Contents

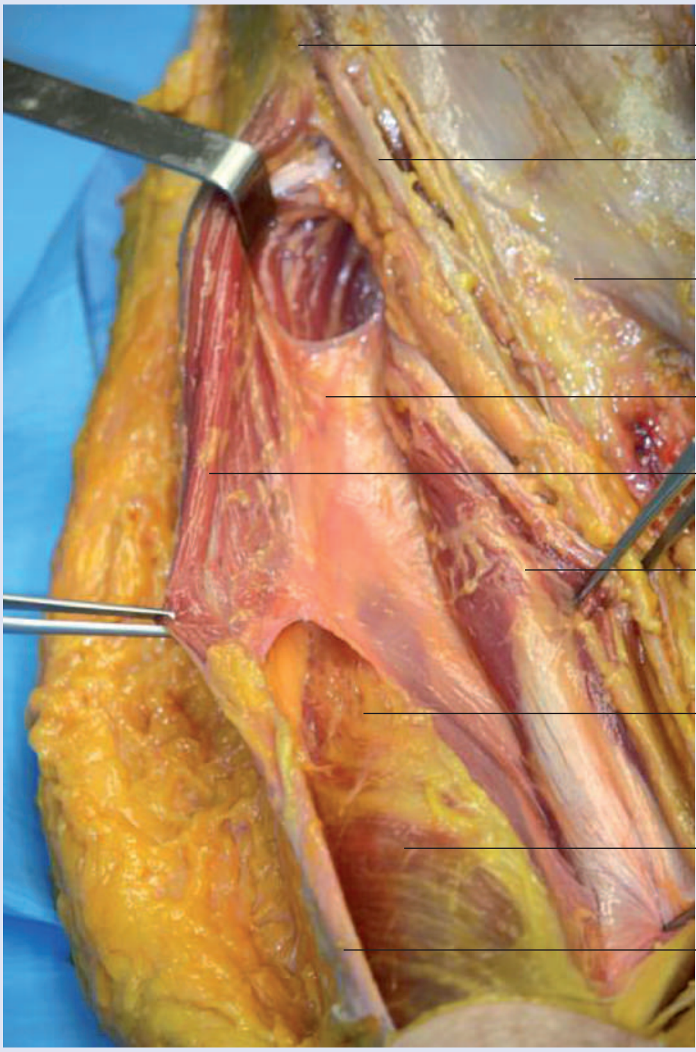


Figure 11 Dissection of the anterior region of the thigh, fresh specimen. The fascia lata has been incised, the sartorius and rectus femoris muscles have been retracted medially and the tensor fascia lata laterally, to show the innominate fascia (or deep fascia lata sheet). Note how this fascia allows a strong connection between these three muscles, which are all involved in hip flexion. If the coordinating role of these fasciae is confirmed, an interruption of this fascia could alter the peripheral motor coordination between these three muscles

cording to the activated muscle fibres. As a result, the stretching receptors within the fascia are activated, helping the CNS to perceive movement correctly. If the fascia becomes fibrous or adherent, or if the fascial continuity is interrupted, the receptors may give abnormal signals, from altered proprioception to pain. Pathological changes in the innervation of the fascia have been described by Sanchis-Alfonso & Rosello-Sastre (2000). They reported an increase in nociceptive fibres, reactive to substance P, in the fascia lata and retinaculum of the knee in subjects with patellofemoral syndrome.

Finally, the fascia lata seems to play a role in peripheral motor coordination. This is because it connects several synergistic muscles and, at the same time, separates antagonistic muscles. Being a connective tissue, the fascia is very much affected by the mechanical forces acting on it, and if damaged it quickly develops scarring processes. However, in order to recover its coordinating and proprioceptive role, it is essential that the fascia heals in its correct basal tension and length.

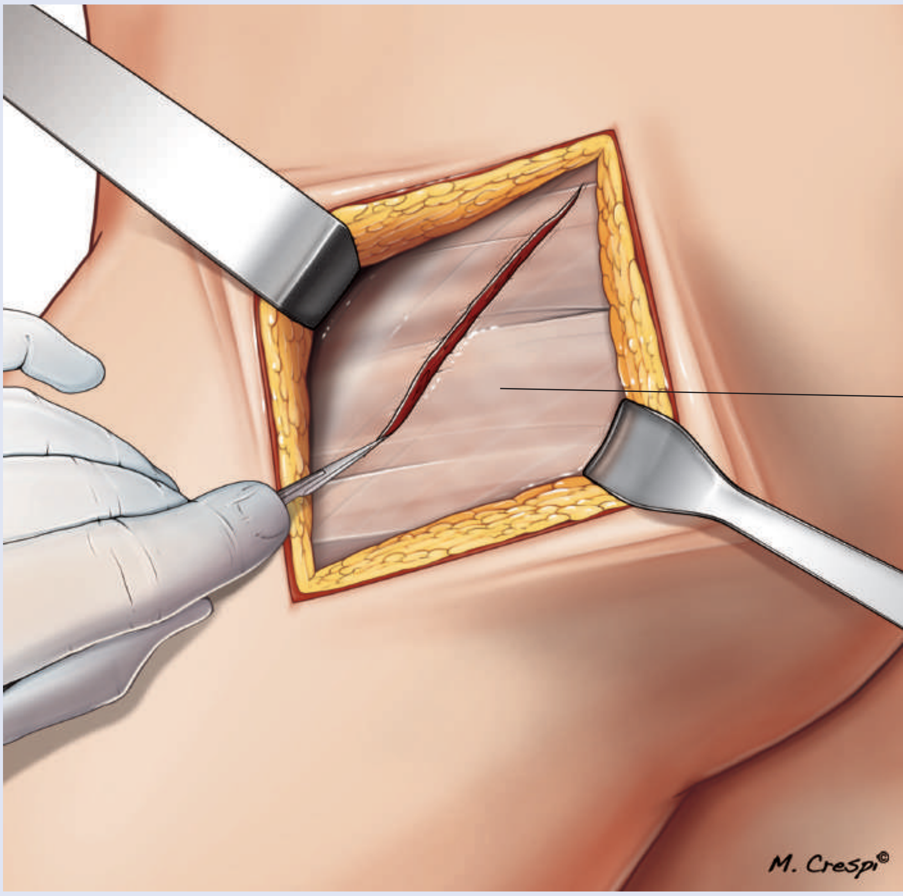


Figure 44
Incision of the gluteal fascia and splitting of the fibres of the gluteus maximus muscle in the direction of their length

