

High Union Rate of Treatment of Adult Aseptic Distal Tibial Nonunions Using Ilizarov External Fixation with Slow Gradual Compression

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Purpose: Distal tibial nonunions can be treated with a variety of surgical techniques. Ilizarov external fixation presents many advantages over conventional internal fixation.

Methods: A retrospective review was performed on a consecutive series of adult patients with aseptic nonunions of the distal third of the tibia treated with Ilizarov slow gradual compression by a single surgeon. Some patients also had deformity correction with or without bone grafting prior to initiating compression. No patient in the current series had a known bone infection, a segmental bone defect that comprised greater than 50% of the available surface contact area between fragments, or was treated with bone transport or excision with acute shortening. Nonunion was defined as a lack of radiographic or clinical signs of progression toward healing for 3 consecutive months and a fracture line that in the opinion of the treating surgeon had zero chance of healing without further intervention.

Results: 94 consecutive adult patients with 94 distal third tibial nonunions comprised our cohort. 87 of 94 cases (92.6%) healed following slow gradual compression across the nonunion site with an Ilizarov external fixator. Four of the 7 patients who failed Ilizarov treatment healed following additional operative treatment and the remaining 3 refused further care. No patient had a deep infection at the nonunion site or an amputation of the involved limb.

Conclusion: Ilizarov external fixation with slow gradual compression was successful in treating aseptic nonunions of the distal third of the tibia in 92.6% of cases. Careful selection of patients for this treatment method can lead to a high success rate with a low complication rate.