G-BEAM CASE REPORT

G-BEAM™
FUSION BEAMING SYSTEM

1. Case presentation

Patient details: This is a 75-year-old female with medical history of Diabetes Type II. She developed swelling of the foot with redness, pain and feeling of instability in the foot. She presented 3 months after the process began. Physical exam revealed a red warm swollen foot, with excessive motion upon midfoot and hindfoot. She also had a gastroc-soleus equinus. X-rays showed subluxation of the Lisfranc, cuneiform and navicular joints. This was a stage 3 Eichenholtz Charcot with ligamentous function loss resulting in deformity of the foot. Calcaneal inclination measured 18 degrees, Meary's angle 12.8 degrees and the talo-first metatarsal angle 38.5 degrees with a 2 cm medial translation of the forefoot against the hindfoot.

Note: This case report shows an individual's response to treatment. The information contained in this case report is provided for informational and educational purposes. It is not intended to guarantee the response other people may have to the treatment as responses to treatment can and due vary. Proper surgical procedure is the responsibility of the medical professional. Each surgeon must evaluate the appropriateness of a technique based on his or her personal medical credentials and experience.

Pre-operative pictures and X-rays

2. Treatment strategy

Beaming of the medial column, lateral column and subtalar joint with an Achilles tendon lengthening. In addition, with a trussing technique to augment the beaming, a truss beam was placed between the medial and lateral column in the midfoot.
Bone graft was harvested from the distal tibia to augment the fusion sites. The surgeon felt that these cases benefit highly from negative pressure over the incision to reduce swelling, thus limiting the potential for a hematoma.

The 2 hours surgery was successful in the preparation of the fusion sites with hardware placement.

Postoperative protocol: patient was not allowed to weightbear for 6 weeks. After X-rays were performed at the 6 week time and osseous bridging was confirmed, physical therapy was done to assist with gait training and balance.

Intraoperative fluoroscopies

Post-operative picture

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3. Follow up at 3 months

Fusion was obtained at 3 months. Realignment was obtained with a calcaneal inclination angle of 23.2 degrees, Meary's angle 0 degrees and AP talo-first metatarsal 0 degrees.

No complications occurred: no implant migration or breakage, no infections or loss of correction.

No revision surgeries were performed.

The patient is very satisfied and is back in shoes.

Pre-Treatment
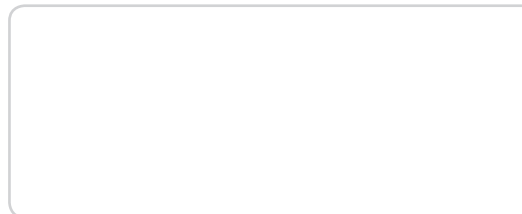

Post-Treatment

Surgeon's comments:
Reconstruction of this Charcot foot required fusions of all the columns of the foot, as well as addressing the equinus. It is imperative to use the largest size beams possible when fixating the columns. It is also highly recommended, based on the surgeon's experience, that even though there may be no disease process in the subtalar joint, it must be fused nevertheless. An unfused subatalar joint can lead to beam migration of the medial column beam as well as causing a breakdown of the subtalar joint due to increased stresses in the joint from the medial and lateral column beams.
This case also uses the concept of adding a truss to the beam. The surgeon combined a plantar truss with a simple truss in order to create an optimally strong structure. This is a new development in treatment and management of the Charcot foot. Lastly, when the surgeon is evaluating the Charcot foot, one must be careful to appreciate the magnitude of deformity and to be able to assess when gradual correction vs acute correction is appropriate. In this case, due to the relative small amount of deformity, an acute correction was chosen.

Contributing Surgeon: Dr. Philip Wrotslavsky, DPM FACFAS, Advanced Foot and Ankle Center of San Diego

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