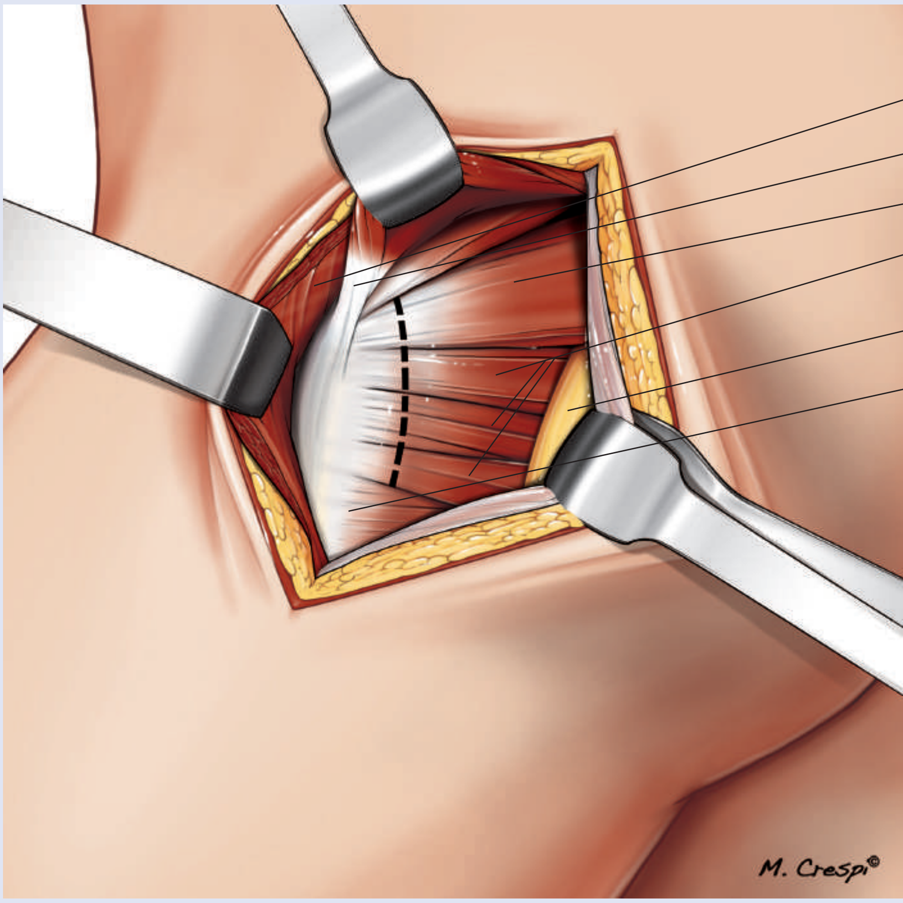


Figure 45
Exposure of the deep muscle layer and identification of the insertion of the short external rotator muscles to the femur. Attention is given to the sciatic nerve course, which is exposed below the piriformis muscle

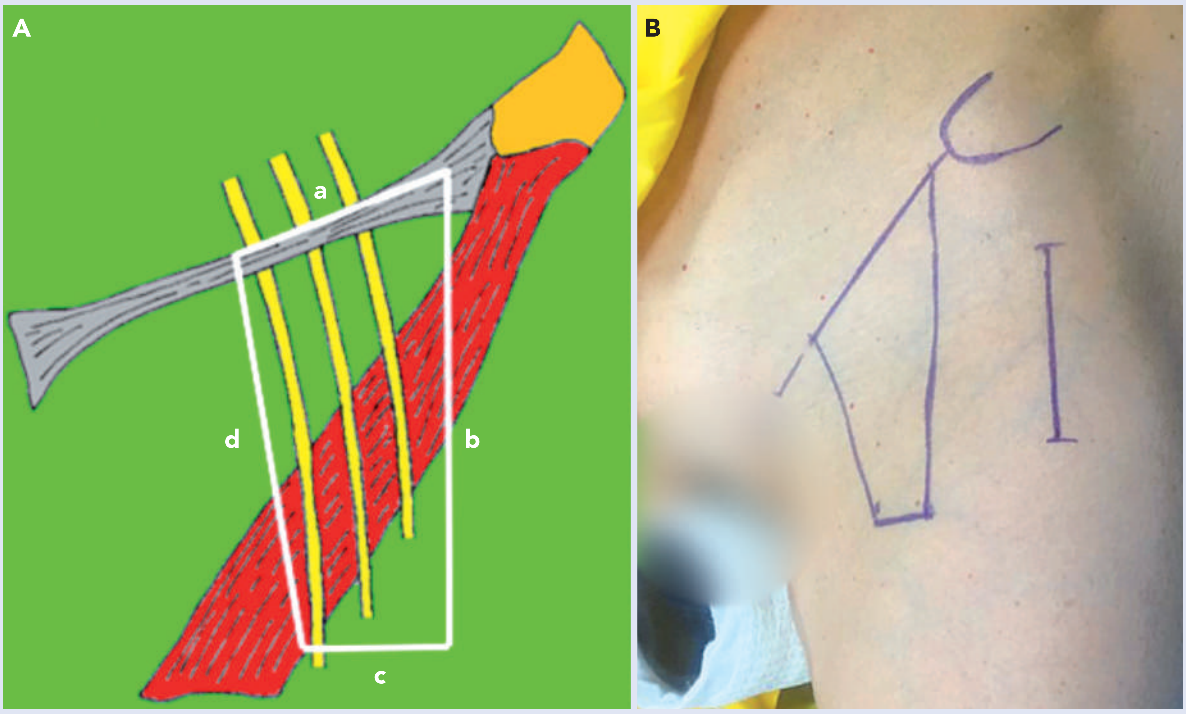


Figure 17 A) Diagram of the boxed zone. This area statistically includes the path of most of the main nerve trunks and branches of the LCN: a = line running from 0.6 cm from the ASIS and extending medially for 7.3 cm (distance considered to be the one most affected by the crossing of the LCN nerve); b = 11.3 cm line running distally from line a to the furthest point provided by the overlap of the nerve trunk with the sartorius; c = line connecting 'b' to the lateral margin of the sartorius; d = line connecting 'a' to 'c'. B) The boxed zone marked on the patient and its topographical relationship to the ASIS and the cutaneous surgical incision line

