A Clinical and Radiographic Comparison of Two Hardware Systems Used to Treat Jones Fracture of the Fifth Metatarsal

Presenting:

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Summary:

This is a retrospective review comparing clinical and radiographic results of patients treated with two different screw fixation systems for a Jones fracture.

Background:
A Jones fracture, located at the metaphyseal-diaphyseal junction of the fifth metatarsal, is at an increased risk for nonunion and continued pain. Intra-medullary screw fixation is a common treatment utilized to expedite healing, return to play and to decrease nonunion rates. There exists a broad variation in the type and size of screws used; therefore, a screw implant specifically designed for the operative treatment of a Jones fracture has been developed. This purpose of this retrospective study is to compare the clinical and radiographic results of patients treated with a screw specifically designed for this fracture to a group treated with a traditional screw.

Methods:
Forty-seven patients underwent surgery (forty-seven feet) for a Jones fracture between 1999 and 2007, performed by four fellowship-trained Foot & Ankle Orthopaedic Surgeons at one institution. Twenty-six patients (26 feet) were treated with the indication-specific screw (Group I) while twenty-one patients (21 feet) were operated on with the traditional screw (Group II). All patients were retrospectively reviewed for either radiographic signs of union or an adverse event. Radiographic parameters were evaluated by two independent observers, and included: Torg’s Classification system (intra-medullary sclerosis, cortical hypertrophy, periosteal reaction), hardware failure, with an endpoint of fusion or non-union. Forty of forty-seven patients were available for clinical follow-up, and functional outcomes with VAS pain scores were compared. Additional procedures (bone grafting), complications, and adverse events were recorded. The results were analyzed using Fisher’s exact tests and independent t-test with a significance level of 0.05.

Results:
The average age of the patients was 43.8 years, with a mean clinical follow-up of 37 months (range of 6 to 105 months). There was no significant difference found between the two groups as related to fracture union, but there was a significantly higher number of adverse events in the Group II as compared with Group I (p = 0.03). The adverse events included 2 implant failures, 1 intra-operative fracture, and 1 symptomatic hardware, all requiring further surgical interventions. The Torg Classification system did not demonstrate any difference between Group I and Group II, with respect to the type of Jones fracture. Group I had a longer follow-up because the surgeries were performed at an earlier time point, but all adverse events occurred within an average of two months follow-up after surgery. Clinically, there were no statistically significant differences between the two systems, in regards to: limitations in activity, shoe wear modifications, recovery time, satisfaction and willingness to repeat the surgery. The VAS pain scales (0-100) were equivalent; average VAS pain of Group II was reported as nine (range 0-33) as...
compared with the VAS pain of patients in Group I averaging eleven (range 0-47).

**Conclusions:**
In our retrospective series, comparing two differing instrumentation systems in treating Jones fractures, both groups were found to progress to radiographic union above ninety five percent. Although there was a statistically greater number of adverse events in the traditional hardware system (Group II), clinically both groups had similar outcomes with good results.