Autogenous Calcaneal Dowel Grafting Jones Fractures: Technique and Case Study
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Introduction
Many foot and ankle surgeons elect to treat the proximal fifth metatarsal base fractures near the metaphyseal-diaphyseal junction by surgical repair due to unpredictable outcomes with nonoperative management. Intramedullary fixation (IM) is the current “gold standard” and has high union rate [1]. However, there are several reports of complications with the IM technique. Notably, refracture, prominent hardware, and slow time to fracture healing [2-5]. This publication aims to describe a novel technique to treat the problematic Jones fracture.

Surgical Technique [6]
The patient is placed in a lateral decubitus position with ipsilateral side facing superiorly. A dorsolateral incision is made centered over the fifth metatarsal base fracture site. After the skin incision is completed, careful subcutaneous dissection is performed to allow identification, and subsequent isolation, of the lateral dorsal cutaneous nerve and its respective branches. After completing subcutaneous dissection, the fracture site is explored and extent of fracture line is visualized (Fig 1).

A trephine is now used to obtain a bone graft plug, which will be used as an inlay graft to be placed into reamed hole. To assure a tight custom fit trephine diameter should be 1 mm greater than the reamer size. The authors’ prefer use of bone graft procured from the lateral calcaneal wall (Fig 6). The bone plug graft is then gently aligned and tamped into place (Fig 8).

A small plate is then be used to stabilize the fracture. Compression screws, utilizing eccentric drilling, are placed first on either side of graft. Subsequently the locking screws can be placed (Fig 9,10&11). Screw sizes in the range of 2.0 to 3.0 mm are preferred with low profile design to avoid skin irritation. Postoperatively, patients are non-weight bearing (NWB) in removable posterior splint with use of crutches and/or roller aid for 4-6 weeks followed by 2-4 weeks in a cast-boot.

Case Study
A 19 year-old soccer player sustained a true Jones fracture and underwent open reduction with internal fixation (ORIF) with an intramedullary screw (4.0 mm cannulated partially threaded). He was NWB in a cast for 6 weeks, and then progressed to a walking cast-boot for an additional 4 weeks. He also utilized a non-invasive ultrasonic bone-stimulator during this time. He did physical therapy and progressed to a walking cast-boot for an additional 4 weeks. He also utilized a non-weight bearing (NWB) in removable posterior splint with use of crutches and/or roller aid for 4-6 weeks followed by 2-4 weeks in a cast-boot. He remained NWB for 4 weeks in a short-leg cast and then wore a cast-boot for an additional 4 weeks. Radiographic and clinical healing of the fracture was attempted return to soccer. Five months post-surgery, he had persistent pain and his outcomes of intramedullary screw fixation with bone grafting. Am J Sports Med 39:1948-1954, 2011.


References