MIS Hammertoe correction

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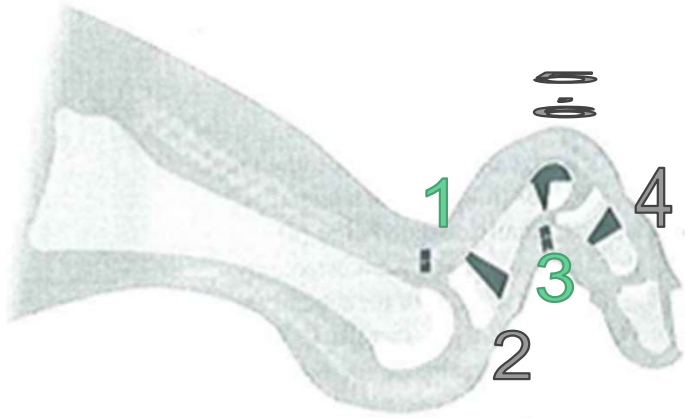
Traditional Hammertoe procedures

- Almost universally disliked by surgeons due to tedious nature, high complication rate, aesthetically and functionally displeasing results, patient dissatisfaction, implant failures, stiffness, etc…
- Larger incision, non-aesthetic
- Fuse ramrod straight requiring tedious hardware and unnatural look
- Hammertoes are (primarily) caused by tendon imbalance, not the ability of PIPJ to move. Evaluate cause and address through procedures to realign and rebalance and PT to remove the originally cause (biomechanics)

MIS hammertoe procedures

- Progressive approach that largely depends upon the location/angulation of deformity (MPJ, PIPJ, DIPJ).
- Most hammertoe deformity starts with dorsal contracture at the MPJ (DF).
- 2nd most common is fibrous adhesion with plantar contracture at PIPJ.
- Mix and match procedures depending on deformity



1. Extensor tenotomy (w/wo capsular release)
2. Prox phalanx base osteotomy
3. Plantar PIPJ capsular release (w/wo flexor tenotomy, usually just brevis released)
4. Middle phalanx osteotomy
5. Shaving of dorsal prox phalanx head
6. Prox phalanx head osteotomy

MIS hammertoe correction

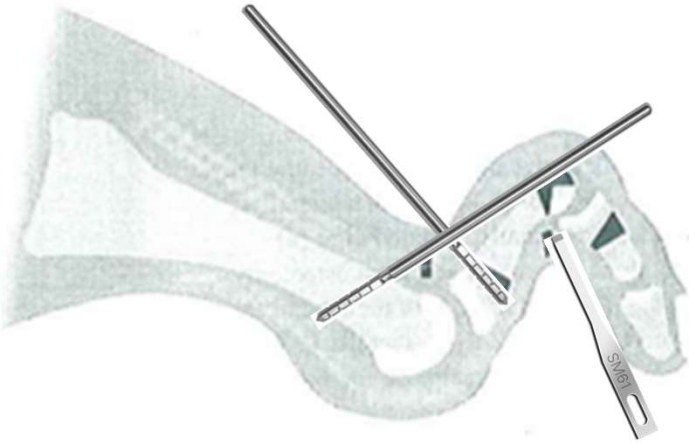
- Able to fix wide variety of hammertoes with combination of procedures, largely avoiding joint surfaces.
- Able to shorten digits.
- No wires or hardware necessary.
- Tenotomies are powerful.
  - Fix what's broken
- For severe HTs, MIS Weil/DMMO performed concurrently to further relax and decompress soft tissues
- Easy to fix fix varus/valgus digital deformity without complicated and expensive suturing or tightrope systems (with better results)
- Easily revisable
- Aesthetically and functionally superior

