

Cannulated Self-Drilling, Self-Tapping Pins for Displaced Extraarticular Distal Radius Fractures

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Displaced unstable extra-articular radius fractures are common and frequently treated with open reduction and internal fixation with a fixed-angle volar plate. Although this treatment yields good results, it might be more invasive than necessary for management of this often relatively simple fracture. In this article, we present the technique of using a cannulated self-drilling, self-tapping (CSDT) construct that can be employed in a minimally invasive fashion. The CSDT offers a minimally invasive alternative to volar fixed-angle plating for unstable extra-articular distal radius fractures. It also can be useful in isolated displaced radial styloid fractures. Placed appropriately, implants rarely have to be removed. The CSDT also allows for early motion and rapid return to activities with anticipated satisfactory range of motion and function. (*J Hand Surg Am.* 2017; ■(■):1.e1-e5. Copyright © 2017 by the American Society for Surgery of the Hand. All rights reserved.)

Key words Cannulated self-drilling, distal radius fractures, tapping pins, volar fixed-angle plating.



INTRODUCTION

Distal radius fractures are the most common fractures treated in the emergency department and by orthopedic surgeons.¹⁻³ Over 640,000 distal radius fractures occur in the United States. Despite being one of the most common fractures treated in orthopedic surgery, there is no consensus as to the reference standard for treatment. Current trends for unstable displaced distal radius fractures in active individuals have favored volar fixed-angle plating.⁴ However, there is a wide range of treatment methods,

depending on the needs of the individual patient and quality of the bone. Whereas volar fixed-angle plating has been shown to be effective,^{5,6} it may be more than is needed for extra-articular displaced distal radius fractures. The purpose of this technique description is to introduce a minimally invasive procedure that has advantages over the more extensive exposure needed for volar plating yet provides better stability than Kapandji pinning alone.

Minimally invasive percutaneous pinning is a common treatment option in the spectrum of modalities used to treat distal radius fractures.⁷⁻⁹ Advantages of minimally invasive percutaneous pinning include increased stability compared with cast alone and that it keeps the soft tissue envelope intact compared with open reduction and internal fixation. Percutaneous K-wire fixation or the Kapandji pinning technique uses 2 to 4 intrafocal K-wires that aid in reduction and act as radial and dorsal buttresses. One notable downside to this technique, however, is that several series reported a 25% to 33% loss of reduction particularly in osteoporotic bone.⁸

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Received for publication May 4, 2017; accepted in revised form December 14, 2017.

No benefits in any form have been received or will be received related directly or indirectly to the subject of this article.

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0363-5023/17/ ■ ■ -0001\$36.00/0
<https://doi.org/10.1016/j.jhsa.2017.12.011>



FIGURE 1: **A** Anteroposterior radiograph of distal radius fracture and **B** lateral radiograph of distal radius fracture.

Another option is the T-Pin (Union Surgical, LLC, Philadelphia, PA), a cannulated self-drilling, self-tapping (CSDT) device designed to treat extra-articular distal radius fractures.¹⁰ The procedure requires minimal surgical dissection. It provides better stability than K-wires alone because threads in the distal fragment make this a fixed-angle construct. As a result, patients experience early return to active wrist range of motion (ROM) and functional activities.

INDICATIONS AND CONTRAINDICATIONS

Indications for the use of this system include unstable, extra-articular, dorsally displaced distal radius fractures. It can also be used for simple displaced



FIGURE 2: Cannulated self-drilling, self-tapping pin.

radial styloid fractures; however, the focus of this technique article is on extra-articular distal radius fractures. This technique is useful in both active patients and infirm patients because it is minimally invasive and can be performed under local anesthesia with intravenous sedation. The ideal fracture is a displaced extra-articular fracture with no volar

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