

Treatment of 5th Metatarsal Shaft Fracture using MIPO (Minimally Invasive Plate Osteosynthesis) Technique

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Introduction/Purpose: The standard treatment of 5th metatarsal shaft fracture is still not determined yet. Conservative treatment using cast immobilization can be applied for shaft fractures without displacement, but there are reports that open reduction is indicated for displacement more than 3mm, rotational displacement, and angular displacement more than 30 degrees. In this study, we report the result of 5th metatarsal shaft fracture using MIPO technique, which can shorten recovery period by reducing soft tissue damage with minimal incision.

Methods: This study consists of 25 patients who had undergone surgery for displaced 5th metatarsal shaft fracture from March 2013 to December 2015; 8 males and 17 females. Mean age at the time of surgery was 47.4(29~69) and mean follow period was 15.0(8~25) months. 11 cases were simple oblique fracture and 14 cases were comminuted fracture with fracture fragments. Mean fracture gap was 4.4(3.1~7.6)mm. MIPO technique with LCP Compact Hand Locking Condylar Plate 2.0(Depuy-Synthes, Zuchwil, Switzerland) was used for all cases. Partial weight bearing was allowed until 4th week post-op, then full weight bearing was allowed until 6th week post-op. Clinical and radiological follow-up was made at post-op week 2, 6, 12, 24. Clinical results were obtained using Visual Analogue Scale(VAS) and American Orthopedic Foot and Ankle Society(AOFAS) score.

Results: VAS of 24 weeks post-op was decreased from 5.6 ± 0.8 (4~7) preoperatively to 1.2 ± 1.3 (0~4), and AOFAS score of 24 weeks post-op was increased from 42.0 ± 12.8 (24~54) preoperatively to 86.4 ± 7.7 (74~95), both showed significant difference. Anatomic reduction and complete bone union was noted in all cases. Mean union period obtained from follow-up radiograph was 6.0 week post-op. For 15 cases, plate removal was performed at 9.5(7~25) months post-op.

Conclusion: Plate fixation can be the preferred option for 5th metatarsal shaft fracture, because 5th metatarsal shaft is surgically easily accessible and more stable fixation can be applied. Since it results complete bone union without any complications and enables early weight bearing, MIPO technique for displaced 5th metatarsal shaft fracture can be considered as useful surgery technique.

