

Refracture after removal of a static-locked femoral nail

A case report

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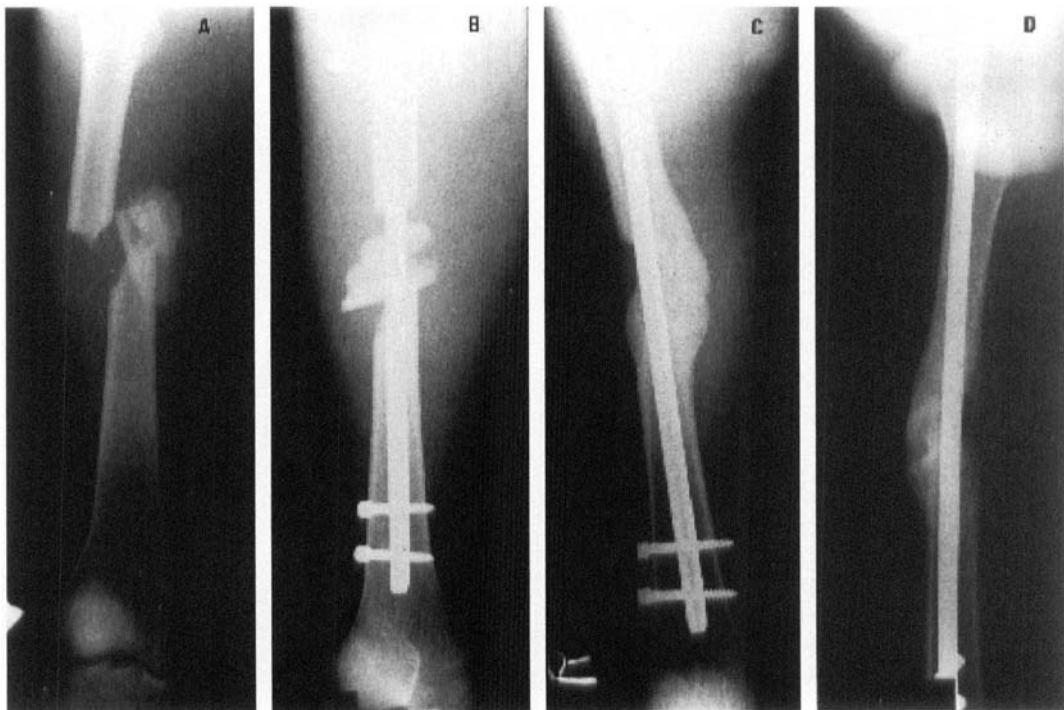
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A 19-year-old man sustained in a motorcycle accident a right closed type IV comminuted (Winkquist et al. 1984) femoral shaft fracture. The fracture was treated with a closed static Grosse-Kempf locked nail (Howmedica, Kiel, Germany) after the patient's general condition stabilized at 2 days. Postoperatively, the fracture fragments were in a bizarre position. The postoperative course was smooth and the patient was

permitted to ambulate with protected weight bearing. The fracture healed at 4 months and the patient recovered to preinjury status. However, a relatively large defect remained laterally in the fracture area.

At 1.5 years postoperatively, the patient wanted the nail removed because of pain at the prominent proximal nail end. Radiographs showed that the fracture site had not yet remodeled and the bone defect later-

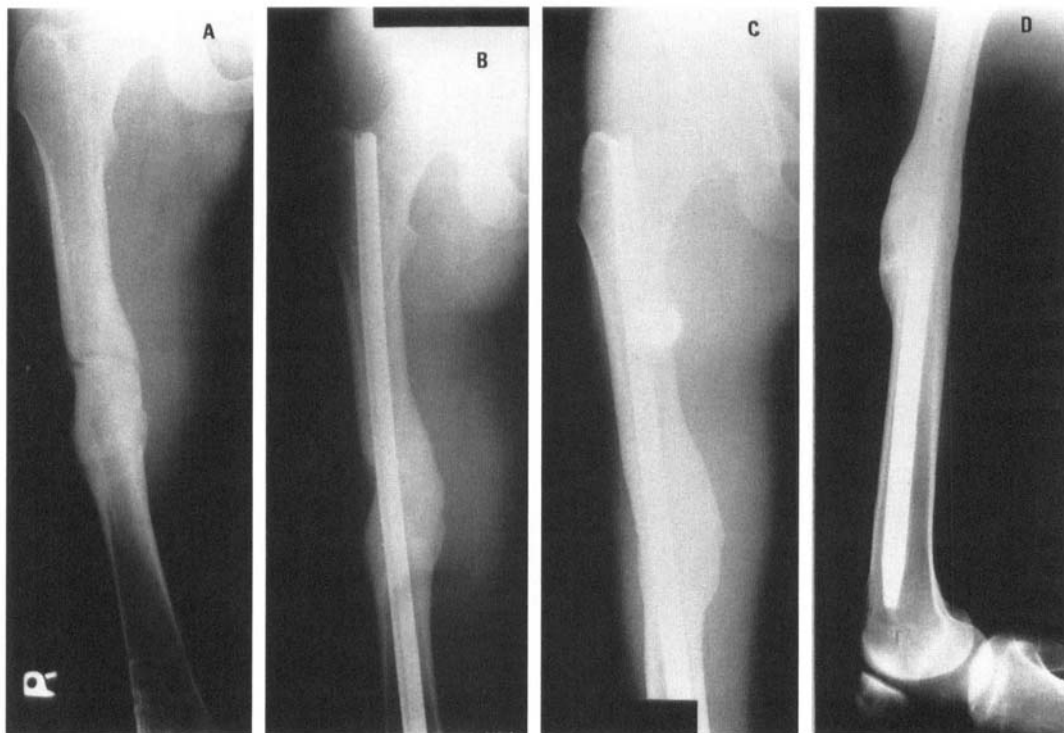
A 19-year-old man with a closed type IV comminuted femoral shaft fracture.



Preoperatively.

Immediately postoperatively, fracture fragments in a bizarre position.

At 1.5-year follow-up, before nail removal, no remodeling of fragments.



Refracture occurred 4 months after the nail was removed.

Fracture united at 3 months after closed Kuntscher nailing.

Good remodeling of fracture site was noted at the 2-year follow-up.

ally was still present. After nail removal, restriction of activity was suggested until remodeling.

4 months postoperatively, when jogging, he had sudden severe pain in his right thigh. Radiographs showed a fracture with some displacement. A 1 mm thicker Kuntscher closed nail was inserted after reaming and the proximal nail end was hammered deep into the trochanter.

The postoperative course was uneventful. The fracture healed at 3 months and the fracture site had remodeled well at the 2-year follow-up. The patient recovered to preinjury status.

Discussion

A static locked nail is load-bearing, with less load transferred through the fracture (Chandler and Wiss 1984, Brumback et al. 1992). Nevertheless, clinical studies show a high union rate without dynamization (Thoresen et al. 1985, Wiss et al. 1986, Brumback et al. 1988, Solbjerg et al. 1990); a static locked nail permits some bending and rotary movements which can stimulate callus formation.

When fracture union is achieved, loads can be transferred by the healed bone (Braten et al. 1992, 1993). Nevertheless, with the static locked nail support, the bony remodeling process is very slow clinically. If the fragments heal in a bizarre position with defects in the callus mass, stress-concentration is introduced. Then there is a high risk of refracture if the nail is removed (Braten et al. 1993) and a supplementary device should be added. To increase remodeling, a Kuntscher nail should be better than a static nail. Renailing is also easier than the alternative method, bone grafting.

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