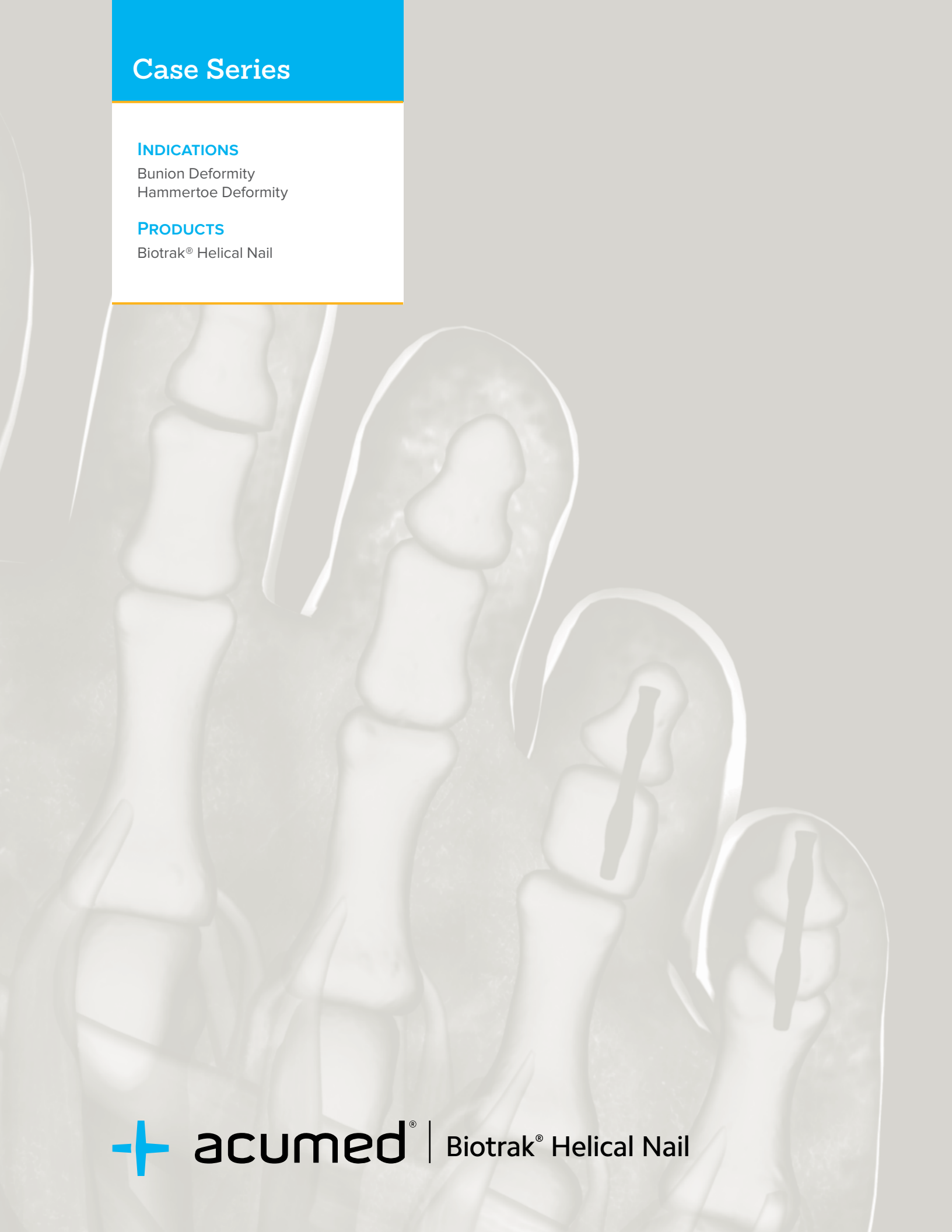
Case Series

Indications

Bunion Deformity
Hammertoe Deformity

Products

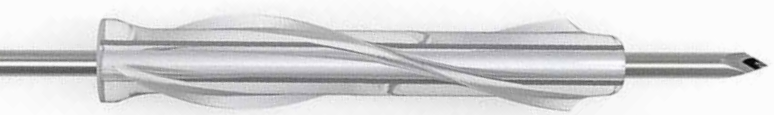
Biotrak® Helical Nail



acumed® | Biotrak® Helical Nail

Case Study No. 1: Bunion Deformity

Acumed® Biotrak® Helical Nail



Surgeon

Brett R. Fink, M.D.

