

BRACHYMETATARSIA

SINGLE STAGE LENGTHENING

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BRACHYMETATARSIA

- ABNORMAL SHORTENING OF METATARSAL/S
- 4TH MET MOST COMMON
- GREATER INCIDENCE IN FEMALES 25:1 (0.02-0.05% INCIDENCE)
- >50% BILATERAL
- MOSTLY ISOLATED PATHOLOGY OR PSEUDOHYPOPARATHYROIDISM (TURNER'S DISEASE)
- PREMATURE CLOSURE OF EPIPHYSEAL PLATE



PRESENTATION

- COSMETIC
- METATARSALGIA OR TRANSFER LESIONS
- TOE DEFORMITY DIFFICULT TO ACCOMMODATE IN FOOTWEAR



SINGLE STAGE V DISTRACTION OSTEOGENESIS

SINGLE STAGE

- SHORT TREATMENT EPISODE
- EASIER POST OP MANAGEMENT
- LIMITED LENGTH CAN BE ACHIEVED 10-15MM
- NEUROVASCULAR RISK
- GRAFT FAILURE
- GRAFT SITE MORBIDITY

EX FIX

- LONGER TREATMENT EPISODE
- DIFFICULT POST OP MX – PATIENT RELIANT
- GREATER PERIODICAL XRS
- GREATER LENGTH CAN BE ACHIEVED
- LESS NEUROVASCULAR RISK
- PIN TRACT INFECTION/EARLY FUSION/ MET ANGULATION/TOE SUBLUXATION/JOINT STIFFNESS

Schimizzi A, Brage M. Brachymetatarsia. *Foot Ankle Clin.* 2004;9(3):555-570

PRE OP CHARTING

- ESTABLISH NORMAL LENGTH BY USING CONTRA LATERAL FOOT X-RAYS OR GO BETWEEN 3 AND 5TH MET.
- CONFIRM WHETHER TOE IS ALSO SHORT
- NEED GOOD BONE STOCK
- TYPE OF BONE GRAFT (ALLO/AUTO/XENO)



INCISION PLANNING & DISSECTION

- PROXIMAL MET
- SLIGHTLY LATERAL – CONFIRM ON C ARM
- EXTENSOR TENDON LENGTHENING?
- CUT 5TH EXTENSOR TENDON FOR ACCESS
- METATARSAL SHAPE MAY APPEAR NARROW DORSALLY FOR SCREW PLACEMENT



