

Elbow dislocations are rare (6/100 000 person-years) and always include injury of the ligaments. Complex elbow dislocations include a fracture, and surgical treatment is common. Treatment for simple elbow dislocations (SEDs) without a fracture is conservative and functional and strives to balance stability and prevent stiffness. Currently, there is little evidence on which to base treatment decisions for SED and there is no indication for standard surgical ligament repair [Taylor F et al. *Cochrane Database Syst Rev.* 2012]. Observational studies suggest the outcomes are similar with EM or PIM [De Haan J et al. *Arch Orthop Trauma Surg.* 2010].

The multicenter, randomized FuncSiE study was conducted to obtain prospective evidence with EM and PIM in patients with an SED. EM comprised a pressure bandage or tubigrip, early exercise within the limits of pain, and physical therapy (PT) commencing after 2 days, whereas PIM comprised a long arm cast for 3 weeks and PT commencing after cast removal. Assessments were made at weeks 1 and 3 and months 3, 6, and 12. The study was conducted from August 2009 to September 2012. Of the 100 patients randomized in the study, 48 in the EM group and 52 in the PIM group were available for analysis. In the EM and PIM groups, respectively, 46% and 39% were men, the average age was 43 years and 47 years, the injury was to the dominant arm in 50% and 42% of patients, and most had a low-energy trauma (94% and 92%).

The primary outcome of the Quick Disabilities of the Arm, Shoulder, and Hand score was significantly lower with EM (12) vs PIM (19) in the first 6 weeks ( $P < .05$ ) but was similar (4) at 12 months in both groups.

The Oxford Elbow Score (OES) was similar in both groups at all assessments, whereas the OES functional domain score was significantly higher in the first 6 weeks in the EM vs PIM group (86% vs 73%) but was similar at 12 months (98% vs 97%). The Mayo Elbow Performance Index was about 95% in each group. Pain assessed with a visual analog scale score was significantly higher with EM vs PIM at 1 week (mean score 3.2 vs 2.2, respectively,  $P < .05$ ), but thereafter it was similar ( $\leq 1$ ) through 12 months in both groups.

The range of motion (ROM) assessed with the flexion/extension (FE) score was 121° with EM and 102° with PIM ( $P < .05$ ) at 6 weeks; at 12 months, it was similar at about 140°. The loss of ROM using the FE score was slightly less with EM vs PIM. The time to return to work and sports is detailed in Table 1. Patients returned to work 8 days earlier with EM vs PIM.

The rate of complications was also similar with EM and PIM in the 40 and 43 patients analyzed, respectively. No redislocation or joint incongruity occurred in either group. Heterotopic ossification occurred in 55% and 65%

Table 1. Time to Resumption of Work and Sports in the FuncSiE Study

	Early Mobilization (n = 48)	Plaster Immobilization (n = 52)
<b>Work</b>		
Working preinjury	32 (67)	32 (62)
Work absenteeism	22 (69)	25 (78)
Resumed (12 mo)	21 (96)	23 (92)
Days to full resumption, n (range)	10 (5–16)	18 (8–41)
<b>Sports</b>		
Sports preinjury	37 (77)	36 (69)
Resumed (12 mo)	28 (76)	27 (75)

Values are n (%) unless otherwise noted.

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of the EM and PIM groups, respectively, most of which was grade 2 (91% and 86%, respectively). Grade 3 ossification occurred in 11% of the PIM group vs none in the EM group.

## Short Arm Casting Effective in Type A2 Fractures in the Distal Radius

Written by Emma Hitt Nichols, PhD

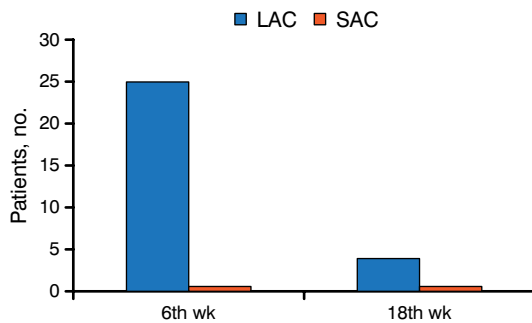
Short arm casting with a 3-point molding resulted in improved flexion, supination, and pronation compared with long arm casting in patients with type A2 fractures of the distal radius. Amir R. Kachooei, MD, Mashhad University of Medical Sciences, Mashhad, Iran, presented data from a study [NCT02286661] evaluating the treatment of type A2 fractures of the distal radius by casting.

