

Ernia inguinale

LANGE 18



**Università
degli Studi
di Ferrara**

Nel futuro da sempre.

A 44-year-old man complains of discomfort in his right upper thigh for the past 6 months. He works in the garden department of a home improvement center. On examination, there is tenderness at the right inguinal area. When the patient performs a Valsalva maneuver (bearing down to increase intraabdominal pressure), a bulge appears superior to the inguinal crease near the pubic bone.

- ▶ What is the most likely diagnosis?
- ▶ What is the anatomical defect associated with this condition?

Descrizione:

- ▶ Uomo 44 anni
- ▶ Lamenta un fastidio nella parte superiore della gamba sinistra insorto negli ultimi 6 mesi
- ▶ Anamnesi positiva per lavoro con sforzo fisico (giardiniere)
- ▶ Indolenzimento nell'area inguinale di destra
- ▶ Quando il paziente esegue la manovra del torchio addominale (aumentare la pressione addominale) si nota la comparsa di una protuberanza superiormente alla piega inguinale vicino all'osso pubico

CLINICAL CORRELATION

A **hernia** is defined as an abnormal protrusion of a structure through tissues that normally contain it. Inguinal hernias are the most common type of hernia, occurring in men and women, although they occur much more frequently in men. This patient's age and his occupation, which requires frequent lifting activity, suggest a direct or acquired inguinal hernia. Loss of tone in the musculature in the inguinal region predisposes to progressive stretching of the parietal peritoneum into the posterior inguinal canal with repeated increased intraabdominal pressure associated with the lifting activity. If the patient were a young man or child, an indirect or congenital inguinal hernia would be a more likely diagnosis. With an indirect hernia, the parietal peritoneum at the deep inguinal ring exists as a fingerlike protrusion into the inguinal canal. This is the result of faulty closure of the embryonic outpouching of peritoneum into the scrotum, called the **process vaginalis**. Indirect inguinal hernias enter the deep inguinal ring, stretch peritoneal tissue with repeated increases in intraabdominal pressure, traverse the length of the inguinal canal, and enter the scrotum. Surgical repair of the tissue defect is indicated to prevent incarceration, infarction, and necrosis of the herniated tissue, typically a loop of small intestine.

Correlazione clinica:

- ▶ Un'ernia è una protrusione anormale di una struttura attraverso le fasce tissutali che fisiologicamente la contengono.
- ▶ Insorge tipicamente negli uomini adulti (ernia diretta) soggetti ad attività lavorative che spesso richiedono sforzi o sollevamento di pesi
- ▶ La perdita del tono muscolare della regione inguinale facilita la protrusione del viscere avvolto dal peritoneo all'interno dell'anello inguinale interno (locus di minore resistenza della parete addominale).
- ▶ L'ernia può insorgere anche in bambini, il tal caso viene definito ernia congenita o indiretta. E' dovuta a una deficit di chiusura del canale inguinale in cui una protrusione del peritoneo all'interno dello scroto, il processo vaginale, può favorire l'erniazione di un viscere.

Manovra del Valsalva o del torchio addominale:

- ▶ La manovra di Valsalva consiste in un'espirazione forzata a glottide chiusa.
- ▶ La manovra di Valsalva aumenta notevolmente la pressione intratoracica ed intra-addominale, favorendo tra l'altro lo svuotamento dei visceri.

