

Self locking tension band technique in transverse patellar fractures

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Summary. *Following tension band wiring of fractures of the patella, proximal K-wire migration is a common complication. To prevent this we have devised the 'self locking tension band' technique. The proximal K-wire ends are bent to form a loop and the cerclage wire passed through them. This prevents subsequent migration of the K-wires. We have treated 15 fractures using this technique. At a mean follow up of 30 months, no postoperative complications were found.*

Résumé. *La migration proximale des broches de Kirschner-certainement dûc à une mobilisation précoce- n'est pas une complication rare de l'ostéosynthèse par la technique du haubannage dans le traitement des fractures transversales de la rotule. Pour éviter cette complication, nous avons légèrement modifié la technique originale. L'extrémité proximale des broches est recourbée en anneau dans lequel passe le fil de cerclage. Ainsi le cercle et les broches se verrouillent mutuellement. Entre Septembre 92 et Septembre 95, nous avons ainsi traité 15 patients. Le suivi moyen est de 30 mois et les résultats prometteurs.*

Introduction

Displaced fractures of the patella are often managed operatively using the tension band technique. A recognized complication of this method is proximal migration of the K-wires leading to loss of rigid internal fixation (Fig. 1) [1–3].

In our clinic, this complication occurred in 3 of 12 patients treated for fractures of the patella

during 1990 and 1991. To prevent further problems we have modified the standard operative technique of tension band wiring of the patella.

Materials and methods

Patients

We treated 15 patients with fractured patellae using our modified technique. The mean age of the patients was 36 years. Eight fractures were transverse and 7 transverse with some comminution. Only one fracture was open; this was a slightly comminuted fracture.

The injury was due to a direct blow in 4 patients; the other 11 fractures were due to indirect trauma.

Surgical technique

Through a midline incision the fracture was exposed, cleaned and anatomically reduced. Retrogradely inserted 1.6 mm or 2.0 mm K-wires were used to stabilize the fracture (Fig. 2A–D). The proximal ends of the wires were then bent 360 degrees to form a loop 5–6 mm in diameter. Excess wire was cut off only after the ring had been fashioned (Fig. 2E). The wires were then drawn distally until the ring was adjacent to the proximal patella (Fig. 2F).

Cerclage wire (18–20 Fr gauge) was then passed through the rings, around the patella and tightened in the normal fashion (Fig. 2G). They produced a self locking tension band. In selected cases additional compression was applied by another cerclage wire in a 'figure of 8' configuration.

The wound was closed over a suction drain. Compression bandaging was then applied. Mobilization was begun on the first postoperative day. By day 7, 90 degrees of flexion was commonly achieved. Partial weight bearing was commenced after 6 weeks. Full weight bearing was allowed at 12 weeks after operation.

Results

In all patients, clinical and radiological healing was achieved at 8 weeks. There were no wound infections. All patients regained a full range of

