Is Early Weight Bearing Safe in Geriatric Ankle Fractures?

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INTRODUCTION:
Geriatric ankle fractures are an increasingly common injury and present unique treatment challenges. Orthopaedic surgeons must weigh the benefits of early mobilization in a medically frail patient population against the challenge of maintaining reduction and fixation in osteoporotic bone. Previous work has suggested that immediate weight bearing following ankle fracture fixation is safe in non-geriatric patients. However, limited data is available regarding the safety of immediate weight bearing following fixation of geriatric ankle fractures utilizing standard open reduction internal fixation techniques.
METHODS:
This was a retrospective review of 128 consecutive patients age 65 or older that presented to a single level-1, academic trauma center between January 2013 and January 2023 with closed unstable rotational ankle fractures that were subsequently treated via open reduction internal fixation. 105 patients followed a standard non-weightbearing (NWB) postoperative protocol while 23 were allowed to weight-bear immediately (WBAT) in a CAM boot at all times. Patients were often made WBAT in the setting of polytrauma or significant medical comorbidities where there was concern that post-operative immobilization would be poorly tolerated. Demographic data, past medical history fracture classification (Weber, Lauge-Hansen) were recorded. The primary outcomes were hardware failure and postoperative complications. Secondary outcomes included length of stay, discharge destination (subacute rehab versus home), and PROMIS scores (global health, physical function, pain interference). Group differences in continuous variables were analyzed via Student's t-test while Fisher's exact tests were used to analyze the differences in categorical variables. Subgroup analysis based on patients' Lauge-Hansen classification was additionally performed to compare outcomes between WB and NWB within injury subtypes.
RESULTS:
There were significantly more patients requiring assistive devices, who were polytraumatized or had a history of diabetes and peripheral vascular disease in the WBAT group. There were no significant differences in fracture types between groups. There were no hardware failures in the WBAT group and three hardware failures in the NWB group, though this difference was not statistically significant. There was no difference in incidence of post-operative complications, discharge destination (subacute rehab versus home), time from admission to discharge, or rate of hardware failure between groups. There was no difference in PROMIS scores between groups. Patients who were made WBAT postoperatively did have a significantly shorter duration of time between injury (6 days) and surgery compared to the NWB group (9 days).
DISCUSSION AND CONCLUSION:
Immediate weight bearing does not appear to be associated with increased hardware failure or post-operative complications within this small, retrospective cohort of patients. These data add to the growing body of evidence which suggests that WBAT following standard ankle fracture fixation is likely safe for a select cohort of geriatric patients where pot-operative mobilization is an important goal.

Table 1. Demographics & Complications

n=128		n=105	n=23	
		NWB	WB	*p*-value
Age	Mean (SD)	75.66(6.33)	76.98(6.93)	
Sex	(%)			
	Male	27.62	21.74	0.795
	Female	72.38	78.26	
Race	(%)			
	Black	6.67	0	0.35
	Caucasian	92.38	100	0.349
	Other	0.95	0	0.999
BMI	Mean (SD)	32.94(24.51)	28.72(4.69)	0.105
Diabetes	(%)	22.86	91.30	<0.0001
Smoking status	(%)			
	Current	4.76	0.00	0.584
	Former	40	34.78	0.814
	Never	55.24	65.22	0.487
PAD	(%)	2.86	100.00	<0.0001
Ambulatory status	(%)			
	Independent	71.43	47.83	
	Assisted	28.57	52.17	0.048
Other injuries	(%)	5.71	21.74	0.027

Note: BMI: body mass index, PAD: peripheral arterial disease.

Table 2. Perioperative outcomes in all ankles

		n=105	n=23	
		NWB	WB	*p*-value
Days waiting for surgery	**Mean (SD)**	**9.21(5.80)**	**6.09(3.90)**	**0.003****
Admitted to inpatient		40.95	47.83	0.643
Postop time to discharge		4.09(4.17)	4.45(1.19)	0.686
Discharge destination				
	Home	69.52	65.22	0.804
	Rehab	30.48	34.78	0.804
	SAR	0.00	0.00	
Any postoperative complication		15.24	13.04	0.999
Postoperative HW failure		2.86	0.00	0.999

Table 3. PROMs

	n=105	n=23	
	NWB	WB	*p*-value
Pain interference	54(11.38)	50(13.16)	0.35
Physical function	34.54(11.01)	40.63(13.02)	0.571
Global health – PF	39.44(8.65)	36.75(3.66)	0.35

Note: PF: physical function.