DISCUSSION

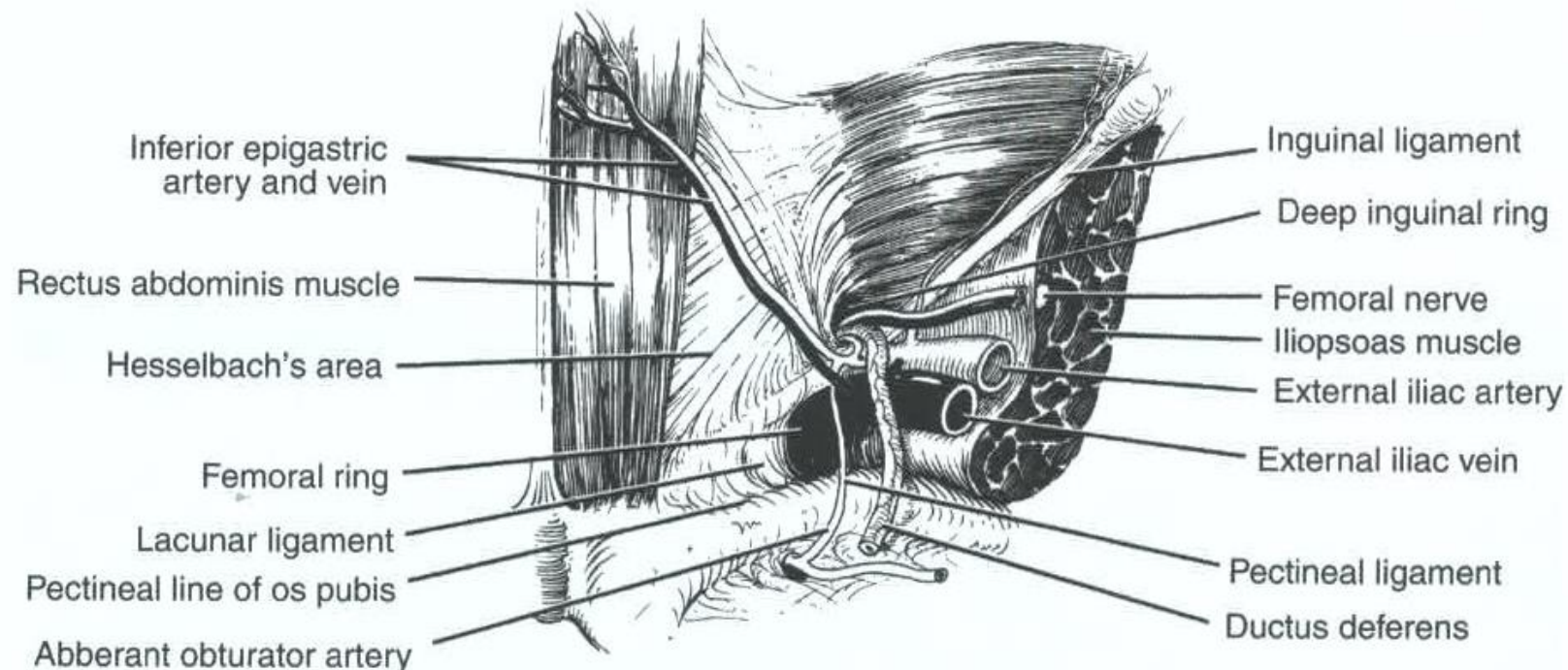
The inguinal region is the junction between the **lower anterior abdominal** and the **upper anterior thigh**. It is the site at which several structures enter and exit the abdomen and therefore is an area of potential weakness in males and females. The **inguinal (Poupart) ligament** is an important anatomical structure and key landmark for this region. It is the thickened, rolled underedge of the inferior portion of the **external abdominal oblique aponeurosis**. It extends from the **anterior superior iliac spine** to the **pubic tubercle** and fuses inferiorly with the **fascia lata (deep fascia)** of the anterior thigh. At the pubic tubercle, the inguinal ligament continues posterolaterally on the **superior pubic ramus** (pectin of the pubic bone) as the **pectineal (Cooper) ligament**. At the point where these two ligaments are continuous and change directions, a ligamentous reflection fills the interval, forming the **lacunar (Gimbernath) ligament**.

The lacunar ligament forms a rigid medial margin for the femoral ring, leading to the femoral canal, the site for femoral hernias (Figure 18-1).

Although the external abdominal oblique muscle and aponeurosis constitute an essentially complete musculotendinous structure (except for the superficial inguinal ring), the **internal abdominal oblique** and **transversus abdominis** muscles are deficient because they originate from the iliopsoas fascia and arch medially to their **tendinous (falx inguinalis) insertions on the pubic tubercle** (Figure 18-2).

Structures enter and exit the abdomen superior to the inguinal ligament through an oblique passage known as the **inguinal canal**. The canal is frequently described as a tunnel, with openings, walls, floor, and so on. These boundary features are listed in Table 18-1.

Two points in Table 18-1 are of anatomical and clinical significance. First, as a result of the arching of the internal oblique and transversus abdominis muscles, the **posterior wall of the canal is deficient and weak**, as it is formed only by the **transversalis fascia** and parietal peritoneum. However, with increased intraabdominal pressure (as in lifting, a bowel movement, etc.), these muscles contract and descend



in a shutterlike fashion, thus reinforcing the posterior wall. Second, the outpouching of the transversalis fascia to form the **deep inguinal ring** occurs **immediately laterally to the inferior epigastric vessels** (see Case 17 for a discussion of their course). In addition, at the medial portion of the inguinal ligament on the interior of the abdominal wall, a clinically important **inguinal (Hesselbach) triangle** is formed by some of these structures. This triangle is formed by the **inguinal ligament, inferior epigastric vessels, and lateral margin of the rectus abdominis muscle** and corresponds to the area where the posterior wall of the canal is deficient because of the arching of the abdominal wall muscles described above.

