Improvised External Fixation—a Modification

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Abstract A modification is presented to a commonly used type of improvised external fixator for hand fractures. Our modified fixator is easy to apply and allows fracture manipulation in three dimensions after application, before the cement sets.

Keywords Fracture · External fixation · Ex fix · Hand Fracture

The value of external fixation in the hand is well established [1–3]. Commercially available external fixators [4, 5] are not always suitable or available, and several improvised external fixators have been described, although these may be limited in size or position if made using short [6, 7] tubes.

A popular technique is to use a syringe barrel or rigid plastic tube filled with orthopaedic cement [7, 8]. Pairs of Kirschner wires (K-wires) are passed through the syringe after being inserted into the bones proximal and distal to the fracture.

This technique has drawbacks because the tubing is brittle. Drilling the wire through the syringe before it enters the bone blunts the tip, but it is difficult to attach the syringe to the wires once they are positioned in the bone without causing loosening. It is also difficult to distract or position the fracture fragments once the fixator is attached, making it difficult to correct rotational, angular or linear displacement of the fracture.

We replace the syringe with a length of corrugated anaesthetic tubing, which is easily available in any hospital (Fig. 1). The tubing is flexible and soft walled, so the reverse ends of K-wires can be passed through it easily once the wire is already inserted into the bones. Once sufficient wires (at least two either side of the fracture) have been inserted, the tube is filled with cement. The construct can be manipulated to the desired position before the cement sets, allowing reduction of the fracture and correction of angular, longitudinal or rotational deformity before providing rigid fixation once the cement hardens (Figs. 2 and 3). It is the ability to manipulate the construct before it hardens that is the major advantage of this improvised device, and we have found it to remain stable during fracture healing.

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Fig. 1 Short length of anaesthetic tubing (the connector is removed prior to use)

Fig. 3 Radiograph taken seven days postoperatively showing stability of the construct

Fig. 2 Postoperative photograph showing the external fixator in situ

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