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APPLIED ANATOMY

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Femoral pseudo-hernias

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Abstract Before surgical intervention in the femoral area, doctors should be mindful of two situations in which surgery is not indicated and, in fact, may cause harm.

Keywords Femoral hernia · laparoscopic surgery · femoral fat pad · femoral pseudo-hernia

Nothing that touches upon femoral hernia can ever be simple. Be it anatomy, etiology, surgery, or complications. The discerning surgeon will be aware of two situations that may be encountered by open and laparoscopic surgeons alike, when the impulse to intervene in the femoral area should be resisted. Misguided surgery in those instances could well result in hernias where none previously threatened. Those instances are: the presence of a femoral fat pad and the femoral "pseudo-hernia."

The femoral canal, which is the most medial compartment of the femoral sheath, varies in length from 1–3 cm. Its entrance, the femoral ring, is an ellipse with a latero-lateral long axis, measuring 1.5–3.0 cm. The short axis, measuring 1–1.5 cm lies in the antero-posterior plane. Variably perforated by lymphatics, the femoral canal is normally a blind pocket whose lower end extends to the level of the fossa ovalis. A femoral hernia is said to exist when the blind end becomes an opening: the femoral orifice, through which one can observe the protrusion of pre-peritoneal fat, transversalis fascia, peritoneum, and viscera into the fat of the thigh, deep to the cribriform fascia, below the inguinal ligament.

Femoral hernia was first described by the French surgeon Paul Barbette in 1687 [1]. The clearest description of the femoral canal anatomy was presented by Jules Cloquet of France in 1817 [2], and he stated that "the anterior wall is formed by the superficial layer of the fascia lata aponeurosis[1], which ascends in front of the femoral vessels and is thicker laterally than medially, where it joins the deep layer of the fascia lata[2] and the ligament of Gimbernat. Its posterior wall is formed by the deep layer of the fascia lata, which covers the inner aspect of the thigh muscles (Fig. 1) and the femoral vein" [2].

A further clarification comes from Teale [5], who described the femoral sheath as a "funnel-shaped prolongation of the internal abdominal aponeurosis[3], which invests the femoral vessels in their transit between the abdomen and thigh...the sheath is divided into three spaces by two longitudinal partitions. The iliac space or compartment is occupied by the femoral artery; the middle compartment by the femoral vein; while the pubic compartment is occupied by the lymphatic vessels of the lower limb...it is into the pubic compartment of the femoral sheath that a femoral hernia descends" (Fig. 2).

The blind pocket of the femoral canal is lined with transversalis fascia, which is cribriform to allow the passage of lymphatic channels. It may shelter a lymph node, known as the node of Cloquet (or node of Rosenmüller in Germany). This pocket is often filled with preperitoneal fat, which acts as a cushion, pad, or plug and should not be disturbed.

Traditionally, the incidence of femoral hernias has been reported to vary between 2% in males and 7% in females [4]. However, laparoscopic surgeons are

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[1]In modern anatomical nomenclature, the "superficial layer of the fascia lata aponeurosis" is referred to as the "superior cornu of the fascia lata"

[2]In modern anatomical nomenclature, the "fascia lata" is referred to as the "pectineal fascia"

[3]In modern anatomical nomenclature, the "internal abdominal aponeurosis" is referred to as "endoabdominal fascia."

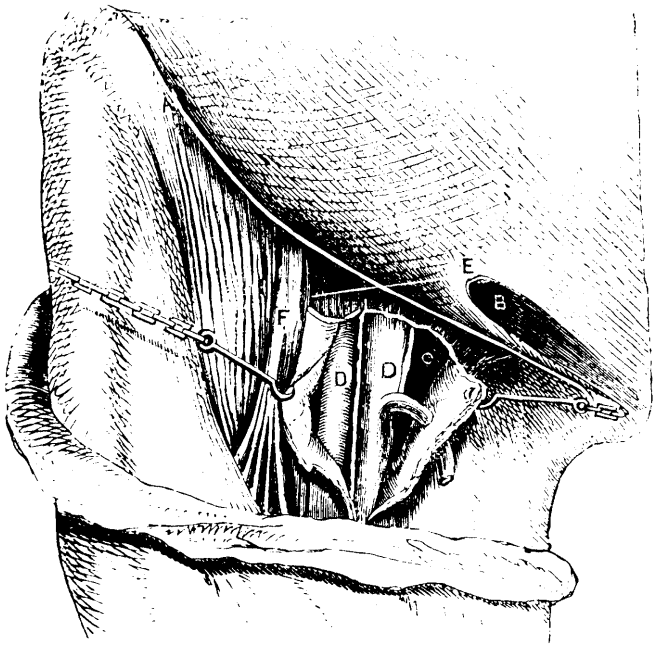

Fig. 1. The femoral sheath (female): *A* Poupart's ligament, *B* Canal of Nuck, *C* pubic compartment of femoral sheath (generally seat of hernial protrusion), *D-D* femoral artery (lateral) and vein (medial), *E* anterior wall of femoral sheath, *F* crural (femoral) nerve. (From Teale TP (1846) A practical treatise on abdominal hernia. London: Longman, Brown, Green and Longman)

beginning to report figures on the order of 11% [3]. The onus is on them to confirm that there was indeed a patent femoral orifice with protruding tissue. Unless a femoral hernia is suspected clinically, the femoral pocket should not be disturbed, as the fat pad and Cloquet's node have a protective function.

