

William L. Wang, MD; Asif M. Ilyas, MD, FACS

The Rothman Institute at Thomas Jefferson University Hospital | Philadelphia, PA

INTRODUCTION

- Scapholunate (SL) ligament injuries can occur concomitantly with distal radius fractures (DRF) and the management of acute SL injury in the setting of DRF remains controversial.
- Chronic SL instability is thought to initiate scapholunate advanced collapse (SLAC) and repair of an acute SL injury may theoretically prevent carpal instability and subsequent disease progression.
- The purpose of the study is to identify the radiographic incidence of SL widening in DRF treated with volar plate fixation and to determine the functional outcomes of DRF with concomitant radiographic SL-widening.

MATERIALS & METHODS

- One hundred and seventeen patients with DRF, with and without radiographic SL-widening, and treated with volar locked plating were prospectively enrolled.
- No SL ligament repairs or reconstructions were performed in any cases.
- Patients with DRF with radiographic criteria for SL widening were compared to those without. Patients were evaluated at 3 months and 1 year post-operatively with QDASH and PRWE questionnaires.
- Independent student t-test and analysis of variance (ANOVA) was used to compare differences in continuous variables between the two cohorts.

TABLE & FIGURES

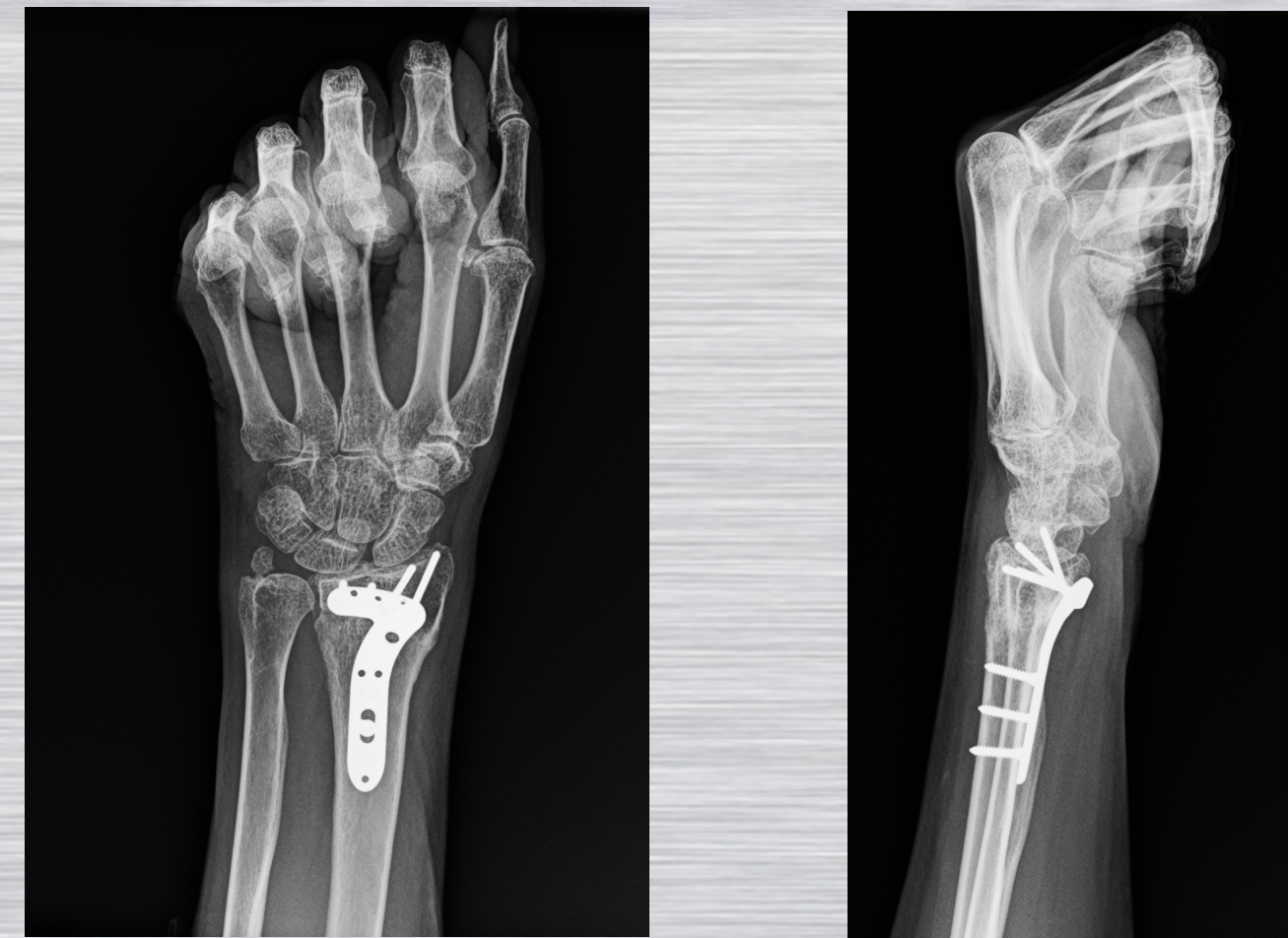


Figure: Standard PA and lateral view of a left wrist status post open reduction internal fixation with a volar plate demonstrating radiographic scapho-lunate widening

