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## Case Report and Review of the Literature

# Ipsilateral Femoral Neck and Trochanter Fracture: A Case Report and Literature Review

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### ABSTRACT

Simultaneous ipsilateral femoral neck and trochanteric fracture is a rare injury. It occurs most commonly in elderly patients with low energy trauma. Its management presents a significant challenge to the orthopaedic surgeons. We report the case of a 77-year-old male, who sustained simultaneous transcervical femoral neck and intertrochanteric fractures caused by an olive tree fall. The patient was treated with a standard gamma nail, with a satisfactory functional result at 3 months follow-up.

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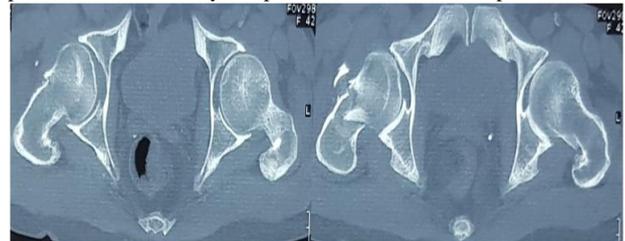
### Introduction

Concomitant ipsilateral femoral neck and trochanter fracture is a very rare injury combination and hence there is no consensus for the management of this entity. Its diagnosis can be missed on standard plain radiographs, emphasizing the necessity of further imaging examinations. Careful preoperative assessment and planning are necessary for successful management.

### Case Presentation

A 77-year-old male was admitted to our emergency department complaining of right hip pain and total loss of function of the lower limb, after he fell from an olive tree. Physical examination showed a shortened limb with an attitude of external rotation and adduction. An anteroposterior radiograph of the pelvis showed a concomitant ipsilateral transcervical femoral neck and intertrochanteric fracture of the right hip (Figure 1). In order to confirm the diagnosis and to study the fracture morphology a computed tomography scan of the pelvis was realized (Figure 2). The patient underwent surgery using a standard gamma nail.

Intraoperative fluoroscopy showed satisfying reduction with a tip-apex distance (TAD) less than 25 mm (Figure 3). No immediate postoperative complications were noted. Mobilization of the hip has been started from the second postoperative day, and full weight bearing was allowed two months after surgery. On his last follow-up examination, 3 months after surgery, functional outcomes were satisfying, with restoring almost complete range of motion of the hip, however, he complained of slight pain and was still walking with a cane. His PMA score was 12. X-rays showed no complications and a progression of the fracture union processes. Unfortunately, the patient was lost to follow-up.

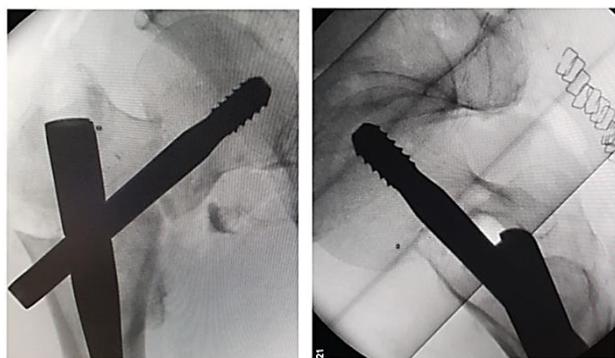


**Figure 1:** Anteroposterior x rays of the hip showing combined intertrochanteric and femoral neck fracture.

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**Figure 2:** CT scan of the pelvis demonstrating the femoral neck fracture.



**Figure 3:** Intra operative anteroposterior and lateral fluoroscopic views.

### Discussion

The combined ipsilateral femoral neck and trochanter fracture is unusual. We performed a literature review and found 20 unique cases reported and a small retrospective study [1]. In most cases, this injury is due to a low energy trauma occurring in elderly osteoporotic patients. The diagnosis can be missed initially on standard plain radiographs. Some authors reported that the existence of this combined injury was only noticed at the time of surgery under fluoroscopy when a closed reduction was attempted [2]. In other cases, the injury was suspected on radiographic evaluation and confirmed on further imaging preoperatively. In our case, the diagnosis was confirmed by computed tomography scan [3].

Regarding the therapeutic management of this association, no consensus has been established given the rarity of the lesion. However, many therapeutical options were reported in the literature. Yoo *et al.* published a retrospective study highlighting the interest of cephalomedullary nailing, using PFNA II nail, in the treatment of this injury in elderly patients [4]. The complete union of the fracture was observed in 85 % of cases. The other patients have experienced treatment failure (breakage

of implant, movement of helical blade out of the femoral head, or nonunion of the fracture), and hence a revision by bipolar hemiarthroplasty was necessary.

The results of the treatment with DHS are varying. Isaac and Lawrence reported concomitant ipsilateral intertrochanteric and subcapital femoral neck fracture treated with DHS and didn't give a final result because patient died from complication of cancer shortly after discharge, and thus they had only 2 months of follow up [3]. Kumar *et al.* reported a similar case treated with DHS and obtained a good functional result, with minimal collapse of the head at one year follow up [5]. Perry and Scott reported a case treated with DHS and experienced fixation failure [2].

Recently, some surgeons preferred to treat this type of injury by hip arthroplasty, even in young patients. A therapeutic option justified by the high degree of fracture site comminution and displacement of the femoral head, predicting the important risk of avascular necrosis and nonunion. Biesemans and vandesande treated a 42-year-old man using a primary cemented total hip arthroplasty combined with tension band cerclage and triple K-wire trochanteric fixation and reported satisfying functional results after one year follow up [1]. Khan *et al.* reported three cases treated using hip arthroplasty and had also good results after two years follow-up [6].

### Conclusion

Given the rarity of this injury, the treatment strategy is not standardized, nonetheless, many options exist which must be adapted to the patient and fracture configuration, taking into consideration the complication risks, disadvantages, and advantages of each one.

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