A New Prognostic Classification of Fifth Metatarsal Stress Fracture Using ‘Plantar Gap’

Foot & Ankle Category: Sports

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Introduction
There have been diverse results even in same Torg type classification in cases with fifth metatarsal stress fracture.

Methods
Eighty six cases with a fifth metatarsal stress fracture that were treated with modified tension band wiring from January 2003 to May 2009 were evaluated retrospectively. This consecutive series of patients included 84 males and 2 females with a mean of 20.2 years of age at the time of surgery. All of the enrolled patients were elite athletes. Each case was classified according to Torg’s classification and a new classification using a degree of plantar gap and morphology of fracture. They were divided into complete fracture and incomplete fracture. Incomplete fractures were divided with a degree of plantar gap-1mm. After the surgery, bone union was determined by CT findings. Statistical analysis of the Torg classification and time for bone union, as well as a new classification and time for bone union were performed.

Results
There was a significant difference in the time for bone union among the three Torg types. (p=0.004) There was a significant difference in time for bone union between complete fracture group and incomplete fracture group. (p<0.001) There was a significant difference in time for bone union between group A (plantar gap<1mm) and group B(plantar gap≥1mm) in incomplete fracture group. (p<0.001) In only cases with Torg I and II classification, there was a significant difference in time for bone union between complete fracture group and incomplete fracture group. (p<0.001) In addition, there was a significant difference in time for bone union between group C (plantar gap<1mm, incomplete fracture) and group D(plantar gap≥1mm, incomplete fracture) (p<0.001). There were eight cases of nonunion in Torg 2, and 1 case in Torg 3. With regard to new classification, there was 1 case of nonunion in complete fracture group and eight cases in incomplete fracture group, especially with plantar gap ≥1mm.

Conclusion
The results of this study suggest that new classification might be used for prognosis in cases with a fifth metatarsal stress fracture.