My assessment and approach

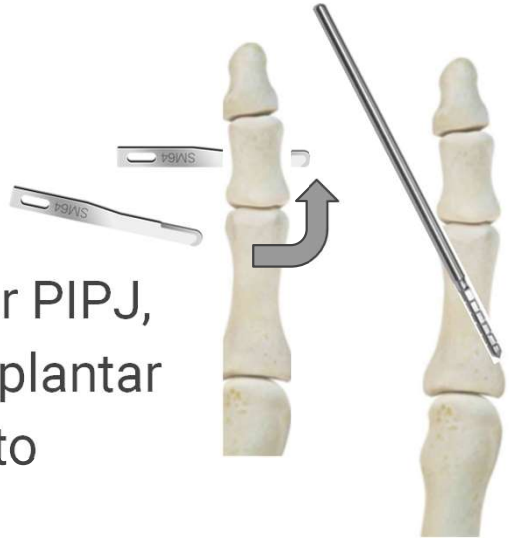
1. Determine deformed joints (MP, PIP, and/or DIP).
2. Address soft tissues at deformed joints
    a. MP -> extensor tenotomy and MPJ dorsal capsulotomy
    b. PIPJ -> FDB tenotomy and plantar PIPJ capsulotomy
    c. DIPJ -> FDL tenotmy at level of DIPJ
3. Reassess position of digits and determine need for osteotomies
    a. Start with Prox phalanx osteotomy, basal plantar closing wedge for mild, long oblique shaft if more severe
    b. Move to PIPJ and determine deformity, osteotomy at middle phalanx of proximal phalanx head (however recognize this will stiffen the PIPJ
4. If severe and still PIPJ contracture
    a. Consider shaving dorsal PP head
    b. Or, consider sending burr through the joint repeatedly (reciprocal planing) while correcting position with non-dominant hand until toe relaxes (essentially a fusion without hardware)

My Bread and Butter HT procedures

1. PIPJ tenotomy and capsulotomy. 61 blade inserted plantarly at middle phalanx, stab along plantar edge of middle phalanx to release capsule and flexor tendons. Straighten by hand, feel and hear it release.
2. Proximal phalanx plantar wedge osteotomy. Start dorsal at MPJ, insert long Isham burr along base to the left of the bone. Sweep across, using fluoro once or twice. Pivot burr to get plantar first then dorsal. Non-dominant hand pushing down on PP head until you feel it give. Leave cortex intact if you want for mild, go through for moderate to severe.
3. Can do met osteotomy through same incision



PIPJ w oblique



The most common joint contracture is at the plantar PIPJ, for this FDB tenotomy and plantar capsulotomy is a great go to procedure.

1. Plantarflex toe slightly and insert blade just under PP head (67MIS or 64), swipe distally (keeping blade right on the bone) under joint and toward center of middle phalanx. Remove blade and dorsiflex PIPJ and you should feel it release.
2. Through this same incision I'll do long oblique osteotomy as shown. Use long shannon burr and work from plantar to dorsal using other hand to push down on the PP head. You should feel the toe relax and plantarflex as the burr gets through the bone

Isolated flexor tenotomies can be powerful

88 Year old male, 2 years ago had 1st MPJ fusion and 2nd toe amp, now has more pain than ever.

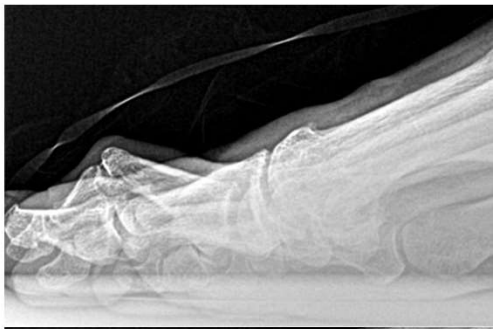
- Pain to distal tip of hallux
- Pain to hallux where 3rd toenail jamming into flesh
- Pain to tips of 4th and 5th toes
- Pain and palpable prominence to mets 2-5

Distal akin, met osteotomy 2-5, 3rd prox phalanx base and head ostetomy and flexor tenotomy, 4 and 5 flexor tenotomy only. Also built him a custom pediplast 2nd toe spacer/prosthetic.


