SURGICAL APPROACHES TO FIRST RAY

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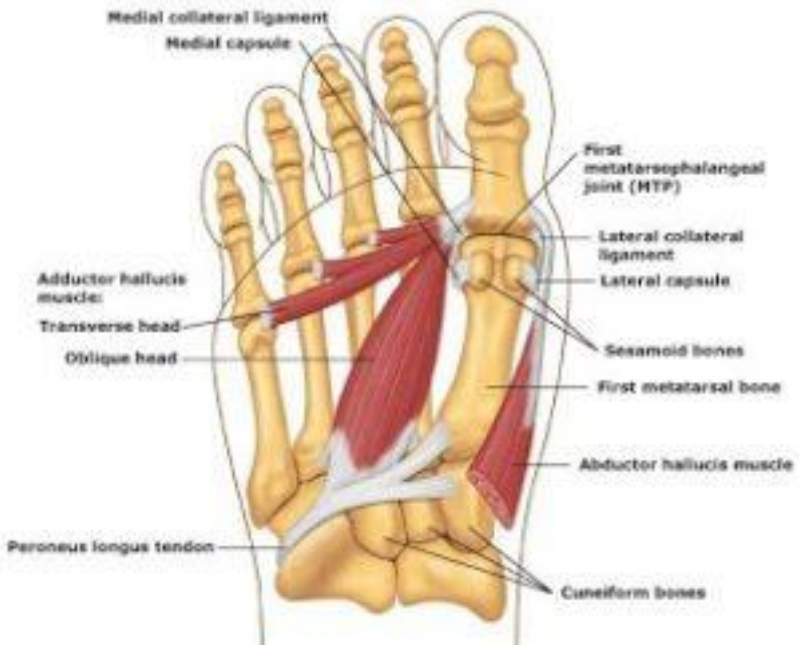
INSTRIDE – PIEDMONT FOOT & ANKLE CLINIC – DUNN, NC

HALLUX ABDUCTOVALGUS DEFORMITY

Bunion Categories

- PASA Deformity only
- Mild HAV
- Moderate HAV
- Severe HAV
- Combined HAV



Typical Procedure Selection

- Capsule Tendon Balancing
- PASA Correcting
- Head Procedure
- Midshaft Procedure
- Proximal Procedure
- Arthrodesis
- Combination of above

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PROCEDURES

Capsule Tendon Balancing

- Removes bump
- Derotates hallux
- Relocates sesamoid
  - Silver
  - McBride
  - Hiss

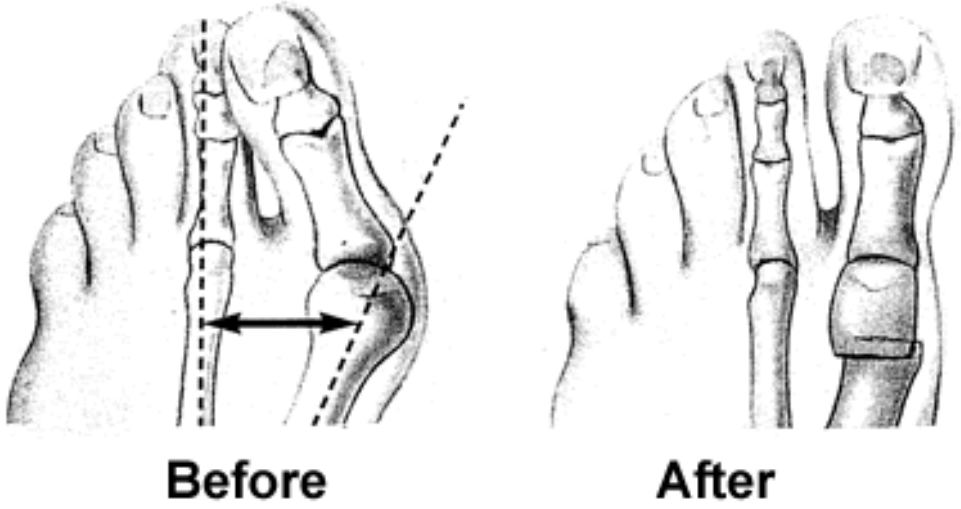
PASA Correcting

- 11 modifications
  - Reverdin
  - Peabody
  - Reverdin-Green
  - Reverdin-Laird
  - Reverdin-Todd

