2. Branney SW, Moore EE, Feldhaus KM, Wolfe RE. Critical analysis of two decades of experience with postinjury emergency department thoracotomy in a regional trauma center. *J Trauma* 1998; **45**: 87–95.
3. Campbell NC, Thomson SR, Muckart DJ, Meumann CM, Van Middelkoop I, Botha JB. Review of 1198 cases of penetrating cardiac trauma. *Br J Surg* 1997; **84**: 1737–40.

k-Wiring of supracondylar humeral fractures

FR MIDDLETON, DR BOARDMAN, CJ COATES
Orthopaedic Department, Royal Surrey County Hospital,
Guildford, Surrey

CORRESPONDENCE TO

FR Middleton, SpR Orthopaedics, Royal Surrey County
Hospital, Egerton Road, Guildford, Surrey GU2 7XX, UK
E: fionamiddleton@doctors.org.uk

BACKGROUND

Closed manipulation and percutaneous pinning of displaced supracondylar humeral fractures (Gartland type IIB or above)¹ is commonly performed in the UK using two crossed pins or two lateral pins.² Accurate reduction and stable fixation is key to the successful surgical treatment of these fractures, but this is often hampered by soft tissue swelling and gross fracture instability. We describe a simple technique to aid successful closed reduction and percutaneous fixation.

TECHNIQUE

After closed fracture reduction, the elbow is held in a fully flexed position. Under fluoroscopic guidance, a 1.6-mm k-wire is passed through the capitellum alongside the lateral border of the olecranon and directed proximally along the longitudinal axis of the humerus (Fig. 1); this wire provides temporary stabilisation of the fracture in all planes. After adequate reduction is confirmed by fluoroscopy with the temporary k-wire in place, definitive stabilisation is achieved with two further k-wires (Fig. 2). Finally, the elbow is screened fluoroscopically to ensure satisfactory fracture reduction prior to the removal of the temporary wire.

DISCUSSION

Maintaining fracture reduction whilst percutaneous k-wires are passed can be challenging. We describe the use of a temporary stabilisation wire to ensure optimal fixation. The temporary wire resists fracture displacement whilst the limb is repositioned during definitive fixation and acts as a guide to aid the judgement of angulation in the sagittal and coronal planes. Optimal placement of the definitive k-wires is thus aided. The possibility of the loss of reduction during definitive k-wire placement is also reduced.

Figure 1 Lateral view of elbow showing position of temporary k-wire.

Figure 2 Anterior-posterior view of elbow showing position of all k-wires.

References

1. Gartland JJ. Management of supracondylar fractures of the humerus in children. *Surg Gynecol Obstet* 1959; **109**: 145–54.
2. O'Hara LJ, Barlow JW, Clarke MP. Displaced supracondylar fractures of the humerus in children. *J Bone Joint Surg Br* 2000; **82**: 204–10.