Figure 4 The completed osteotomy, fixed with two percutaneous screws. The prominence around the distal fibula is excised.

Figure 1 Removing the proximal fragment of the broken nail using the standard extraction tool.

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A novel technique to remove a broken tibiototalcalcaneal intramedullary nail using Moreland hip revision instrumentation

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ABSTRACT

Hindfoot intramedullary devices are increasingly used in tibiototalcalcaneal arthrodesis after failed total ankle arthroplasty or as a salvage procedure after complex trauma. Nail breakage is a well-described complication and numerous techniques for removal of broken parts can be found in the literature, especially for femoral and tibial nails. There is a relative paucity regarding techniques solving the challenge of removing a broken hindfoot intramedullary nail. We describe a novel technique using a curved thin hook from the Moreland hip revision set to remove the distal part of a broken tibiototalcalcaneal intramedullary nail.

KEYWORDS

Moreland – Broken nail – Hindfoot – Extraction – Technique

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Background

Hindfoot intramedullary devices are increasingly used in tibiototalcalcaneal arthrodesis after failed total ankle arthroplasty or as a salvage after complex trauma. Nail breakage is a well-described complication, with numerous techniques for removal of broken femoral and tibial nails. There are limited reports of a broken hindfoot intramedullary nail and we describe here a technique to remove its distal part.

Technique

First, remove the proximal part of the nail using the standard extraction equipment (Fig 1). We illustrate a Phoenix (Biomet Trauma) nail arthrodesis system (150 mm × 11 mm) used after failed total ankle arthroplasty that fractured in the dynamic proximal hole. To facilitate removal of the distal part of the nail we used the curved thin hook from the Moreland hip revision set (DePuySynthes; Fig 2). This is thinner and with sharper angle than the plain hook found in the same tray therefore more suitable for thin nail. The hook passes distal to the nail (Fig 3) and as it engages to its edge serial withdrawing movements (Fig 4) lead to nail removal.

Discussion

Use of ‘jammed’ guide wires has been described but this was not applicable due to the unavailability of suitably sized guide wires.¹ Only one case where part of Moreland set (tap extractor) was used for removal of an intact femoral nail can be found, which is a completely different scenario.² We did not use small fragment 3.5-mm tap as it was considered too small to engage and bigger ones were not suitable.³ Our technique uses readily available instruments, is cheap and reproducible enriching surgeon’s armamentarium.

Figure 2 Curved thin cement extractor hooks available in Moreland hip revision set.

Figure 3 Hook advanced distal to nail end and ready to engage.

Figure 4 Repeated backward movements disengage the distal broken nail from the bony canal leading to its removal.

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