3:00 – 4:00 pm

SESSION 7:
COMPLICATIONS OF BUNION SURGERY

Moderators:

Stephen F. Conti, MD
(Pittsburgh, Pennsylvania)

Nicholas A. Abidi, MD
(Santa Cruz, California)
Goals and Objectives:
1. The goal of this lecture is to stimulate the listener to think about the treatment of bunion deformities by individualizing treatment based on intraoperative assessment.
2. Reduce surgical complications by learning to analyze and treat bunion deformity components intraoperatively.

Introduction:
The surgical treatment of bunions is best performed by an analysis of the patient's complaints and structural deformities and an intraoperative algorithmic assessment of particular sites to create a customized surgical treatment plan for each patient.

Treatment is based upon the following observations:
1. There are three types of bunion deformities: congenital, acquired, and traumatic.
2. Congenital bunions have congruent 1st MTP joints with subluxed MTS articulations and varying 1-2 intermetatarsal spring.
3. Acquired bunions have incongruent 1st MTP and MTS joints with much of the pain from MT-medial sesamoid arthritis. Assessment of the 1st TMT joint intraoperatively can reveal the reason for the 1st metatarsus primus varus and can include remodeling of the joint, asymmetric arthritis or ligamentous instability.
4. The goal of surgical correction must be to correct the DMAA and realign the sesamoids under the metatarsal head.
5. Gastrocnemius tightness and structural foot abnormalities (pes planus/cavus) affects long-term outcomes following bunion surgery and must be taken into account during surgical correction.

Preoperative assessment of congruency of the first MTP joint and instability of the 1st TMT joint is unreliable and are best assessed intraoperatively. Post-operative complications such as first MTP stiffness, chronic pain, recurrence, and incomplete correction can be lessened by choosing a surgical procedure that addresses the patient's complaints and intraoperatively corrects each component of the deformity.

How to avoid these issues:
1. Set up appropriate expectations preop of power of surgery to correct the problems that the patient perceives and the lack of ability of the surgery to correct the problems that the patient perceives- is their goal pain relief, deformity correction, improved range of motion, increased activity post-op, increased ability to wear fashionable shoes.
2. Identify the anatomic source of the patient's complaint.
3. Follow a defined intraoperative surgical treatment algorithm rather than depend exclusively on preoperative assessment.
4. Do not apply the same surgical procedure to all bunions.
Bibliography:

1) Chevron (or other distal) osteotomies
   - Common complications
     - Undercorrection
     - Early recurrence
     - Inadequate soft tissue balance
     - AVN
   - Prevention
     - Don’t push the limits of the osteotomy
     - Know more than one procedure well
     - Look at all the elements of the deformity
   - Salvage
     - Proximal procedure, or shaft osteotomy more powerful than distal chevron

2) Scarf Osteotomy
   - Common complications
     - Throwing
       - Invagination of two semitubular metatarsal halves
       - Leads to elevation of the 1st metatarsal
       - Can lead to pronation or supination malunion
   - Prevention
     - Stem to stern osteotomy
     - Shorten the “short cuts” of the Z limbs
     - Non-compression screw fixation
   - Throwing - Salvage
     1. Proximal crescentic
     2. Biplane shaft
     3. Transverse osteotomy plus grafting to correct multiple planes
   - Proximal fracture
     - Saw blade swing
     - Screw fixation
     - Prevention
       - Short, narrow saw blade
       - Limit WB post-op
Difficulty sliding/rotating capital fragment
- Short limbs should be parallel

3) Proximal Crescentic Osteotomy

- Common complications

Dorsiflexion Malunion
- Medial rotation of the saw blade
- Inadequate fixation
- Early weight bearing

Prevention
- Attention to detail
  - blade orientation is critical
  - perpendicular to long axis of foot
- Protected weight bearing
- Additional fixation

Salvage
- Plantarflexion osteotomy
- Bone block
- Plate fixation

Hallux Varus

Shortening

4) Lapidus

- Common complications

Nonunion
- Most common: 2% - 10%

Prevention
- “crush” subcondral plate and multiple small diameter drill holes
- Longer weight bearing restriction than other bunion procedures
- Social factors – smoking – is a contra-indication

