Instability of the lesser MTP joints  
(Crossover 2nd toe deformity)  
-my 25 year journey-  

Michael J Coughlin, M.D.

Conflicts of interest

• Arthrex- consultant
• Arthrex- royalties
• Elsevier-book royalties

Early Diagnosis

Progressive MTP joint subluxation

Coughlin, M. The Crossover toe. Foot Ankle Int 1987
Surgery -1987-2011-
Soft tissue balancing
• Extensor tenotomy, lengthening
• Medial/dorsal capsulotomy

Capsular reefing


Flexor Tendon Transfer

MEDIocre RESULTS

Partial proximal phalanectomy
Metatarsal condylectomy
Akin-ette
MTP joint arthrodesis
Amputation
Metatarsal osteotomy
All of these treatments

- Never really treated the problem!
- Indirect repairs
- Never saw the pathology
- (the plantar plate tear)

Grading and Staging
(Barcelona-2011)
-8 fellows-
- saved 12 specimens over 7 years-


Grade 1
transverse tear < 50%

Grade 2
Transverse distal > 50%
Grade 3
Transverse and longitudinal, extensive

Grade 4
no repairable capsule

We then devised a clinical staging system
• To help us with our clinical examination

Stage 1
• Mild MTP joint malalignment
• Plantar MTP joint pain
• Swelling MTP joint (plantar)
• Mild + drawer (subluxable, <50%)
Physical Examination
Positive Drawer

Stage 2
• Moderate malalignment
• Reduced swelling??
• No toe purchase
• ++ positive drawer

Stage 3
• Severe malalignment
• Plantar MTP joint pain
• Little swelling
• Very positive drawer
  – Can dislocate
Stage 4

- Very severe deformity
- Dislocation
- Fixed hammertoe
- Little or no swelling
- ? Painless drawer

Began defining the extent of the plantar plate tear

We then developed a technique to expose and repair the plantar plate

Weil osteotomy
Incision

Direct dorsal interspace incision

Multiple joints? Neuroma present? Unsure of the diagnosis?

Deepening the incision

Versatile exposure Extensor brevis is available for transfer later

Proximal capsular release

Yes- we routinely release the proximal capsule Does it destroy the circulation to the metatarsal head? NO It does give 2-3 mm. more expansion of the joint

McGlamry

Base of proximal phalanx Met head Plantar blood supply Plantar Plate

Courtesy of LS Weil, Jr., DPM
Proximal translation of the Weil

Distraction and visualization

Medial and lateral collateral ligament release

Releasing the plantar plate

So it is completely released!!
**Example**

Free it up from the base of the proximal phalanx, and the flexor tendon.

**Passing the sutures**

- Try the two different types of Micro-scorpion
Suture number
Suture pattern

8. Exposing the base of the proximal phalanx

Towel clip on the phalanx, and twist downward
Exposing the base of the proximal phalanx

Fixing the Weil

Tying the sutures

Plantar flex the PP 20 degrees
Cartilage against cartilage
Neutral deviation
**Prospective study**

- Two year study
- 100 patients
- Improved stability
- Marked resolution of pain


- Coughlin M. Lesser toe abnormalities. AAOS Instructional Course Lectures. 52:421-444, 2003