Importance of sliding screw position in trochanteric fracture

4 cases of secondary cervical fracture

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We present 4 cases, in which trochanteric hip fractures were fixed with a Dynamic Hip Screw (DHS). In each case a subcapital fracture subsequently occurred proximal to the tip of the DHS. Review of the original postoperative radiographs showed that there had been a failure to place the lag screw close enough to the subchondral bone of the femoral head, which allowed a further fracture to occur.

Case 1

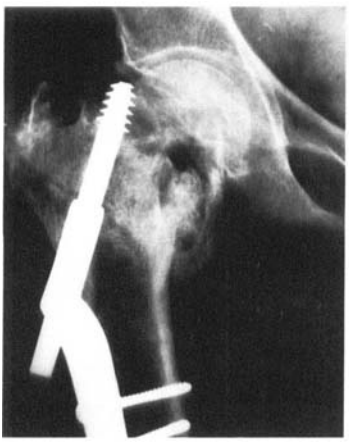
A 76-year-old woman sustained a 3-part displaced intertrochanteric hip fracture, which was reduced and internally fixed with a DHS. She returned after 6 months with recurrence of pain in the hip but no history of further injury. Radiographs showed a displaced subcapital fracture proximal to the DHS. After removal of the DHS she had a hemiarthroplasty.

Case 2

A 75-year-old woman sustained a 3-part displaced intertrochanteric hip fracture, which was reduced and fixed with a DHS. Postoperative radiographs showed that the fixation device was centrally placed in the femoral head, 14 mm from the subchondral bone. 5 months later whilst getting out of a car, she caught her foot and sustained a displaced subcapital fracture above the united trochanteric fracture. After removal of the DHS she had a total hip.

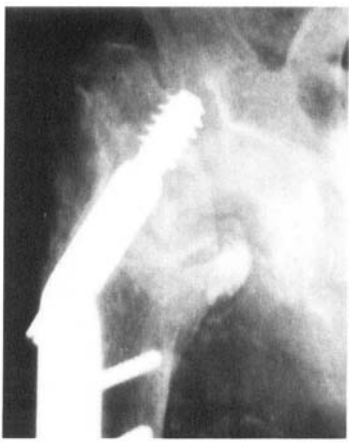
Case 3

An 84-year-old woman sustained an unstable intertrochanteric fracture, which was reduced and fixed with a 4-hole DHS, with the lag screw in the posterior quadrant of the femoral head 14 mm from the articular



Case 1 with a secondary subcapital fracture

Case 3 with fracture collapse and secondary subcapital fracture.



Case 4 with a secondary subcapital fracture.

surface. 10 months later, after a series of further falls, she was unwilling to bear weight, radiographs showed a subcapital fracture at the tip of the lag screw. Because of a poor medical state a further operation was not possible and her mobility remained poor.

Case 4

An 89-year-old woman had a DHS inserted for an unstable intertrochanteric fracture. Postoperative radiography showed the tip of the lag screw to be 8 mm from the subchondral bone. 3 years later she presented with a 6-month history of hip pain following a fall. Radiographs showed a fracture proximal to the DHS; she had a total hip.

Discussion

A review of the postoperative radiographs showed that the tip of the DHS had been placed 15, 14, 14, and 8 mm, respectively, from the articular surface of the hip, thus allowing a second fracture to occur. 3 similar cases following DHS fixation have been described by Mariani and Rand (1989), Blyme et al. (1990) and Wolff and Kessler (1990). Our report further emphasizes the need to accurately place the tip of the DHS to within 5 mm of the joint line.

This complication has also been described following Zickel nail fixation (Ross and Kurtz 1980), McLaughlin nail plate (Baker 1975, Wilson-MacDonald 1985, Mariani and Rand 1989), Ender nails (Mariani and Rand 1989), and AO blade plate fixation (Cameron et al. 1975). To reduce the risk of joint penetration as the fracture collapses, the tip of these static fixation devices should not be placed close to the articular surface. The DHS is designed so the tip may be placed close to the articular surface, with sliding of the screw should the fracture collapse.

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