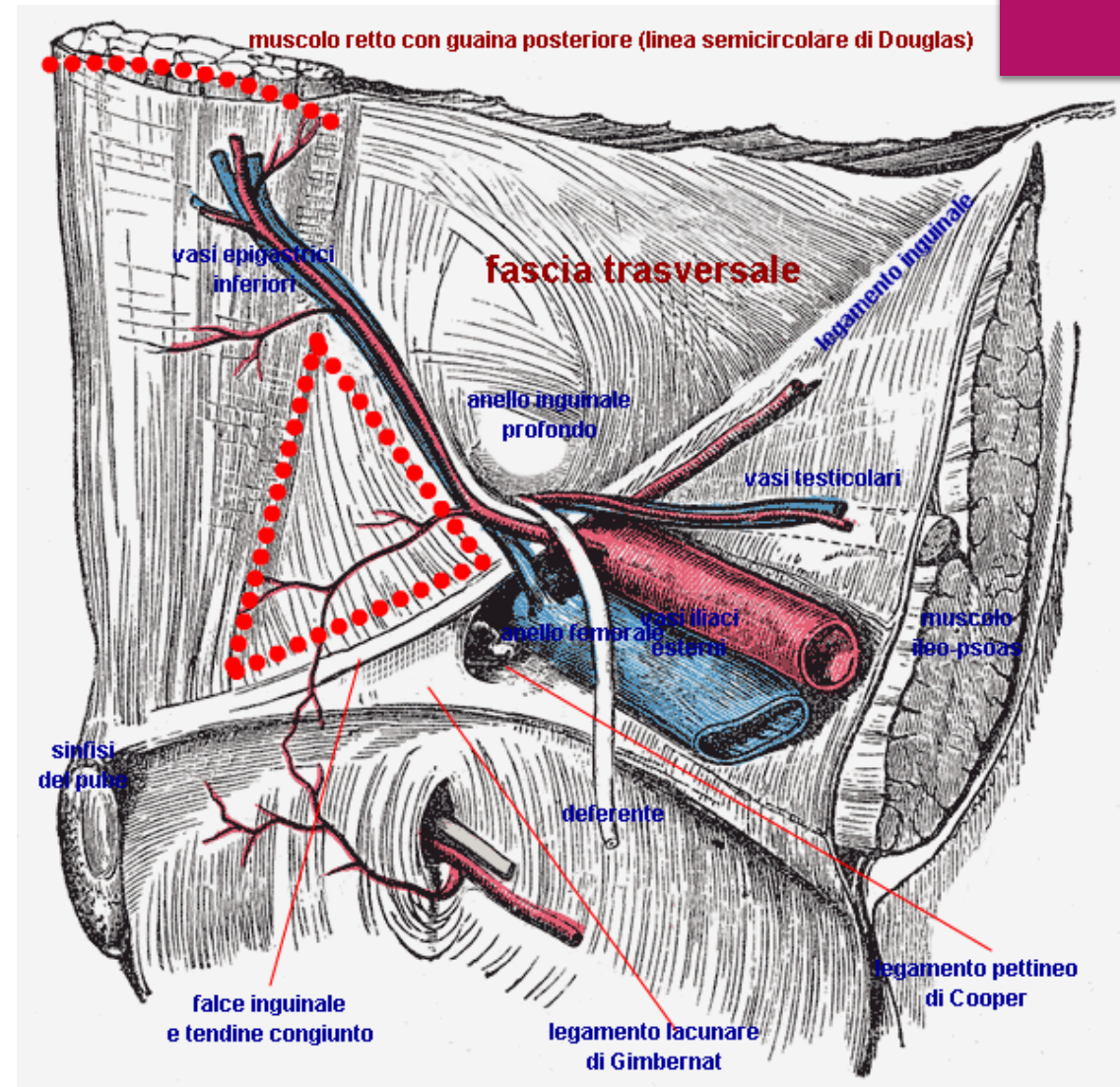
In females, the **inguinal canal** is traversed by the **round ligament of the uterus**; in males, the **spermatic cord** (ductus deferens and associated vessels and nerves) passes through the canal. The **ilioinguinal nerve** is found in the canal in both sexes.