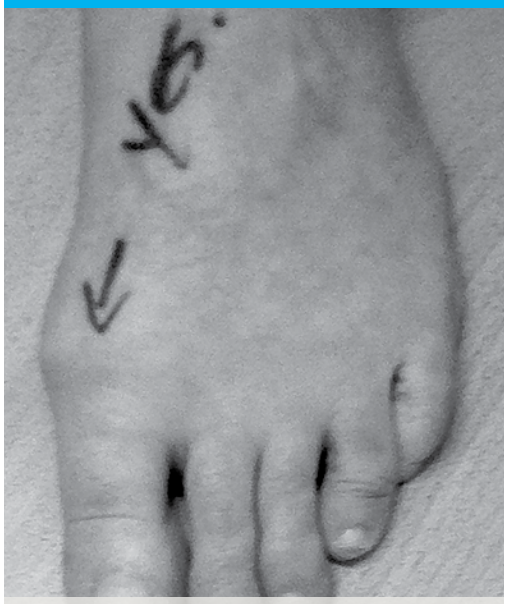


Figure 1: Preoperative appearance of the foot.

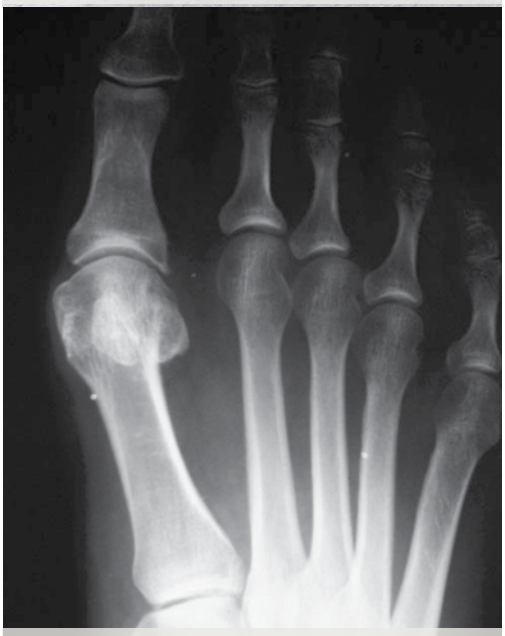


Figure 2: Preoperative radiograph of the foot.

Patient History

The patient is a 59-year-old female with long standing pain with shoe wear despite attempts at extra width shoes and orthotics. The deformity has worsened over the last two years and she is currently unable to wear any shoes other than tennis shoes.

On physical examination, the hallux is abducted and the distal end of the metatarsal head is prominent. While the second toe is slightly elevated, she notes no symptoms referable to this digit. She is tender on the medial first metatarsal head prominence and the area is reddened and swollen. Radiographs of the foot show a hallux valgus deformity with mild lateral subluxation of the proximal phalanx on the metatarsal head with a prominent medial eminence.

Treatment

The patient was taken to the operating room and positioned supine. A T-shaped medial capsulotomy was made in the first metatarsal head and the medial eminence resected conservatively.

A chevron osteotomy was made with an extended dorsal limb. The metatarsal head was translated laterally. The inferior metatarsal shaft was exposed and the metatarsal head translated laterally approximately 7 mm. The osteotomy was stabilized initially with a 0.9 mm Helical Nail guide wire. After confirmation fluoroscopically of optimal placement of the pin, this was measured and reamed. The osteotomy was stabilized with a tenaculum and an appropriate length Helical Nail was used to definitively stabilize the osteotomy.

A portion of excess dorsal Helical Nail was removed by cutting it from the leading edge of the implant. Shortening of the nail is intended to reduce the potential for it to back out.

The capsulotomy was imbricated with 2-0 Ethibond suture. The skin was repaired with a running subcuticular Polydioxanone (PDS) suture. A sterile dressing was applied. The tourniquet was released and good capillary flush was confirmed in the toes prior to leaving the operating room.

