Osteosynthesis for a T-shaped fracture of the femoral neck and trochanter: a case report

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ABSTRACT

Ipsilateral fractures of the femoral neck and trochanter are uncommon. We report a 30-year-old man with a T-shaped fracture separating the trochanter and neck from the head. He underwent osteosynthesis using a dynamic compression plate, screws, and pins. Bone union occurred 4 months postoperatively. At the one-year follow-up, the patient was free of pain and had no evidence of avascular necrosis. It is important to preserve the femoral head in young patients by preventing further compromise of the tenuous blood supply.

Key words: femoral neck fractures; fracture fixation, internal; hip fractures

INTRODUCTION

In young patients, femoral neck fractures associated with other injuries are usually the result of high-energy trauma. The most common associated fractures are shaft fractures; less common are fractures of the contralateral femur, tibia or ankle, upper extremity, patella, pelvis, foot, acetabulum, ribs, skull, facial bones, and spine.

Prosthetic replacement is the treatment of choice for elderly patients with displaced fractures, but in young patients it is more important to preserve the femoral head. We report a case where osteosynthesis was used to manage a T-shaped fracture separating the trochanter and neck from the head.

CASE REPORT

In January 2006, a 30-year-old man presented to our hospital with an externally rotated and shortened left leg after a traffic accident. The trochanteric area was tender and swollen with ecchymoses. Radiographs revealed ipsilateral fractures of the femoral neck and trochanter (reversed obliquity) [Fig. 1]. The patient was put on skin traction for 2 days before surgery.
The trochanteric fracture was reduced via a posterolateral approach using a Schanz pin. Two cortical lag screws were used to stabilise the reduction, converting the 3-part fracture into a 2-part fracture. A narrow dynamic compression plate was applied after anterolateral contouring to neutralise the shearing forces held by the lag screws.

The femoral neck fracture was reduced under image intensification and held with 2 cannulated screws through the posterior part of the lateral cortex. A Knowles pin was inserted into the antero-inferior part of the neck through the plate for additional stability (Fig. 2). The wound was closed in layers.

The patient was instructed to do quadriceps and range-of-movement exercises in bed. Weight-bearing exercises were delayed until week 4. He was followed up at regular intervals to assess fracture union, range of movement, and complications. Bone union occurred 4 months postoperatively. At the one-year follow-up, the patient had no pain and no evidence of avascular necrosis (Fig. 3).

**DISCUSSION**

Ipsilateral fractures of the femoral neck and trochanter are uncommon,\(^3 - 5\) and are usually caused by high-energy trauma. The injuries most commonly associated with femoral neck fractures are ipsilateral femoral shaft fractures (incidence, \(5–6\%\)).\(^2, 6\) Less common associations are ipsilateral intertrochanteric and shaft fractures.\(^6\) Cannulated screws, Knowles pins, and sliding hip screws have all been reportedly used for treatment of femoral neck fractures.\(^7 - 9\) Associated injuries alter the configuration of fractures and treatment modalities.

Figure 1  Radiographs showing a T-shaped fracture of the femoral neck and trochanter.

Figure 2  Radiographs showing (a) a plate placed anterolaterally to enable posterior placement of 2 cannulated screws and (b) a Knowles pin inserted into the antero-inferior part of the neck through the plate for additional stability.

Figure 3  At the one-year follow-up, there is no evidence of avascular necrosis.
A case of ipsilateral fractures of the femoral neck, intertrochanteric, and subtrochanteric regions has been reported. Another case of ipsilateral fractures of the femoral neck and intertrochanteric region in a young adult was stabilised with a Smith-Peterson nail and a Thornton side plate, with muscle pedicle grafting. Two other cases of ipsilateral fractures of the neck and trochanter were treated with hemiarthroplasty. In our patient, cannulated screws were used after the trochanter and shaft had been lagged successfully. In younger patients, it is important to preserve the femoral head using osteosynthesis to prevent further compromise of the tenuous blood supply.

REFERENCES