The inguinal region and canal serve as the site for inguinal hernias. Although hernias occur in both sexes, they are far more common in males. There are two types of inguinal hernias: indirect and direct. **Indirect or congenital inguinal hernias tend to occur in young males.** During embryonic descent of the testes, an outpouching

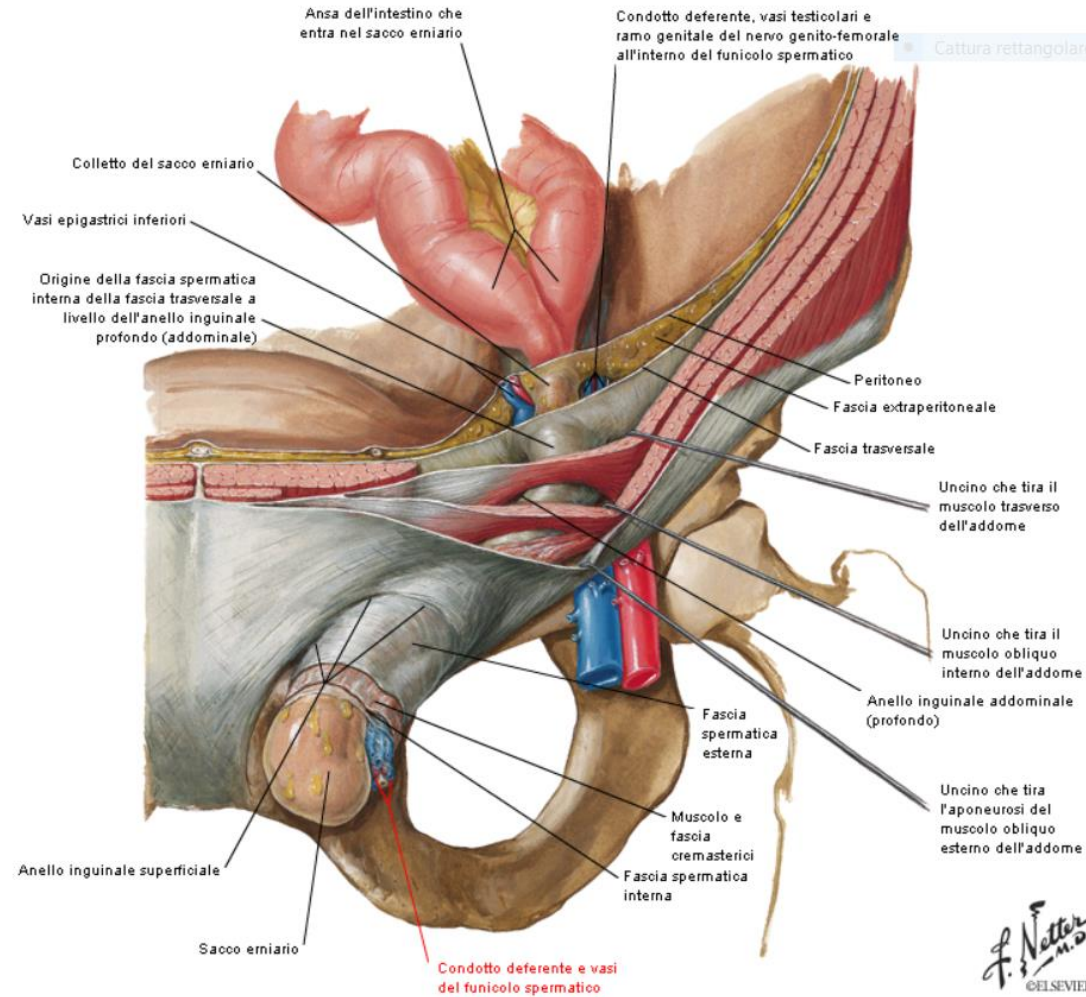
of **parietal peritoneum**, the **tunica vaginalis**, pushes through the lower abdominal wall, encountering first the transversalis fascia (thus forming the deep inguinal ring), slipping inferior to the transversus abdominis muscle, but catching the lower margin of the internal abdominal oblique muscle, and then pushing through the external abdominal oblique muscle (**forming the superficial inguinal ring**). The testes descend into the scrotum along the path created by the tunica vaginalis (and the gubernaculum). In normal development, this outpouching fuses and closes. If it does not fuse and close, a predisposing complete or partial path for the abnormal migration of an abdominal organ (usually small intestine) is established. The loop of small intestine would pass through the deep inguinal ring and the inguinal canal, and possibly through the superficial ring into the scrotum. By definition, **indirect inguinal hernias** leave the abdominal cavity **lateral** to the **inferior epigastric vessels** (through the deep inguinal ring).

