**Assessment of Complications Associated with Casting of Acute Distal Radius Fractures in Adults**

Joseph Kahan MD MPH[1]; Giscard Adeclat MD[1]; Anna Jorgensen MD[2]; Andrea Halim MD[1]
[1]Department of Orthopaedics and Rehabilitation, Yale University School of Medicine
[2]Department of Orthopedic Surgery, University of Connecticut Health Center

**Background:** Controversy exists regarding the closed treatment of distal radius fractures. Circumferential casting of acute distal radius fractures has been shown to be safe in children, however few studies have demonstrated its efficacy in adults. The purpose of this study was to assess the complications of casting of acute distal radius fractures in a consecutive series of adult patients.

**Methods:** 29 consecutive patients treated by a single hand surgeon with closed reduction and short arm casting were retrospectively reviewed. Inclusion criteria included isolated injury, age greater than 18 years old, and a normal neurovascular exam at time of presentation. Demographics were recorded, in addition to mechanism of injury, acuity of injury, and need for reduction. Patients were followed for a minimum of 4 weeks after their injury. Complication rates associated with casting were recorded, including rates of compartment syndrome and acute carpal tunnel syndrome. Cast replacement prior to 4 weeks of treatment was also recorded.

**Results:** A total of 29 patients were included in the study. Mean patient age was 62.3 years old with a range from 18 to 89 years old. 69% (n = 20) of patients were female and 69% (n = 20) had left sided injuries. The majority of patients, 83% (n = 24) sustained their injuries from a ground level fall, and 80% (n = 23) presented on the day of injury. 28% (n = 8) had radiographic evidence of intra-articular extension, and 41% (n =12) required a reduction. There were no patients who developed compartment syndrome or acute carpal tunnel syndrome as a result from the casting. The majority of patients, 65% (n = 19) maintained their same Emergency Department cast for at least 4 weeks.

**Conclusion:** In this series of 29 consecutive patients, there were no major complications associated with casting of acute low energy distal radius fractures in adults with a normal neurovascular exam. Initial casting can be a safe and effective treatment for both displaced and non-displaced distal radius fractures in adult patients with a normal neurovascular exam. Further study is needed to evaluate this treatment in a larger series of patients and to determine the efficacy of casting in maintaining reduction.

Table 1: Initial Casting of Patients with Low Energy Distal Radius Fractures

| | |
|---|---|
| Number | 29 |
| Mean Age (Range) | 62.3 (18 - 89) |
| Gender | |
| Male | 31% (n = 9) |
| Female | 69% (n = 20) |
| Side | |
| Left | 69% (n = 20) |
| Right | 31% (n = 9) |
| Mechanism | |
| Ground Level Fall | 83% (n = 24) |
| Fall from Height | 7% (n = 2) |
| Motor Vehicle Accident | 10% (n = 3) |
| Time from injury | |
| Day of injury | 80% (n = 23) |
| 1 day after injury | 10% (n = 3) |
| > 2 days after injury | 10% (n = 3) |
| Intra-articular extension | 28% (n = 8) |
| Decreased Sensation at Initial Exam | 0% (n = 0) |
| Concurrent Hand Injuries | 0% (n = 0) |
| Reduction Performed | 41% (n = 12) |
| Casting Complications | |
| Compartment Syndrome | 0% (n = 0) |
| Acute Carpal Tunnel Syndrome | 0% (n = 0) |
| Cast changed prior to 4 weeks | 35% (n = 10) |
| Cast change at 1 week | 7% (n = 2) |
| Cast change at 2 weeks | 14% (n = 4) |
| Cast change at 3 weeks | 14% (n = 4) |
| Surgery for Acute Distal Radius Fracture | 0% (n = 0) |