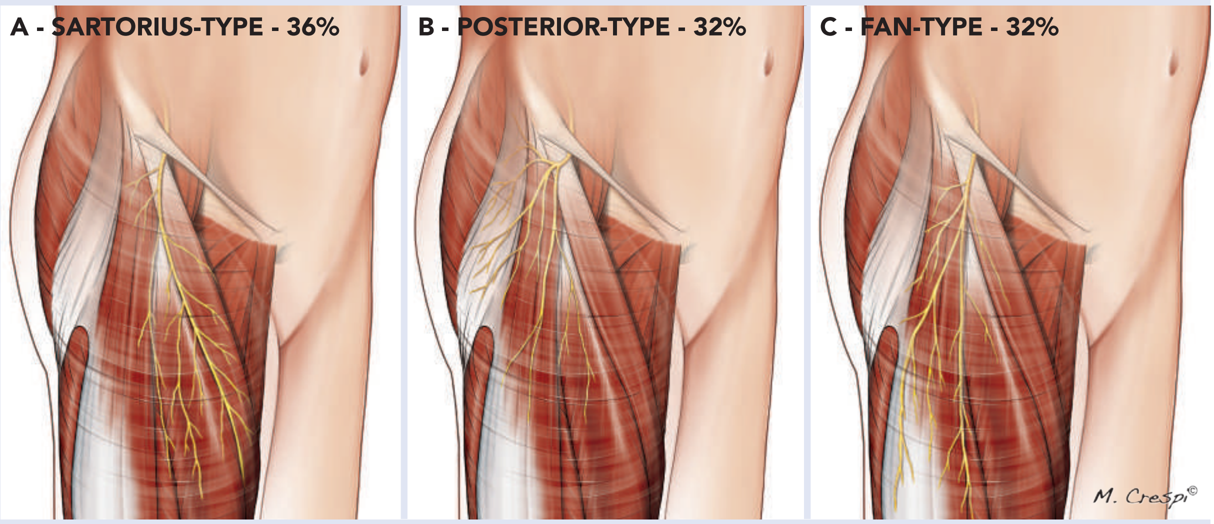


Figure 18 Anatomical diagrams of LCN distribution on the thigh according to D.F. Rudin.
A) Sartorius type, this type has a predominantly anterior distribution above the sartorius muscle.
B) Posterior type, in this type a posterior branch is added for the skin of the trochanteric era.
C) Fan type, in this type the arborization involves more extensively the surface of the tensor fascia lata muscle.

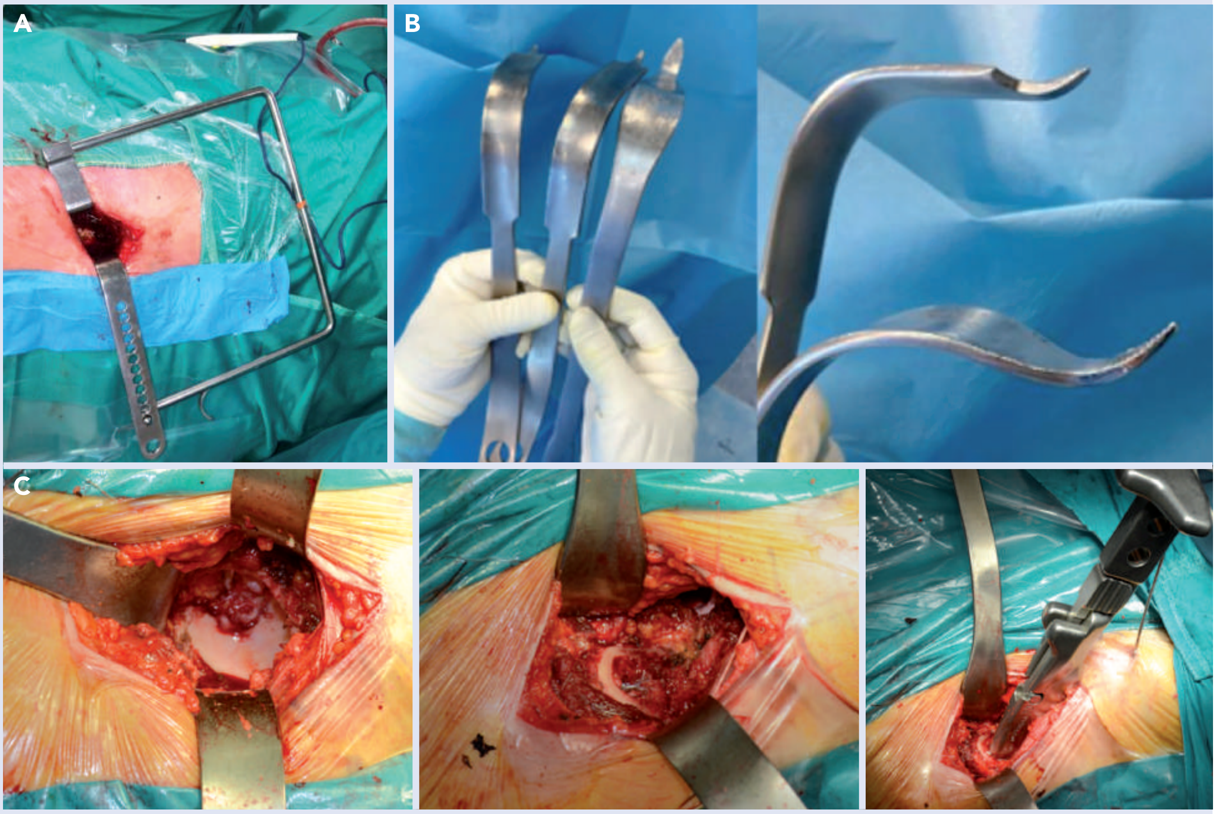


Figure 27 A) The use of the Charnley retractor. B) The retractors we use allow adequate exposure of the surgical field and a more controllable tension on the soft parts. C) Example of surgical field exposure for cup and femur preparation

curs mainly during the movements necessary for the surgical procedure, in particular extension, external rotation of the limb and adduction. The Charnley retractor can therefore exert a local injurious action, especially with its medial component.

We have been using retractors with a special design for a long time. These do not overstress the soft tissue, allowing continuous and gradual modulation of pressure, even with useful phases of reduced tension.

In a high percentage of cases, the lateral femoral cutaneous nerve is multiform in composition, course and distribution and can be difficult to recognise and complex to manage.

In Rudin's C/fan-type variant (32% of cases) for example, where the fine nerve arborization diffusely overlaps the tensor fascia lata, an inadequate incision and incorrect suprafascial surgical dissection can significantly damage the nerve branches.

For this reason, an ultrasound scan (fig. 28) can be a helpful measure. This can allow us to identify the type of nerve distribution, particularly in the case of the C/fan-type variant. The ultrasound investigation can also provide the surgeon with information that leads him to perform specific accessory surgical gestures. These may be a more lateral section of the fascia lata and the scrupulous subfascial (not transfascial) intermuscular deepening, or prefer a more lateral minimally invasive incision or even renounce to the anterior approach.

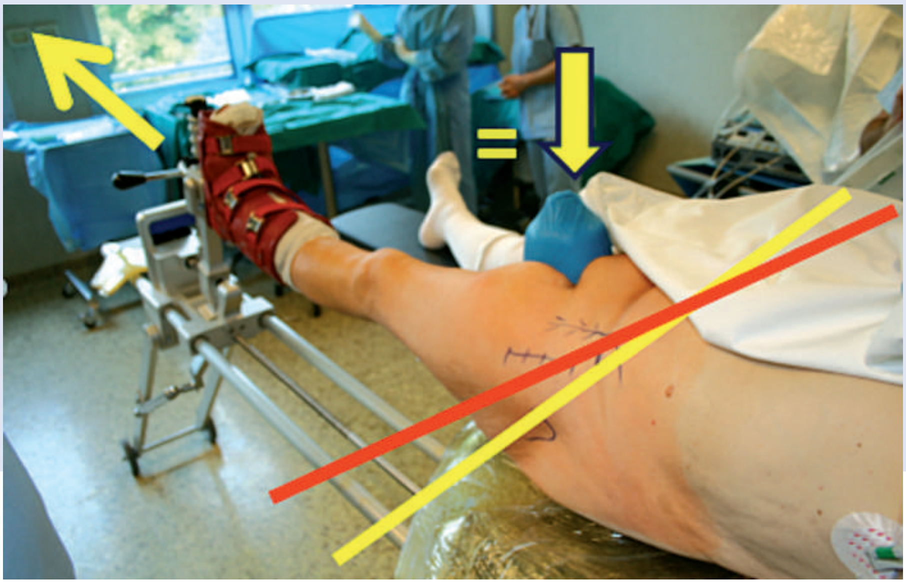


Figure 3 Traction mechanism of the limb to be operated on, which may cause pelvic obliquity in the post-surgical period

