Hallux varus deformity is the dislocation of the great toe medially in relation to the longitudinal axis of the first metatarsal shaft. Although, most reported cases have been iatrogenic, congenital and idiopathic etiologies, traumatic hallux varus has been seldomly described in the literature. The authors present a case of traumatic hallux varus secondary to plantar plate rupture and tear of the lateral sesamoid-metatarsal ligament about the first metatarsophalangeal joint. The surgical treatment is described, along with post-operative follow up care.

Case Study
A 60 year-old female presents to our clinic with complaints of left foot pain and instability with ambulation. She suffered an injury to her great toe 6 weeks prior to presentation. She was evaluated previously by a local podiatrist who obtained weightbearing radiographs to rule out any acute fractures. X-rays were negative, and she was told to monitor and observe. Patient failed conservative treatments and was then referred to our clinic for further evaluation and treatment. Past medical history includes obesity with a BMI of 30. She has had previous left ankle surgery. She had intact soft tissue envelope with scar noted to left ankle from previous surgery.

Intact soft tissue envelope with scar noted to left ankle from previous surgery. She had past medical history includes obesity with a BMI of 30. She has had previous left ankle ORIF and right knee surgery. Patient has familiar history of diabetes and CVA.

Physical examination revealed unremarkable vascular and neurological exam. Intact soft tissue envelope with scar noted to left ankle from previous surgery.

Musculoskeletal examination revealed adducted left hallux, which was clearly in varus position. Range of motion about the first metatarsophalangeal joint was limited, but the deformity was reducible with no crepitus. The dorsal aspect of the joint was edematous, with mild erythema, and patient experienced pain with first metatarsophalangeal joint range of motion and palpation (Fig. 1). She had both an apropulsive and antalgic gait upon presentation. Radiographs showed subluxed hallux on the first metatarsal with spared joint space. No arthritic changes noted to joint. Hallux abductus angle was -2° (Fig. 2). Patient was educated on the etiology and treatment, and advanced imaging was obtained. MRI of the left foot revealed a tear of the plantar plate of the first metatarsophalangeal joint with probable tear of the lateral sesamoid metatarsal ligament (Fig. 4). Patient was scheduled for surgical repair of the hallux varus with soft tissue balancing procedures.

Under monitored anesthesia care and local anesthetics, surgical correction was performed. Hemostasis was achieved using a pneumatic ankle tourniquet at 250mmHg. A linear incision along the medial aspect of the first metatarsophalangeal joint was made and blunt dissection was carried out. The tibial sesamoid was identified and completely excised. A linear capsulotomy was then performed and the Abductor Hallucis muscle tendon was released from its attachment at the base of the proximal phalanx. A longitudinal incision was then made over the first interspace to expose the lateral soft tissue structures. The incision was extended distally across the Extensor Hallucis brevis (EHB) muscle and tendon, then an unbilical tape was pass underneath the tendon distally, while the EHB was retracted proximally, with the attachment to the base of the proximal phalanx preserved. The distal portion of the EHB tendon was then rewrapped under the deep transverse metatarsal ligament (DTML) and anchored to the lateral capsule. Placation of the lateral collateral ligaments as well as the capsule was performed with repair of the lateral sesamoid-metatarsal ligament using a 2-0 Vycril suture.

After repair of the varus deformity and adequate correction was achieved, the hallux was held in a slight valgus and plantarfaced position, a 0.062 K-wire was driven across the metatarsophalangeal joint, and the distal fragment was aligned and secured with a 0.062 K wire. Hemostasis was achieved using a pneumatic ankle tourniquet. Under monitored anesthesia care and local anesthetics, surgical correction was achieved using an ankle tourniquet. The case presented here involves a traumatic hallux varus deformity, which was realigned using a more rectus position with correction maintained.

Repair of Traumatic Hallux Varus Deformity: A Case Report
Osayamen Edigin, DPM; Alan R. Catanizariti, DPM, FACFAS
Division of Foot and Ankle Surgery, West Penn Hospital, Allegheny Health Network, Pittsburgh, PA

Surgical Technique
Fig. 3-Post-operative plain radiographs obtained at 16 months follow up after hallux varus repair.

Fig. 1-Preoperative Clinical pictures showing varus deformity of the hallux. Moderate edema about the first metatarsophalangeal joint can be appreciated

Fig. 2-Preoperative plain radiographs showing a subluxed hallux on the first metatarsal.

Fig. 4- MRI showing rupture of both lateral sesamoid-metatarsal ligament (left) and plantar plate (right).

Analysis & Discussion
Hallux varus is a triplanar deformity which may sometimes involve hammering of the hallux interphalangeal joint. This deformity is usually associated with pain and swelling around the great toe joint, difficulty with shoegear and clothes, functional impairment, altered gait and cosmetic dissatisfaction. Etiologies of this deformity includes congenital, acquired (iatrogenic traumatic), idiopathic, and systemic (inflammatory arthritis) traumatic hallux varus has been the most reported and has been attributed to complications associated with hallux abductovalgus corrections. A subtype of acquired hallux varus, traumatic varus, is rarely encountered. Labovitz and Kaczander1 reported a case involving a 38 year-old male, who fell down stairs and sustained a traumatic avulsion of the adductor hallucis tendon leading to hallux varus. Surgical repair was achieved using a soft tissue Mitke mini g2 anchor to imbricate the lateral capsule of the metatarsophalangeal joint. Another case reported by Hunter and Wasik3 described a traumatic hallux varus dislocation, 3 months status post a bunionectomy procedure and the deformity was corrected using a split extensor tenodesis procedure. The case presented here involves a traumatic rupture of the lateral sesamoid-metatarsal ligament and plantar plate about the first metatarsophalangeal joint, which was corrected utilizing soft tissue balancing procedure.

References