

Clinical and Radiographic Comparison of Splinting Constructs for Distal Radius Fracture: An Effort to Free the Elbow

Nicole Stevens MD; Zoe Norris BA; Nirmal C Tejwani MD
NYU Langone Health , New York, NY, United States

Purpose: Distal radius fractures are a common presenting problem in the emergency room. These common fractures occur in a bimodal distribution, and particularly affect older, osteoporotic women. On presentation, patients typically are closed reduced and immobilized. Currently, there is no definitive standard for the immobilization methodology of acute distal radius fractures. Several techniques are available; the most performed immobilization method is splinting with plaster either above or below the elbow. Currently, at our institution, acute displaced distal radius fractures are initially managed with sugartong splints. In our experience, these splints are sufficient for fracture reduction maintenance, but many patients, particularly the elderly, find the splints cumbersome. Because the splint goes around the elbow, many patients require a sling, which further limits their mobility, and many complain of difficulty with activities of daily living. Given the literature to date, we hypothesize that clamshell splinting of the wrist, below the elbow, will provide adequate immobilization of the distal radius fracture, while allowing patients better use of their arm and more functionality.

Methods: This is a prospective randomized trial. Patients presenting to the emergency room with isolated, closed, distal radius fractures are randomized to receive a clamshell or sugartong splint. The selected splint is applied after reduction. At 1 week, radiographs are taken to assess maintenance of reduction. Measured parameters included tilt, inclination, and height. A telephone survey about the patient's arm utility is performed between 7 and 10 days. Patients were followed to time to healing, and the number of cases indicated for operative fixation was assessed.

Results: 100 patients were enrolled. 50 were randomized to clamshell and 50 to sugartong. The average Disabilities of the Arm, Shoulder and Hand (DASH) score for clamshell splints is 106 (standard deviation [SD] 24) and for sugartong 109 (SD 16). The average change in radiographic parameters for clamshell splints were tilt 1.1° (SD 1.1), inclination 1.8° (SD 2.1), and height 1.5° (SD 0.97). The average change for sugartong splints were tilt 3.2° (SD 3.2), inclination 2.0° (SD 2.3), and height 2.2° (SD 2.1).

Conclusion: Our results to date suggest that there is no clinical or radiographic difference between sugartong and clamshell splints and clinicians should consider using clamshell splints for patient comfort.