Postoperative Care

Postoperatively, the patient is allowed heel weight bearing. The patient's toe is supported in a dressing for the first three weeks. Weight bearing is advanced as tolerated following this. This has proven to be a reliable method of stabilizing this osteotomy without the need for hardware removal. Drainage or radiographic osteolysis around the pin has not been encountered. Potential complications of this technique are common to other methods of bunionectomy.

About Acumed® Biotrak® Helical Nail

Indications for Use: Small bone fractures, osteotomies, and arthrodeses, cancellous fragments, and osteochondral fragments in the upper and lower extremities.

Contraindications: Presence of active or latent infection, sepsis, osteoporosis, insufficient quantity and/or quality of bone.

Warnings and Precautions: Surgeon must be thoroughly familiar with the implant, material, methods of application, instruments, and recommended surgical technique. Device is not designed to withstand stress of weight bearing, load bearing, and/or excessive activity. Device breakage and/or damage can occur when implant is subjected to increased loading associated with delayed union, non-union, or incomplete healing. Improper insertion of device during implantation can increase the possibility of loosening or migration. Exceeding the softening temperature of the material can lead to degradation of the mechanical properties and/or warping.

Adverse Events: Fracture of the implant due to excessive loading, incomplete or inadequate healing, or excessive force during insertion; Implant migration and/or loosening; Sterile inflammation as a result of a body reaction to the degradation products of the absorbable material; Pain, discomfort, or abnormal sensations due to the presence of an implant; Nerve damage resulting from surgical trauma; Bone necrosis or bone resorption.

*The information found within this material contains the opinion of a medical professional. Compensation was made to the consulting medical professional for the creation of this case series.

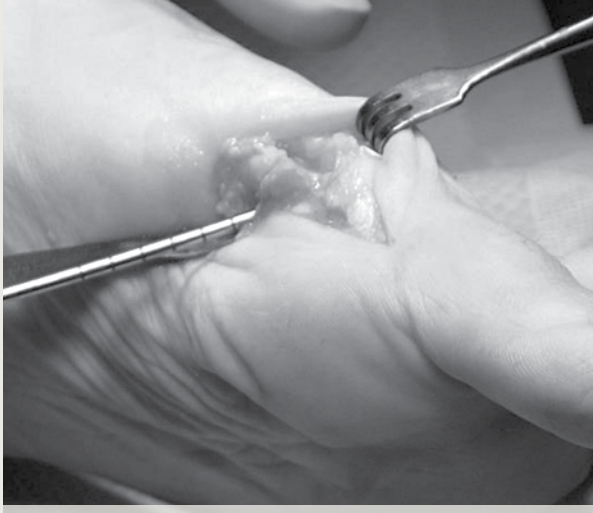


Figure 3: Intraoperative picture of the pin and reamer. The pin is inserted from the plantar surface.

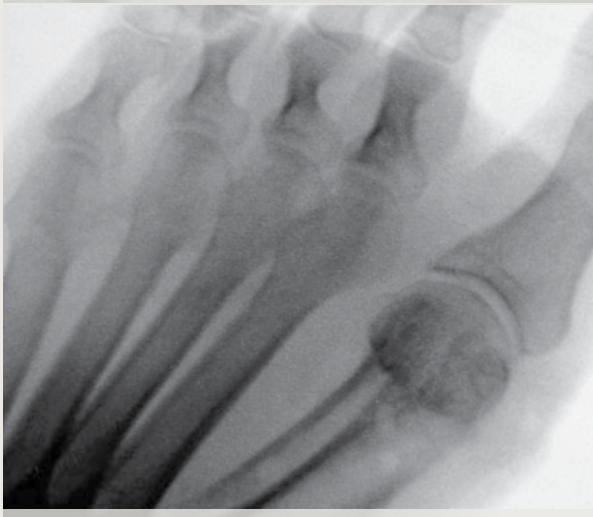


Figure 4: Postoperative radiograph of the foot after chevron bunionectomy.

