First and Second Metatarsophalangeal Joint Arthrodesis for Second Metatarsophalangeal Joint Disease

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1) Treatment of second MTP joint disease remains an unsolved problem
2) Multiple procedures have been described:
   a) For mild to moderate deformities:
      i) Soft tissue release
      ii) Tendon transfer
      iii) Interpositional arthroplasty
      iv) Plantar plate repair
   b) For severe deformities:
      i) MTP resection arthroplasty
      ii) Shortening metatarsal osteotomy
      iii) Partial proximal phalanectomy
      iv) Second toe amputation
3) Rationale
   a) All of the above mentioned surgical procedures have complications including continued pain
   b) First MTP arthrodesis has an excellent track record
   c) We believe that concomitant first and second MTP arthrodesis will also have an excellent long-term clinical outcome
4) Procedure
   a) Second MTP arthrodesis performed with first MTP arthrodesis
      i) Concentric reamers used to prepare MTP joint surfaces
      ii) Lag screw and dorsal plate applied
      iii) Hallux positioned 21-25 degrees dorsiflexion, 10-15 degrees of valgus
      iv) Second toe positioned to match hallux dorsiflexion and in between hallux and third toe

Pre- and post-operative images of 1st and 2nd MTP arthrodesis for 2nd MTP dislocation and hallux valgus deformity
b) Isolated second MTP arthrodesis not recommended

5) Results
   a) 5/5 first and second MTP joints fused by 3 months
   b) AOFAS scores improved from 37 to 78 out of 90 total points
   c) VAS pain scale improved from 6.8 to 1.1
   d) No recurrent deformities at 2.4 years

6) Indications
   a) Use concomitant first and second MTP arthrodesis as a salvage procedure when conservative treatment and other procedures have failed
   b) Severe crossover deformities
   c) Patient resistance of second toe amputation

7) Conclusion
   a) Our small series of concomitant first and second MTP arthrodesis demonstrates good results with improvement in function and pain
   b) We recommend second MTP arthrodesis in conjunction with first MTP arthrodesis
   c) Isolated second MTP arthrodesis may have an inferior result

Bibliography:
