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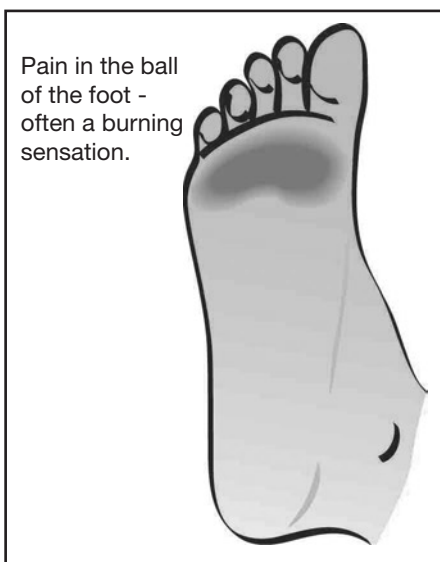
Treating Metatarsalgia: Ball of Foot Pain

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Metatarsalgia is a general term used to denote a painful foot condition in the metatarsal region of the foot (the area just before the toes, more commonly referred to as the ball of the foot). This is a common foot disorder that can affect the bones and joints at the ball of the foot. Metatarsalgia (ball of foot pain) is often located under the 2nd, 3rd and 4th metatarsal heads, or more isolated at the first metatarsal head (near the big toe). Differential diagnosis of Metatarsalgia is Morton's Neuroma which exhibits localised pain than Metatarsalgia.

This is a very important condition



to be aware of, as often it affects the sufferer's quality of life. Metatarsalgia restricts the distances patients can walk, and causes extreme pain and discomfort. It is a simple condition to treat effectively, however left untreated, this condition can be debilitating to its sufferers.

Excessive pronation for any length of time can cause weakening of the soft tissue structures and as a result ligamentous laxity and muscle wastage will occur. As this occurs in the forefoot, the metatarsals plantarflex and rotation takes place resulting in the loss of the transverse arch, resulting in shearing forces on the forefoot structures causing pressure and pain.

Long term damage to the nerves may be caused and callosities will be exhibited in the patient. With this condition one or more of the metatarsal heads become painful and/or inflamed, usually due to excessive pressure over a long period of time. It is common to experience acute, recurrent, or chronic pain with Metatarsalgia. Also, as we get older, the fat pad in our foot tends to thin out making us much more susceptible to pain in the ball of the foot (Cailliet, 1983; Lorimer et al, 1997).

Treatment

1. Identify if the feet are pronating or supinating.
2. If pronation exists then place the foot into the subtalar neutral position, and identify the amount of pronation, i.e. slight, moderate or severe. This will help you identify the appropriate ICB Orthotic™ type to heat mould - then mould the orthotic to the

subtalar neutral joint position. It is considered that mild pronation needs less support, whilst severe pronation requires firm orthotic support.

3. Don't forget to consider the patient's body weight also - light weight patients need less control than overweight patients.

If the patient has been pronating for a long time, not only will they have lost the longitudinal arch but they will have also lost the transverse arch. This situation will require that the practitioner heat moulds to the patient's neutral calcaneal stance position, and will then need to apply a metatarsal dome.

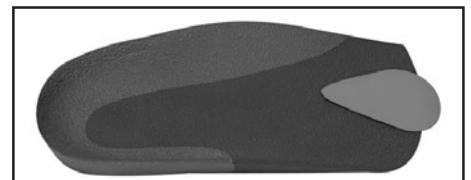


Figure 1: For a plantarflexed 1st ray, add a metatarsal dome

The size of the dome will depend on the width of the foot - i.e. a narrow foot will only require a small metatarsal dome, a wide foot, a large dome. The function of the metatarsal dome is to promote the transverse arch and separate the metatarsal heads to prevent nerve impingement and entrapment.

If the foot is supinating or the patient has a high Pes Cavus foot type this allows increased pressure on the metatarsal heads and callous formation. Always check for a forefoot valgus deformity > 10°. A plantarflexed 1st ray can also cause a high in-step with clawed toes.

If you identify a forefoot valgus >10°, place a Forefoot Valgus addition

(approximately half the size of the valgus to start with), and heat mould the ICB Orthotics™ with the Forefoot Valgus attached.

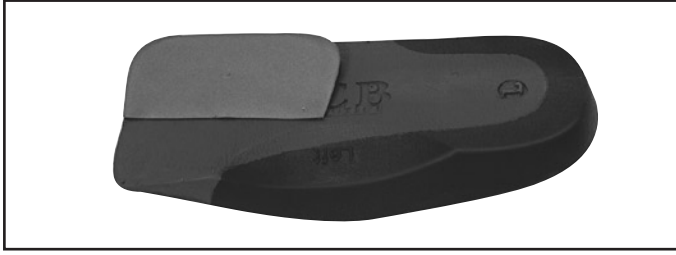


Figure 1: Add a forefoot valgus addition before heat moulding

NOTE: Do not place the Forefoot Valgus Addition after heat moulding. It must be attached prior to moulding, otherwise the orthotic may become unstable in the shoe.

If the patient presents with a plantarflexed 1st ray, the practitioner will need to cut a deflection around the 1st MTPJ to allow the 1st metatarsal head to drop down, and the lesser metatarsal heads will then be supported by the orthotic.

For patients with both a forefoot valgus and a plantarflexed 1st ray, a metatarsal dome needs to be added to the dorsal surface of the orthotic (AFTER heat moulding), to lift and separate the metatarsal heads and reduce the clawing effect on the digits.

Sometimes an orthotic alone is not enough and the practitioner may need to incorporate additional treatment modalities, such as:

- Appropriate shoe with wide toe width
- Foot Joint Mobilisation
- Acupuncture
- Massage

A combination of orthotic therapy and other such treatment methods will undoubtedly be beneficial to long-term treatment success.

REFERENCES

CAILLIET, R. (1983) *Foot and Ankle Pain*, Philadelphia: FA Davis Company

LORIMER, D., FRENCH, GWEN, & WEST, S. (1997) *Neales Common Foot Disorders: Diagnosis and Management*, 5th Edition, Melbourne: Churchill Livingstone