



Intraoperative evaluation of DRUJ instability through dorsal stress radiography in distal radius fractures

Samuel Baek, MD, MS¹; Geum-Ho Lee, MD¹; Seok Kim, MD¹; Tae Min Kim, MD, MS²; Myung Ho Shin, MD³; Seoung Joon Lee, MD, PhD⁴
¹Seoul Red Cross Hospital, Seoul, Korea, Republic of (South); ²Yonseigunwoo Hospital, Seoul, Korea, Republic of (South); ³CM Hospital, Seoul, Korea, Republic of (South); ⁴Konkuk University, School of Medicine, Seoul, Korea, Republic of (South)

Introduction

- Certain type of injury of the triangular fibrocartilage complex associated with distal radius fracture can result in distal radioulnar joint instability (DRUJ).
- Untreated DRUJ instability may lead to poor result in the treatment of acute distal radius fractures.
- The aim of this study was to evaluate DRUJ instability in distal radius fractures through dorsal stress radiography comparing the affected and unaffected wrists intraoperatively.

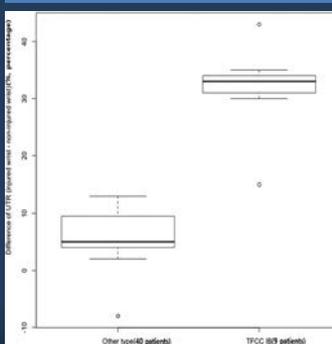
Materials and Methods

- 49 patients with a distal radius fracture after volar plate fixation
- Dorsal stress radiography was used to evaluate both affected and unaffected wrists peri-operatively to detect DRUJ instability (Fig. 1, 2).
- The ulnar translation ratio (UTR) was measured through the dorsal stress radiograph. (Fig. 3).
- Arthroscopic examination was performed on all affected wrists according to Palmer's and Atzei classification.
- Peripheral TFCC tears were confirmed by trampoline test and hook test by inserting a probe into the 6-R portal.

Figure 3



Figure 4



Results

- The UTR of the affected wrist and the TFCC injury Palmer-type IB tendency were positively correlated (odds ratio: 1.18, p-value: 0.002) (Table 1).
- Additionally, as the UTR difference between the affected and unaffected wrists enlarged, it revealed a significant DRUJ instability tendency due to Palmer-type IB TFCC injury (p-value: 0.000006, Wilcoxon rank-sum test) (Fig. 4).
- In addition, probit analysis showed that the probability of TFCC Palmer-type IB was more than 95% when the UTR difference value was 14.28 or more (Fig. 5).

Conclusions

- Dorsal stress radiography is a reliable, simple procedure to evaluate DRUJ instability intraoperatively (Fig. 6).
- UTR value from dorsal stress radiography could be useful for evaluating DRUJ instability associated with distal radius fracture.

Table 1

Affected wrist	Odds ratio	95% Confidence Interval	P-value	
TFCC Palmer-type IB injury	1.18	1.12–1.24	0.002	
Ulnar Styloid fracture	Tip	0.99	0.97–1.01	0.721
	Base	1.05	1.02–1.08	0.08

Figure 5

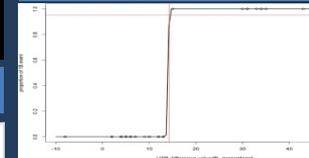


Figure 1



Figure 2



Figure 6

