Full Weightbearing After Dual Fixation of Clavicle Fractures Appears Safe and Effective: A Multicenter Comparative Study

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Purpose: Recently, dual plating of displaced clavicle fractures has become a popular construct to reduce implant prominence while optimizing balanced fixation. Traditionally, patients have a postoperative period consisting of a limited weightbearing period after clavicle fracture fixation. However, dual plate fixation may allow for immediate weightbearing and facilitate earlier rehabilitation, especially in polytraumatized patients. The current study aimed to evaluate bony healing and complication rates between different weightbearing protocols following dual plating of displaced diaphyseal clavicle fractures.

Methods: There were 69 patients from 2 geographically diverse, Level I trauma centers who sustained diaphyseal clavicle fracture and were subsequently treated with dual plate fixation from 2014 to 2022. Patients were included with minimum of 1-year follow-up or until radiographic and clinical union were achieved. Patients were either non-weightbearing (NWB; strict sling immobilization) (N = 11), partial weightbearing (PWB; limited to 5 lb) (N = 36), or weightbearing as tolerated (WBAT; no limitations and subjective pain as guide) (N = 22) based on surgeon preference. Demographic, comorbidity, and surgical data were collected. Complications, reoperation rates secondary to loss of reduction/fixation, and union rates were compared between weightbearing groups using Fisher's exact test.

Results: There was no significant difference in union rates (NWB 100%, PWB 97.2%, WBAT 95.45%; P = 0.99). There was no significant difference in overall reoperation rate between weightbearing groups (NWB 0%, PWB 11.11%, WBAT 18.18%; P = 0.30). The majority of reoperations were due to symptomatic hardware removal (N = 4). One patient in the PWB group required revision surgery for explicit radiographic nonunion. One patient in the WBAT group required irrigation and debridement for superficial wound infection. For fracture pattern, the most common configuration were simple fractures (69.60%, N = 48), followed by comminuted (30.4%, N = 21). The WBAT group had the most comminuted fractures (N = 12) while the PWB and NWB groups had the majority of simple fractures (N = 38). The most common fixation strategy was bridge plating, followed by compression plating, and neutralization plating with lag screws.

Conclusion: Full weightbearing after dual plate fixation for diaphyseal clavicle factures may be safe and effective. In comparison, limited weightbearing does not seem to offer any clinical benefit related to union and complication rates. Allowing patients to weightbear immediately after clavicle fracture fixation may improve rehabilitation and patient quality of life, especially in polytraumatized patients who require crutch/walker weightbearing for concomitant injuries to optimize healing.

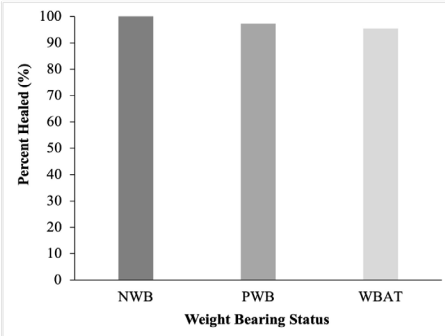
Fig 1A

Sociodemographics

Variable	WBAT	PWB	NWB	P value
Total (n)	22	36	11	
Age (Mean ± SD)	41.68 ± 17.28	41.39 ±13.56	39.09 ± 11.61	P = 0.88
Gender (Male %)	72.7%	80.6%	91.0%	P = 0.46
BMI (Mean ± SD)	25.32 ± 7.09	24.52 ± 2.68	23.55 ± 2.42	P = 0.57
ASA (Mean ± SD)	2.54 ± 0.86	1.19 ± 0.40	1.18 ± 0.40	P < 0.0001
Smoking history (Yes %)	31.8%	11.1%	18.2%	P = 0.13

Fig 1B

Primary Outcomes



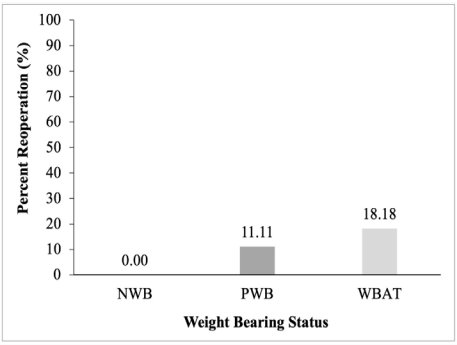


Fig 1C

Complications

Variable	WBAT	PWB	NWB	P Value
Healed? (% Achieving Bony Union)	95.45%	97.2%	100%	0.99
Complications (n)				
Loss of Reduction/Fixation Requiring Reoperation TOTAL	4	4	0	0.30
Neurovascularly Compromised	1	0	0	
Infection Requiring I&D	1	0	0	
Removal of Symptomatic Implants	2	2	0	
Heterotopic Ossification	0	1	0	
Nonunion	0	1	0	