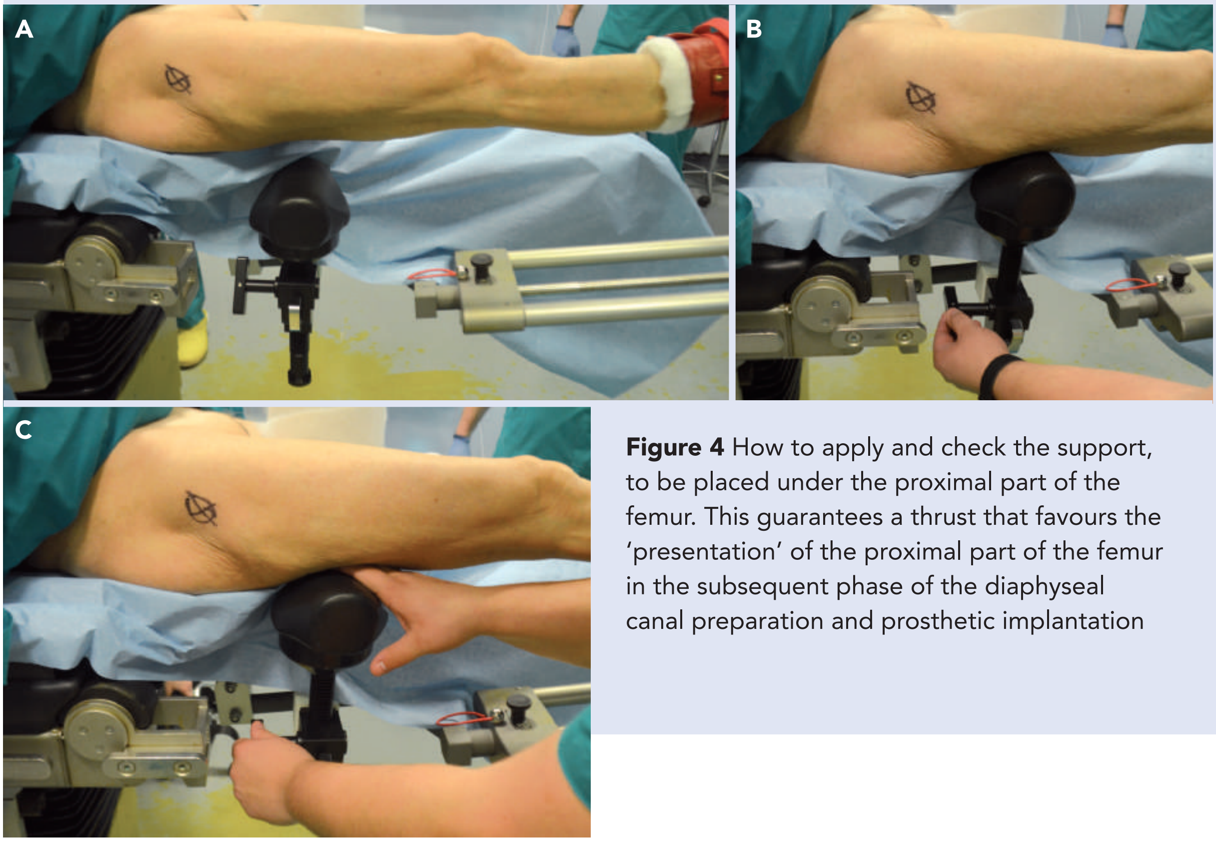


Figure 4 How to apply and check the support, to be placed under the proximal part of the femur. This guarantees a thrust that favours the 'presentation' of the proximal part of the femur in the subsequent phase of the diaphyseal canal preparation and prosthetic implantation

stabilise the pelvis without exerting excessive compression on the genitals.
An appropriately sized support is carefully prepared with cotton and gauze. This is placed posterior to the thigh, close to the femur subtrochanteric section. A sheet of anti-decubitus gel will help to make the femoral fulcrum area more comfortable and secure. A space corresponding to the thickness of a hand's palm must be kept between it and the skin in order to avoid excessive compression when extending the limb. However, a special pad is now available and is capable of exerting an upward push on the femur, without excessive pressure.
During the subsequent extension of the

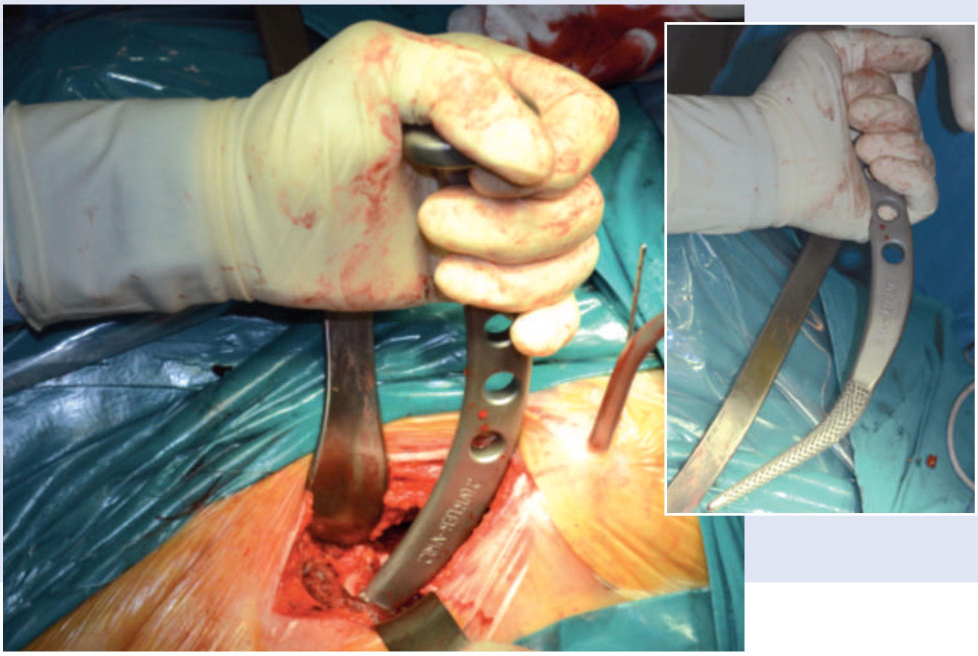


Figure 28 Further preparation of the diaphyseal canal with the curved 'banana' rasp

