a retrograde suction technique. Alternatively, for narrow canals, impaction of the entire canal can be followed by the use of the femoral corer, also found on the X-change® system, to create a canal for implant passage.

DISCUSSION

Impaction bone grafting of the proximal femur during revision hip replacement is a well described technique.^{1,2} It has also been reported in the revision elbow arthroplasty setting, to restore humeral bone.³ In the absence of specialised humeral impactors, previous authors have either impacted graft longitudinally around the outside of a cementation tube nozzle or used trial and final humeral prostheses as impactors. Our technique allows centrifugal impaction of allograft around a fixed central guidewire. This may provide a stronger base of distal humeral bone than longitudinal impaction alone. In addition, the final prosthesis is not required until implantation, minimising surface damage and contamination.

References

1. Gie GA, Linder L, Ling RS *et al*. Impacted cancellous allografts and cement for revision total hip arthroplasty. *J Bone Joint Surg Br* 1993; **75**: 14–21.
2. Schreurs BW, Arts JJ, Verdonchot N *et al*. Femoral component revision with use of impaction bone-grafting and a cemented polished stem. Surgical technique. *J Bone Joint Surg Am* 2006; **88**: 259–274.
3. Loebenberg MI, Adams R, O'Driscoll SW, Morrey BF. Impaction grafting in revision total elbow arthroplasty. *J Bone Joint Surg Am* 2005; **87**: 99–106.

The use of an oxygen cylinder key for removal of a Hoffmann II external fixator

WG Britnell, SM McDonnell, R Handley

Trauma Unit, John Radcliffe Hospital, Oxford, UK

CORRESPONDENCE TO

William Britnell, E: williambritnell@doctors.org.uk

BACKGROUND

The Hoffmann II is a commonly used external fixator (Fig 1). It can be applied as a temporising measure or as definitive fracture fixation.¹ Different versions of the Hoffmann II system exist. The adjustment or removal of the Hoffmann frame is often carried out in a different centre to the one in which it was initially applied and the manufacturer's specific key (Fig 2) may not always be available. While the frame is applied under

Figure 1 A Hoffmann II external fixator

sterile conditions, instrumentation for adjustment or removal is not necessarily sterile. The keys for removing the device are packed sterile with the rest of the instruments for frame assembly. This means the whole pack needs to be opened and decontaminated for the sake of a short unsterile procedure, with obvious financial and logistical implications.

TECHNIQUE

The key used for opening the valve on oxygen/medical air cylinders, which is universally found in operating theatres on the back of anaesthetic trolleys, also fits Hoffmann II clamps (Fig 3). This allows the device to be removed in any centre without the sterile instruments being opened. If a key is not located with the oxygen cylinder, the theatre porters can locate one.

DISCUSSION

Sterile external fixator packs are often few and far between in theatre departments. The use of this commonly found key will certainly save theatre time but may also save money and leave the valuable kit available for the next polytrauma patient who needs it. This technique has been used within our unit and no complications have been experienced.

Reference

1. AO Surgery Reference (Tibia Shaft 42-C3 CREF). AO Foundation. <http://bit.ly/lVramS> (cited March 2011).

Figure 2 A sterile packed external fixator key

Figure 3 A commonly found oxygen/medical air cylinder key