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Breakage of a sliding hip screw

A case report

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I report a case of breakage of a Richards sliding screw used in treatment of a trochanteric fracture. The mechanism was probably prevention of sliding caused by collision with an extra screw.

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Introduction

Failures after sliding screw fixation of a hip fracture have been penetration of the femoral head (Joseph 1986), varus displacement, and loosening of the implant in the femoral head or in the femur (Heyse-Moore et al. 1983, Jensen 1981). Breakage of the sliding screw was not been reported earlier.

Case report

A 67-year-old woman was admitted after she had been overturned by a cyclist. Radiographs showed a comminuted, 4-fragmentary, trochanteric fracture (Jensen 1981) of her right femur (Figure 1). The next day, open reduction and fixation with a Richards sliding screw was performed. The lesser trochanter was stabilized with a cerclage wire and the greater trochanter with a screw (Figure 2). No contact between the two screws was

Figure 1.

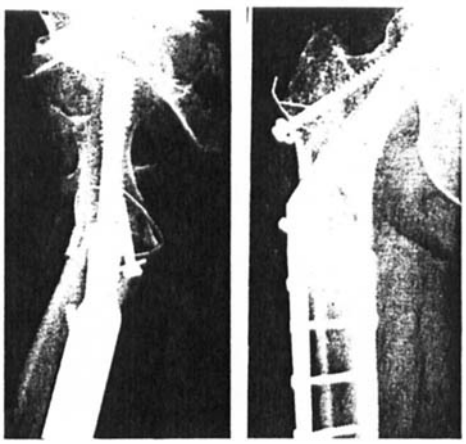

Figure 2.

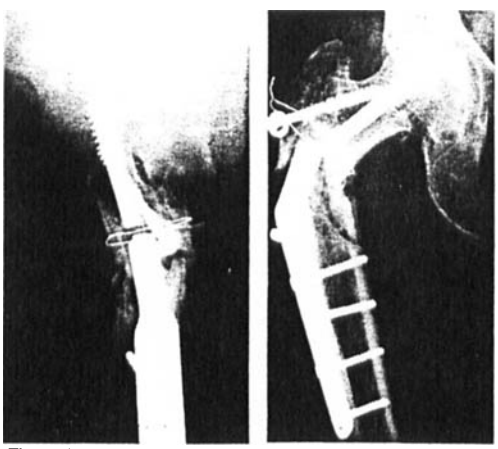

Figure 3.

Figure 1. Four-fragment trochanteric fracture.

Figure 2. After osteosynthesis with a Richards sliding screw and an extra screw in the trochanter major. Trochanter minor fixed with a cerclage wire.

Figure 3. After 6 months, probable nonunion and breakage of the sliding screw.

recognized at the operation. The postoperative course was uncomplicated. The patient was discharged 3 weeks after the operation without weight bearing. After 3 months, the range of motion in the hip was almost normal. The radiographs showed an unchanged position of the fixation device and callus formation was observed. The patient was allowed to start walking with weight bearing.

After 6 months, the patient stepped out of a bus a little awkwardly, and the same day she had pain in her hip and could not stand on her leg. Repeat radiographs showed a refracture, or possible redisplacement through a pseudoarthrosis, and breakage of the sliding screw just at the barrel (Figure 3). The following day the patient was reoperated on with removal of all the osteosynthesis material and fixation with a new Richards sliding screw.

The radiographs (Figures 2 and 3) indicated a collision of the two screws preventing the femoral head screw from sliding, causing stress concentration at the end of the barrel. Examination of the screw showed that the breakage probably was caused by metal fatigue. In the barrel, marks indicated a bending force at the screw.

Discussion

The advantage of a sliding screw-plate device is that it allows the fragments to impact until bony support is established across the fracture. Prevention of the sliding may result in penetration of the femoral head or acetabulum (Høgh 1981) and nonunion (Wile et al. 1983), as seen also in the McLaughlin nail-plate (Høgh et al. 1981).

In this case, delayed union in combination with prevention of sliding was followed by breakage of the screw, which was very likely due to stress concentration of the screw at the end of the barrel.

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