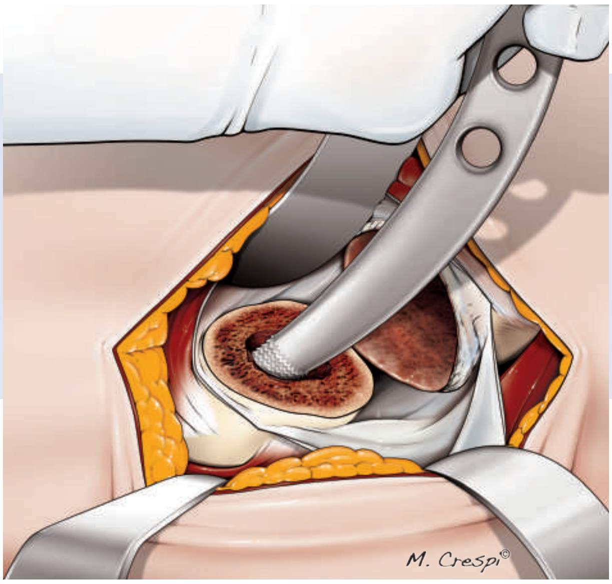


Figure 29 The access to the diaphyseal canal is widened with the curved 'banana' rasp

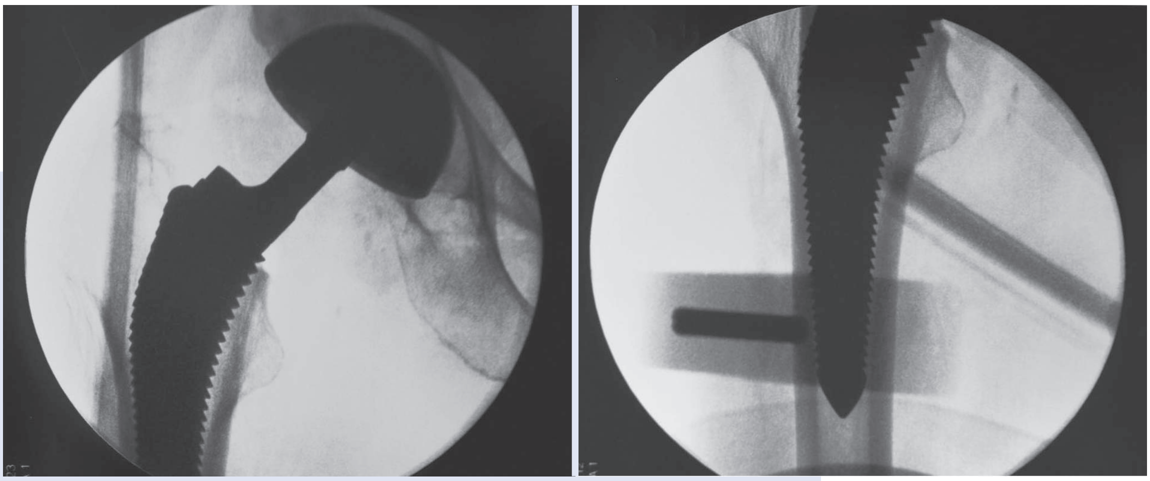


Figure 30 Fluoroscopic examination of the position, orientation and size of prosthetic components

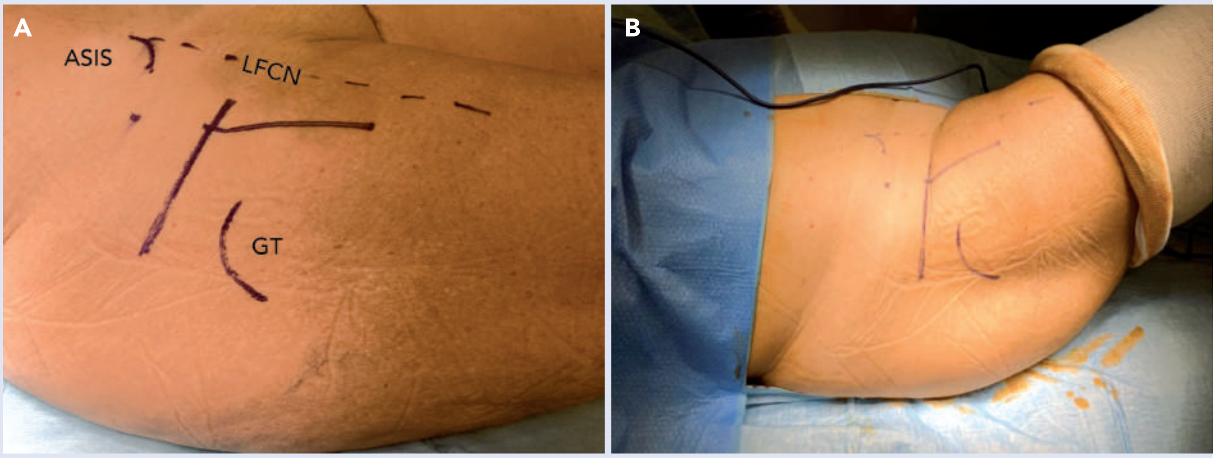


Figure 3 A) The signed landmarks are ASIS, great trocanter GT and the lateral femoral cutaneous nerve LFCN. B) Finding of the inguinal crease putting the hip into flexion. The incision is entirely lateral to the ASIS

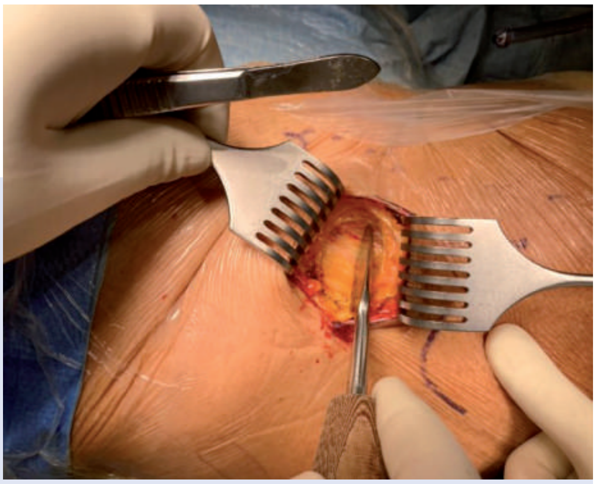


Figure 4 Using two retractors the TFL fascia is exposed by blunt dissecting of the subctaneous fat

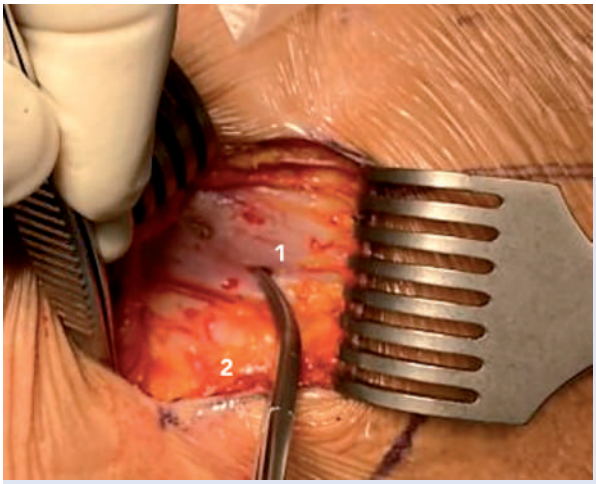


Figure 5 Notice the different colorations of the TFL (blue 1) and the gluteus medius fascia (white 2)

