FEMORAL NECK FRACTURE DURING CLOSED MEDULLARY NAILING: BRIEF REPORT

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Closed intramedullary nailing of the femur is a complex technique but one that has considerable advantages. The choice of an appropriate point of entry into the proximal femur during introduction is vital, since an oblique insertion of the nail may lead to impaction of the implant and comminution of the proximal femoral fragment (Winquist, Hansen and Clawson 1984); this is particularly so in small patients with a narrow medullary canal. Femoral neck fracture also may occur and we report here on our experience of this complication.

Material. Four femoral neck fractures have occurred during closed femoral nailing in 143 consecutive procedures; three of these fractures occurred in somewhat slight female patients. The insertion of the medullary nail had been oblique in all four cases, the starting point for the nail being too far lateral in the trochanteric region. All four neck fractures were vertical, extracapsular inferiorly, and without significant mal-alignment; indeed, two were virtually undisplaced and the other two only slightly separated (Fig. 1). All had pre-operative pelvic radiographs of reasonable quality none of which revealed evidence of femoral neck fracture. Three of the patients also developed some comminution of the proximal femoral shaft during nail insertion, and in this series of 143 nailing procedures three other patients had proximal femoral shaft comminution but without femoral neck fracture.

Three of the femoral neck fractures were treated by insertion of compression screws into the femoral head around the proximal end of the nail, and when there was proximal femoral comminution a statically locked medullary nail was used (Fig. 2). All these femoral neck fractures and proximal femoral comminutions have gone on to heal, so far without avascular necrosis, though not all have been followed up for two years.

Discussion. Küntscher (1967) recommended that his nail should be inserted through the tip of the trochanter and more recently the trochanteric starting point has been used by Kempf, Gross and Lafforgue (1978). Winquist et al. (1984) found insertion through the tip of the trochanter to be associated with proximal femoral comminution in some patients but do not mention femoral neck fracture having occurred; they now recommend introduction through the trochanteric fossa. We have found that it is important to establish the approximate point of entry by examining the pre-operative radiographs and to confirm that the entry point is appropriate during operation by screening the trochanteric region while inserting a hand-held 6 mm medullary reamer.

The fact that all four of our femoral neck fractures have healed has encouraged us to suggest that this fracture may not be too serious. Support for this view comes from Casey and Chapman (1979) who have reported 21 patients with ipsilateral femoral neck and shaft fractures. They do not attribute any of these fractures to the closed nailing technique, and they indicate than none of their patients developed avascular necrosis or non-union of the femoral neck fracture. A further 52 patients reported in the literature with this combination of femoral neck and shaft fractures, many of which resulted from extreme violence and which were associated with considerable displacement, included five non-unions, and two with avascular necrosis.

Conclusion. We have drawn attention to the risk of femoral neck fracture during closed medullary nailing, and stress the importance of avoiding an oblique insertion of the nail.

REFERENCES


