These Wire Cutters are Broken

Saqib Javed · Daniel Redfern

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Abstract K-wire cutters have a fixed range of cutting capabilities. Wire cutters are most efficiently applied perpendicular to the K-wire as oblique application increases the effective diameter of the K-wire, which may cause the wire cutters to break.

Keywords Kirschner wire · Wire cutters · Damage · Technique · Kapandji

Technical Note

A 65 year old gentleman sustained an extra-articular distal radius fracture during a fall onto an outstretched hand. A manipulation under anaesthesia and Kirschner wire (K-wire) fixation were planned for him. In the operating theatre two dorsal wires in a kapandji fashion and one tran-styloid wire were used to fix the fracture [1]. The wires were stainless steel and 1.6mm in diameter. Following insertion, the wires were bent and then cut using a wire cutter. On cutting the first wire, the cutting surface

of the wire cutters broke. On checking the manufacturers recommendations the wire cutters, which broke had a maximum cutting diameter of 2mm. On careful inspection of the wire the wire cutters had been applied to the wire obliquely.

Introduced in 1909 by Martin Kirschner, K wires are now widely used in orthopaedics. They come in different diameters and can be used for temporary or definitive fixation of bone fragments [2]. K-wire cutters have a fixed range of cutting capabilities. If this is exceeded the wire cutters will break [3]. Wire cutters are most efficiently applied perpendicular to the K-wire. Oblique application increases the effective diameter of a K-wire, by a proportion determined by a simple trigonometric relationship. This will frequently exceed the capacity of the wire cutter to divide the wire. When cutting obliquely, a larger wire cutter should be used. Furthermore, wire cutters are expensive and, importantly, there is also the risk of injury to the surgeon with the broken fragment (s). This emphasises the need for correct technique as well as knowing the surgical equipment well. In our

S. Javed (✉) · D. Redfern
Department of Trauma and Orthopaedic Surgery,
Royal Preston Hospital,
Preston, UK PR2 9HT
e-mail: shehzada50@doctors.org.uk

D. Redfern
e-mail: daniel.redfern@lthtr.nhs.uk

Fig. 1 Demonstration of the technique for cutting a 1.6mm diameter K-wire

case the 1.6mm wire was cut obliquely at 45° which effectively increased the cutting diameter to 2.3mm exceeding the 2mm capacity of the wire cutter to divide the wire (Fig. 1). We appreciate that older wire cutters or those with manufacturing defects are more liable to break but neither explanation was applicable to our case.

References

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