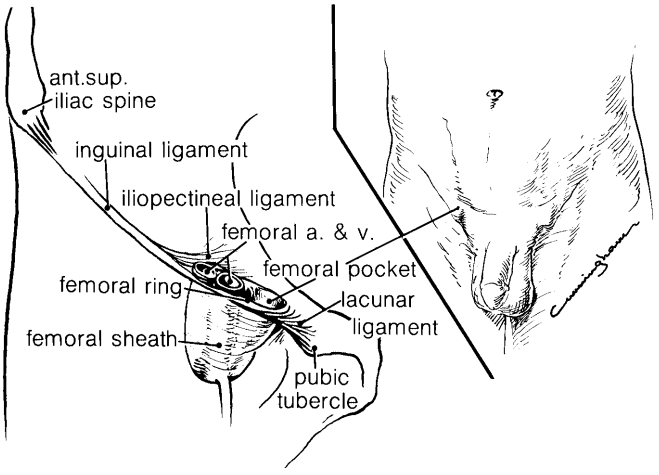

Fig. 3. Femoral bulge at the level of the inguinal ligament or below, bilateral, asymptomatic, reduces without manipulation when patient is supine

A femoral pseudo-hernia may be suspected in a patient who is extremely thin, who shows a prominent bulge below the inguinal ligament on each side, medial to the femoral vessels. These bilateral prominences are asymptomatic and flatten out spontaneously, without manipulation, when the patient is supine (Fig. 3). Surgery for this condition is not indicated.

Restraint in these situations is entirely justified and in keeping with the tenet of every surgeon: "first, do no harm."

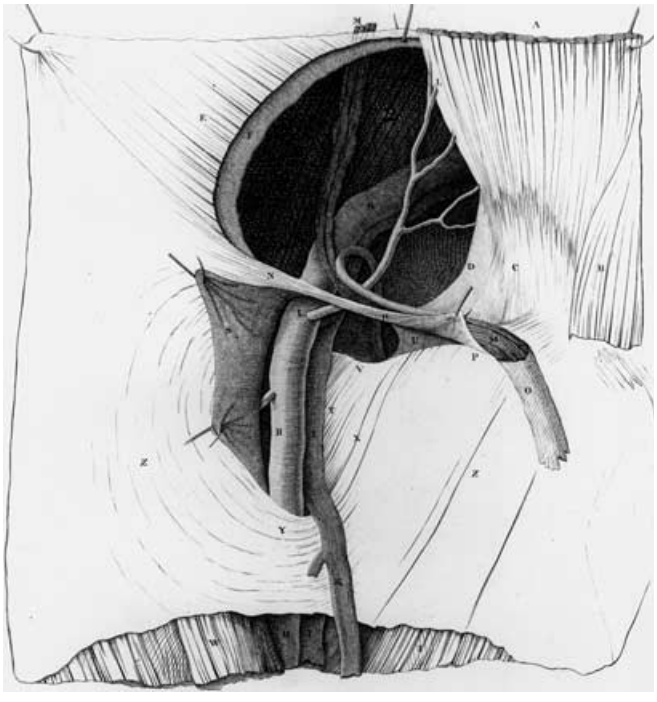

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Fig. 2. Cloquet's key to Plate III. *A* Rectus abdominis muscle. *B* Pyramidalis. *C* Tendon of rectus abdominis. *D* Part of transversalis fascia. *E* Part of aponeurosis of the external oblique muscle. *F* Other part of transversalis fascia. *G* External iliac artery and vein directed toward the inguinal ligament. *HH* Femoral artery. *II* Femoral vein. *K* Long saphenous vein joining the femoral vein. *LL* Epigastric artery and vein; the vein is cut near its origin. *MM* Spermatic vessels. One can here observe the two elbows formed by their course from the abdomen to the testicle. *N* The vas deferens joins at an angle the blood vessels of the testicle. *O* Part of sheath of the spermatic cord. *P* Pubic tubercle giving insertion to the lateral or inferior crus of the inguinal ring. *Q* Superior opening of the femoral canal. *R* Inferior border of the aponeurosis of the external oblique forming the inguinal ligament. *S* Superficial layer of the fascia lata, detached from the inguinal ligament and retracted laterally on the thigh, to reveal the deep layer of the same aponeurosis, the femoral canal and the vessels which it encloses. *T* Deep layer of the fascia lata forming the posterior wall of the femoral canal. *U* Ligament of Gimbernat seen from in front. *V* Deep layer of fascia lata attaching to the crest and superior border of the pubis. *W* Sartorius (cut). *X* Site where the superficial and deep layers of the fascia lata unite to form the medial angle of the femoral canal. *Y* Thick semilunar border that limits below the inferior opening of the femoral canal [the "opening" known today as the femoral orifice, when a femoral hernia exists – Editor]. *Z* Fascia lata covering the sartorius muscle. *No. 1* Adductor medius. *No. 2* Psoas and iliacus joined. (From Cloquet J. (1817) Recherches anatomiques sur les hernies de l'abdomen. Paris: Méquignon-Marvis)

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