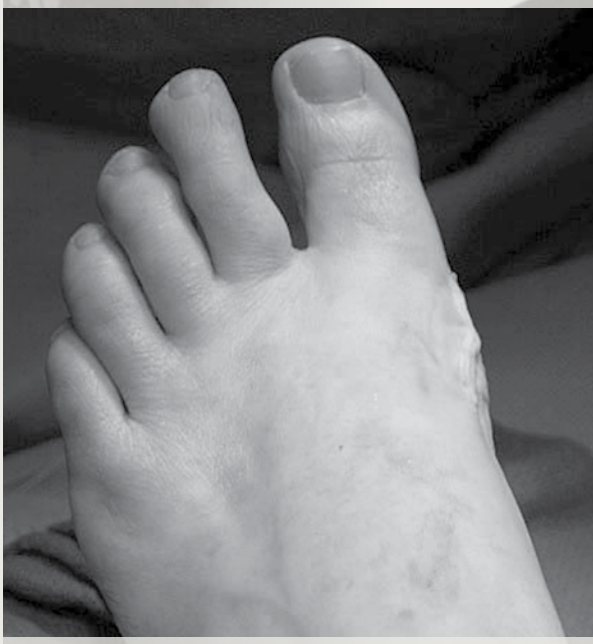


Figure 5: Postoperative picture of the foot after surgery. Excellent correction of the toe has been obtained.

Case Study No. 2: Hammertoe Deformity

Acumed® Biotrak® Helical Nail

SURGEON

Brett R. Fink, M.D.

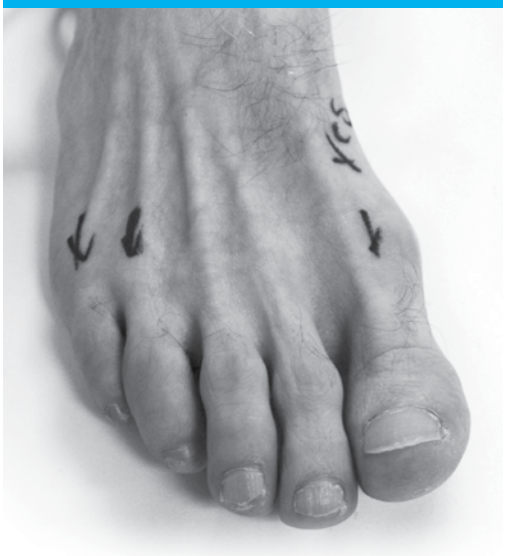


Figure 1: Preoperative appearance with overlapping of third and fourth toes on adjacent lateral toes.

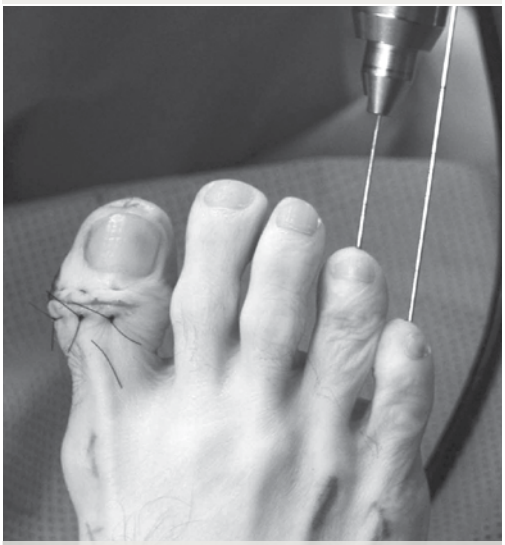


Figure 2: FDL tendons have been released and the guide pins are in correct position.

PATIENT HISTORY

The patient is a 53-year-old male who has a long history of discomfort to the right fourth and fifth toes. When standing, the patient's fourth toe lies under the third and the fifth toe lies under the fourth. He finds this to be significantly uncomfortable. He has experienced this for 2 years and has attempted to use toe separators and tape to reposition the toes without satisfaction. Incidentally, he also has a flexion deformity of the hallux interphalangeal joint which impinges on the upper of his shoe despite accommodative shoe wear.

On physical examination, the lesser toe deformity is accentuated by dorsiflexion of the ankle, but does not completely reduce with plantar flexion, indicating tightness of the flexor digitorum longus (FDL) muscle with secondary ligamentous contracture of the interphalangeal joints. Radiographs of the foot show no bony abnormality.

Treatment

The patient was taken to the operating room and positioned supine. The FDL tendon and plantar ligaments were percutaneously released at the proximal interphalangeal joint. The toes were manipulated into extension. As is typical, the flexor tendon release alone does not maintain appropriate alignment due to residual soft tissue contracture of the collateral ligaments in interphalangeal joints.

