MEDIO-DORSAL 1st MPJ DEVELOPMENTS

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Inability or failure of the 1st metatarsal to plantarflex in gait causes impingement of the metatarsal head on the proximal phalanx of the hallux, causing joint erosion and inflammatory reactions in the cartilage and bone ends. The trauma stimulates the bone to grow, and the effect of this osteogenic development is firstly to restrict, and later to cause total seizure of the joint. Loss of movement at the first metatarsophalangeal joint causes severe disruption of the biomechanical function of foot and limb.

Medio-dorsal 1st MPJ enlargements produce greater suffering than the medially positioned 'bunion' joint. Hallux limitus and hallux rigidus are associated with medio-dorsal joint enlargement, and the osteogenesis that occurs at the joint causes functional bony restriction of the 1st metatarsophalangeal joint.

Hallux limitus is the condition in which there remains some dorsiflexion of the hallux, but less than the 80º required for free ambulation, and stride length will be shortened to avoid pain at toe-off. Stress is imposed on the joint components causing inflammation of the blocked joint and fibrous and eventually bony development within the articulation.

Hallux rigidus is the condition that allows no movement whatsoever between the hallux and the first metatarsal. The hallux becomes fused to the first metatarsal at the 1st MPJ and the first ray becomes a rigid 'girder' or 'bar' on the medial border of the foot that has a devastating effect on foot function.

The lateral x-ray demonstrates the bony overgrowth and associated fibrotic tissue over the joint.

This picture shows the typical hyperextension of the distal phalanx and its spatulate (flattened) shape as a result of the excessive pressure imposed upon it - note the medial callous.

At toe-off, the hallux must be able to dorsiflex (escape upwards) as the heel is lifted from the ground. If the hallux cannot dorsiflex, it must transfer the entire bodyweight right out to the end of the rigid lever arm that it has become. The result is a very great deal of high-magnitude stress upon the distal phalanx and pulp of the hallux and the 1st MPJ. Hyperextension of the IPJ is commonly seen as a fixed dorsiflexion of the distal phalanx and there will be spatulate flattening of the distal segment.

Restriction of movement at the 1st MPJ is a recognised cause of onychocryptosis, the 'ingrowing' toe nail.

The compensation usually adopted by the sufferer of Hallux rigidus is to grossly abduct the foot and roll over it in the frontal plane so that the foot does not have to flex across the MPJs at all. This strategy inevitably leads to knee and hip pathologies.

THE ALLIANCE PROFESSIONAL DEVELOPMENT PROGRAMME

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The questions on this sheet are based upon the above-named paper. Answers should be submitted on A4 paper and should be of sufficient length to demonstrate full understanding of the topic. Single word answers are not permissible. Try to answer in one or two short paragraphs, not more than a ¼ page per answer.

Q1. What causes the joint damage that leads to restriction of movement at the 1st MPJ?

Q2. How does the joint damage progress, so that movement is lost?

Q3. Describe an offloading strategy for the relief of pressure on the plantar aspect of the 1st MPJ.

Q4. Describe the typical appearance of the hallux in 1st MPJ restriction pathologies.

Q5. How does Hallux limitus become Hallux rigidus? How does the sufferer compensate?

To be valid, all parts of each question must be addressed

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