PROCEDURES

Head Procedures

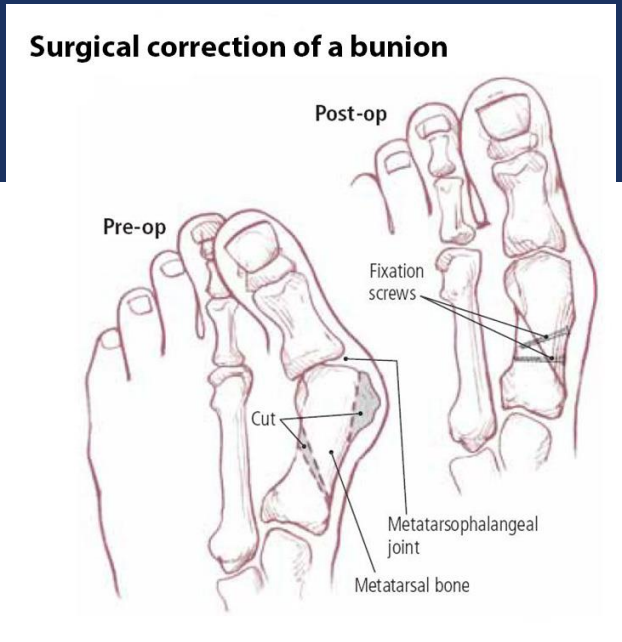
- Most common
- Gives apparent IM correction
  - Austin/Chevron and modifications
  - Mitchell
  - Hohmann
  - Wilson
  - DRATO



Midshaft Procedures

- Performed in diaphysis or cortical bone
- Scarf or Z osteotomy
- Offset V
- Ludloff
- Mau

PROCEDURES



Proximal Procedures

- CBWO
- OBWO
- Crescentic
- Kotzenberg – Proximal Chevron
- Cotton

Combination Procedures

- Head osteotomy and Akin
- Midshaft osteotomy and Akin
- Logroscino (CBWO and Reverdin)
- Stamm (OBWO and Keller)
- Cotton and Head osteotomy
- Cotton, Head osteotomy, and Akin
- Lapidus and Akin

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"NEW" PROCEDURES OR METHODS

- More than 130 methods have been described to treat bunions
- Consensus regarding best management has yet to be determined
- 4.4 million patients visit physicians annually complaining of bunion deformity
- Recurrence can be as high as 25-75% due to inability to align joint

- MIS
- Lapidus

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MINIMALLY INVASIVE SURGERY

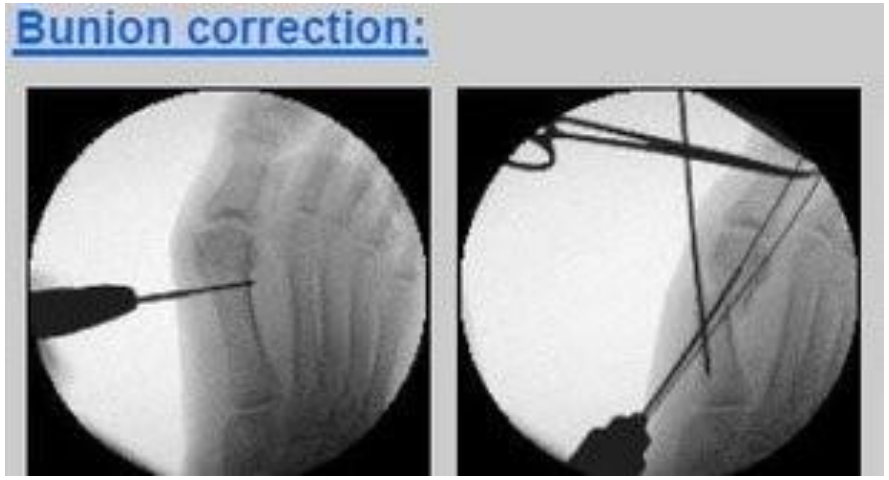
- Arthroscopy
- Percutaneous Procedures
- Minimum Incision Osteotomies

- Common concerns
  - Lack of stability
  - Unpredictable healing
  - Prominent metatarsals