Table 1: Comparison of Demographic Factors of Cohort with and without SL widening

	SL Widening		Total	p-value
	Not Present (n=86)	Present (n=31)		
Age	60.8 (15.7)	65.4 (10.3)	62.0 (14.6)	0.127
Follow-up (weeks)	68.3 (21.9)	60.7 (15.5)	66.3 (20.6)	0.077
Female Gender	72 (83.7%)	25 (80.1%)	97 (83.0%)	0.697
BMI	26.5 (5.1)	26.3 (5.8)	26.4 (5.23)	0.881
Dominant Extremity Injury	39 (45.3%)	13 (41.9%)	52 (44.4%)	0.743
AO fracture Classification				
Type A	28 (32.6%)	8 (25.8%)	36 (30.8%)	0.485
Type B	10 (11.6%)	4 (12.9%)	14 (12.0%)	0.851
Type C	48 (55.8%)	19 (61.3%)	67 (57.2%)	0.597

Table 2: SL Widening at immediate post-op, 3 months, and 12 months

SL Widening	Immediate Post-op	3 months	12 months
<2 mm	86 (73.5%)	86 (73.5%)	86 (73.5%)
2-3 mm	27 (23.1%)	24 (20.5%)	23 (19.7%)
3-4 mm	4 (3.4%)	6 (5.1%)	7 (6.0%)
>4 mm	0 (0%)	1 (0.9%)	1 (0.9%)

Table 3: Range of Motion and Functional Outcome Scores

	SL Widening		p-value
	Not Present (n=86)	Present (n=31)	
3 Months			
Wrist Extension	60.8° (15.7)	52.4° (21.7)	0.034
Wrist Flexion	60.4° (17.7)	53.0° (20.8)	0.075
Supination	80.9° (10.6)	79.3° (16.6)	0.558
Pronation	81.1° (10.2)	78.4° (17.0)	0.342
Volar Tilt	6.1° (5.9)	6.5° (5.4)	0.771
Radial Inclination	23.4° (6.1)	23.5° (3.4)	0.942
Radial Height (mm)	11.23 (3.12)	12.29 (2.90)	0.168
Ulnar Variance (mm)	0.41 (1.75)	0.69 (2.71)	0.579
Articular Step off (mm)	0.06 (0.25)	0.33 (0.52)	0.042*
PRWE	46.8 (22.3)	37.5 (22.0)	0.055
Quick DASH	14.5 (18.3)	19.5 (18.0)	0.211
1 Year			
Wrist Extension	71.8° (12.0)	64.5° (15.4)	0.023
Wrist Flexion	69.8° (10.7)	66.9° (11.8)	0.273
Supination	85.4° (5.9)	86.2° (5.1)	0.536
Pronation	83.5° (5.3)	85.8° (4.5)	0.061
Volar Tilt	5.5° (6.2)	6.9° (5.0)	0.379
Radial Inclination	23.1° (4.3)	23.0° (3.8)	0.897
Radial Height (mm)	12.12 (2.56)	12.25 (3.16)	0.867
Ulnar Variance (mm)	0.30 (1.32)	0.70 (1.60)	0.286
Articular Step off (mm)	0.05 (0.21)	0.11 (0.32)	0.348
PRWE	6.8 (12.6)	5.0 (5.4)	0.451
Quick DASH	6.9 (11.7)	6.6 (7.5)	0.906

RESULTS

- Thirty-one (26.5%) patients were found to have radiographic evidence of SL widening.
- Patients with concomitant SL widening had less wrist extension at 3 months (52.4 degrees versus 60.8, p=0.034) and at 1 year (64.5 degrees versus 71.8, p=0.023).
- The group with SL widening had greater articular step off at 3 months (0.33 versus 0.06, p=0.042), but no difference at 1 year (0.11 versus 0.05, p=0.348).
- There were no differences in wrist flexion, supination, pronation, volar tilt, radial inclination, radial height, ulnar variance, PRWE scores, and Quick Dash scores at 3 months and 1 year.

CONCLUSION

- Radiographic SL-widening is a common finding associated with DRF undergoing surgical repair.
- No association with specific fracture pattern or SL injury type was identified.
- There are similar clinical outcomes between those with untreated SL widening compared to those without an SL widening at 1 year post-operatively.