Under fluoroscopic visualization, a guide wire was drilled from the distal phalanx into the base of the proximal phalanx. After confirming appropriate central and interosseous position of the pin, the skin was released around the pin with a stab incision. The length of the pin was measured with the depth gauge. The guide pin was over-reamed with the drill and the Helical Nail was impacted into the toe, countersinking the head of the Helical Nail into the distal phalanx.

The wounds were then closed with 4-0 chromic suture and a sterile dressing applied. The tourniquet was released and good capillary flush was confirmed prior to leaving the operating room.

Postoperative Results

Postoperatively, the patient is allowed full weight bearing as tolerated. The toe remains stiff for six to twelve weeks. Usually, at that time, the structural integrity of the pin is lost and some mobility of the toe returns. Assuming that adequate release of the flexor tendons and contracted ligaments was achieved, recurrence of the deformity is rare although the toe remains somewhat stiff. This patient was satisfied that his toes no longer overlapped and noted considerable relief.

Postoperative Note: Figure 4: In addition to the Hammertoe procedures done on the fourth and fifth metatarsals, a DIP fusion was performed on the first metatarsal using an Acutrak 2®.

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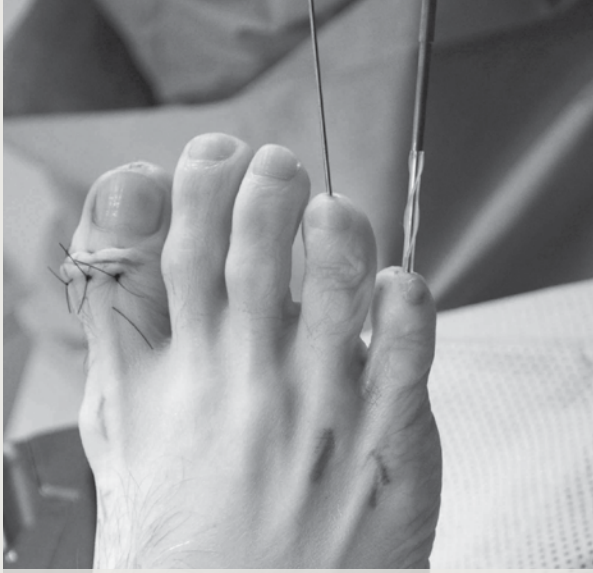

Figure 3: The Biotrak® Helical Nail is impacted into the toe.

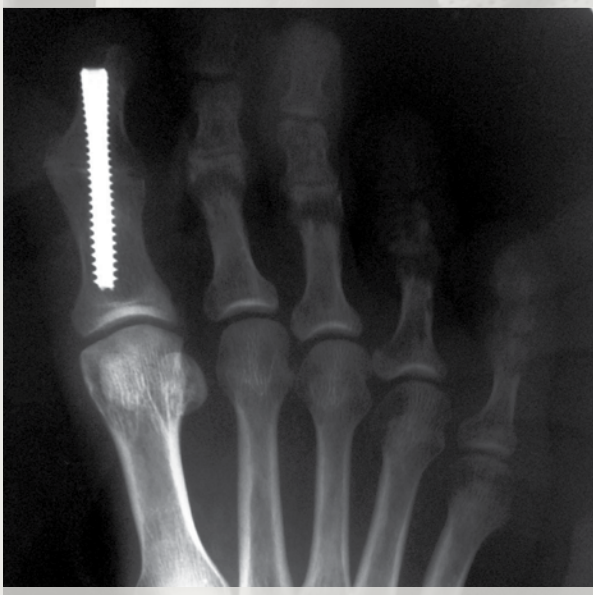

Figure 4: Radiographic view of the foot at 6 weeks.

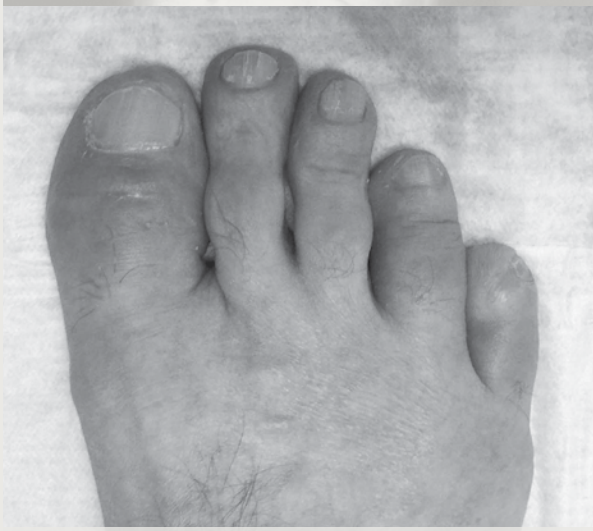

Figure 5: Clinical appearance of the foot at 6 weeks. No further malalignment of the toes is noted by the patient.

