

SIMPLIFIED TECHNIQUE FOR CANNULATED SCREW REMOVAL

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INTRODUCTION

Although cannulated screws have become increasingly popular in foot and ankle surgery over the past several years, removal of retained fixation has remained a fairly common problem. Sometimes screws simply become prominent and need to be removed or they are crossing weight-bearing joints such as in a LisFranc fracture. As most of these devices are placed with the aid of intraoperative image intensification, their removal should follow similar suit. This update will detail a simplified technique for minimal incision cannulated screw removal.

TECHNIQUE

Unlike most solid screw removals, cannulated screw removal should begin under image intensification utilizing a C-arm or mini C-arm. Make sure to request the actual screw set that was utilized during initial insertion. This way you are guaranteed to have appropriate guide wires, countersink and screwdrivers needed for removal. Another important pearl is to make sure that the averaging or noise filter on your fluoroscopy is turned off or to its lowest setting. This will provide a slightly grainy image, but with no motion artifact.

The steps to follow are: set-up fluoroscopy, pin placement, incision, screw removal, and closure.

Take a guide pin and locate the head of the desired screw on the dorsal-plantar and lateral projections. Next, penetrate the skin with the guide pin until the screw head is palpated. Again, utilizing fluoroscopy, manipulate the pin until it is able to enter into the cannula of the screw. Once the screw head is actually identified, the pin should be able to be advanced quite easily (Figures 1-4). In situations where there may be bone overgrowth, or if the screw has sunken into the bone, the pin can be driven with power.

At this point, a small incision is made large enough for the screw head on either side of the guide pin. A hemostat may be utilized to bluntly dissect down to the screw head itself. Next, the screw driver is placed over the guide pin until it firmly engages the screw. The guide pin will usually have cleared the majority of soft tissue from the head to allow the screw driver to engage. At this point, the screw can usually be removed without difficulty (Figures 5-10). In situations where the screw may actually be deep, simply utilize the appropriate countersink until the screw head is identified. Use caution to avoid stripping the screw head. Following removal of the screw, irrigate and close in typical fashion.



Figure 1. Fluoroscopic placement of guide wire into cannulated screw.



Figure 2. The screw head is located.

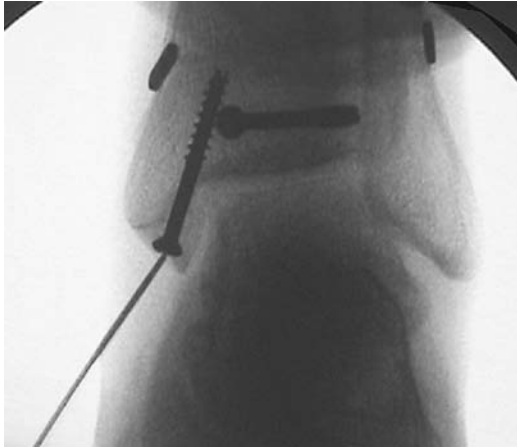


Figure 3. Guide wire placement, anterior posterior projection.



Figure 4. Anterior posterior projection.



Figure 5. Both screws identified, ready for removal.

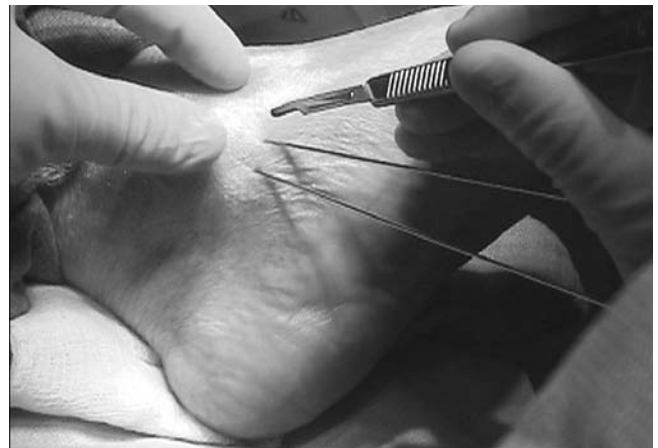


Figure 6. A small incision is made.



Figure 7. A hemostat is used to dissect.



Figure 8. The screw driver is placed over the guide pin.



Figure 9. The screw is removed.



Figure 10. The removed cannulated screw.

SUMMARY

While this technique certainly can simplify cannulated screw removal, only a reasonable amount of time should be spent trying to place the guide wire. If this proves too difficult, an open procedure should be performed. Additionally, as most cannulated screws are partially

threaded, remember the potential for screw breakage still exists. And as with all hardware removals, an alternate method, such as a broken hardware removal set, should be available in case of screw breakage. It is hoped that this technique will offer a less traumatic and time-saving option for cannulated screw removal.