About 17% of fractures are of the distal radius, with about two-thirds requiring surgical treatment; however, initial treatment typically includes closed reduction and immobilization with a plaster cast [Walenkamp MMJ et al. *BMC Musculoskelet Disord.* 2014]. The purpose of this study was to assess outcomes of 2 different types of casting methods.

In this prospective, multicenter trial, 100 patients with distal radius fractures were randomly assigned to receive a short or long arm cast. All fractures were type A2, and patients with dorsal angulations  $> 20^\circ$ , radial shortening  $> 10$  mm, and extensive cortical comminution were excluded. Patients in the short arm cast (SAC) group had their wrist positioned in neutral rotation with volar-ulnar deviation. In the SAC, distal extension of the cast was to the metacarpophalangeal joints dorsally, and to the



Figure 1. Effect of Casting Type on Elbow Extension



LAC, long arm cast; SAC, short arm cast.

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proximal palmar crease volarly. The cast was extended proximally to 1 inch distal to the antecubital fossa and posteriorly to the olecranon. In the long arm cast (LAC) group, the elbow was positioned in 90° of flexion and the cast was extended to the middle of the arm.

Patients assigned to the LAC group were converted to an SAC at 4 weeks, and all patients had their casts removed at 6 weeks. Reduction failure was defined as >5 mm displacement or >5° of angulations. Range of motion was considered abnormal if there was >10° difference with the unaffected wrist. Baseline, preoperative characteristics including radial inclination in the plain anteroposterior view, dorsal tilt angulations in the lateral view, and radial shortening in the plain anteroposterior view were similar among the SAC and LAC groups.

Patients in the SAC group demonstrated greater range of flexion and extension of the elbow at 6 and 18 weeks compared with the LAC group; however, the difference between the groups decreased substantially by the 18th week (Figure 1).

Similarly, patients treated with the SAC experienced greater range of supination and pronation of the forearm at 6 and 18 weeks compared with patients who received the LAC, with the difference between the 2 arms decreasing by week 18. The SAC arm demonstrated fewer blisters and wounds compared with the LAC arm. There was no significant difference in distal radio ulnar joint instability and reduction loss between the 2 arms. Patients reported greater satisfaction with the SAC compared with the LAC. There was no evidence of malunion, nonunion, carpal tunnel syndrome, and compartment syndrome in either group.

Prof Kachooei stated that the data from this study indicate that an SAC with proper 3-point and interosseous molding provides good therapeutic outcomes in patients with a type A2 fracture.

## Improved Short-Term Outcomes With Volar Locking Plates, Immediate Mobilization in Wrist Fractures

Written by Emma Hitt Nichols, PhD

Use of volar locking plates and immediate mobilization for the treatment of distal radius fractures demonstrated greater improvement in functional, radiographic, and clinical scores compared with other treatment modalities, including casting and external fixation with 6 weeks of immobilization. Lidia Koval, MBBS, Mackay Base Hospital, West Mackay, Australia, presented data from a trial evaluating the use of a volar locking plate vs an external fixator or cast fixation in patients with a distal radius fracture.

Although the long-term outcomes associated with the treatment of distal radius fractures are similar across modalities, short-term outcomes are not well understood. Immediate immobilization of the wrists is important, yet it is inconvenient to the patient because it can cause loss of income and loss of independence. Therefore, regaining mobilization early is important. The purpose of this study was to evaluate the short-term outcomes of volar locking plates and immediate post-operative mobilization compared with conservative treatment with an external fixator and 6 weeks of immobilization in patients with a distal radius fracture.

In this prospective, single-center study, 50 patients with distal radius fracture who were recruited from 5 orthopaedic surgeons were randomly assigned to receive a volar locking plate with immediate mobilization post-operation, or casting or external fixator with or without Kirschner wires (K-wires) plus immobilization for 6 weeks postoperation. Functional outcomes were measured by the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire and the Patient-Rated Wrist Evaluation (PRWE) score. Clinical scores included range of motion, grip strength, and activities of daily living (ADLs), and radiologic outcomes were measured by radiography.

In the volar locking plate arm, the DASH score was lower ( $P=.063$ ) and the PRWE was significantly lower ( $P=.007$ ) compared with the immobilized arm. In addition, patients who received the volar locking plate demonstrated significantly greater grip strength compared with the immobilized arm ( $P=.012$ ). Patients in the volar locking plate arm also demonstrated significantly improved ADLs compared with patients in the immobilized arm ( $P=.036$ ). Radiologic evidence demonstrated that volar slope both after reduction and at follow-up was significantly better in the volar locking arm compared with the immobilized arm ( $P=.01$  and  $P=.001$ ).