LEGAL MTPJ INSTABILITY-
Surgical Treatment Survival Guide

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DIAGNOSIS: Before discussing surgical tx options, establish a firm diagnosis. Be sure to evaluate for lesser MTPJ instability & predisposing factors as these findings may change tx recommendations.

PRE-OP CONCERNS: Previous surgery, adequate perfusion, expectations, patient type, patient goals, bone healing potential, tolerance for revision surgery (including possible amputation) should all be considered.

SURGICAL APPROACHES: Dorsal vs. plantar or both, patient positioning, skin incision placement, subcutaneous dissection

POST-OP CONCERNS: Complications, dressings & taping to maintain & enhance correction, WB status, pain management-consider multi-modal management strategy.

Consider the following questions when performing surgery for lesser MTPJ instability:

IS MTPJ EXTENSUS DEFORMITY PRESENT WITHOUT INSTABILITY? If yes, correct via MTPJ soft tissue balancing procedures which may include dorsal capsulotomy, suspensory (ACL)/collateral (PCL) ligament release, extensor expansion or hood (sling & wing) release, EDL & EDB lengthening/release & FDL tendon transfer. "Scooping the head" should be scrutinized and is a questionable procedure as it results in a delaminated
plantar plate which may not be desirable. In patient w/ FF equinus deformity, a Hibb's procedure may be needed to address globally tight lesser extensor tendons or isolated EDL tendon lengthenings.

IS DIGITAL DEFORMITY PRESENT (i.e., hammertoe, mallet-toe, claw-toe, swan-neck deformity)? If yes, repair via arthrodesis or arthroplasty procedure w/ K-wire fixation. Lesser digits should be corrected with some flexion & hyperextension should be absolutely avoided.

IS THERE A METATARSAL ABNORMALITY (i.e., elongated metatarsal or a plantarflexed metatarsal)? If yes, consider metatarsal shortening osteotomy or dorsiflexory osteotomy, respectively.

IS THERE A PLANTAR PLATE DISORDER W/ CLINICAL EVIDENCE OF INSTABILITY? If yes, repair and/or imbricate plantar plate through a preferred plantar lazy-S “step-down” incision (dorsal linear incision approach is also available)
Consider the following: acute/subacute vs. chronic; rupture vs. attenuation; mids substance vs. distal plate disruption (2 mini bone anchors in base of proximal phalanx indicated). If patient is sedentary and/or sagittal plane instability is not severe, an isolated FDL transfer may be acceptable.

IS TRANSVERSE PLANE DEFORMITY PRESENT? If yes and mild, consider an isolated MTPJ capsulotomy/capsulorrhaphy w/ or wo/ an FDB tendon transfer at the PIPJ level. EDB transfer and MTPJ ligament reconstruction have also been described. If yes and moderate to severe, treat this as a “bunion deformity of lesser MTPJ” and consider MTPJ capsulotomy/capsulorrhaphy w/ osseous procedures of the metatarsals. An FDB tendon transfer may also be helpful for additional correction or mini anchors can
be considered as part of the capsulorrhapsy for more robust correction. Osseous procedures may include a shortening and/or transpositional osteotomy distally and/or an angular correctional osteotomy proximally (angulational correctional osteotomy distally would be rarely indicated). Combinations of these three procedures may be indicated as dictated by pre-operative clinical and radiographic evaluation. Procedures of the proximal phalanx have previously been described as well but they generally do not address level of deformity and would be rarely indicated. In the author’s experience, moderate to severe transverse plane abnormalities are usually accompanied by a metatarsal malalignment and/or parabola abnormality that are predisposing factors for transverse plane instability.

Note: If problem is not isolated to one or two metatarsals but involves all metatarsals, i.e., severe metatarsus adductus, then corrective procedures of all metatarsals may be required for successful correction of transverse plane component. Syndactylization procedures w/ proximal phalanx base resection, arthrodesis procedures of the 1st and possibly the 2nd & 3rd MTPJs may be needed in cases of advanced instability involving dislocatable & dislocated digits.

FOR DORSALLY DISLOCATED DIGIT, IS DIGIT REDUCIBLE? If reducible, an MTPJ release, shortening metatarsal osteotomy (if elongated), plantar plate repair and digital correction w/ FDL tendon transfer with pin fixation of the MTPJ is indicated. If digit is non-reducible due to loss of MTPJ congruity, a joint elimination procedure may be indicated w/ a variety of choices available, i.e., proximal phalanx base resection w/ interposition (Stainsby Procedure) w/ or wo/ syndactylization, lesser MTPJ arthrodesis, interpositional arthroplasty w/ or w/ joint resection, amputation,
etc.). If there is maintained articular congruity but loss of cartilage dorsally, a radical dorsiflexory/plantar translational distal metatarsal osteotomy may be indicated to restore MTPJ congruity and joint articulation.

ARE THERE PREDISPOSING FACTORS PRESENT?
Predisposing factors may include the following: ankle equinus, forefoot equinus, hallux abducto valgus, first ray abnormality i.e., metatarsus primus adductus & medial column hypermobility), lesser metatarsus/forefoot adductus, lesser metatarsus/forefoot abductus, congenital hallux "varus" (adductus), metatarsal malalignment, etc.. Address these issues PRN to assure successful result.

POTENTIAL COMPLICATIONS: vascular compromise, extensus positioning of digit, lack of toe purchase, digital stiffness, stress fx of proximal phalanx due to overtensioned FDL transfer, recurrence of deformity, overcorrection, malunion, nonunion, irreparable plantar plate, continued pain w/ no repair of plantar plate.
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