Salvage
- Bone graft
- Plate fixation

Dorsal elevation/malunion
- Inadequate joint exposure
- Inadequate removal of plantar cartilage
- Poor fixation

Prevention
Adequate joint distraction
Use a mini lamina spreader
Remember anatomy! The 1st TMT joint is about 30mm deep

- **Salvage**
  - Dorsal open wedge osteotomy
  - Plantar closing wedge osteotomy
  - Stable fixation

- **Shortening of the 1st ray**
  - Too aggressive bone cuts
  - Congenital short metatarsal

- **Prevention**
  - Remove cartilage only with bone cuts
  - Slight plantarflexion of first ray
  - Consider second and third MT shortening if indicated

- **Salvage**
  - Orthotics to unload lesser metatarsals
  - Shortening osteotomies of the lesser metatarsals
  - Bone block lengthening

**References: Bunions**

**Lapidus**


Thompson IM, Bohay DR, Anderson JG. Fusion rate of first tarsometatarsal arthrodesis in the modified Lapidus procedure and flatfoot reconstruction. Foot Ankle Int. 2005 Sep;26(9):698-703.

Proximal osteotomy


Scarf Osteotomy


Smith AM, Alwan T, Davies MS. Perioperative complications of the Scarf osteotomy. Foot Ankle Int. 2003 Mar;24(3):222-7

Introduction:
Poor outcome after bunion surgery is a result of many factors.
1. Failure to adequately listen to patient complaints-
“difficulty with shoe wear”, “heels”, walking barefoot, can’t run (female athlete), pain at night, pain at rest

Most commonly dorsal medial first MTP pain-74%(Mann and Pfeffinger 1991)
Cosmetically unacceptable deformity-62%-REF 70 (Mann and Pfeffinger 1991)
Can also be pain plantar MTP joint-consider sesamoid issues
Can also be pain in an adjacent MTP joint or webspace

2. Failure to adequately diagnose patient problem-advanced HV deformity, advanced IM deformity, first TMT hypermobility, first MTP DJD, gout, sesamoid AVN, tight gastroc, underlying neurological issue (spasticity or flaccidity).

3. NOTHING IN ORTHOPAEDIC SURGERY RESULTS IN 100% GOOD OR EXCELLENT OUTCOME. TELL THEM THAT AHEAD OF TIME! FIND THE PAPER THAT DEMONSTRATES 100% G or E outcome-good luck.

Failure to set appropriate post-op expectations regarding post-op recovery, possibilities for residual deformity, arthrofibrosis or neurogenic issues. Ability to wear shoes (75%) that they would like to wear post-operatively.

4. Failure to perform correct operation for deformity-
Distal soft tissue surgery must be performed carefully in order to re-align the sesamoids. Important to release the adductor tendon and transverse metatarsal ligament from the fibular sesamoid along with lateral capsulotomy. And transfer the adductor tendon to the first and second Met heads.

-92% post operative good or excellent outcome-satisfied
  74% No residual pain
  18% Decreased deformity
  8% Decreased bunion size
-8% dis-satisfied
  50% Complained of pain around the joint
  50% Complained of alignment of the toe

- Unrestricted shoewear was possible in 20% of patients preop
-53% of patients could wear un-restricted shoes post-op
-47% Could not wear unrestricted shoes post-op

-66% of patients were able to increase their activity level
-30% were unchanged
-4% were diminished

-8% incidence of hallux varus post-op

ROM post-op was DF 67 PF 8 compared with DF 75 and PF 16 for control foot

HV angle post-op <16 degrees in 41% of patients (Mann and Pfeffinger 1991)

-re-current pain post-op will resolve over the first year post-op
-arthrofibrosis will resolve post-op but patients can initially suffer with stiffness and pain, unless arthritic joint found intra-op
-neurogenic symptoms can develop post-op due to scar tissue formation over the nerves around the incision cites.

Distal soft tissue surgery alone can result in higher recurrence rate and poor post-operative patient satisfaction in light of a high hallux valgus and inter-metatarsal angle pre-op; these patients should undergo metatarsal osteotomies along with the distal soft tissue procedure in many cases with large deformity (their studied outcome was similar to the distal soft tissue procedure, but they started with higher HV and IM angles in this study).

Patients with evidence of high angle HV and IM or DJD should undergo first MTP arthrodesis in order to prevent post-op pain or deformity re-occurrence.

