## Effects of Displaced Lesser Trochanteric Fracture on Performance and Functional Outcomes in Elderly Patients with Intertrochanteric Fractures: A Retro-Prospective Cohort Study

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INTRODUCTION: This study aimed to compare postoperative performance and functional outcomes between intertrochanteric fracture patients with lesser trochanter (LT) displacements of <10mm and >10mm.

METHODS: We conducted a retro-prospective study, including patients aged ≥60 years with intertrochanteric fractures who underwent internal fixation at a Level-1 trauma center. 88 eligible patients were divided into two main groups based on the displacement of LT fragments in postoperative radiographs: Group I (44 patients) comprised cases with LT displacement < 10 mm, including intact LT fragments or LT displaced fractures less than 10 mm in both vertical and horizontal directions. Group II (44 patients) included cases with fractured LT displacement > 10 mm in any direction. Primary outcomes were patients' performance, assessed using the Functional Reach Test (FRT), Timed Up and Go Test (TUG), and 5-time Sit-to-Stand Test (5TSTS). Secondary outcomes were functional outcomes, including the Harris Hip Score (HHS), de Morton Mobility Index (DEMMI), and Barthel Index (BI). Assessments were conducted at 3 months and 1 year postoperatively.

RESULTS: The baseline characteristics were similar between the groups. Group I (LT displacement <10mm) had higher completion rates for performance tests at both 3 months and 1 year compared to Group II (LT displacement >10mm) (93.2% vs. 72.7%, p<0.001). At 3 months, Group I showed better results in FRT (15.80 cm vs. 12.16 cm, p=0.028) and TUG (47.71 sec vs. 67.55 sec, p=0.008), but not in 5TSTS (p=0.081). At 1 year, Group I continued to outperform in FRT (18.44 cm vs. 12.50 cm, p=0.003) and TUG (37.38 sec vs. 52.30 sec, p=0.028), while 5TSTS showed no significant difference (p=0.067). Functional outcomes at 3 months were significantly better in Group I for HHS, DEMMI, and BI (p<0.05). At 1 year, HHS and DEMMI remained superior in Group I (p<0.05), but BI showed no significant difference (p=0.067).

DISCUSSION AND CONCLUSION: Elderly intertrochanteric fracture patients with postoperative LT displacement >10mm had poorer postoperative performance as well as functional outcomes compared to those with lesser displacement <10mm, in short-term recovery trajectories (3 months and 1-year postoperative). This informs clinical decision-making regarding LT fragment reduction or fixation. as well as tailored rehabilitation strategies.

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	FUNCTIONAL REACH	TIMED UP AND GO S-TIME NT-TO-STAND	TABLE 1. Demographic and clinical characteristics of patients (n = 88)					TABLE 2. Patient performance in elderly patients with intertrochanteric fractures (n=73)			TABL	2 3. Patient functional r	fonal outcome in elderly patients with intertrochanteric fractures (n=58)		
			Characteristics	Total (critic)	11 displac < 10 mm (si44) > 0 %	20000000 P > 10 mm (mi 44) 0 N	P		<10 mm (s=41) > 10 mm (s=41) Mean 450 Mean 450	= 32) Difference P Mean (85% CI)		< 22 mm jn Mean 49	displacement =64] > 22 mm (s= 44) Mean VID	Difference Mean (RVA.C)	,
			Gender Male Female	27 50.7N 61 69.3N	25 36.49 28 63.69	11 25.0% 33 75.0%	0.248	FRET (one) 3 moeths 1 year	15.00 17.51 12.1616 18.64 18.52 12.5016	77 3.65 (0.36.7.83) 0.828* 61 5.94 (2.41.,6.47) 0.803*	105	f rearths 78.80 #10 Lyeer 74.11 ±10	162 65.68±12.38 0.84 68.57±10.31	8.11 (k.27, 12.96 4.55 (0.10, 8.99)	0.005* 0.045*
	A Transmission and A	C	Age (years) 63-79	28 51.8N	17 58.69	11 25.0%	0.289	3 months	47.71 ±30.66 87.55 ±3 12.56 ±36.65 52.56±3	177 -129.04 (-34.29.,-5.46) 0.008* 92 -14.92 (-38.59.,-1.25) 0.028*	DEM	Mi Emarths 49.82 EM	36.95 112.62	12.86 (7.00 ,18.77	<0.001*
	HARRIS HIP SCORE 0 (HRS)	IE MORTON MOBILITY BARTHEL INDEX INDEX (DEMIN) [80	80-89 2.90	43 48.9N 17 19.3N	18 40.91 9 20.51	25 56.8% 8 35.2%		STSTS (sec) 3 months	BROB 128.15 44.60.11	(10 5.52 (15.38,4.30) 0.081		.year \$1.93 ±16	.18 42.32413.33	9.61 (2.84,16.99	0.000*
	Martine and Internet	All the start of t	MeentSD.	82.84 ±7.59	81.09 25.14	\$5.80 ±6.97	0.406	1 year Pfrantindependent	35.35 ±22.66 42.02±3 11 First or Mer Whitney 2-test, * laged	(99 -6.67 (-06.61 ,3.27) -0.067	-	i year 83.52 ±10	152 77.55 ±18.28	6.86 (-1.02,13.25	0.067
	C		R L	45 51.1N 43 48.99	20 45.59 24 54.59	ni 25 56.9N 26 29 40.2N					-				
	D	100 100 100 100 100 100 100 100 100 100	OTA/AD classification 53 A1 83 A2	51 55.2N 53 60.2N	25 56.8% 17 38.8%	6 13.6N 36 81.8N									
	FIGURE 2: Mean postopensitive performance doplacement = 10mm] and Group II (UT dop Timed up and go test (1926), (2) 5-time Sir-S	PROJECT, Mass postspensive performance or functional score at 3 months and 1 year of Group I (17 displacement is 30mm) and Group II (17 displacement is 30mm). (b) the functional Reach Texil (1975, (R) Turned up and go texil (1976), (15) 5 drive three datased Texil (19753), (3) Harris (46 doine (4956), (1) de			2 45%	2 45%									
	values were significantly different between	Martin Medinity index (bMMM), and p justifier index (bi). The advance (*) indicates that the presented values were significantly different between Group I and Group II at the time with P < 0.05.		67 76.1N	23 52.5%	44 102%	00.0001								
from the tip of the LT to the horizontal line of the acetabular apex of the uninjured side.	The		LT Horizontal displace (mm)	7.80 ±5.67	4.15 12.23	9.71 ±6.00	<0.000*								
Sourceful (If displacement (a-V2) is the average of measurements at the corresponding on the CT to the lightest and lowed fracture sites of the CT togener.	sites		Briplant Dynamic hip blade PfNA	2 2.5% 66 97.7%	2 4.5% 42 95.59	0 DN 44 100%	0.494								
			Sergery within 48 hr yes no	44 50.0% 44 50.0%	22 58.09 22 58.09	22 50.0% 22 50.0%	1.000								
			TAD (mm)	18.87 15.21	18.53 25.09	19.22 ±5.55	0.517								
			Fre-op Batthel Index (BI)	92.68 #10.56	92.39 49.73	88.98 A11 18	0.068								
			Length of stay (day)	9.83 45.03	8.64 #3.62	11.02 ±5.93	0.008*								
			Able to complete all performance tests	71.01.00	0.00	11.71.76	0.011*								
			No	15 17.0%	3 6.8N	13 27.5%									
			Piter mean data were calculated with On separar lead or Faher's mast lead	The use of Independent Significant at F < 50	retroiet or Mari-Niti 6	trwy 2-348, for percentages	NO DO LOS OF								