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Late Stage Freiberg's Disease Treated with Dorsal Wedge Osteotomy and Distraction Arthroplasty
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Summary: In this prospective study we present the short-term clinical results of a new surgical technique for treating late-stage Freiberg's disease. 8 consecutive patients (7 women and 1 man, mean age 46 years) suffering from chronic pain, swelling and stiffness of the involved second metatarso-phalangeal (MTP) joint were included in this study and were treated with dorsal closing wedge osteotomy with absorbable pin fixation and distraction arthroplasty with mini-external fixator. The short-term clinical results of this study were completely satisfactory in terms of pain relief and improved range of motion.

Background: Although dorsal wedge osteotomy was described for the stage II and III according to the Smillie's classification and gained good results. For the late stages, limitation of motion still remains a problem. Distraction arthroplasty has been mostly used in hip, knee or ankle joints to treat severe osteoarthritis by preserving the joint space and decreasing the overload on the affected cartilage. The strong evidence justifies us to treat late Freiberg's disease with joint distraction arthroplasty together with dorsal wedge osteotomy.

Methods: 8 consecutive (7 women and 1 man, mean age 46 years) suffering from chronic pain, swelling and stiffness of the involved second metatarso-phalangeal (MTP) joint were included in this study. According to 5-stages Smillie classification system, there were two in grade III, and six in grade IV. All the patients were treated with dorsal closing wedge osteotomy with absorbable pin fixation and distraction arthroplasty with mini-external fixator. American Orthopaedic Foot and Ankle Society (AOFAS) lesser metatarsophalangeal-interphalangeal scoring system was used for clinical assessment. Subjective complaints were also recorded. Patients were followed-up at monthly intervals and at least a 6 month period, when the last follow-up examination took place.

Results: The mean pre-operative and post-operative AOFAS scores were 46.7 and 86.3. We found 7 excellent and 1 good at last follow-up examination. The complaint of pain with joint motion was decreased in all patients; the ROM of the affected MTPJs differed significantly after surgery. The post-operative ROM was excellent in 6 patients and moderate in 2. There were no peri-operative complications.

Conclusion: The short-term clinical results of this study on patients with late-stage Freiberg's disease treated with dorsal closing wedge osteotomy and joint distraction arthroplasty were completely satisfactory.