Direct inguinal hernias are also called **acquired inguinal hernias** because they are seen in **older males** and are related to strenuous activity that increases intraabdominal pressure. It is believed that with aging there is loss of tone in the abdominal musculature, and the shutterlike actions described above for the internal abdominal oblique and transverses abdominis are diminished or lost. This predisposes abdominal organs to push directly anterior through the parietal peritoneum and transversalis fascia **in the inguinal triangle** area and into the posterior wall of the canal. Because of the larger herniation, these hernias tend not to enter the scrotum. **Direct inguinal hernias** by definition leave the abdomen **medial to the inferior epigastric vessels** because these vessels form the lateral boundary of the triangle.

- ▶ L'ernia inguinale diretta passa attraverso il triangolo inguinale e l'anello inguinale esterno (mediale ai vasi epigastrici inferiori)
- ▶ L'ernia inguinale diretta passa attraverso l'anello inguinale interno (laterale ai vasi epigastrici inferiori)



Ernia inguinale indiretta



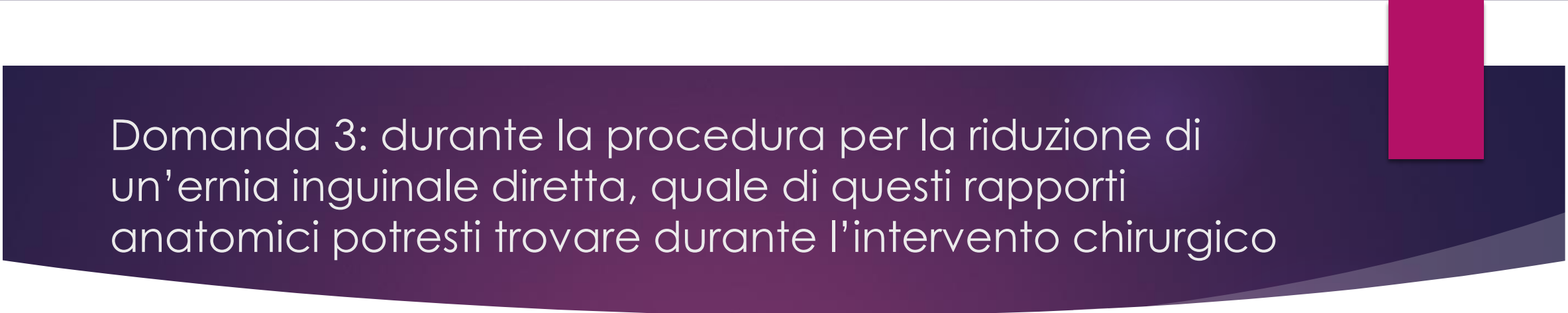
Domanda 1: durante l'esame obiettivo svolto su questo paziente è fondamentale prendere come punto di riferimento un particolare punto di riferimento: il legamento inguinale. Da cosa è costituito?

- A. Fascia superficiale
- B. Fascia lata della coscia
- C. Aponeurosi del muscolo obliquo esterno dell'addome
- D. Aponeurosi del muscolo obliquo interno dell'addome
- E. Aponeurosi del muscolo trasverso dell'addome



Domanda 2: per valutare la presenza di un'ernia inguinale si deve inserire la punta del dito a livello dell'anello inguinale esterno che è un'apertura di quale delle seguenti strutture?

- A. Fascia superficiale
- B. Fascia lata della coscia
- C. Aponeurosi del muscolo obliquo esterno dell'addome
- D. Aponeurosi del muscolo obliquo interno dell'addome
- E. Aponeurosi del muscolo trasverso dell'addome



Domanda 3: durante la procedura per la riduzione di un'ernia inguinale diretta, quale di questi rapporti anatomici potresti trovare durante l'intervento chirurgico

- A. L'ernia sarà laterale ai vasi inferiori epigastrici
- B. L'ernia sarà mediale ai vasi inferiori epigastrici
- C. L'ernia entra nell'anello inguinale profondo
- D. L'ernia sarà inferiore al legamento inguinale



Domanda 4: esame obbiettivi su un uomo di 58 anni che presenta una protrusione superiore al legamento inguinale di destra. Le valutazioni di imaging mostrano che l'ernia si trova localizzata medialmente con i vasi epigastrici inferiori. Questa condizione è probabilmente dovuta alla debolezza di quali strutture?

- A. Anello inguinale
- B. Muscolo retto dell'addome
- C. Muscolo cremastere
- D. Fascia trasversalis