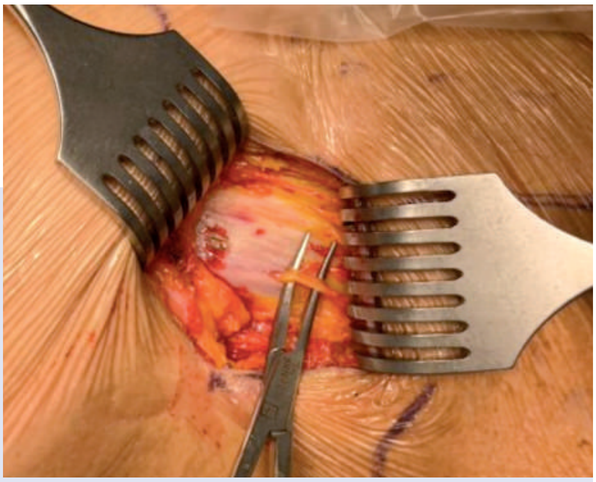


Figure 6 The TFL perforator vessel is an important landmark

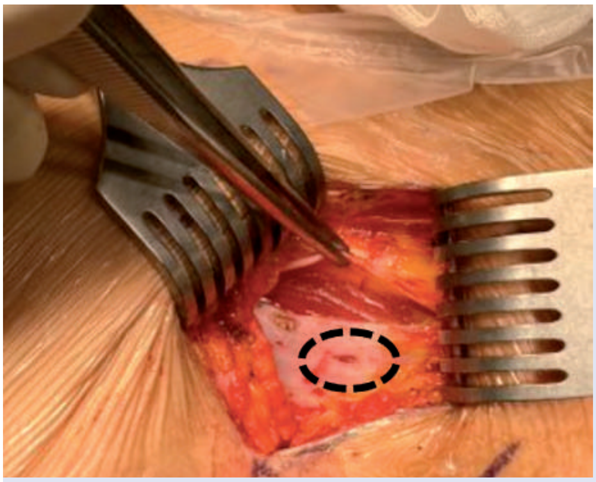


Figure 7 The TFL fascia is incised just medially to the vessel perforation

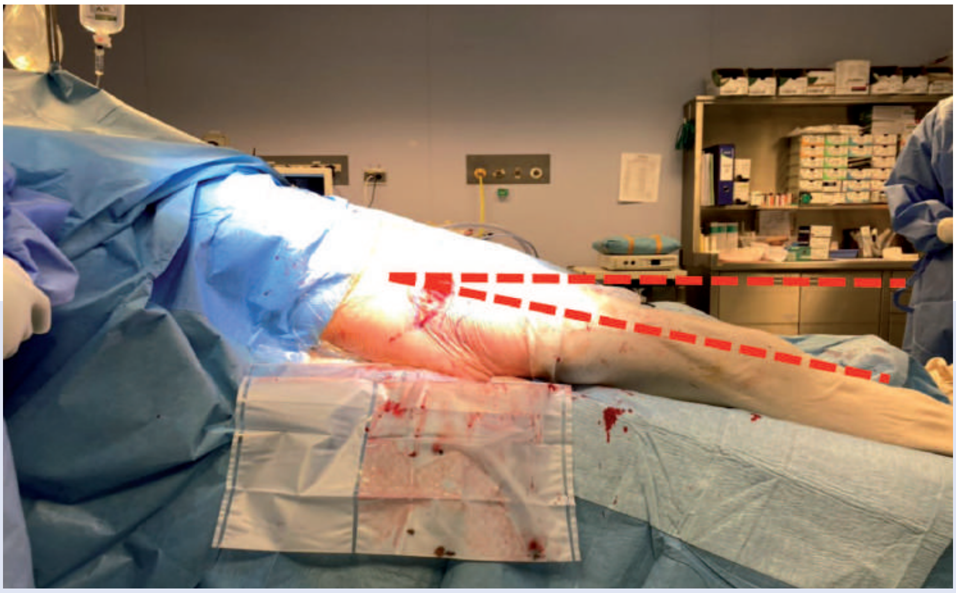


Figure 15 Breaking the table over the hinge facilitates the entry in the femoral canal

