What Kind of Procedure Should be Indicated for the Comminuted Talar Fracture as Initial Treatment?

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Introduction/Purpose: Open reduction is most difficult to perform in comminuted talar fractures, because it necessitates osteotomy of the lateral or medial malleolus. Furthermore, the incidence of aseptic talar necrosis after a comminuted fracture is extremely high. Fifty-seven tali in 55 patients with aseptic necrosis of the talus underwent replacement with an artificial ceramic whole talus from 2005 to 2015, and we obtained excellent and good results. Based on the results, we performed replacement with an artificial ceramic talus, as the initial treatment, for 6 patients with comminuted talar fractures with bony destruction or defects.

Methods: From 2009 to 2016, six feet in 6 patients with comminuted talar fractures were replaced with ceramic whole-talus prostheses as the initial treatment. Of them, 5 were male and one was female, with a mean age of 40.3 years (range, 19–59 years). The causes of the fractures were fall from a high place in 2 patients and traffic accident in 4. The ceramic prosthesis was made based on the computed tomographic scan of the normal opposite talus. The production of the custom-made prosthesis required a period of 5 weeks. In 3 patients, the capacity of the original talus was acquired by external fixation before replacement. Plaster cast immobilization was retained for 2 weeks each of non-weight bearing and weight-bearing. Preoperative and postoperative assessments were performed in accordance with the American Orthopaedic Foot and Ankle Society ankle/hindfoot score system.

Results: Follow-up was conducted for 12 to 84 months (mean, 53.8 months). The postoperative AOFAS score was 68-100 (mean, 81.8). The result of the replacement with ceramic whole-talus prosthesis was excellent in 4, good in one, and fair in one. Three patients had resumed participation in sports activities (golf, aerobics, and jogging). However, 2 patients with open fracture and bony defects had limitation of the range of motion of the ankle. The patient with a fair result is still undergoing therapy for femoral and tibial fractures.

Conclusion: A ceramic whole-talus prosthesis was used to replace 6 comminuted talar fractures as the initial treatment. The results using these prostheses were excellent, and good except one patient with open fracture and bony defects. Replacement with a ceramic whole-talus prosthesis should be indicated for comminuted fractures with bony destruction or defects.

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