SESSION 7: Avoiding Complications: Associated Structural Issues

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Background
- Unstable medial column
- Caduceus affects arch integrity
- Progression in adolescents
- Developmental or neuromuscular

Ideal procedure for Hallux Valgus
- Corrects deformity where it originates
- Addresses medial arch
- Does not retract lateral structures
- Avoids transfer ligament problems
- Does not weaken arch
- Reliable results

Lessering Complications of Bunion Surgery:

Donahue
- Co-Founder, Grand Rapids Orthopedic Foot and Ankle Fellowship
- Co-Founder, Grand Rapids Orthopedic Foot and Ankle Fellowship
- Co-Founder, Grand Rapids Orthopedic Foot and Ankle Fellowship

There are no potential conflicts with this presentation.
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

AOHSC 2012
**Evidence of a hypermobile first ray**

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

**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

**Evidence of a hypermobile first ray**

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

**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
Gatchel, Jette, Anderson, Baky AOFAS, Toronto, July 2007

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

- Let's stop using the term "Bunion" and look at a more global application involving metatarsus varus and hallux valgus.
- Associated structural abnormalities ie gastrocnemius contracture, medial column instability, dorsal lateral peritalar subluxation if affecting the overall clinical picture should be addressed.