5. Failure to use inadequate intra-operative fixation techniques for bone osteotomy or fusion can result in a lack of fixation, non-union, malunion or AVN post-op.
In-adequate post-op soft tissue dressing can result in recurrence of hallux valgus deformity.

6. Failure to adequately assess circulation preop or excessive post-op swelling or development of Raynaud’s can result in wound healing complications or loss of a toe or a foot. Patients need to hear this preop.

7. Bunion surgery can lead to over-correction (hallux varus) that requires more surgery due to deformity and pain or under-correction or loss of correction than can require more surgery due to deformity and pain. Patients need to hear this preop as well in case it happens post-op.

How to avoid these issues:

5. Set up appropriate expectations preop of power of surgery to correct the problems that the patient perceives and the lack of ability of the surgery to correct the problems that the patient perceives- is their goal pain relief, deformity correction, improved Range of motion, increased activity post-op, increased ability to wear fashionable shoes.

6. Prepare patients for possibilities of stiffness—may have to wear a stiff soled shoe post-op for a while until stiffness resolves and swelling goes away.
7. Metabolically evaluate your patients ahead of time looking for suspected gout, inflammatory disease, vascular insufficiency and peripheral neuropathy.

8. Evaluate patients for neurogenic spasticity or first MTP DJD preop-consider arthrodesis for these patients in order to avoid recurrence and persistent pain post-op.

9. Order MRI’s/bone scans preop if suspect first met head AVN, DJD or sesamoid AVN prior to surgery.

Bibliography:

The post-operative management of the bunion patient really starts with pre-operative education. Controlling expectations is vitally important; but equally important is to prepare the patient for what lies ahead.

**Pain issues-**
The control of post-operative pain is the first major hurdle. The variability of pain issues is enormous from patient to patient. The use of narcotics is important as the peripheral block wears off. The use of a pain pump for 48-72 hours and the injection of a“subq cocktail” (ropivacaine, morphine, methylprednisolone and ketorolac) may assist in pain control post-operatively.

**Motion issues-**
We have noted that a large number of patients have cartilaginous articular lesions on the plantar metatarsal surface. These pre-arthritis findings may help in predicting those patients who will have suboptimal motion at longer term follow-up. We know that realigning a substantial hallux valgus deformity immediately diminishes MTP joint motion by 20 degrees. A patient will have to strive to gain this motion back. We provide them with a handout, instructing them in passive motion to commence at one week after surgery (when pain issues have subsided). At six weeks following surgery, if motion is reduced and not improving, we pursue physical therapy. (We work with only one or two dedicated therapists who are committed to the foot and ankle.) An MTP joint manipulation occasionally is needed (and should be performed by 12 weeks post-operatively).

**Sensory issues-**
We assess numbness over the medial eminence pre-operatively. Often it is significant, and we want our patients to understand we will identify the dorsal sensory nerve at surgery and protect it, but it may be substantially compromised pre-operatively. This often but not always improves after surgery, and pre-operative education here is important. Patients rarely are aware of this sensory deficit.

**Swelling-**
The older and heavier the patient (it seems), the longer it takes for swelling to subside. This can take months in some patients, and pre-operatively informing of this is important.

**Maintaining position-**
This is a controversial subject. Some procedures require little control of the position of the hallux (like an MTP arthrodesis) while others require close watch (a DSTR). Some procedures (like the SCARF) seem to require less attention according to their advocated. A quick dressing change every two weeks is still our routine, however, in some patients, we do let them use a prefab great toe splint. But this is rare. Even in the best of circumstances, recurrence or hallux varus can develop. A close watch for 6 weeks is how we still do it. There are no studies that confirm either way is superior.
Conclusion-
I still believe frequent visits for the first 6 weeks after surgery is the best way to avoid complications. Each visit is an education opportunity for you with your patient, as well as a chance to intervene if complications develop. Patients with bunion deformities really want a realigned hallux when they are done. Keep control of the situation, and watch them closely.
SESSION 7: Avoiding Complications: Associated structural issues

Donald R. Bohay, MD
(Grand Rapids, Michigan)

LESSENING COMPLICATIONS OF BUNION SURGERY:
ASSOCIATED STRUCTURAL ISSUES

Donald R. Bohay MD/FACS
Professor Orthopaedic Surgery
Michigan State University
Co-director Grand Rapids Orthopaedic Foot and Ankle Fellowship Program

Unstable Medial Column

Could this represent a pre-collapse condition of the longitudinal arch?
Is this a picture of the foot in a “moment in time”?
Is there a more global explanation for this phenomenon?

