Lesser metatarsals – how to address deformity

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Lesser toe deformities
Lesser toe deformities

- Mallet-/Hammer-/Claw-toes
- Instability of MTP joint
Lesser toe deformities

- ill-fitting shoe wear
- Inflammatory arthritis
  - Trauma
  - Anatomy
- Neuromuscular disorders
Conservative Treatment

- Shoes with wide toe box
- Lower heel
- Softer materials of the shoe
- Padding the lesion
Conservative Treatment
Operative Treatment

Mallet Toe

Hammer Toe

Claw Toe
How to address the deformity?

Deformity flexible or fixed?
Mallet toe deformity

Flexible: Release of flexor digitorum longus tendon

Fixed (frequent): Resection of the DIP joint, Stabilization with Kirschner wire
Hammer toe deformity

Flexible: Flexor-To-Extensor-Tendon Transfer
Flexor-to-Extensor tendon Transfer

Coughlin MJ, Lesser toe abnormalities, JBJS Am 84:1446-1469, 2002
Flexor-to-Extensor tendon Transfer

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Hammer toe deformity

Fixed: PIP joint Arthrodesis (Hohmann-Procedure)

Shortening is important, due to contracted plantar neurovascular structures
PIP-Arthrodesis
Hammer toe deformity

Key joint: MTP

If hyperextended (frequent), it needs to be realigned
MTP joint realignment

- Metatarsophalangeal soft tissue release
- Extensor tenotomy and/or elongation
- Kirschner wire fixation across the joint
Claw toe deformity

• Combination of procedures
• MTP joint always hyperextended
MTP joint instability
MTP joint instability - Treatment

• Hallux valgus has to be corrected even if asymptomatic
MTP joint instability - Treatment

• Release MTP joint
• Remaining deviation correct with tightening of collateral ligaments
• Flexor-to-Extensor transfer depresses proximal phalanx
• Kirschner wire fixation
MTP joint instability - Treatment
Alternatives

Stabilization with Tight rope® (Arthrex)
Alternatives

Extensor digitorum brevis transfer

From: Easly MEE et al., Operative Techniques in Foot and Ankle Surgery
Alternatives

Extensor digitorum brevis transfer

From: Easly MEE et al., Operative Techniques in Foot and Ankle Surgery
Severe instability

- Soft tissue correction not sufficient
- Osseous decompression necessary

→ Shortening osteotomy of the metatarsal
Severe/recurrent instability
Thank you