NAME AND DESCRIBE THE ARCHES (MEDIAL AND LATERAL LONGITUDINAL ARCHES .GIVE ITS APPLIED ANATOMY (LE)

Arches of the foot

Longitudinal - Medial and lateral

Transverse - anterior and posterior

Medial longitudinal arch

Anterior end –

heads of the first, second and third metatarsals.

Posterior end -

medial tubercle of calcaneum.

Summit :

Superior articular surface of the body of the talus.

Pillars :

Anterior pillar –

talus, navicular, cuneiform bones, and the first three metatarsal bones.

The posterior pillar –

medial part of the calcaneum

This arch is considerably higher, more mobile and resilient than the lateral.

Factors maintaining the medial longitudinal arch

Shape of the bones :

Head of the talus acts as the "key stone".

Intersegmental tiers or ligaments :

Plantar calcaneo-navicular or spring ligament.

Factors acting as tie – beams or bowstrings :

Plantar aponeurosis,
abductor halluci
medial part of flexor digitorum brevis,
tendon of flexor hallucis longus,
flexor hallucis bevis.

Suspending the arch from above or "slings" :

Tendon of tibialis anterior and tibialis posterior and deltoid ligament.

Medial Longitudinal Arch Ligament Support

Plantar Calcaneonavicular
Long Plantar Lig
Deltoid ligament
Plantar fascia

Lateral Longitudinal Arch

Anterior end –

heads of the 4^{th} and 5^{th} metatarsal bones.

Posterior end –

lateral tubercle of the calcaneum.

Summit :

Superior surface of the calcaneum at the level of the sub-talar joint.

Pillars :

Anterior pillar - cuboid bone, 4^{th} and 5^{th} metatarsals.

Posterior pillar - lateral half of the calcaneum.

This arch is characteristically low, has limited mobility and is built to transmit weight and thrust to the ground.

Factors Maintaining Lateral Longtuidinal Arch

Shape of bones :

Calcaneal angle of cuboid projects backwards.

Intersegmental tiers :

The long and short plantar ligaments.

Factors acting as tie – beams :

Plantar aponeurosis,

abductor digiti minimi,

lateral part of flexor digitorum brevis and longus tendons

flexor digiti minimi brevis.

Acting from above : Tendons of peroneus brevis and tertius and peroneus longus.

Functions

Adaptation on uneven ground

Resilience to foot

Propulsion of body

Protection of plantar nerves and vessels

Applied Anatomy

Arch deformities :

Pes planus (flat foot)

occurs when the arches of the foot collapse. The entire sole of the foot comes into complete or near-complete contact with the ground. It occurs due to failure of factors maintaining the arches.

Pes cavus (high arched foot)

The term pes cavus is Latin for "hollow foot" – The deformity is characterised by an abnormally high medial longitudinal arch.

Congenital talipes equino varus (club foot)

is a congenital deformity involving one foot or both. The affected foot appears to have been rotated internally at the ankle.

FLAT FOOT (SE)

flat foot(Pes planus)

occurs when the arches of the foot collapse. The entire sole of the foot comes into complete or near-complete contact with the ground. It occurs due to failure of factors maintaining the arches.

Types- Congenital

Acquired

The effects of flat foot are-

Loss of spring in the foot leads to a clumsy shuffling gait.

Loss of absorbing of forces makes the foot liable to trauma and osteo orthritis.

Loss of concavity leads to compression of the nerves and vessels of the sole.

BONES FORMING LATERAL LONGITUDINAL ARCHES (SA)

Lateral tubercle of Calcaneus

Cuboid

Lateral 2 matatarsals

BONES FORMING MEDIAL LONGITUDINAL ARCH OF FOOT (SA)

Medial tubercle of Calcaneus

Talus

Navicular

3 cuneiform bones

Medial 3 metatarsals