

Immobilization Constructs in Nonoperative Distal Radius Fractures: Do We Need to Immobilize the Elbow?

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INTRODUCTION

- Fractures of the distal radius are among the most common orthopaedic injuries and are often treated conservatively with immobilization
- Whether to immobilize the elbow and theoretically improve control of pronation/supination remains controversial
- The aim of this study was to assess the existing literature for randomized controlled trials (RCTs) comparing radiographic parameters, requirement for operative intervention, and patient-reported functional outcomes between conservatively managed distal radius fractures treated with short-arm (SA) and long-arm (LA) immobilization

METHOD

- A systematic review and meta-analysis was conducted of all RCTs examining conservatively managed distal radius fractures comparing SA and LA immobilization constructs
- Outcomes of interest
 - Change in radiographic parameters (loss of volar tilt, radial height, and radial inclination)
 - Loss of reduction
 - Conversion to operative treatment
 - Patient-reported functional outcomes (DASH or quick DASH)

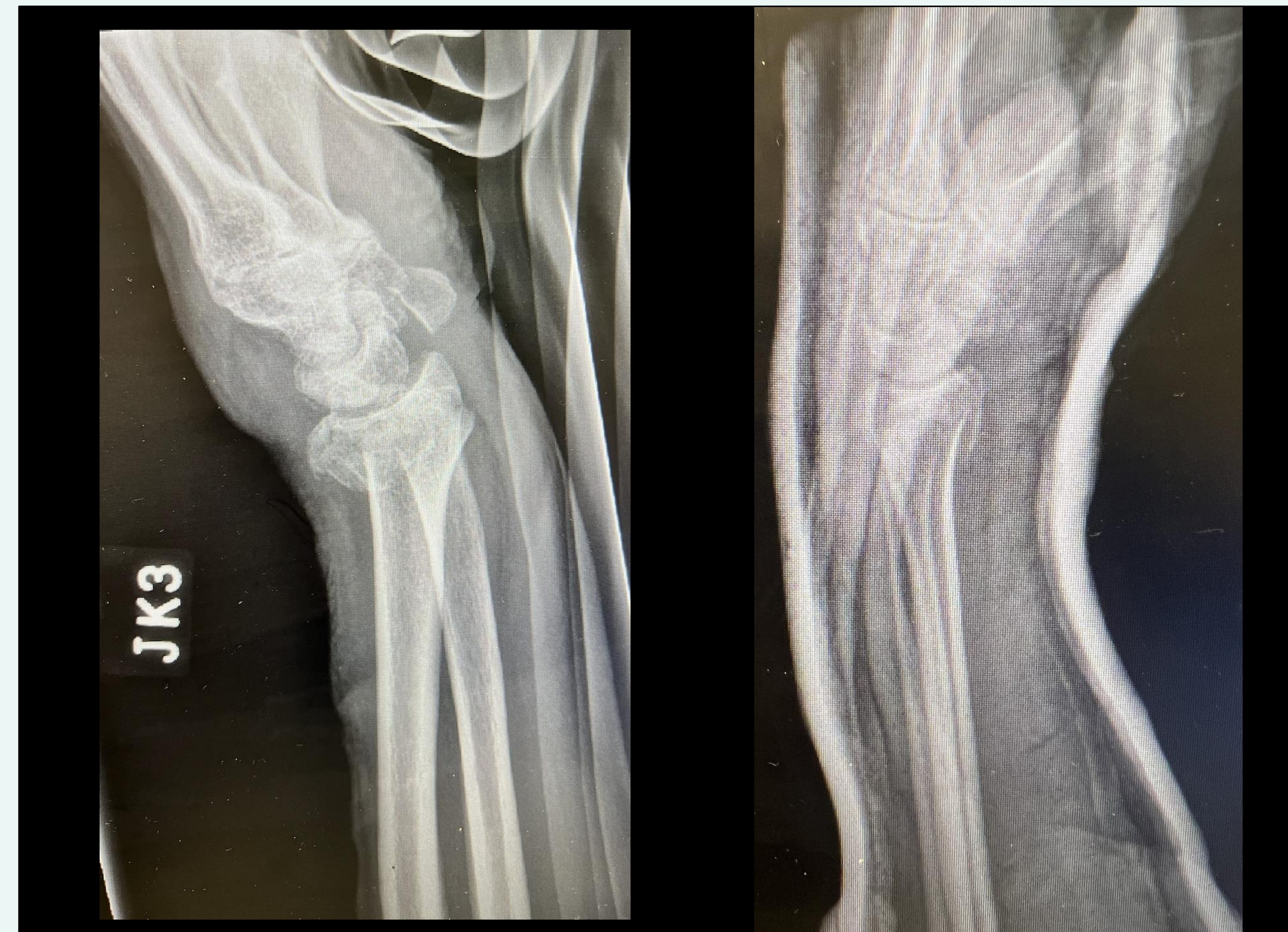


Figure 1: Pre- and post-reduction radiographs of a distal radius fracture placed in a reverse sugar-tong (short-arm) splint.

DISCUSSION

- Nine studies involving 983 cases were included in this review, including 497 treated with SA and 486 treated with LA constructs
- There were no differences with regards to volar tilt ($p = 0.83$), radial height ($p = 0.83$), radial inclination ($p = 0.35$), loss of reduction ($p = 0.33$), conversion to operative treatment ($p = 0.33$), or patient-reported functional outcomes ($p = 0.10$)

CONCLUSION

- The results of this review suggest that both SA and LA are acceptable forms of immobilization for conservatively managed distal radius fractures
- Providers should consider the use of SA constructs to allow for less restrictive immobilization of distal radius fractures

Author, Year	IC	N	Lost to FU	Loss of Reduction	Change in VT	Change in RH	Change in RI	Required ORIF	DASH Score
Bong 2006 (20)	SA	38	NR	16	3.32	1.72	1.90	NR	62.00
	LA	47	NR	17	3.03	1.58	2.06	NR	70.00
Camur 2021 (5)	SA	62	8	2	4.10	2.70	1.70	0	32.60
	LA	65	1	3	1.30	0.50	0.60	4	37.50*
Caruso 2019 (21)	SA	36	1	NR	7.00	1.33	2.83	1	71.70*
	LA	36	1	NR	8.67	2.33	3.33	1	71.90
Dib 2022 (19)	SA	143	8	44	4.11	1.59	2.83	7	59.00
	LA	137	11	31	3.53	1.63	2.54	7	59.90
Gamba 2017 (22)	SA	40	1	NR	10.8	NR	4.60	NR	NR
	LA	32	1	NR	10.6	NR	5.60	NR	NR
Grafstein 2010 (23)	SA	31	NR	5	NR	NR	NR	2	NR
	LA	30	NR	9	NR	NR	NR	6	NR
Mahmoudi 2019 (24)	SA	40	0	NR	NR	NR	NR	NR	7.19*
	LA	40	0	NR	NR	NR	NR	NR	16.02*
Okamura 2021 (25)	SA	58	6	34	7.35	24.31	2.61	5	45.01
	LA	59	5	35	6.64	24.56	3.31	6	70.40
Stevens 2022 (17)	SA	49	NR	12	NR	NR	NR	10	NR
	LA	40	NR	8	NR	NR	NR	10	NR
Total	SA	497	24 (4.8%)	113 (30%)	5.51	1.92	2.70	25 (6.6%)	NA
	LA	486	19 (3.9%)	103 (27%)	4.66	1.63	2.60	34 (9.3%)	NA

Table 1: Study outcome data in nine randomized controlled trials assessing above versus below elbow immobilization of conservatively managed distal radius fractures