



## Bone formation blocking closure of the expanded distal fins during removal of a Seidel humeral nail

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**The authors report the case of a young patient in which, during removal of a Seidel nail four years after healing of a mid shaft fracture of the humerus, bone formation into the central canal of the nail through the peripheral slots, prevented the three spread distal fins of the nail to close. The nail could only be extracted by forceful use of the extracting instrument, fortunately without complication.**

**Keywords :** humerus ; fracture ; Seidel nail.

screws and unscrewing of the distal expansion screw to close again the distal fins. A specially designed extractor is used for the final removal of the nail (8).

We present a case of a young patient in which, during removal of a Seidel nail, bone formation into the central canal of the nail through the peripheral slots, prevented the three spread distal fins of the nail to close.

### CASE REPORT

An 18-year-old male patient was treated with a Seidel nail for a displaced transverse mid-shaft fracture of the right humerus. The fracture united after 3 months. Four years later, the patient wanted the nail removed. During surgery we realised that unscrewing of the distal expansion screw was impossible. Finally the nail was removed by forceful use of the extractor, fortunately without complication. After removal of the nail we recognised that

### INTRODUCTION

The Seidel locking nail is used for the treatment of humeral shaft fractures and non-unions. The reported success rate is not uniformly good (2, 5, 9). The humeral canal is reamed and the nail is introduced antegrade with an insertion device that attaches to its proximal end. This device guides the placement of two proximal locking screws at a right angle to each other. Distally the nail has three slots which divide its end in three flexible distal fins. A long screw driver is guided down through the nail and draws a properly designed distal expansion screw back into the nail. Expansion of the distal flexible fins of the nail ensures a tight fit of the nail within the medullary canal, and provides axial and rotational stability at the fracture site (in conjunction with the proximal interlocking fixation). The removal of this nail is accomplished following removal of the proximal interlocking

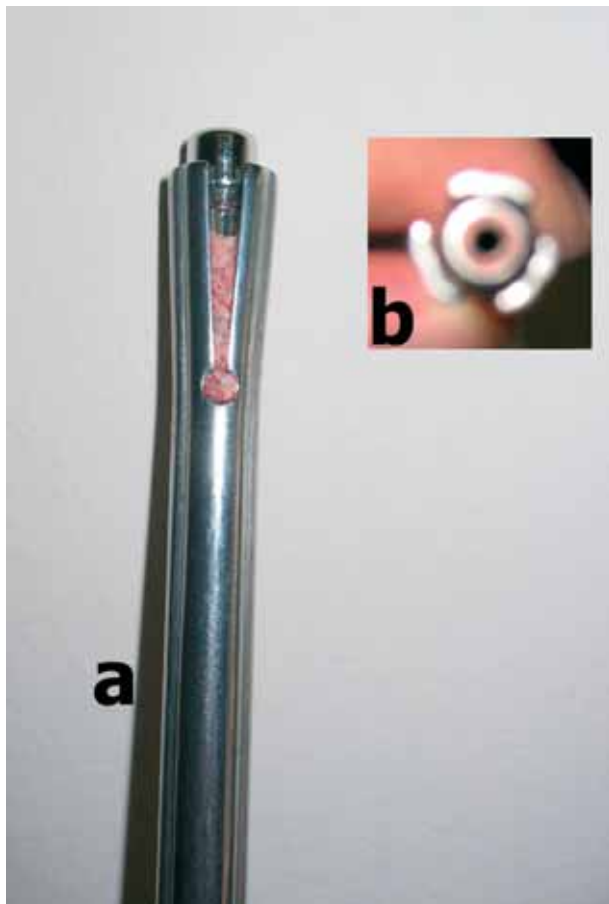
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**Fig. 1.** — Photograph of the distal part of the removed Seidel nail (a). Bone formation in the central nail canal prevents closure of the expanded distal fins (b).

bone formation into the distal slots prevented closure of the expanded end of the nail (fig 1). The patient had an uncomplicated and complete recovery.

### DISCUSSION

According to its designers, the Seidel nail is removed easily after unlocking (8). Several studies mention removal of this nail because of failure to achieve fracture healing in a number of cases (1, 3,

4, 6). However, none of those authors comment about the ease of removal of this nail or about difficulty in approximating the expanded distal fins during the procedure. The distal end of the nail can never be expanded in the medullary cavity to the maximum capacity for expansion of the fins. The reason for a successful removal of this nail is in fact its inability to achieve strong distal anchorage with its distal expansion (7).

The surgeon should be aware of a possible blocking of fin closure and must realise that bony damage and even fracture may occur during nail extraction, particularly when the distal fins are widely splayed out.

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