Distal Radius Fractures and the Volar Marginal Fragment: Spring Wire Fixation in Addition to Volar Locked Plating

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INTRODUCTION
The volar marginal fragment occurs at the distal, volar, and ulnar portion of the distal radius. Loss of fixation of this fragment can lead to volar subluxation of the carpus and/or DRUJ instability (Figure 1). The purpose of our study was to determine if a small bent Kirschner wire (K-wire) could reliably hold the reduction of volar marginal fragment if the wire is secured under a volar locking plate, a technique we refer to as spring wire fixation. In this study, we describe this technique and report the results of our series of nine patients with distal radius fractures and a volar marginal fragment treated with this type of fixation.

METHODS
A retrospective review (2006-2011) identified nine patients with AO type C distal radius fractures with an associated volar marginal fragment that were treated with volar locked plating and spring wire fixation of the volar marginal fragment (Figure 2). Mean follow-up was 54 weeks (range, 13 - 199 weeks). Radiographic indices, range of motion and grip strength were measured at the last visit. Postoperative Patient-Related Wrist Evaluation (PRWE) scores were obtained to assess pain and functional difficulties. Complications were also recorded.

RESULTS
All distal radius fractures healed and the volar marginal fragment reduction was maintained with the spring wire fixation and volar locked plating (Figure 3). Mean active range of motion was 46° wrist flexion, 51° wrist extension, 80° forearm pronation, and 68° forearm supination. Of those recorded (n = 8), the mean grip strength was 21 kg, achieving 66% of the uninjured limb. The average PRWE score was 17. One patient required a carpal tunnel release eight months after distal radius fixation. No patient required removal of hardware or had evidence of tendon irritation.

CONCLUSIONS
The addition of spring wire fixation to volar locked plating:
• Provides stable fixation of the VMF
• Addresses a limitation of volar locked plating
• Potentially extends indications of volar locked plating to treat distal radius fractures

REFERENCES