Tight gastroc drives this collapse of medial arch

Background

- Gastroc-soleus contracture
- Well-documented deleterious effects on limb function
- Spastic or neuro impaired individuals
- Sparse reports linking gastroc contracture with:
  - Plantar fascitis
  - Forefoot ulceration in diabetics
  - Progressive hallux valgus
  - Flatfoot
- Little attention given to effects of gastrocnemius contracture in orthopaedic literature
**Background**

- Hansen/Sangeorzan et al (JBJS 2002)
  - review of 68 Prospective patients
  - Patients with forefoot/ midfoot symptoms
  - maximum ankle dorsiflexion (4.5 vs 13.1°) with the knee extended than the control group
  - Hypothesized gastrocnemius muscle is the predominant deforming force in people with structural breakdown or chronic pathological changes related to the foot and ankle

**Hypothesis: Direct Relationship between foot collapse and gastroc contracture**

- Foot collapse occurs in predictable patterns
- Collapse occurs over a continuous spectrum
- Clinical states present as a “snapshot” within the motion picture of progressive collapse
- Equinus contracture is common denominator

**The foot as a tripod: Requires stable medial column**

**Collapse of the medial arch: Tripod has tipped over**

**Medial arch collapse**

- AKA:
  - Hypermobile first ray
  - Incompetent medial column
  - Varus forefoot
  - Supinated forefoot
  - TMT, N-C, T-N “sag”
  - Falling arch

**Medial column stability**

**The hypermobile first ray**
Evidence of a hypermobile first ray

- Radiographic sag at 1st TMT, NC or TN joint
- Lesser metatarsal overload (metatarsalgia)
- Lesser metatarsal plantar callosity
- Arch pain
- 2nd MTP synovitis or subluxation
- Lesser metatarsal stress fractures or stress hypertrophy

Evidence of a hypermobile first ray

- 2nd and 3rd TMT arthritis
- N-C arthritis
- Flatfoot (varus forefoot with valgus hindfoot)

Transverse arch collapse

- Occurs as a result of medial column collapse
- Stress moves to 2nd and 3rd rays
- Arthritis occurs in rigid medial column joints
- Medial N-C
- 2nd and 3rd TMT
- Wear occurs on dorsal side

Bunion x-ray
Treated with TMT fusion, intercuneiform stabilization, Modified McBride, Gastroc

- First TMT stabilization to restore medial arch stability
- Modified McBride realigns 1st ray
- Gastroc recession to unload forefoot and midfoot pressures, restore dorsiflexion

Arch collapse Classification System
Gustilo, Jolles, Anderson, Oakley AOFAS, Toronto, July 2007

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>Stage 1</td>
<td>Tight gastrocnemius with no foot deformity or collapse</td>
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<tr>
<td>Stage 2</td>
<td>Tight gastrocnemius with medial column breakdown and isolated forefoot problem</td>
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<tr>
<td>Stage 3</td>
<td>Tight gastrocnemius with medial column breakdown, forefoot and midfoot problem</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Tight gastrocnemius with medial column breakdown, forefoot varus with compensatory hindfoot varus</td>
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<tr>
<td>Stage 5</td>
<td>Stage 4 with valgus ankle</td>
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</table>

Stage 2 Forefoot deformity
Conclusion

- Let's stop using the term "Bunion" and look at a more global application involving metatarsus primus varus and hallux valgus.
- Associated structural abnormalities i.e. gastrocnemius contracture, medial column instability, dorsal lateral peritalar subluxation if affecting the overall clinical picture should be addressed.
Goals and Objectives:
1) Understand one surgeon’s thought process for a surgical algorithm
2) Develop your own algorithm based on education, training and experience
3) Reduce surgical complications through application of a uniform algorithm

Assessment of x-ray:
- If 1st MTP arthritis then offer 1st MTP fusion
- If other reasons for fusion such as neurogenic bunion, severe MTS arthritis or poor soft tissue around MTP joint then fuse
- If no reason to fusion then proceed through ABC algorithm

