

## Injection of calcium phosphate cement in the percutaneous treatment of fractures of the lateral tibial plateau

Breck R. LORD, Tom C. B. POLLARD, Andrew R. McANDREW

From Royal Berkshire Hospital, Reading, United Kingdom

### INTRODUCTION

Reduction of split-depression or pure-depression fractures of the lateral tibial plateau (Schatzker II and III) leaves a void in the metaphyseal region, traditionally filled with bone graft (1). Calcium phosphate cement offers a structural and biological alternative to bone graft (2). Once mixed, the cement is usually injected into such defects with a syringe (Fig. 1).

Many Schatzker II and III fractures are amenable to percutaneous treatment, whereby the fracture is elevated via an anterolateral bony window, and screws inserted percutaneously through a separate incision. Because of the short curing time of calcium phosphate cement (three minutes), percutaneous injection into the defect may be problematic

because of difficulties locating the entry point and optimum site to inject the cement, and loss of reduction prior to injection. We describe a technique to avoid such difficulties.

### TECHNIQUE

Having made a window in the proximal tibia, elevate the fracture using the blunt end of a 2 mm Kirschner-wire. Screws may then be passed across the fracture, but not tightened. Take the metal part of the calcium phosphate cement syringe (Fig. 1) and railroad it over the K-wire, to abut the elevated metaphyseal bone (Fig. 2). Remove the K-wire and confirm the position of the syringe tip fluoroscopically (Fig. 3). The calcium phosphate cement is then mixed and poured into the syringe barrel, which is then screwed onto the metal tip. Inject the cement and tighten the screws whilst it cures. Avoid

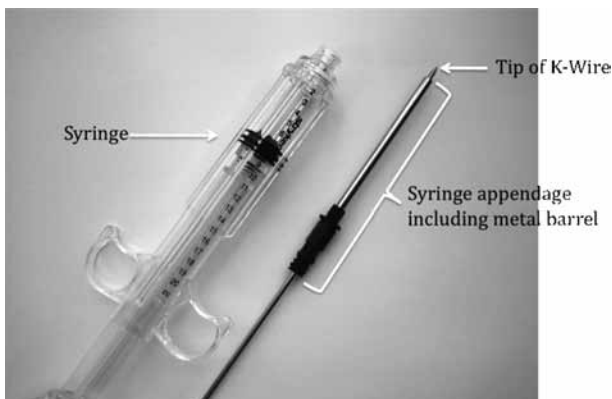


Fig. 1. — 2 mm K-wire, barrel and metallic part of syringe

- Breck R. Lord, Core Surgical Trainee (CT3) Trauma and Orthopaedics.
- Tom C. B. Pollard, Specialist Registrar (ST6) Trauma and Orthopaedics.
- Andrew R. McAndrew, Consultant Orthopaedic Surgeon – Trauma Specialist.  
*Department of Trauma and Orthopaedics, Royal Berkshire Hospital, Reading, U.K.*

Correspondence : Mr Breck R. Lord, Department of Trauma and Orthopaedics, Royal Berkshire Hospital, London Road, Reading, RG1 5AN. E-mail : brecklord@doctors.org.uk

© 2011, Acta Orthopædica Belgica.



**Fig. 2.** — Fluoroscopic image demonstrating the syringe being railroaded over the K-wire.



**Fig. 3.** — Metal syringe in ideal position ready for injection of cement.

over-vigorous injection as this may result in extrusion of cement into the joint.

### REFERENCES

1. Harper MC, Henstorf JE, Vessely MB, Maurizi MG, Allen WC. Closed reduction and percutaneous stabilisa-

tion of tibial plateau fractures. *Orthopedics* 1995 ; 18 : 623-626.

2. Lobenhoffer P, Gerich T, Witte F, Tscherné H. Use of injectable calcium phosphate bone cement in the treatment of tibial plateau fractures ; a prospective study of twenty-six cases with twenty-month mean follow-up. *J Orthop Trauma* 2002 ; 16 : 143-149.