

Appendix 1

The Phemister Technique

The Phemister^{43, 44} procedure is generally performed using a direct lateral approach (Hardinge¹³ and Rue et al⁵⁰). The patient is placed in a supine position with the greater trochanter lying at the edge of the fracture table without traction. The greater trochanter is the fix point of the skin incision. Incision length typically averages 6 to 8 cm with the leg slightly internally rotated. The gluteal fascia and iliotibial band are exposed and divided in the same direction as the skin incision. Next, the tensor fascia latae muscle is retracted anteriorly and the gluteus maximus muscle posteriorly. Remaining fibers of the gluteus medius muscle attached to the gluteal fascia are pushed off by blunt dissection. The vastus lateralis muscle is released and retracted from the femur anteriorly. The greater trochanter should now appear in the center of the incision. At the base of the greater trochanter, two drill holes, each 10 mm in diameter, are drilled under fluoroscopic guidance through the neck into the necrotic area of the femoral head. The second hole is made just below the first hole and the trephine is advanced slightly backward (15°–30°) and upward into the posterior aspect of the lesion. The trephine is used to obtain a core biopsy of the necrotic portion of the femoral head with viable bone from the femoral neck. Next, rectangular bone grafts (tibia, fibula, iliac crest) are inserted into the hole and impacted. The bone grafts provide mechanical support for the subchondral bone and articular cartilage. Improper placement of bone grafts secondary to the location of the lesion or depth of the core track increases the risk for femoral head collapse and early failure of the procedure. After the bone grafting has been finished, the closure is made in layers. The procedure typically does not exceed 60 minutes.