Removal of a Kirschner wire during follow-up of a replantation injury of an amputated finger using a novel technique

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DESCRIPTION
A 15-year-old boy who had presented six weeks after a replantation injury to his left little finger which had been amputated at the level of the metacarpophalangeal joint (MCPJ) due to a machete laceration during an altercation. The little finger was successfully revascularized with microsurgical repair of both neurovascular bundles including repair of his flexor and extensor tendons as well as stabilisation of his MCPJ with an axial Kirschner wire (K-wire). Despite such promising results, he was not compliant with his follow up appointments. The patient remained with his original cast since surgery developing over-granulation around the drill site (figure 1). At his six-week clinic review the clinician attempted to remove the wire using pliers but this was unsuccessful as the patient could not tolerate it. As a result, the patient was then consented for removal of the K-wire under general anaesthesia. However, as opposed to reattempting to remove it with pliers a medical oscillating drill was used instead. By using the medical oscillating drill in reverse-mode the K-wire was withdrawn with ease with no complications (figure 2).

K-wiring is a common method of percutaneous fixation of metacarpal and phalangeal bone fractures in children. A well-known open fracture audit conducted by the British Society for Surgery of the Hand (BSSH) revealed that approximately 70% of open hand fractures require K-wire fixation. Furthermore, a national survey performed by the WIRE collaborative group involving 423 hand surgeons indicated that overall surgeons preferred to leave K-wires with exposed percutaneous ends to facilitate ease of removal at a future clinic appointment.

On most occasions exposed K-wires are easily removed in the clinic setting. However, if an anxious child is unwilling or unable to tolerate K-wire removal in the clinic setting then this may warrant a procedure under general anaesthesia. Removing K-wires in clinics avoids the associated impact to the child and the family caused by the admission to hospital, the stress of being nil by mouth and the health risks of a general anaesthetic.

The instrument breakage rate is 0.018% and has been reported in various clinical settings. Drill bits, followed by K-wires have been the most commonly reported instruments to break during orthopaedic procedures. We present a very simple and practical

Figure 1 Axial Kirschner wire stabilising previous replantation injury which was amputated at the level of the metacarpophalangeal joint of the left little finger as shown by scar.

Figure 2 Hand drill successfully removing Kirschner wire when put in reverse mode.

Patient's perspective
Everyone was great. Thanks to the team for a great job.

Learning points
► Consider using handheld drills to remove difficult-to-remove Kirchner wires.
► To avoid the unnecessary risks of general anaesthesia, removing Kirchner wires using the handheld drill can be performed under local anaesthesia, especially in the paediatric population.
method of removing difficult K-wires by using a medical oscillating hand drill. This method can increase the chances of success of removal not only in theatre but also in the clinic setting under local anaesthetic.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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