Ipsilateral Hip and Diaphyseal Fractures

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Surgical Principles

Ipsilateral hip and femoral shaft fractures are not uncommon combination fractures in high-energy trauma. Most reports show that diaphyseal fractures are comminuted, as the energy of trauma dissipates through shaft fractures [1, 4, 9, 11, 12, 16], while hip fractures remain relatively undisplaced or minimally displaced. This is one of the reasons why hip fractures are quite frequently missed in polytrauma patients with femoral shaft fractures [13]. It becomes apparent that careful radiological examination of the hip should always be done in all patients with femoral shaft fractures [14].

Fracture Characteristics

Hip fractures can be intracapsular and extracapsular fractures. Most of these fractures are either undisplaced or minimally displaced (Fig. 2.1). The result of closed treatment is good except in very proximal fractures with comminutions [7].

Most femoral shaft fractures are comminuted and unstable, Winquist Type II to IV, and stable fixation is indicated to maintain length and allow early mobilization [7].

Treatment of these complex combined fractures is difficult. Operative treatment is indicated in most cases [1, 3, 5, 6]. Treatment of these combined fractures can be considered in separate stages, but combined treatment is another viable option [17].

The closed-treatment technique with intramedullary locked nails is usually indicated in comminuted femoral shaft fractures to provide immediate stability. The hip fractures can be treated separately, e.g., with hip screws [2, 8], or in combination with the intramedullary locked nail system or the long gamma nail.

Indications

All combine fractures should be treated with internal fixation.

Open fractures in the femur can be treated with intramedullary locked nails provided the principles of management for open fractures are observed.

Preoperative Preparation

Preoperative preparation is similar to that for single femoral shaft fractures (see Chap. 9 “Femoral Fractures,” other volume). Skeletal traction should always be applied to maintain length and control pain before the operation. Careful adjustment of the traction force is needed to prevent displacement in hip fractures.

Patients must be carefully assessed to exclude injuries in other systems. Life-threatening conditions must receive priority management. Skeletal fixation should be done as soon as the patient’s condition is stabilized.

Special Instruments and Implants

Combined fractures can be fixed with a single implant system [15], a long gamma nail (Fig. 2.2), or a combination of intramedullary locked nails and hip screws (Fig. 2.3). In general, we recommend the long gamma nail for ipsilateral trochanteric and shaft fractures and a combination of the intramedullary locked nail and hip screws for ipsilateral femoral neck and diaphyseal fractures [7].

The instruments required are standard instruments for intramedullary locked femoral nailing. When using the long gamma nail, the proximal targeting device for the gamma lag screw is needed (see Chap. 11 “Operative Technique for Peritrochanteric Fractures” in “Proximal Femoral Fractures,” other volume). When using combina-
tion fixation with intramedullary locked nailing and hip screw fixation, an additional system of cannulated screws is preferred.

Positioning

As for the intramedullary fixation of femur, the supine position on a traction table is preferred. Skeletal traction through the distal femur is set up to facilitate reduction of the femur. Adequate exposure of the hip region from the iliac crest is prepared (see Chap. 9 “Femoral Fractures,” other volume).

The C-arm is positioned from the opposite side of the injured limb. Both the frontal and lateral views must be obtained for images of the hip.

Reduction of Fractures

Closed reduction of the fractures is carried out before surgical procedures start. In most cases, reduction of the femoral shaft fracture takes priority. Procedures must be carried out carefully and meticulously to reduce femoral shaft fractures and hip fractures. The hip fracture usually remains undisplaced after the femoral shaft fracture is reduced (see Chap. 9 “Femoral Fractures,” other volume).