Figure 16 A bone hook in the calcar region helps to bring the femur up

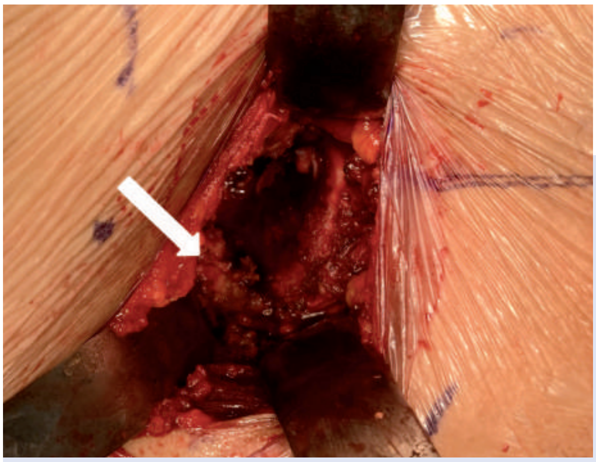


Figure 17 The posterolateral capsule waiting to be released

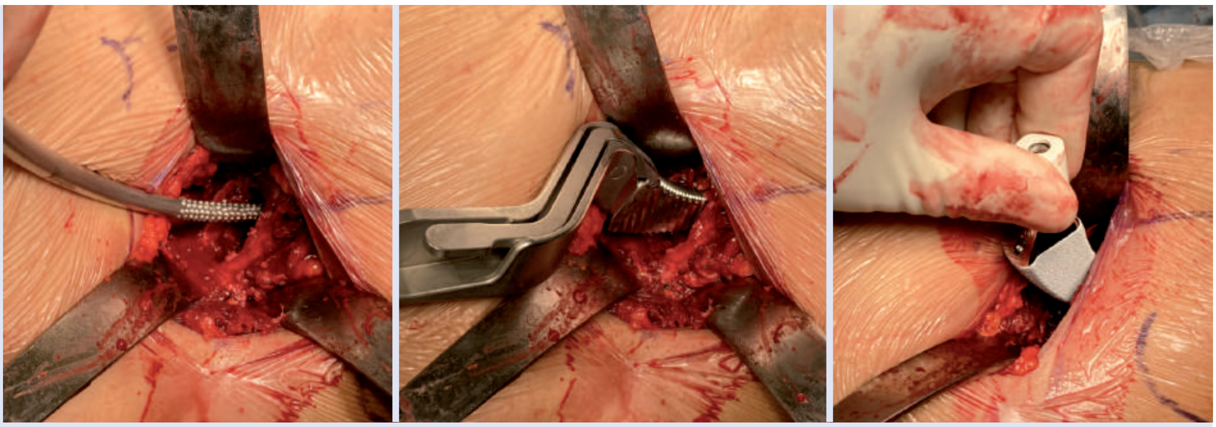


Figure 18 Preparing and broaching of the femoral canal

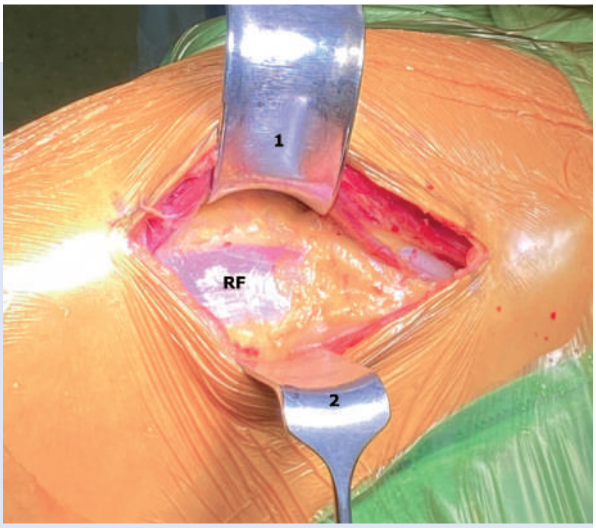


Figure 7 Retraction of the TFL and exposure of the rectus femoris (RF), whose fibres are recognisable in transparency below the thin fibrous sheath

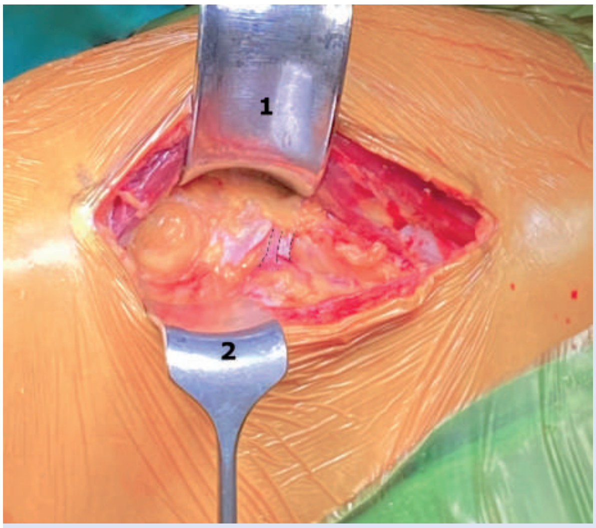


Figure 8 The muscle belly of the RF is mobilised antero-medially by retractor 2, exposing the thin vascular branch that feeds it (this is shown by the dotted line)

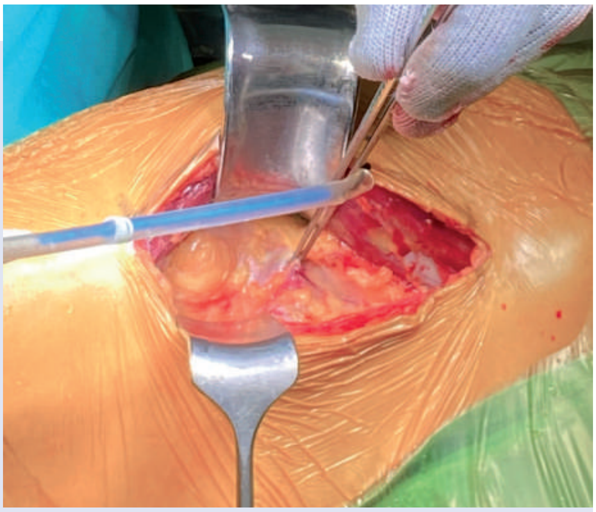


Figure 9 Cauterization of the vascular branch of the RF allows the antero-medial retraction of this muscle to be completed

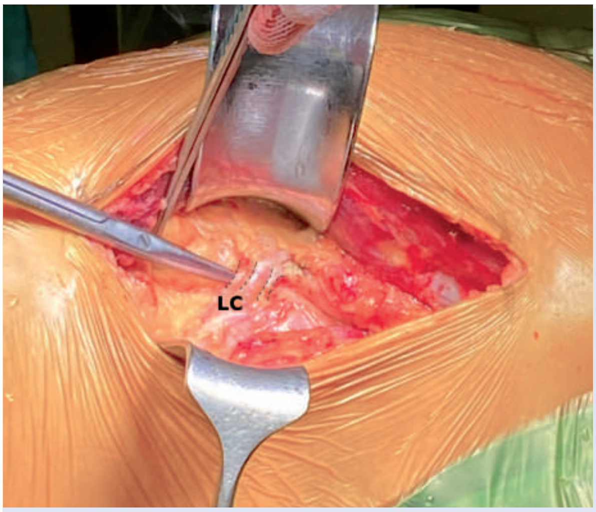


Figure 10 Exposure of the transverse branch of the lateral circumflex artery of the femur (LC)

