In a frail elderly patient a pathological fracture of the femur at the lower end of a loose femoral stem was treated by the retrograde insertion of an intramedullary nail over the tip of the prosthesis.

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Fractures of the shaft of the femur in elderly patients with total hip replacements present a considerable problem.

Case Report

In June 1996 a 95-year-old woman confined to a wheelchair for four years because of loose prostheses in both hips sustained a spontaneous fracture of the right femur. Two years earlier a fracture of the shaft of the ipsilateral tibia had been plated. There was limited function in her arthritic right knee. Conservative treatment of the femoral fracture with analgesics and a brace had been unsuccessful; persisting pain interfered with nursing care.

Radiographs showed marked atrophy of the femur with a fracture through a large granuloma at the level of the tip of the loose stem (Fig. 1). A limited salvage procedure was planned since the patient’s general condition did not allow extensive surgery. The stem of the prosthesis was templated and 16 and 17 mm slotted femoral nails (AO/ASIF) were obtained.

Operative technique. With the patient supine on a radio-opaque table, the knee was flexed over a bolster. The length and diameter of the nail were estimated using an image intensifier so that approximately half of the stem (7 cm) would be covered. The distal end of the slotted nail was cut with a handsaw and the tip polished with a file under aseptic conditions. Through a short medial parapatellar incision the medullary canal of the distal femur was opened after subluxation of the patella. A guide wire was introduced and the distal femur reamed to 17 mm before the nail was introduced. Closed ‘docking’ of the nail and the tip of the prosthesis was not possible: a lateral vastus-splitting incision allowed the stem and nail to be aligned.

The nail was driven over the prosthesis with a mallet while the position of the loose acetabular component was monitored fluoroscopically. Some pieces of bone cement were chipped off the stem by the advancing nail and some were removed. The nail was advanced until about half of the stem had been covered and the end of the nail was flush with the articular cartilage. The nail was then locked from the anteromedial side, and its distal end was sealed by a polyethylene plug and bone wax to provide a watertight closure. Both incisions were closed without drainage. Knee flexion and extension exercises were started on the third day after operation.

When reviewed after seven months the patient had no pain during transfers and nursing care. Knee flexion was limited to 100°. Radiological examination showed little callus formation (Fig. 2). The position of the prosthesis and the nail had not changed (Figs 3 and 4).

Retrograde nailing of a tapered hip stem for femoral fracture may be useful in a frail geriatric patient. If weight-bearing is likely the nail should be inserted deeper and locked dynamically to accommodate shortening of the femur during healing of the fracture.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References

Figure 1 – Radiograph showing fracture of the shaft of the femur at the level of the tip of the femoral prosthesis. Figure 2 – Composite radiograph of the combined prosthesis and the site of the fracture seven months after operation.

Figures 3 and 4 – Radiographs after seven months showing the position of the nail.