LATE FRACTURE ASSOCIATED WITH RETAINED INTERNAL FIXATION

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Plates and screws act as stress risers and may result in subsequent fractures (Burny, Bourgois and Donkerwolcke 1980). Despite this, metal is frequently left in situ after union has occurred. Recently we have seen five fractures 20 to 60 years after internal fixation. These cases show that even corroded plates that have lost their structural integrity can cause problems.

Case 1. A 61-year-old man jumped from a lorry and sustained a fracture through the lowest screw hole of a plate applied for a fracture 55 years previously (Fig. 1). The corroded plate was removed (Fig. 2) and open Kuntscher nailing performed. The nail jammed beyond the fracture site achieving an imperfect but stable fixation which united in six months.

Case 2. A 65-year-old woman sustained a closed fracture of the mid-shaft of her femur through the distal screw hole of a plate applied 62 years previously for a derotation osteotomy. The corroded plate was removed and Kuntscher nailing attempted. However, the passage of the nail split the femur and the patient was managed on traction. Despite subsequent bone grafting and cast bracing the fracture remains un-united at 25 weeks.

Case 3. A 78-year-old woman fell, sustaining a spiral fracture of the mid-shaft of her left femur with a large butterfly fragment in relation to the proximal end of a plate inserted 31 years previously. Six weeks in skeletal traction followed by femoral cast bracing for 14 weeks led to union and 21 weeks after the fall she was fully mobile and had attained her previous level of activity.

Case 4. A 57-year-old man developed pain in the mid-thigh following minor trauma. Radiographs revealed a stress fracture at the site of a plate applied 22 years previously for a mid-shaft fracture. The plate was removed; bony union and full mobility resulted in 10 weeks.

Case 5. A 64-year-old man fell sustaining a mid-shaft fracture of his humerus through the site of a single screw inserted 36 years previously. He is currently progressing to union with conservative treatment.

Discussion. There is no agreement as to when metallic fixation devices should be removed. Corrosion, electrical effects and tissue reaction can occur (Weisman 1980), and an association with malignancy has been described (Hughes et al. 1987). It is surprising however, that since the concept of stress risers is well known, the problem of late fracture has not been addressed more fully. Contemporary plates can be expected to create more significant stress risers than their dated counterparts.

Fig. 1

Fig. 2

Thus the late fracture rate may be expected to increase with the current vogue for rigid internal fixation, unless these devices are removed when their usefulness has passed.

The cases described demonstrate the long-term problems of retained internal fixation: two presented considerable difficulty in performing the secondary surgery.

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REFERENCES

