Percutaneous First Metatarsocuneiform Joint Arthrodesis in a Treatment of Metatarsus Primus Varus: a Prospective Study of 22 Feet.

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My disclosure is in the Final AOFAS Program Book. I have no potential conflicts with this presentation.
INTRODUCTION. Percutaneous forefoot deformities surgery is now accepted to a greater or lesser extent by some orthopaedic surgeons. In most cases percutaneous surgery refers to distal procedures limiting its application in hallux valgus (HV) surgery. The purpose of this study was to develop a percutaneous first metatarsocuneiform joint (1st MTCJ) arthrodesis technique.

MATERIAL AND METHODS. The results of 1st MTCJ percutaneous arthrodesis of 22 feet were reviewed with the mean follow-up of 6 months (range 3 to 12). The average 1st intermetatarsal (IM) angle was 20.4 ° pre- and 9.8 ° postop. All arthrodeses had fused by 3 months. No serious complications were noted. Three cases of incomplete metatarsus primus varus correction and one case of mild transferred metatarsalgia were registered but did not required reoperation. Bilateral simultaneous surgery was performed in 9 cases.
Kirschner wires placement on the dorsomedial aspects of the 1st metatarsal and medial cuneiform.

Creation of space for instruments introduction into the 1st MTCJ using Hintermann retractor.
1st MTCJ opening under fluoroscopic control with a Beaver 64 blade through a 5-mm incision between Kirschner wires.

Removal of the cartilage from the 1st MTCJ articular surfaces using small burrs, periosteal elevators, curette and suction.
1st IM angle reducing with a clamp, placed percutaneously. 1st metatarsal desired position is fixed with two 4-mm partially threaded cannulated screws.

1st screw is placed from the 1st metatarsal base dorsomedial surface (yellow circle) into the third metatarsal base or intermediate cuneiform; 2nd screw is inserted between the tendons of EHL and tibialis anterior muscles from the medial cuneiform dorsomedial aspect (blue arrow) into the plantar aspect of the 1st metatarsal.
CLINICAL EXAMPLE. Female, 28 years. 1<sup>st</sup> IM angle 15°, 1<sup>st</sup> ray hypermobility. Bunion and bunionette pain. Painful hyperkeratosis under the 2nd metatarsal head. 2-4th toes hammer deformity. Percutaneous surgery included bunionectomy, 1<sup>st</sup> MTCJ arthrodesis, 5th metatarsal and 1-4th toes proximal phalanx osteotomies. Excellent result with arthrodesis fused by 2 months. Fast walking without a limp from the third month, running - from the 4th month after surgery.
EXAMPLE №2. Female, 73 years. HV surgery 15 years ago. Gradual recurrence of the deformity. 1 month prior to the presentation acute 1st metatarsophalangeal (MTP) joint inflammation had developed with the purulent wound, which appeared a few days later. 1<sup>st</sup> IM angle 30°.

**Diagnosis**: severe recurrent hallux abductovalgus deformity complicated by a purulent wound and 1st MTP joint purulent arthritis.

**One-step surgery** included wound debridement with 1st MTP joint partial synovectomy and primary wound closure, percutaneous 1<sup>st</sup> MTCJ arthrodesis and Akin osteotomy.

9 months follow up: no pain, excellent big toe alignment, 1st MTP joint good range of motion.
CONCLUSION. Minimally invasive approach proposed by the author has shown itself to be safe and technically not very demanding. The surgeon must be familiar with percutaneous foot surgery techniques. Percutaneous 1st MTCJ arthrodesis should be reserved for the treatment of selected cases of severe metatarsus primus varus, first ray hypermobility, previous surgeries failures and infected wounds in advanced bunion deformities.

EXAMPLE №3. Female, 56 years, 1st IM angle 20°.

3 months after surgery.
References.