ABC algorithm:
- Perform medial eminence incision, capsulotomy and inspect first MTP joint
- Inspect for congruency of 1st MTP joint
- If congruent perform biplanar distal Chevron osteotomy with release of metatarsal-lateral sesamoid ligament
  - If no spring between MT’s 1 and 2 then only capsular closure
  - If moderate spring add minitightrope between MT’s 1-2
  - If severe spring then add cuneiform opening wedge medial cuneiform osteotomy with minitightrope between MT’s 1-2
- If incongruent then add first webspaces incision to complete formal DSTR
- Make incision base of first metatarsal
  - If 1st TMT joint is stable then perform proximal metatarsal osteotomy
  - If 1st TMT joint is unstable then perform Lapidus fusion

Advantages: Applies to all bunion deformities; easily applied in the OR; lessens traditional complications of incomplete correction of sesamoids, changing a congruent joint into an incongruent joint resulting in stiffness, recurrence, dorsiflexion malunion, shortening and transfer metatarsalgia; and aligns first ray.

Disadvantages: Requires special distractor and wedge plates; potentially two pieces of metal per case so cost could be an issue.
Hallux Valgus Angle, Sesamoid Position, and Distal Metatarsal Articular Angle on Immediate Postoperative Radiographs Can Predict Recurrence of Hallux Valgus

Presenting:
Chulhyun Park, MD (Seoul, Korea)
Jiyong Ahn, MD; Jonghoon Jang, MD; Woo-chun Lee, MD

Introduction
Various radiographic parameters have been known as risk factors for recurrence of hallux valgus. However, there is no report of comprehensive analysis of various factors for recurrence. The aims of this study were (1) to identify risk factors of recurrence, and (2) to clarify whether recurrence after surgery can be predicted using radiographic parameters derived from immediately postoperative nonweight-bearing radiograph.

Materials and methods
We retrospectively reviewed 93 patients (117 feet) who were treated with proximal chevron osteotomy for moderate to severe hallux valgus deformity. Recurrence of hallux valgus was defined as hallux valgus angle (HVA) of ≥20°, and the feet were categorized as no-recurrence group and recurrence group by the radiographs at one year after surgery. Pre- and postoperative HVA, intermetatarsal angle (IMA), and sesamoid position, preoperative metatarsus adductus angle (MAA) and postoperative distal metatarsal articular angle (DMAA) and shape of the lateral edge of first metatarsal head were compared between two groups. Changes of HVA, IMA, and sesamoid position over time were analyzed by comparing values measured during each postoperative period in the both groups. In addition, we calculated cutoff points for recurrence for each radiographic parameter, and determined the relative risks of recurrence posed by pre- and postoperative radiographic parameters.

Longitudinal axis of the proximal phalanx was determined intuitively for assessment of recurrence in this study. Intuitive method of measuring HVA is more likely to express the outward appearance of the proximal phalanx than the center-center method in which the longitudinal axis of the proximal phalanx was defined as a line connecting the midpoints of the proximal and distal articular surfaces of the proximal phalanx. The difference between the HVA measured measured by intuitive method and that measured by the center-center method.

Results
Thirty (25.6%) of the 117 feet showed recurrence of hallux valgus. Preoperative HVA and MAA, and immediately postoperative HVA, sesamoid position, and DMAA were significantly larger in the recurrence group. HVA and IMA stabilized at three months after surgery in the non-recurrence and at six months after surgery in the recurrence group. Sesamoid position continued to deteriorate after surgery in both groups. HVA of ≥10°, sesamoid position of ≥4, and DMAA of ≥16° on immediately postoperative radiograph were found to be significantly associated with recurrence. HVA measured by intuitive method at 1 year after surgery was larger by mean 2.3° ± 2.9° than that measured by center-center method.
method. The differences of HVA caused the difference in defining the axis of the proximal phalanx were a cause of the relatively high recurrence rate in this study.

**Conclusion**
Recurrence after proximal chevron osteotomy for hallux valgus can be predicted from immediate postoperative nonweight-bearing radiographs.

