

Broken tibial nail extraction: a useful technique

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BACKGROUND

A broken tibial nail can be challenging, generally requiring removal before proceeding with further fixation. Extracting the distal segment poses difficulties, and there are several minimally invasive techniques to either hook the distal end of the nail,^{1,2} or create an interference fit,^{3,4} and specific instruments such as nail removal hooks now exist for this purpose. When unsuccessful, more invasive techniques, such as removal of part of the cortex for access,⁵ can be employed but ideally surgeons should be aware of numerous minimally invasive options to avoid this.

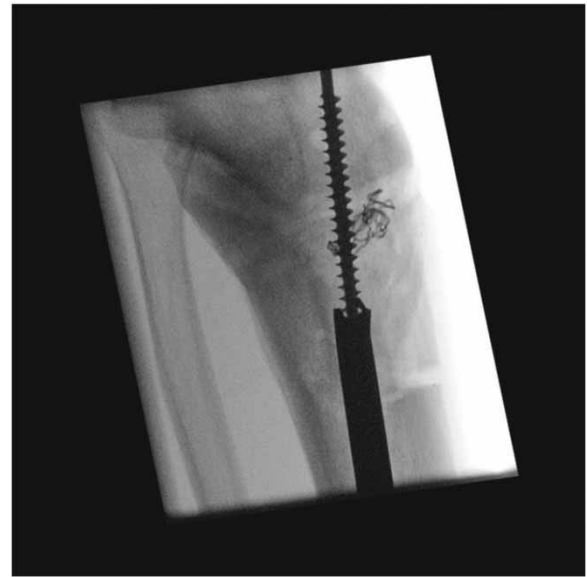


Figure 2 Tap (6.5mm) engaged inside broken distal segment of tibial nail



Figure 1 Broken intramedullary nail with tibial non-union

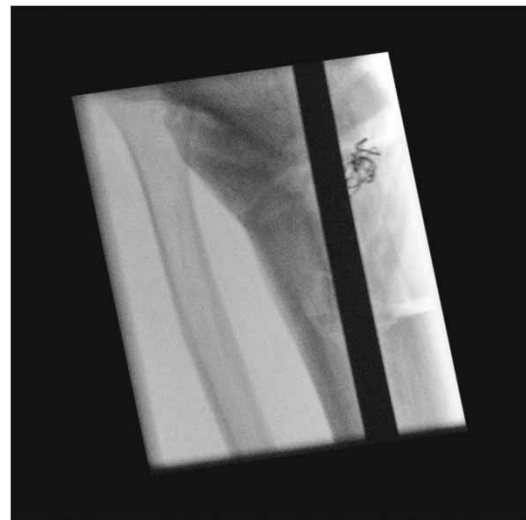


Figure 3 Intramedullary nail pulled out using the tap

TECHNIQUE

For a broken tibial nail (Figure 1), the first steps are to remove the locking bolts and proximal nail segment. Removal of the distal segment can be attempted using extraction instruments, but if conventional methods are unsuccessful, this technique can be utilised. A 6.5mm tap from a large fragment set (eg, Stryker Basic Fragment) is introduced into the nail segment on a handle, using image intensifier guidance. This is carefully

advanced and rotated to engage the threads of the tap into the nail (stainless steel instrument with greater hardness than a titanium nail) (Figure 2). Once purchase is achieved, the tap is used to extract the nail (Figure 3). Care must be taken to avoid bending or excessive torque on the tap to avoid breakage, and usage of this technique is not supported by the manufacturer.

DISCUSSION

This simple technique is a useful addition to any surgeon's inventory for removing a challenging broken intramedullary nail.



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