

PAPER 05

Clinical Paper Session 1: Distal Radius
Friday, October 4, 2013 • 8:45–8:51 AM
Category: Evaluation/Diagnosis/Clinical Treatment
Keyword: Hand

Fragment-Specific Fixation of Intra-articular Distal Radius: The Role of Arthroscopy to Confirm Anatomical Reduction

Level 4 Evidence

◆ Mari Thiar, MBBS

◆ Ajmal Ikram, MD

Hypothesis: The goal of this study was to discover whether intraoperative arthroscopy assists in the reduction of intra-articular distal radius fractures when using fragment-specific fixation.

Methods: All patients who presented at our institution with intra-articular distal radius fractures were included. A computed tomography scan was done preoperatively. Intraoperatively, the fragments were reduced and fragment-specific fixation was used. The reduction was confirmed with an image intensifier. After the reduction, a scope was inserted into the radiocarpal joint to evaluate the reduction. Other pathology was documented and treated accordingly. Seventy-one patients were included in the study. One patient needed the fracture to be reduced again and 1 had a pin repositioned because it was intra-articular. Thirty patients (42%) had other intra-articular pathology; but only 2 (3%) needed further treatment. Six patients had complications: 1 had migrating hardware (K-wires backing out) and fracture collapse, and 5 had only fracture collapse. Thus, the complication rate was 8.5% for fracture collapse and 1.4% for migrating hardware.

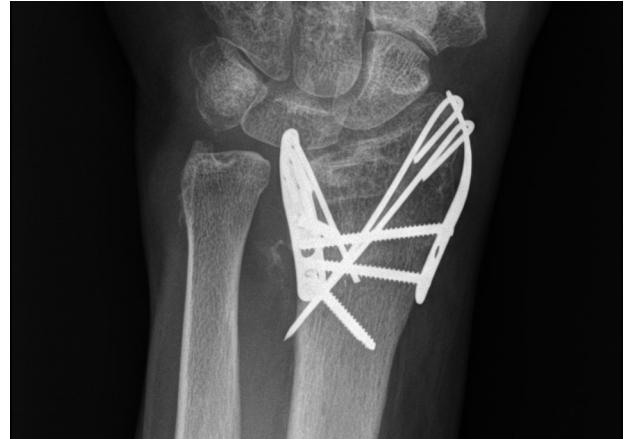
Results: A total of 85% of the patients had no gaps and 77% of the patients had no steps. Only 1 patient needed refixation of a fracture fragment (1.4%) and 1 had a K-wire reinserted because it was intra-articular (1.4% of patients). An array of other pathology was seen intra-articularly, including 5 osteochondral defects, 20 triangular fibrocartilage complex tears (only 1 needed to be repaired), 4 bruised scapholunate ligaments, 3 scapholunate tears, 1 capsular tear, and 1 undisplaced scaphoid fracture (open reduction internal fixation was done).

Summary:

- The use of arthroscopy intraoperatively was shown not to assist in fracture reduction. This is relevant because intraoperatively, arthroscopic

assistance is controversial. To our knowledge, no study exists combining fragment-specific fixation and arthroscopy.

- The procedure allowed for a detailed inspection of the joint for other pathologies and showed that 42% of patients had additional pathology, although a large percentage did not have to be treated (97%).
- Incidentally, the main surgical approach when we used fragment-specific fixation was laterally from the radial styloid and not the traditional Henry's approach.
- Fixating the radial styloid from laterally stabilized the fracture in most cases.
- We also found that when a second fixation was needed, we used the dorsal ulnar approach, which left the volar side completely intact.



PAPER 06

Clinical Paper Session 1: Distal Radius
Friday, October 4, 2013 • 8:55– 9:01 AM
Category: Evaluation/Diagnosis/Clinical Treatment
Keyword: Wrist

Residual Radial Translation of Distal Radius Fractures— Defining a New Radiographic Parameter and Occult Cause of DRUJ Instability

Level 2 Evidence

◆ Greg Couzens, MD

◆ Livio Di Mascio, MD

• Mark Ross, FRACS

Hypothesis: Commonly used radiographic parameters that assess distal radius fracture reduction, do not take into account radial translation of the distal fragment, a cause of distal radioulnar joint instability.¹ We hypothesized that having a normal radiographic parameter for residual radial translation will equip surgeons with a reliable and reproducible tool that can identify and evaluate the extent of this problem and direct appropriate surgical management.

Methods: Anteroposterior radiographs with no evidence of an acute fracture, dislocation, or history of previous fracture or dislocation were identified. These radiographs were of skeletally mature individuals with no history of distal radioulnar instability. Radiographs were excluded if the distal 10 cm of the radius was not visible or if there was more than 5° radial or ulnar deviation of the wrist, assessed by deviation of the long axis of the middle metacarpal from that of the radius.

Radial translation was measured by drawing a line along the ulnar aspect of the radius, into the proximal row of the carpus. This line intersects the lunate. The point of intersection was evaluated by drawing a second line along the transverse width of the lunate on the anteroposterior radiograph, which was parallel to the distal radial articular surface. The point of intersection was evaluated measuring from the radial side of the lunate. A single author repeated these measurements for all radiographs studied at 2 separate sittings to evaluate for intraobserver variability. In an attempt



to evaluate for interobserver variability, 2 fellowship-trained upper limb surgeons took measurements on 25 of the radiographs. The results were collated and statistical analysis was performed.

