A 20 minute DISSEPTION ON...

Pes Cavus

Several Issues

Definition
Multi-faceted

Biomechanics
Tri-planar

Classification
Three Types

Management
Multiple Choices
Pes Cavus

Definition

“. . . primarily a sagittal plane deformity . . ., with secondary multiplanar forefoot and rearfoot deformities, that is either flexible or rigid, and is associated with neuromuscular disease.”


Pes Cavus

Definition

- Sagittal Plane Deformity
- 2° Multiplanar Deformities
- Flexible or Rigid
- Neuromuscular Disease

Plantarflexion of the Forefoot on Rearfoot

OR

Dorsiflexion of the Rearfoot on Forefoot

. . . a matter of perspective.
**Pes Cavus**

**Definition**

- Sagittal Plane Deformity
- 2° Multiplanar Deformities
- Flexible or Rigid
- Neuromuscular Disease

**Frontal & Transverse**

**Actions & Reactions**

- Flexible Pes Cavus
- Rigid Pes Cavus

Smith, TF: *Textbook of Foot Surgery*
Pes Cavus

Definition

- Sagittal Plane Deformity
- 2° Multiplanar Deformities
- Rigid or Flexible
- Neuromuscular Disease

Patient Complaints

Keratosis
Joint Pain

Pes Cavus

Definition

- Sagittal Plane Deformity
- 2° Multiplanar Deformities
- Flexible or Rigid
- Neuromuscular Disease

75% Correlation
Brewerton, 1963

Progressive Nature

Motor & Sensory

Superstructure
Pes Cavus

4th Annual International External Fixation Symposium
December 11-14, 2008

Midtarsal Dorsiflexion
Ankle Dorsiflexion

Pes Cavus

Biomchanics

- Sagittal Plane
- Frontal Plane
- Transverse Plane

Forefoot Valgus and Varus
Rearfoot Valgus and Varus
Pes Cavus

Biomechanics

- Sagittal Plane
- Frontal Plane
- Transverse Plane

Flexible or Rigid?

Pes Cavus

Biomechanics

- Sagittal Plane
- Frontal Plane
- Transverse Plane

Rigid: Forefoot Valgus

With Weightbearing:
Heel inverted to the Floor
Rigid Forefoot Valgus: Plantarflexed First Ray

Rearfoot Varus or Forefoot Valgus ??
**Pes Cavus**

**Classification - Type II**

**Sherman-Coleman Block Test**

- Pre-operative
- Weightbearing
- Primary / Compensatory
- Distal Step / Lateral Block

**Pes Cavus**

**Sherman-Coleman Block Test**

Forefoot Valgus (NOT Rearfoot Varus)
Coleman Block Test

Forefoot Valgus (NOT Rearfoot Varus)

Sherman-Coleman Block Test

Rearfoot Varus (Forefoot Valgus ??)
Pes Cavus

Classification

- **Type I** — Digital Deformity — Mild
- **Type II** — Frontal Plane — Moderate
- **Type III** — Sagittal Plane — Severe
### Pes Cavus Classification

**Type I**
- Digital Deformity

**Type II**
- Frontal Plane

**Type III**
- Sagittal Plane

### Operative Options
- Digital Arthrodeses & MTPJ Release
- Hibbs’ Suspension

### Management – Operative

**Type I – Digital Arthrodeses**

**Digital Deformities**
- Anterior Pes Cavus
- Posterior Pes Cavus
- Ankle
- Muscle Imbalance

---

4th Annual International External Fixation Symposium
December 11-14, 2008
**Pes Cavus**

**Classification**

- **Type I**
  - Digital Deformity
- **Type II**
  - Frontal Plane
- **Type III**
  - Sagittal Plane

**Flexible Anterior Pes Cavus**

**Function**

**Pes Cavus**

**Management – Operative**

- **Type I – Digital Arthrodeses**
- **Digital Deformities**
- **Anterior Pes Cavus**
- **Posterior Pes Cavus**
- **Ankle**
- **Muscle Imbalance**

**Hammertoe Symptoms**

**Metatarsal Pain**
Pes Cavus

Classification

- Type I — Digital Deformity — Mild
- Type II — Frontal Plane — Moderate
- Type III — Sagittal Plane — Severe

Radiographs

- Type I
  Digital Deformity
- Type II
  Frontal Plane
- Type III
  Sagittal Plane

NO Frontal Plane Foot X-ray
PES CAVUS Stage II

Proximal To Distal Clinical & Surgical

Pes Cavus

Coleman Block Test

Flexible Rearfoot Varus

Rigid Rearfoot Varus
Pes Cavus

Classification

- **Type I**
  - Digital Deformity

- **Type II**
  - Frontal Plane

- **Type III**
  - Sagittal Plane

Operative Options

- First Metatarsal Osteotomy
- Dwyer

Pes Cavus

Classification

Type II - Subtypes

Type I

- RIGID
- FLEXIBLE
- RIGID

Type II

- FLEXIBLE

Type III

- LOCKED RIGID
- RIGID
- LOCKED RIGID

Type II - Subtypes

Preoperative

12 Years

16
Pes Cavus

**Classification**

- **Type I** — *Digital Deformity* — Mild
- **Type II** — *Frontal Plane* — Moderate
- **Type III** — *Sagittal Plane* — Severe

**Posterior Pes Cavus**

- **Type I**
  - Digital Deformity
- **Type II**
  - Frontal Plane
- **Type III**
  - Sagittal Plane

Rearfoot Osteotomy
**Pes Cavus**

**Classification**

- **Type I**
  - Digital Deformity

- **Type II**
  - Frontal Plane

- **Type III**
  - Sagittal Plane

**Operative Options**

- Cole Midfoot Osteotomy
- Triple Arthrodesis

**Management – Operative**

- **Digital Deformities**
- **Anterior Pes Cavus**
- **Posterior Pes Cavus**
- **Ankle**
- **Muscle Imbalance**

**Cole Midtarsal Osteotomy**

- Adduct
- Dorsiflex

- No Frontal Plane
Pes Cavus

Pes Cavus

4th Annual International External Fixation Symposium
December 11-14, 2008
Pes Cavus

Management – Operative

- Digital Deformities
- Anterior Pes Cavus
- Posterior Pes Cavus
- Ankle
- Muscle Imbalance

Type III - Triple Arthrodesis

Tri-planar Correction
Pes Cavus

Management – Operative

Triple Arthrodesis

Frontal Plane - Eversion

Pes Cavus

Frontal Plane - Eversion

Pes Cavus

25
Pes Cavus

Summary

Definition
Multi-faceted

Biomechanics
Tri-planer

Classification
Three Types

Management
Multiple Choices

707 544 3400
ChangGang5@aol.com

4th Annual International External Fixation Symposium
December 11-14, 2008