

Diagnostic Test Study of the Skyline View for Dorsal Screw Protrusion After Fixation of Distal Radius Fractures

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Background: Distal radius fractures are one of the most common orthopedic injuries, and around 50% of them are intra-articular which leads to requiring open reduction and fixation. One of the most common complications involving the distal radius volar locking plate, when used as a method for fixation, is the possibility of leaving the distal screws too long and crossing the dorsal cortex leading to rupture of the extensor tendons of the wrist and hand. The skyline view of the wrist allows the evaluation of different aspects of the fixation in distal radius fractures, including the screw that crosses the dorsal cortex; however, no studies report the accuracy of this view to predict this and eventually prevent tendon ruptures. **Objectives:** Describe the accuracy of the skyline view (specificity, sensibility) to predict protrusion of the screws in the dorsal cortex compared with a postoperative computed tomographic (CT) scan in patients who underwent volar fixation of distal radius fractures. **Methods:** A retrospective analysis was undertaken on patients with fixation of distal radius fractures using distal radius volar locking plates between January 2013 and January 2016 that had the skyline view of the wrist taken immediately after the end of the surgery and had a CT scan in the follow-up. Patients that had any other type of fixation were excluded from the study. The sample size predicted a total of 36 x-rays. Only patients operated by orthopedic hand surgeons were included. Two experienced orthopedic hand surgeons evaluated both the skyline view and the CT scan (used as gold standard) and evaluated in each image whether any screw crossed the dorsal cortex of the distal radius. **Results:** A total of 44 patients with distal radius volar locking plate fixation were identified, including 27 females and 21 males with a mean age of 52 (range, 25-87 years), and the leading cause of the fractures was low-energy trauma. The skyline view and the CT scans were randomized for each observer, meaning that each observer analyzed 44 x-rays and 44 CT scans. The prevalence of protruded screws in the dorsal cortex of the distal radius was 25% confirmed with the gold standard study the CT scan. The sensibility of the skyline view to predicting protruded screw in the dorsal cortex was 81% and the specificity 94%. The positive predictive value was 81% and a negative predictive value 94%, all values with *P* values less than .05. **Conclusions:** The skyline view is an accurate tool to evaluate protrusion of the screws in the dorsal cortex

of the distal radius when using distal radius volar locking plates as a method for fixation of distal radius fractures. With a high specificity and sensibility allowing orthopedic hand surgeons an easy and accessible tool to assess the appropriate length of the distal screws for the distal radius volar locking plate in radius fractures to prevent possible tendon ruptures.

Treatment of Distal Radius Metaphyseal Comminution Fracture by Volar Locking Plate Fixation: Comparison of Results Between Pronator Quadratus Sparing Technique and Conventional Technique

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Objective: The pronator quadratus (PQ) has important functions such as pronation and robust blood supply of metaphysis. However, PQ repair is difficult when using conventional approach, which is necessary to release PQ for volar plate fixation of distal radius fracture. In addition, anatomical reduction is difficult in patients with distal radius metaphyseal comminution fracture. Therefore, the purpose of this study is to compare the results of volar locking plate fixation using PQ sparing technique and conventional volar approach technique for patients with distal radius metaphyseal comminution fracture. **Materials and Methods:** In total, 30 patients treated with volar locking plate using PQ sparing approach were compared with 29 patients using conventional approach in distal radius metaphyseal comminution fracture. Mean follow-up periods were 19 and 26 months each. Postoperative clinical evaluation was performed with wrist range of motions, pronation power, and modified Mayo wrist score measured at last follow-up. Radiologic evaluation was performed with mean bone union period and measurement of radial length, radial inclination, and volar tilt at last follow-up. **Results:** Mean range of motion, pronation power, and modified Mayo wrist score were significantly superior in PQ sparing approach group. Bony union was achieved in all two groups. However, mean bone union period was superior in PQ sparing approach group (8.7 weeks in PQ sparing group vs 12.5 weeks in conventional group). Radial length, radial inclination, and volar tilt did not show significant differences. **Conclusion:** We propose that a volar locking plate fixation using PQ sparing technique is a more effective treatment method than conventional approach for patients with distal radius metaphyseal comminution fracture.