IGNITE® Power Mix Injectable Cellular Scaffold

Treatment of Nonunion of a Fifth Metatarsal Fracture (Jone Fracture) with a Novel Percutaneous Grafting Technique that Combines Demineralized Bone and Bone Marrow Aspirate

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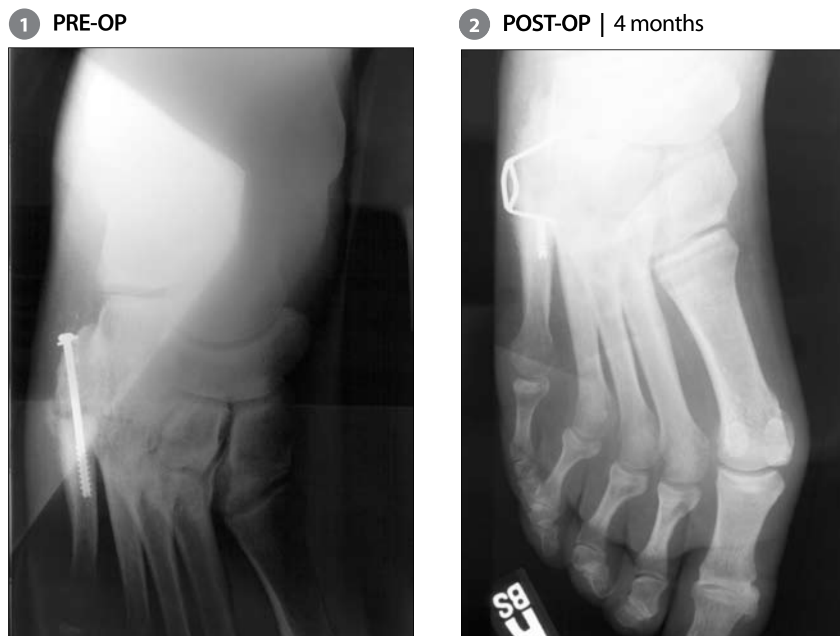

1 **PRE-OP**

2 **POST-OP** | 4 months

INTRODUCTION

Fractures at the base of the fifth metatarsal, at the metaphyseal-diaphyseal juncture, are commonly referred to as "Dancer's Fractures" or "Jones Fractures." Because of the location of the fracture, the difficulty in immobilizing the patient, and the average time from fracture until the patient presents with pain, this type of fracture is associated with a significant level of non-union. With the ability to treat a delayed union of the fracture, a physician using a biocomposite material with autogenous bone marrow aspirate has a strong weapon in his arsenal.

PATIENT PROFILE

The patient is a 34 year-old, right hand dominant male with a significant past medical history for diabetes, obesity, and lymphangitis on a chronic basis. The patient suffered the original injury when he felt a pop while stepping down a height of about 4 inches. The patient was referred to the orthopaedic office.

Physical examination showed the patient's height to be 6'9", weight 340 pounds. The patient demonstrated tenderness on the lateral aspect of the foot. Diagnostic studies revealed a fracture of the metaphyseal, diaphyseal junction (i.e., a Jones type fracture). The patient had difficulty coping with non-weight bearing status secondary to his size. However, the patient was placed into a cast and immobilization was recommended. The patient was placed on antibiotics and after four weeks, the patient was placed in a walker boot.

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Radiographs showed a fracture healing response within two months; however, at four months, the patient was diagnosed with a clinical nonunion. The patient was subsequently treated with an electrical bone stimulator and underwent intramedullary screw fixation. The patient appeared to have improved fracture healing response with further consolidation of the fracture site. While the patient had some consolidation of the fracture site medially, laterally the fracture line was still present. The patient had returned to his normal job for several months and continued to use his bone stimulator.

SURGICAL METHOD

The patient presented for reevaluation one year after IM screw fixation. Radiographs showed a clinical nonunion to be present with fracture of the screw. The patient had noted increased swelling and occasional tenderness. The patient had a repeat surgery done with partial hardware removal, open reduction of the fracture site, internal fixation with a staple, and placement of the IGNITE® biocomposite containing powdered DBM and bone marrow aspirate.

POST-OPERATIVE COURSE

The patient has gone onto a solid union at four months following the IGNITE® grafting procedure. The patient was asymptomatic and radiographs showed a solid consolidation of the fracture site. The patient has had no recurrence of his fracture to date.

DISCUSSION

Given the incidence of nonunion associated with Jones Fractures, in general, and the specific treatment course already undergone with this patient, the IGNITE® biocomposite material provided an opportunity to bring osteoconductive, osteoinductive, and osteogenic factors to a difficult fracture situation. With the visible consolidation of the fracture site, the patient's return to normal life activities, and the lack of continued nonunion, it appears that the course of treatment that included IGNITE® biocomposite material mixed with bone marrow aspirate was successful with this patient.

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