- Benefits
  - Cosmetic incision
  - Minimal soft tissue/bone dissection
  - Low energy osteotomy
  - Shorter surgical time
  - Shorter recovery
  - Greater patient satisfaction

MIS STUDIES

- 1983 – New *et al* reported on percutaneous technique for HAV correction
- 1990 – Bosch *et al* first described minimally invasive distal metatarsal osteotomy with percutaneous technique
- 2010 – Enan *et al* performed study of 36 feet and found that due to less operative time and less surgical dissection there was no reports of
  - Recurrence
  - Nonunion/Malunion
  - Transfer Metatarsalgia
  - Avascular necrosis
  - Secondary Hallux varus
  - Deep infection



NEW METHOD OF LAPIDUS PROCEDURE

- Allows 3 plane correction and to fuse TMTJ in corrected anatomic alignment
- "Positioning" instrument to hold metatarsal in 3 planes before making bone cuts – freehand variability is removed
- Mizuno in 1956 first described frontal plane or pronation of first metatarsal
- Component in up to 85% of bunions
- Traditional osteotomies mainly provide transverse plane correction and unable to correct frontal plane

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NEW METHOD OF LAPIDUS

- Both an instrumentation and fixation systematic approach to bunion surgery
- Relies on "biplanar plating" to fuse in corrected position
- Hardware is low profile but highly stable construct and helps with fast return to WB post-op
- JFAS study by Dayton *et al* shows biplanar fixation is superior to plate and interfrag compression screw construct

CASE DISCUSSION ONE

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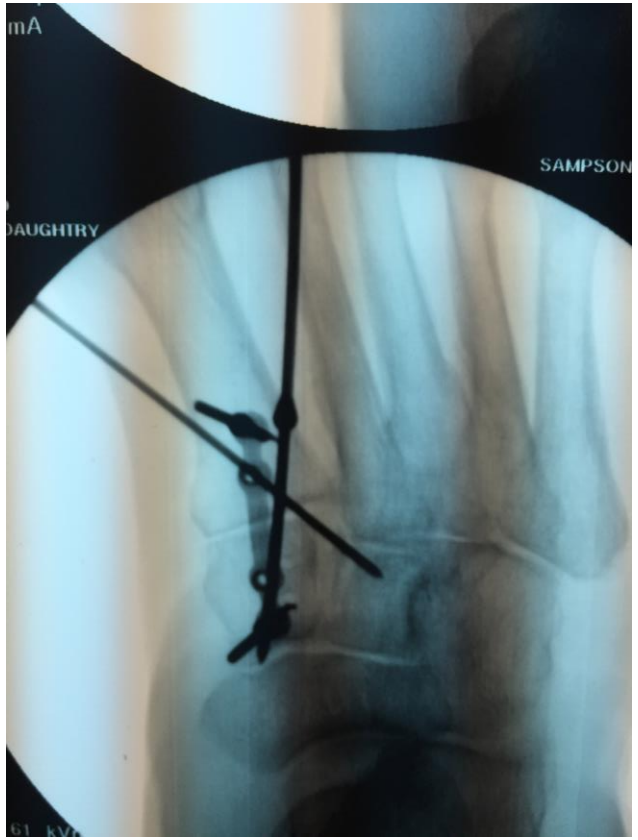
CASE DISCUSSION ONE



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CASE DISCUSSION TWO

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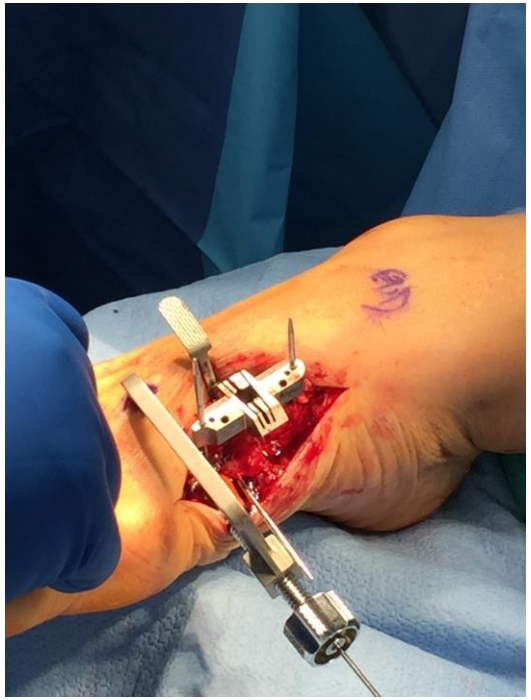
CASE DISCUSSION TWO