**Key words**: Hallux valgus, Recurrence, Risk factors, Radiographic parameters
Correction of Medial and Lateral Subluxation of the Lesser Metatarsophalangeal Joints with Extensor Brevis Transfer and MP Release

Presenting:
Elizabeth Young, BS (New York, New York)
Scott J. Ellis, MD; Jonathan T. Deland, MD

Summary
An extensor brevis tendon transfer with a plantar plate release provided correction of medial and lateral deviation of the lesser metatarsophalangeal joints in a retrospective review of 20 patients.

Introduction
There are several surgical options for correcting lesser toe deformities when conservative care is ineffective. Tendon transfers have been reported in the literature as a possible option for correcting certain toe deformities. Few extensor brevis transfer techniques have been described in the literature, and therefore the effectiveness of such a procedure is not well documented. This study seeks to evaluate the success and long-term outcomes associated with extensor brevis tendon transfers for the correction of medial or lateral subluxation of lesser metatarsophalangeal joints. Specifically, we sought to evaluate if such a technique provided lasting correction of this deviation.

Methods
Twenty patients (20 female, 0 male) having undergone correction of medial or lateral subluxation of a lesser metatarsophalangeal (MTP) joint (15 second toes, 5 third toes), with a transfer of the extensor digitorum brevis (EDB) tendon were assessed at an average of 17.9 months (12 to 34 months) after surgery. The technique was indicated when MTP and medial or lateral partial plantar plate release alone were not sufficient to correct deformity. The EHB was released proximally and passed through drill holes in the proximal phalanx and metatarsal neck to replicate the affected collateral ligament. It was then secured to the dorsal metatarsal with a screw post. If the toe remained elevated, a plantar dermodesis was added (13/20 patients). Hallux valgus correction was performed in 16/20 patients. Radiographic parameters (MTP angle, congruity of MTP joint, hallux valgus angle, intermetatarsal angle, elevation of proximal phalanx), physical exam (impingement on the adjacent toe, MTP tenderness, MTP elevation off the floor, and MTP joint range of motion), and subjective outcomes (the Foot and Ankle Outcome Score) were assessed. A toe-specific survey was created to capture more detailed subjective information concerning patient satisfaction, pain specific to the toe, and shoe wear.

Results
The radiographic results are summarized Table 1. Pre-operatively, 12/20 patients had 75% or greater congruity of the MP joint, which improved to 19/20 post-operatively. On exam, impingement on the adjacent toe was found in one case, MTP tenderness in two cases, and toe elevation in three cases. The average MTP joint range of motion was 63º (±11.1 ⁰) dorsiflexion and 10.85º (±2.1 ⁰) plantarflexion. Post-operative FAOS scores indicated an average score of 82.02 (±25.18) for the pain domain and 87.47 (±10.78) for the symptoms domain. As reported on the toe-specific survey, 18/20 patients were either highly satisfied or satisfied with the procedure. The majority of patients (15/20) indicated that they were not having any pain, and 13/20 patients reported that they were able to wear both comfort and dress shoes.
Conclusion
The extensor brevis tendon transfer technique described in conjunction with a plantar plate release can successfully correct medial and lateral MTP deviation. It can be considered when MTP and partial plantar plate release are insufficient to correct the deformity. This combined procedure is powerful. However, minimal release of the medial or lateral plantar plate and not over-tightening the transfer are recommended.

Table 1: Radiographic outcomes

<table>
<thead>
<tr>
<th>X-ray Parameters</th>
<th>Pre-op Mean</th>
<th>Post-op Mean</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angle between long axis of the metatarsal shaft and long axis of the proximal phalanx (AP view)</td>
<td>2° varus</td>
<td>15.15° valgus</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Hallux Valgus Angle (AP view)</td>
<td>20.50°</td>
<td>7.10°</td>
<td>0.0154</td>
</tr>
<tr>
<td>Intemetatarsal angle (AP view)</td>
<td>13.70°</td>
<td>6.05°</td>
<td>0.0001</td>
</tr>
<tr>
<td>Elevation of the proximal phalanx (Lateral view)</td>
<td>2.16mm</td>
<td>0.95mm</td>
<td>0.0039</td>
</tr>
<tr>
<td>Angular elevation of the proximal phalanx (Lateral view)</td>
<td>42.30°</td>
<td>21.17°</td>
<td>0.0003</td>
</tr>
</tbody>
</table>