

CASE STUDY

Use of Innovative Allograft Bone Wedges for Treatment of Neglected Calcaneal Fracture



Surgeon Author: Thomas J. Chang, DPM.

Professor and Past Chairman of the Department of Podiatric Surgery at the California College of Podiatric Medicine. Private Practice – Redwood Orthopedic Surgery Associates, Santa Rosa, CA.
Faculty – The Podiatry Institute.

FEATURED PRODUCT: PRESERVE™ Subtalar Joint Distraction Arthrodesis Graft

PRESENTATION

65 y.o. female sustained a calcaneal fracture months earlier. She declined surgical intervention at that time. 8 months later, the patient presents with complaints of daily pain experienced throughout the hindfoot and ankle with ambulation and weight bearing.

EXAMINATION

Physical examination revealed tenderness to palpation to the subtalar joint and pain with range of motion of the subtalar joint. Tenderness was noted to palpation of the anterior ankle joint and to the peroneal tendons. A widened heel was noted clinically. A diagnostic and therapeutic subtalar joint injection relieved only 50% of the hindfoot pain.

Radiographs show a loss of talar declination and subtalar joint collapse. This results in abnormal positioning of the anterior ankle, thus resulting in clinical anterior impingement (Figs. 1 & 2).

INTRODUCTION

The neglected calcaneal fracture often presents with multi-planar deformity. Besides consistent arthritic pain in the subtalar joint, pain can also involve the ankle joint and the calcaneocuboid joint. The subsidence and posterior rotation of the talus on the flattened calcaneus affects the overall height of the hindfoot and often results in anterior ankle impingement. Surgical treatment of this problem requires attention to restoring height of the hindfoot, restoring the talar declination angle to free up the ankle, rotation of the heel out of varus and decompressing the lateral aspect of the heel. A bone block distraction arthrodesis will be the approach to correct this difficult deformity.

SURGICAL TECHNIQUE

The ideal surgical approach for this procedure is posterolateral with the patient in a prone or lateral decubitus position. The prone position and preferred surgical approach was used in this case. A linear incision was placed lateral to the Achilles tendon (Fig. 3). Dissection was carried directly posterior to the sural nerve and peroneal tendons to enter the deep posterior compartment. Attention was directed to identify and mobilize the flexor hallucis longus tendon. The FHL tendon was retracted medially to protect the structures of the medial ankle.



SURGICAL TECHNIQUE - continued

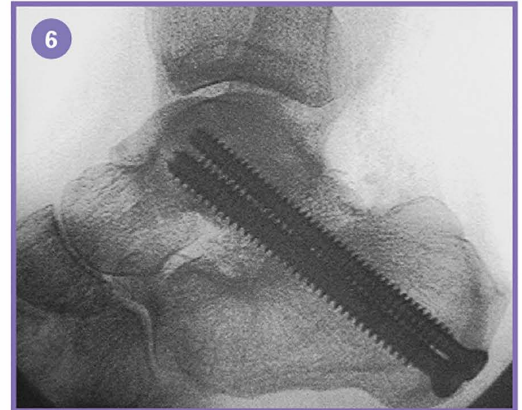
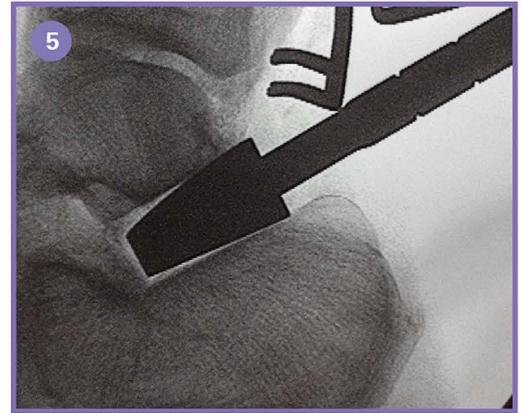
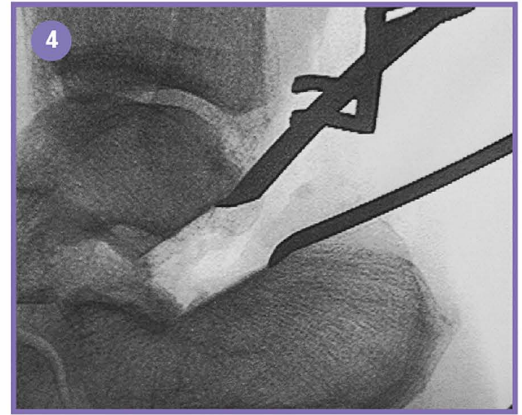
Time was taken to clean up scar tissue and osseous fragments in the posterior ankle. The ankle joint and subtalar joint were identified. The medial capsule of the subtalar joint was released to allow the heel to move out of varus. A small joint distractor was used to help resect flat surfaces on the talus and calcaneus (Fig. 4). This allows for placement of trial implant sizers that assess proper contact and positioning of the subtalar joint. Heel height can be determined using the implant trial sizers until restoration of height is achieved (Fig. 5). Varus and valgus alignment can also be dialed in by rotating the trial sizer until the correct heel position is viewed clinically and radiographically. Once implant trial size and position were determined, an allograft bone graft was inserted in the proper orientation to restore height and correct varus/valgus malalignment.

A lateral wall exostectomy was performed to decompress pressure on the peroneal tendons, and should be performed in those cases if necessary. Two fully threaded screws were placed to provide static stabilization, while maintaining height and distraction across the bone graft (Fig. 6).

POST-OPERATIVE PROTOCOL

The patient was casted for 2 months and gentle range of motion began at 8 weeks. In general, 2-3 months of casting is necessary. Physical therapy was also initiated to facilitate quicker recovery. Radiographs at final follow-up (one year) show improvement in talar declination angle and improved ankle joint alignment (Fig. 7). Clinically, the patient is able to perform activities of daily living with minimal pain and limitations.

TIP: Graft healing takes longer than primary bone healing. There are two surfaces which need to heal and the size of the graft should not be larger than 2 cm to allow for complete revascularization throughout the whole graft.



Exclusively foot & ankle
Paragon[®] 20

Paragon 28, Inc.
4B Inverness Ct. E, Ste. 280
Englewood, CO 80112, U.S.A.
855.786.2828 | www.paragon28.com

CE 2797

P01-CS-0001 RevB
™ Trademarks and ® Registered Marks
of Paragon 28, Inc.
© Copyright 2016 Paragon 28, Inc.
All rights reserved.
Caution: U.S. Federal Law restricts this device
to sale by or on order of a physician.

