acutely are associated with a 10-fold increased risk of mortality<sup>12</sup>

linked with an increase in bowel resection, and this is associated with mortality rates that are about 20 times higher than those for patients having elective hernia repair (which would not require a bowel resection).<sup>2</sup>

**How is it diagnosed?****Clinical**

Classically, femoral hernias present as mildly painful, non-reducible groin lumps, located inferolateral to the pubic tubercle. In contrast, inguinal hernias are found superomedially. However, femoral hernias tend to move superiorly to a position above the inguinal ligament, where they may be mistaken for an inguinal hernia. Differentiation of groin hernias on clinical grounds is therefore unreliable, irrespective of the experience of the examining doctor.<sup>14</sup> In patients presenting electively, only about 1% of groin hernias in males are likely to be femoral, whereas the likelihood in females is about 20%.<sup>1</sup> Clinical examination alone is inaccurate in differentiating groin hernia.<sup>14</sup> Therefore in females, owing to the greater prevalence of femoral hernia, consider all groin hernia to be femoral until proved otherwise.

Femoral hernias may also present without a palpable lump and with only vague symptoms of abdominal or groin pain. However, symptoms may vary and there is a lack of evidence to predict the likelihood of a particular symptom indicating the presence of a femoral hernia. Patients may present later with clinical features of bowel obstruction. Undertake a detailed groin examination in all patients presenting with bowel obstruction.

**Investigations**

Ultrasonography, magnetic resonance imaging, and computed tomography (CT) have all been shown to be accurate in detecting and differentiating groin hernias.

Ultrasonography is widely available, non-invasive, and highly accurate in differentiating inguinal from femoral hernia—with sensitivities and specificity of 100% being reported in two studies.<sup>15 16</sup> Its accuracy is, however, operator dependent.

Magnetic resonance imaging has been reported to be more accurate than ultrasonography in detecting inguinal hernia.<sup>17</sup> However, there is a lack of evidence for whether magnetic resonance imaging is better than ultrasonography in detecting and differentiating groin hernia. Therefore ultrasonography should be the first choice for electively investigating suspected groin hernia as it is more widely available, less costly, and accurate.

CT scanning has been shown to be accurate in differentiating groin hernias. One retrospective study reports the correct identification of 74 of 75 hernias (28 femoral and 47 inguinal), which were later confirmed at operation.<sup>18</sup> This is broadly comparable with the non-invasive modalities outlined above, but as there is a substantial radiation dose associated with CT scanning, it should not be used electively for investigating suspected groin hernia. In the acute abdomen, however, consider CT as the first choice for investigating suspected small bowel obstruction in the presence of a negative clinical examination.

**How is it managed?**

In males, a groin hernia suspected as being femoral on clinical examination requires urgent referral, due to the risks of acute complications outlined above. All groin hernia in females should be urgently referred for assessment.

Electively, both open and laparoscopic repair using mesh have significantly lower recurrence rates than repair using sutures only.<sup>1</sup> Open repair has the advantage that it can be performed under local anaesthetic. No evidence suggests superiority of either method in the acute setting.

Some research has suggested that femoral hernias may be overlooked during repair of suspected inguinal hernias.<sup>19</sup> So during surgical repair of all groin hernias examine the femoral canal if an obvious inguinal hernia is not observed.

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**Key points**

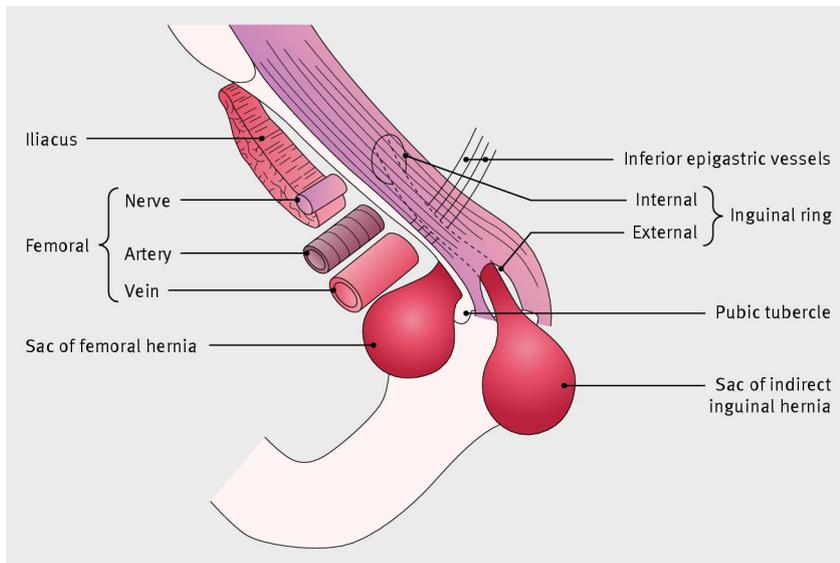
- Femoral hernias are more common in females and in people aged over 65 years and are associated with higher rates of complications such as strangulation
- Emergency surgery for femoral hernia is associated with a 10-fold increased risk of mortality, which is further increased by preoperative delays
- Clinical examination is unreliable in differentiating femoral from inguinal hernia
- Refer all females with groin hernia for urgent assessment and management
- Examine the groins of all patients presenting with signs of small bowel obstruction
- Ultrasound is the first line elective investigation for suspected uncomplicated groin hernia, but in acute small bowel obstruction, CT scanning is first choice

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**Figure**



Inguinal hernias are usually reducible and above the inguinal ligament. Femoral hernias are often irreducible and below the inguinal ligament. Adapted with permission from Ellis H. *Clinical anatomy*. 6th ed. Blackwell Scientific, 1977