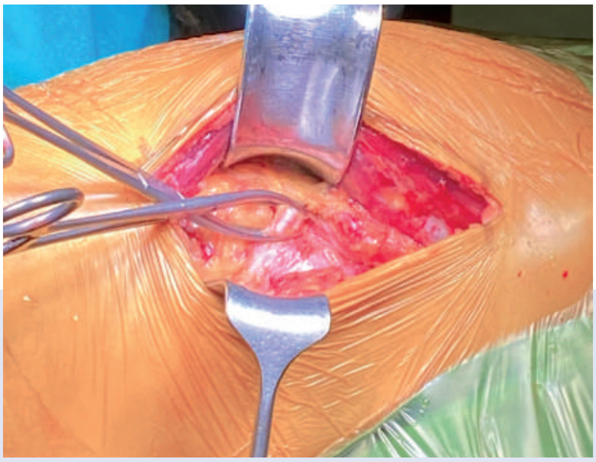
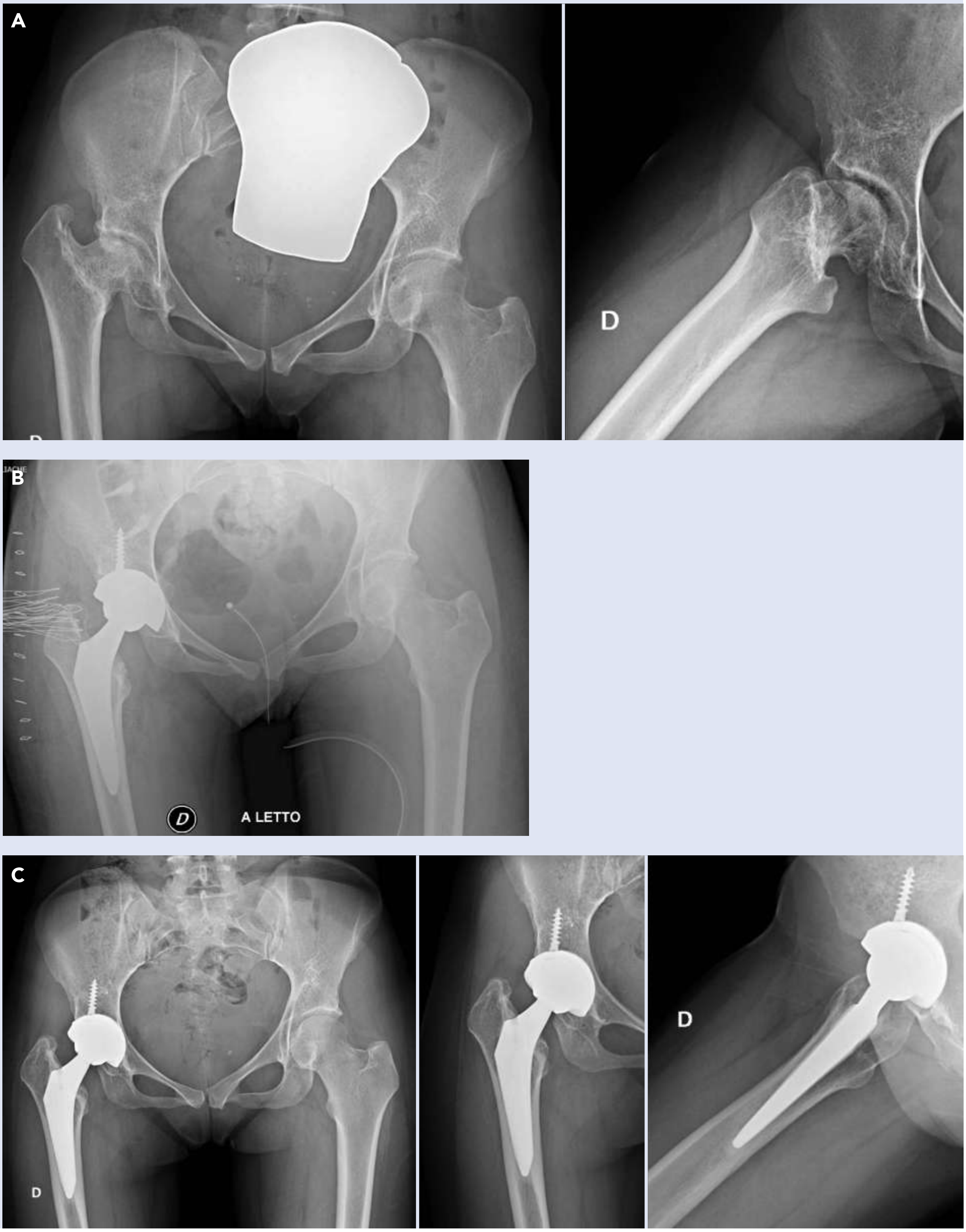


Figure 11 Clamping and cautery of the LC

CASE REPORT 5

29-year-old female. A) Preoperative X-ray in right dysplastic femur with hypoplasic head due to Perthes disease. B) Post-operative X-ray. Right THR performed with ALDI Approach correcting the leg length discrepancy. C) 2 years X-ray. Complete prosthetic ostheointegration.



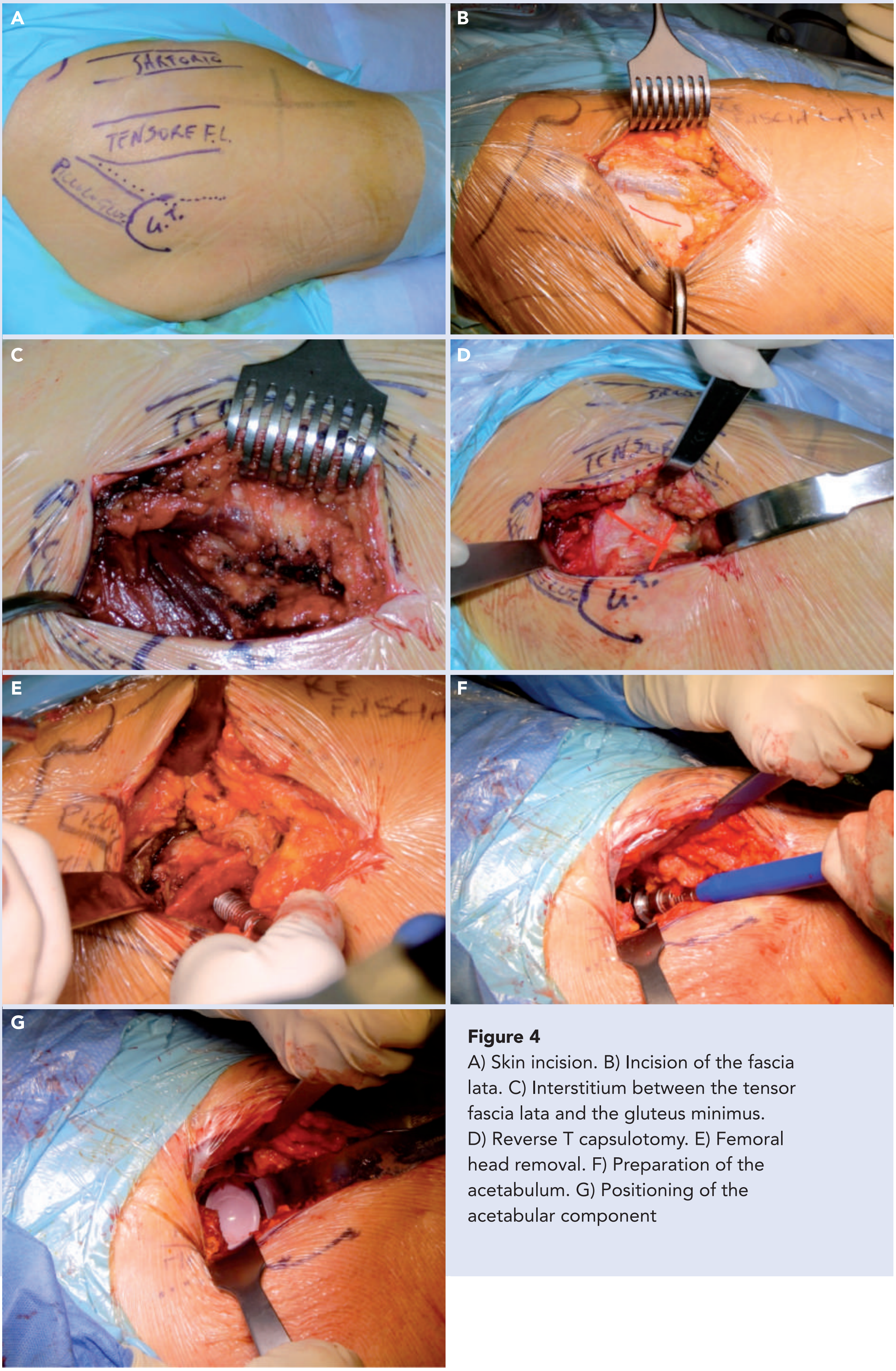


Figure 4
A) Skin incision. B) Incision of the fascia lata. C) Interstitium between the tensor fascia lata and the gluteus minimus. D) Reverse T capsulotomy. E) Femoral head removal. F) Preparation of the acetabulum. G) Positioning of the acetabular component