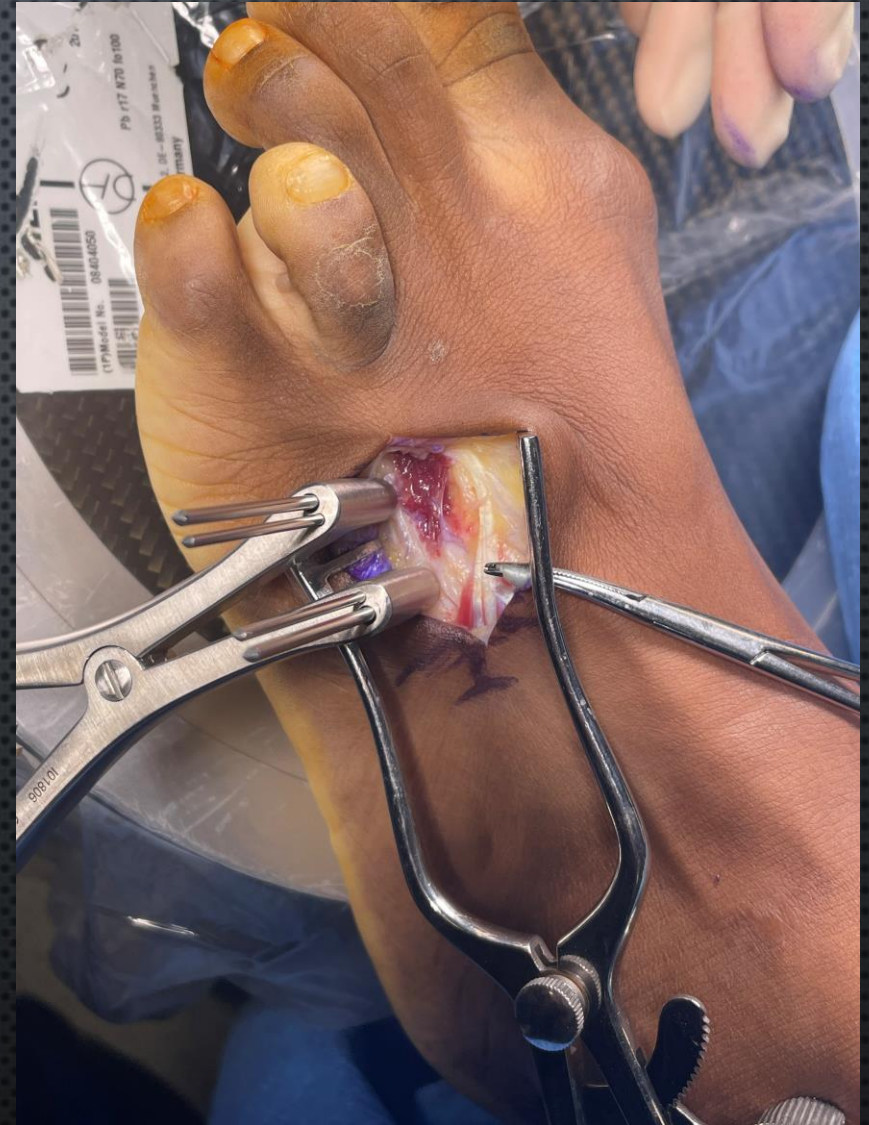
OSTEOTOMY

- TRANSVERSE OSTEOTOMY
- PROX MET 2CM DISTAL TO MET-CUBOID JOINT
- DO NOT OVER DISSECT PERIOSTEUM



DISTRACTION

- SLOW DISTRACTION
- KEEP EYE ON TOE SUBLUXATION AND DISTAL MET AND TOE
- NEEDS TIME TO DISTRACT AND ALLOW SOFT TISSUE ADAPTION (10-20 MIN)
- CAN USE K WIRE ACROSS TOE/MTP/MET SHAFT FOR TEMP STABILISATION
- CHECK ALIGNMENT IN ALL PLANES
- USE A 4 HOLE HINTERMANN
- CAN USE EX FIX FOR CONTROLLED DISTRACTION



INTERPOSITION GRAFT

- CAN SOMETIMES COLLAPSE IF TOO MUCH TENSION
- NEED TO CONTROL DISTAL MET ALIGNMENT
- PLATE FIXATION RATHER THAN K WIRE



POST OP

- 2 WEEKS BACK SLAB AND ROS AT 2/52
- BK FOR 4 WEEKS
- XRAYs AT 6/52
- SHORT AIRCAST BOOT FOR 4 WEEKS
- XRAYs AT 10/52
- 6/12 AND 1 YEAR REVIEW



COMPLICATIONS - SINGLE STAGE

- GRAFT FAILURE
- PLATE IRRITATION/FRACTURE
- JOINT STIFFNESS/ FLEXED TOE
- NEUROVASCULAR INJURY
- UNDER CORRECTION



JONES MD, PINEGAR DM, RINCKER SA. CALLUS DISTRACTION VERSUS SINGLE-STAGE LENGTHENING WITH BONE GRAFT FOR TREATMENT OF BRACHYMETATARSIA: A SYSTEMATIC REVIEW. J FOOT ANKLE SURG. 2015 SEP-OCT;54(5):927-31. DOI: 10.1053/J.JFAS.2015.02.013. EPUB 2015 MAY 19

CALLUS DISTRACTION

- MAJOR COMPLICATIONS 12.62%
- MINOR COMPLICATIONS 39.18%
- MEAN LENGTH 17.5MM
- MEAN HEALING TIME 16.04 WEEKS

SINGLE STAGE

- MAJOR COMPLICATIONS 3.72%
- MINOR COMPLICATIONS 15.72%
- MEAN LENGTH 13.2MM
- MEAN HEALING TIME 9.35 WEEKS

Conclusion - callus distraction whilst can achieve greater length, is associated with higher complication and x2 healing time!

62 Studies

MY COMPLICATIONS – SINGLE STAGE

- 26 FEET BETWEEN 2014 AND 2022 (24 WERE 4TH MET AND ONE 3RD MET)
- 5 CASES WITH ADJUNCTIVE FOREFOOT PROCEDURES
- AVERAGE FUP 13.2 MONTHS
- 18 FEMALE AND 1 MALE
- 6 BILATERAL
- 24 AUTOGRAFT AND 2 XENOGRAFTS
- 1 CRPS
- 4 PLATE REMOVALS (2 PLATE FRACTURES)
- 3 STIFF TOES NEEDING PERCUTANEOUS FLEXOR TENOTOMIES
- 3 UNDER CORRECTIONS
- 2 NON UNION (XENOGRAFT)
- **MAJOR COMPLICATION RATE 11.5%**

MY LAST EX FIX CASE



Pre op



4 weeks post op



8 weeks



16 weeks



8 Months



10 months



4 weeks post op

FINAL THOUGHTS - SINGLE STAGE

- IT'S MY GO TO FOR <15MM LENGTHEN
- 12-15MM RANGE CAN BE TRICKY AND NOT ALWAYS ACHIEVABLE
- LESS PATIENT DEPENDENT
- NO RISK OF PIN TRACK INFECTION
- PREDICTABLE
- LESS CHANCE OF STIFF JOINT
- QUICKER EPISODE



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THANK YOU

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