Notes:

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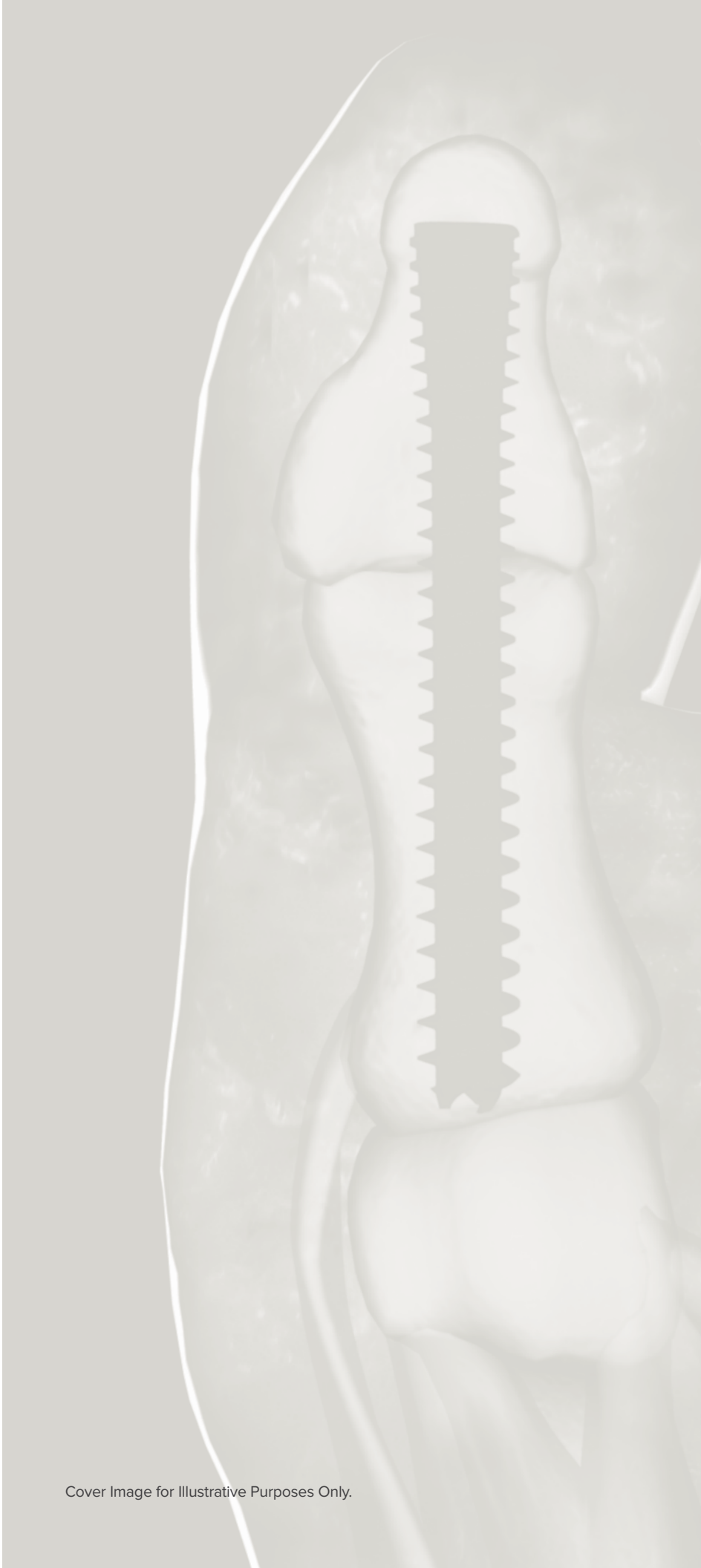

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