72 F, post op pics at week 4, Left Double cut SERI, Right akin. ⅔ mets on left, 2nd met on right. Bread and butter 2nd HTs, left 3rd flexor T&C

66 F. 2nd HT only. Bread and butter PP osteotomy and PIPJ flexor tenotomy and capsulotomy.

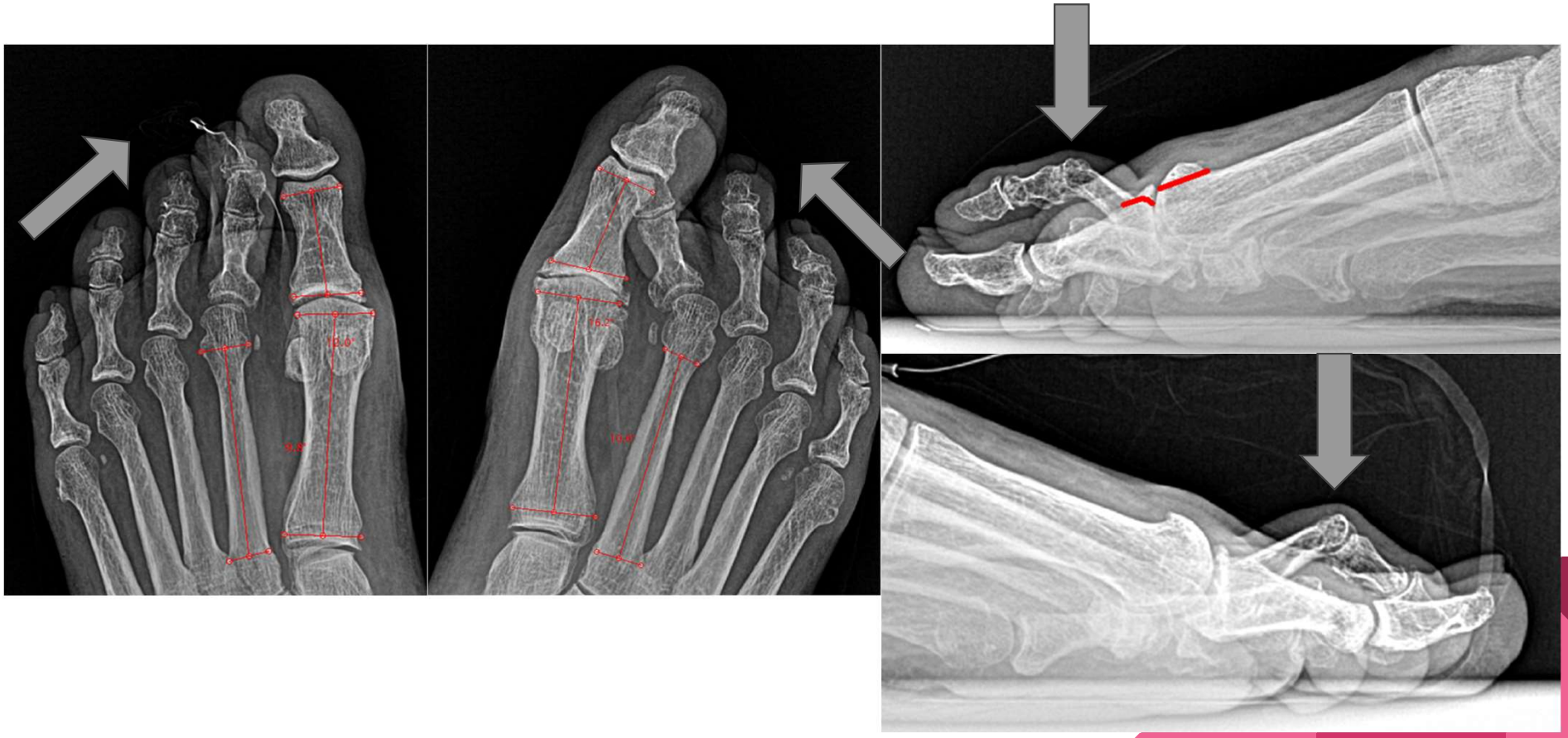
59 M, again, bread and butter PP base osteotomy and PIPJ T&C

