

Which Surgical Method is More Effective in the Fifth Metatarsal Base Fracture?

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Introduction/Purpose: The aim of this study was to evaluate and compare the clinical and radiological results of internal fixation with headless cannulated screw and locking compression distal ulna hook plate for the fracture at the base of fifth metatarsal bone, Zone I.

Methods: From April 2012 to April 2015, thirty cases (29 patients) were evaluated retrospectively. The mean follow up periods was 13 months. There were divided two groups based on use of the screw (group A, n=15) or the plate (group B, n=15). We measured the displacement to diastasis of the fracture on the foot oblique radiographs taken pre- and post-operatively in each group, checked the time to bone union and the difference of the reduction distance in each group. Clinical results were evaluated using American Orthopedic Foot and Ankle Society (AOFAS) midfoot score at 12 months postoperative.

Results: In group A, the mean time to union was 54.2 ± 9.3 days, the mean displacement to diastasis improved to 0.3 ± 0.4 mm postoperatively ($p < 0.001$), and the mean reduction distance was 2.9 ± 1.0 mm. In group B, the mean time to union was 41.5 ± 7.0 days, the mean displacement to diastasis improved to 0.06 ± 0.2 mm postoperatively ($p < 0.001$), and the mean reduction distance was 4.1 ± 1.6 mm. AOFAS score was verified 97.7 ± 3.4 in group A and 98.2 ± 3.2 in group B. The time to union was significantly different between groups A and B ($p = 0.01$). There were no complications.

Conclusion: We suggest that the plate is more effective method for the shorter union time in surgical treatment of fifth metatarsal base fractures.

Table. Demographics and Clinical Characteristics of the Patients

	Group A (n=15)	Group B (n=15)	P [*]
Gender(F:M)	9:6	10:5	0.61
Mean age (years)	47 (21 to 70)	50 (21 to 77)	0.31
Displacement to diastasis (mm) (oblique view)			
preoperative	3.4±0.8	4.5±1.6	0.08
Postoperative	0.3±0.4	0.06±0.2	0.10
P [#]	< 0.001	< 0.001	
Reduction distance [§] (mm)	2.9±1.0	4.1±1.6	0.049
Time to union (days)	54.2±9.3	41.5±7.0	0.002
AOFAS midfoot score	97.7±3.4	98.2±3.2	0.75

The values are given as the mean±standard deviation.

AOFAS midfoot score : American Orthopedic Foot and Ankle Society midfoot score.

p^{*} : Mann-Whitney test (p-value <0.05) comparing group 1 and 2.

P[#]: Paired t-test(p-value <0.05), comparing the preoperative and postoperative value in each group.

Reduction distance[§] : the difference of the distance between preoperative and postoperative displacement.