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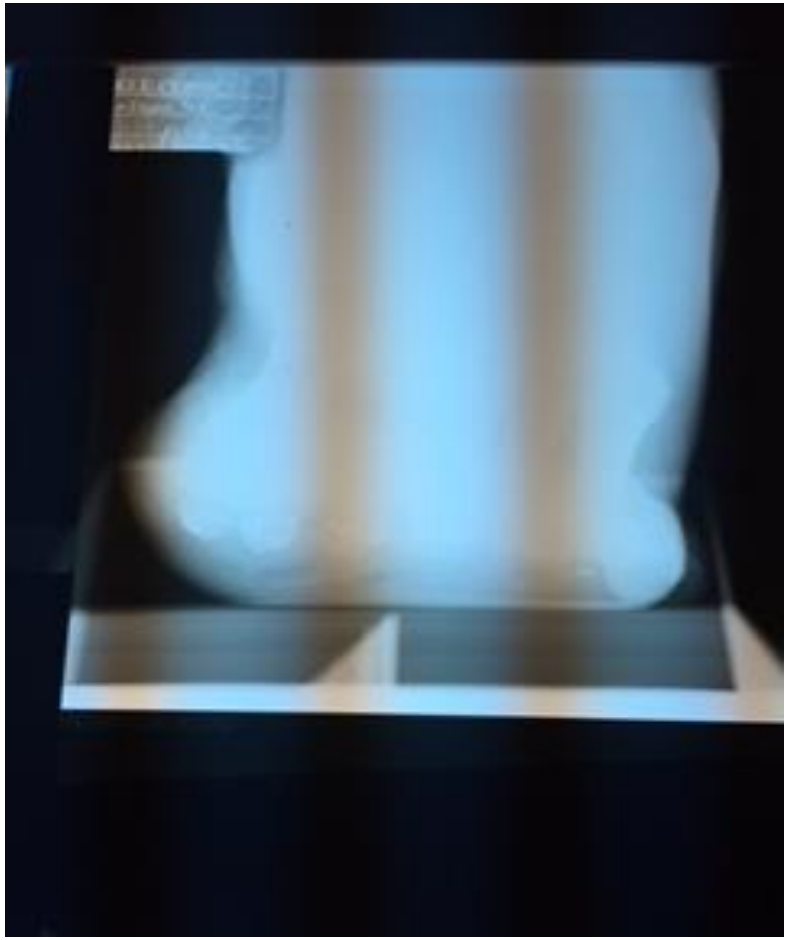
FRONTAL PLANE CORRECTION NOTED ON SESAMOID AXIAL VIEW



HALLUX LIMITUS/RIGIDUS PROCEDURES

Joint Preservation

- Cheilectomy/Valenti
- Plantarflexory osteotomy
  - Watermann
  - Hohmann
  - Modified Austin (Youngswick)
- Proximal phalanx osteotomy
  - Moberg
  - Bonney-Kessel

Joint Destruction

- Resection arthroplasty (Keller)
- Arthrodesis
- Interpositional arthroplasty
- Hemi or total joint replacement

HALLUX RIGIDUS

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HALLUX RIGIDUS

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HALLUX LIMITUS/RIGIDUS

Procedure Selection

- Patient's age
- Activity level
- Location of joint pain
- Severity of joint damage
- Patient expectations

Advancement in Surgical Management

- Improved osseous preparation
- Improved/more stable internal fixation for fusion
- New materials - synthetic cartilage implant

JOINT DESTRUCTIVE

Arthodesis

- "Gold standard" to eliminate pain and allow more normal functional gait pattern
- Proven and predictable method
- Advances include:
  - Improved osseous preparation/equipment
  - Internal fixation for 1st MTPJ fusion
- Metallic resurfacing of metatarsal head shows promise as alternative to fusion

New materials

- Synthetic cartilage implant
- Gel-like implant that mimics quality and density of bone
- Steps for use:
  - Remove bone spurs
  - 1cm drill hole in first metatarsal head
  - Inject gel into the hole which expands to fill space and overflow acts as cap on joint

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