

AT614: Foundations of Sports Injury Rehabilitation Annotated Rehabilitation Evidence Assignment #3

Dias JJ, Dhukaram V, Abhinav A, Bhowal B, Wildin CJ. Clinical and radiological outcome of cast immobilization versus surgical treatment of acute scaphoid fractures at a mean follow-up of 93 months. *J Bone Joint Surg Br.* 2008;90:899-905.

Because scaphoid fractures are the most common of the carpal bones, it is necessary to determine whether operative or non-operative treatment has the best long-term outcomes. According to the literature, medium and long-term outcomes and methods used to treat scaphoid fractures are not well-documented. Specifically, the few studies reporting long-term outcomes are retrospective studies, which do not represent ideal study designs. Therefore, the purpose of this study was to examine the mid-term seven-year outcomes of early fixation of a scaphoid fracture or treatment with a below-elbow cast, followed by delayed fixation after eight weeks if non-union was found.

All patients attending the Leicester Royal Infirmary between October 1996 and November 1999 with a scaphoid fracture were included in the study. Children (<16 years) and patients with fractures of the scaphoid tuberosity, arthritis of the wrist, multiple injuries, and significant illnesses were excluded. 88 patients with a bicortical scaphoid fracture of the waist were prospectively randomized to undergo early fixation or non-operative treatment. 44 patients were randomized to have open reduction and internal fixation (ORIF) using a Herbert screw or a cannulated Whipple screw with an additional Kirschner wire. 44 patients were treated non-operatively with immobilization of the wrist in a below-elbow cast for eight weeks with the thumb free. At a 93 month follow-up, 71/88 patients were assessed by questionnaire; 62/71 reported for additional clinical examination. There were no significant differences in mean grip strength, pinch strength, ROM, Patient Evaluation Measure, or Patient-Rated Wrist Evaluation between treatment groups. There was no significant difference noted in malunion or radioscaphoid arthritis between treatment groups.

According to the AAOS, this study is consistent with Level I Prognostic Study. The strength of recommendation (SORT) is a level 1(A) study. Total quality of this study according to the critical appraisal checklist is 30/48.

The results of this study are clinically relevant to the population athletic training clinicians treat. Specifically, scaphoid fractures are relatively common in competitive athletics, especially in contact sports and those with a high likelihood of 'falling on an outstretched hand'. Based on the nature of athletics and the timeliness with which athletes have the desire to and are expected to return to play, it is important for the athletic training clinician to know that both operative and non-operative long-terms outcomes after scaphoid fracture are similar. It is helpful for the athletic training clinician to know that non-operative treatment did not have lower disease-orientated or patient-orientated outcomes; specifically, if non-operative treatment is comparable to operative, casting may allow an athlete to participate during the competitive season when surgery may not otherwise allow the possibility. In regards to patient education implications, it is imperative that patients be made aware of the necessity to report any low-grade or constant wrist pain, as late reporting of wrist pain in the presence of a scaphoid fracture may precipitate unnecessary poor long-term outcomes because of the poor vascularity of the scaphoid and subsequent necrosis frequently associated with delayed healing of scaphoid fractures.

Center of Evidence-Based Medicine Worksheet: Prognosis

I. Are the results in the study valid?

- Primary Guides
 - Sample size was calculated to detect a 10% difference in grip-strength, wrist movement, and the Patient Evaluation Measure to provide a 90% power with $p < 0.05$.
 - Follow-up was made on ~80% of the initial subjects; however, rationale for the 93 month-mark as the follow-up was not made.
- Secondary Guides
 - Both disease-oriented and patient-oriented outcomes were measured.

II. What are the results?

- At a 93 month follow-up, 71/88 patients were assessed by questionnaire; 62/71 reported for additional clinical examination.
- There were no significant differences in mean grip strength, pinch strength, ROM, Patient Evaluation Measure, or Patient-Rated Wrist Evaluation between treatment groups.
- There was no significant difference noted in malunion or radioscaphoid arthritis between treatment groups.

III. Will the results help me in caring for my patients?

- Because I work in the secondary school setting, mean age of the patients was higher in both treatment groups than the patients I treat. No other descriptive statistics stating the mechanism of injury or other information were provided to allow me to generalize the results to the adolescent population.
- Based on the results of this study, I will be more confident that immobilization does not have a greater risk of non-union or poor long-term outcomes than with internal fixation for scaphoid fracture. Additionally, the results of this study provide me with useful information to share with patients who may be deciding whether operative or non-operative treatment for scaphoid fracture is more optimal.