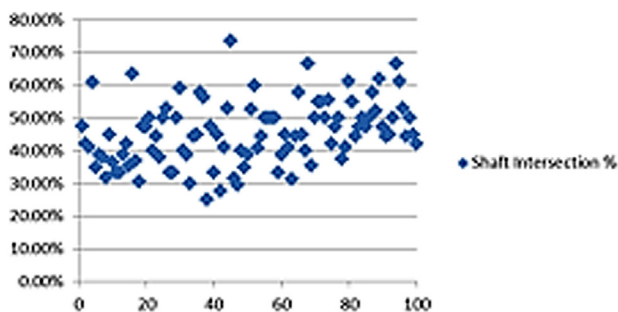
Results: A total of 100 radiographs fulfilling the study entry criteria were identified. There were 42 females and 58 males with a mean age of 43 years (range, 18–66 y). For all individuals studied, the point of intersection left a mean of 45.48% (range, 73% to 25%) of the lunate remaining on the radial side. Good interrater (intraclass correlation coefficient, 0.967) and intrarater (intraclass correlation coefficient, 0.780) reliability was observed.

Summary:

- With the advent and increasing popularity of volar locked plating systems for use in the treatment of distal radius fractures, there is potential for the creation of a stable construct with a radial translation malreduction.
- We propose a new parameter to measure radial translation, so that distal radioulnar joint instability can be minimized after distal radius fractures.
- This radiological parameter has been found to be reliable and reproducible.



Shaft Intersection %



REFERENCE

1. Ross M, Heiss-Dunlop W. Volar angle stable plating for distal radius fractures. In: David JS, Slutsky DJ, eds. *Principles and Practice of Wrist Surgery*. Philadelphia: WB Saunders; 2010:126–139.

- Contracted Research with: Integra Life Sciences, Lima Orthopaedics
- Royalties/Honoraria received from: Ascension Orthopaedics, Surgicraft
- Consulting Fees (eg, advisory boards) received from: Ascension Orthopaedics, Lima, LMT surgical, Surgicraft
- Receipt of Intellectual Property Rights/Patent Holder with: Ascension Orthopaedics, Surgicraft
- Other Financial/Material Support received from: Depuy

PAPER 07

Clinical Paper Session 1: Distal Radius
 Friday, October 4, 2013 • 9:05–9:11 AM
 Category: Evaluation/Diagnosis/Clinical Treatment
 Keyword: Wrist

Demonstration of an Effective Postoperative Pain Management Protocol in Distal Radius Fractures

Level 4 Evidence

- ▲ David L. Nelson, MD
- ◆ ▲ Brandon La

Hypothesis: A multimodal pain program can help pain control in a common, moderately painful procedure (open reduction internal fixation distal radius fracture with volar plate). The effectiveness was assessed by a patient-centered outcome measure. The program could serve as an index of pain management effectiveness for other hand surgery practices.

Methods: All patients undergoing open reduction internal fixation by a single surgeon for distal radius fracture within 7 days postinjury had a pain control program previously presented to this Society in 2002. The components included: (1) preoperative counseling regarding expected pain, (2) preoperative oral long-acting acetaminophen and long-acting nonsteroidal (celecoxib), (3) pre-incision lidocaine block, (4) intraoperative bupivacaine block, (5) non-as-needed oral long-acting acetaminophen and long-acting nonsteroid (celecoxib) for 48 hours postoperatively and thereafter as needed, (6) hydrocodone/acetaminophen 5:500 (Vicodin) Q4H for break-through pain, (7) postoperative telephone call, and (8) assessment of the efficacy of the pain management at the first follow-up visit. The outcome measure was the number of opioid doses (hydrocodone/acetaminophen 5:500) taken within 10 days of surgery. The patient alone determined whether the pain required opioid medication. The surgeon had no input into the evaluation of pain. Exclusion criteria were multiple trauma and concurrent use of opioids for other conditions. Data were verified by an independent ASSH member who: (1) examined the operative casebook (no cases were skipped), (2) reviewed patient charts (data were correct), (3) contacted patients (to verify data in charts), and (4) examined the study database (all data were entered correctly).

Results: A total of 72 consecutive patients were eligible for the study; 59 patients met inclusion criteria and 13 were excluded. There were 10 males and 49 females, and 3 bilateral fractures. The average age was 62 years (range, 20–89 years). The average number of hydrocodone/acetaminophen doses taken within 10 days of surgery was 0.68 pills. A total of 72 of patients decided that the pain did not require opioids, and therefore took none. Eight percent took 1 pill, 6% took 2, 5% took 4, and 3% took 5. No patient asked for a refill. The review by an independent ASSH member verified the collected data.

Summary: The pain management protocol resulted in low usage of narcotic analgesics. Volar plating of distal radius fractures is a common procedure and is performed in a uniform manner by most surgeons. This makes volar plating a suitable model for evaluation of pain management across different practices, without requiring significant additional time for postoperative assessment, because only 1 question is required.

- ▲ This presentation will discuss Celebrex by Pfizer
- Royalties/Honoraria received from: Orthofix

◆ Speaker has nothing of financial value to disclose