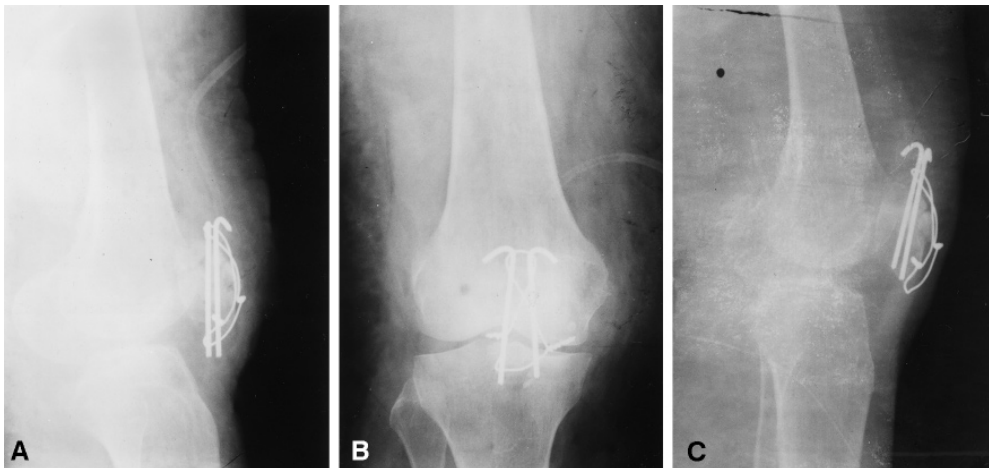


Fig. 1 A, B Radiographs after fracture fixation using the AO tension band technique. C After 6 weeks, proximal migration of K-wires has occurred. Compression across the fracture is lost

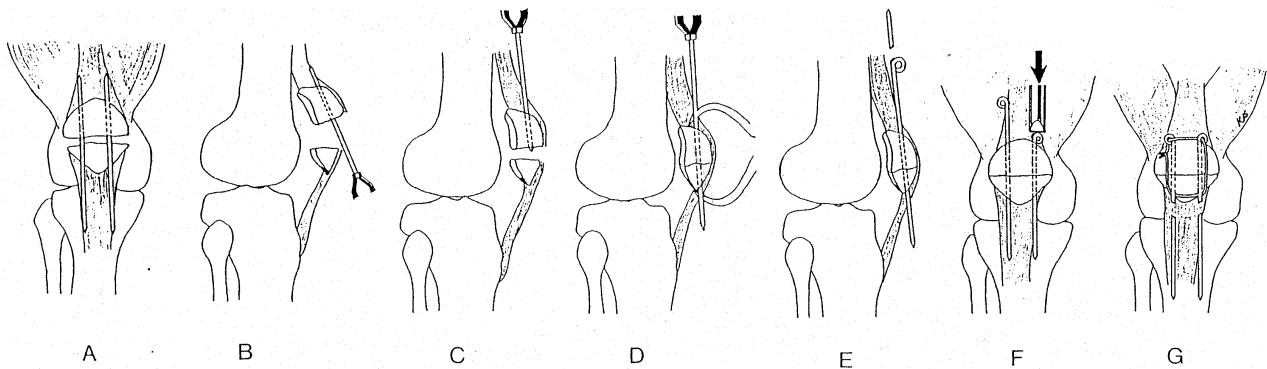


Fig. 2 A, B Retrograde insertion of K-wires into the proximal fragment. C, D Orthograde advancement of K-wires to fix anatomically reduced fracture. E Proximal wire bent into a

ring and excess wire trimmed. F Wire advanced until ring abuts proximal patella. G Cerclage wire inserted and tensioned, excess wire trimmed

active and passive movement at 8 weeks. At a mean follow-up of 30 months (15–38) all patients had regained full function. Migration of the K-wires has not been seen.

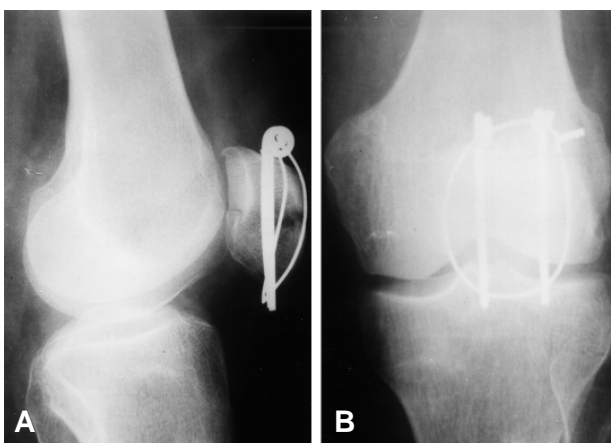


Fig. 3 A, B Postoperative radiographs after fixation of fracture using self locking tension band technique

Discussion

We have described a modification of the standard AO tension band wiring technique of the patella. Satisfactory results were achieved using our ‘self locking tension band’ technique even in comminuted fractures. In our series of 15 fractures, no migration of K-wires was observed post-operatively. We recommend the use of this technique.

References

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