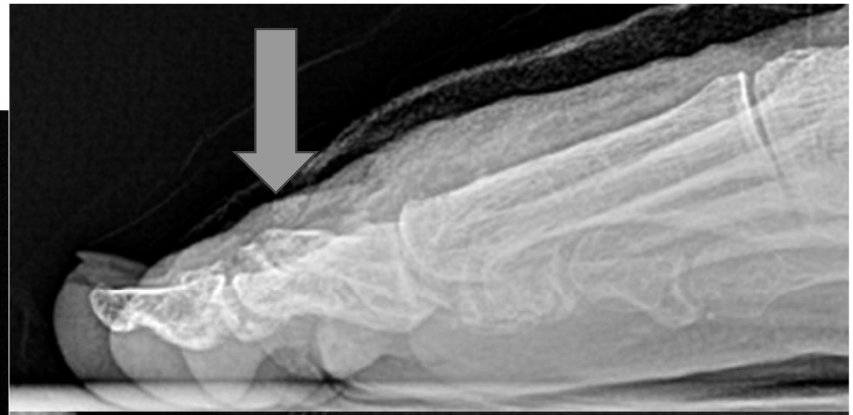


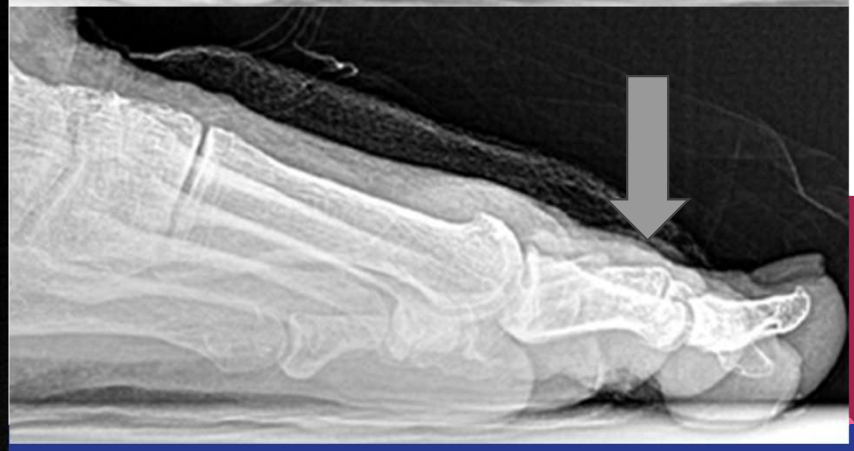
65F, and another, PP osteotomy, PIPJ T&C

Toe shortening

Multiplanar HT deformity, Varus digits, 2nd MPJ DF







Tenotomy/Weil can be very powerful

81y/o tennis player

+Dorsal shave

Bandaging

Lack of fixation makes bandaging more important, however I would urge you to try to get satisfactory correction prior to bandaging. Put another way, don't try to make up for inadequate procedures with extra bandaging.

- Steri-strips can be used in OR with direct contact to skin
- Pediplast is a great tool in your arsenal (after incisions are healed)
- Kinesiotape is fantastic as its stretchy and won't cut into the skin like silk tape
- Kling and Coban can also be used to manipulate toes into correct position
- I personally change HT bandages once per week, in many cases you can train the pt to do this by having them videotape you or with a simple handout with pictures.

https://grecmip.org/elearning/conferences/send/16-toes-deformities/86-toes-postop-dressings-2019