Ball of the foot pain

What causes pain in the ball of the foot?

Pain in the ball of your foot (metatarsalgia) may be pain in any one of the structures in the metatarsal region: skin, bone, joints, muscle, tendon, connective tissue, ligament, nerve, or blood vessel.

Typically, burning pain under the ball of the foot is related to a buildup of callus in the skin overlying the ball of the foot, or an imbalance of your foot structure itself, causing overload on some areas. As part of the process of ageing, some women lose the bulk of the shock-absorbent fibro-fatty pad under the ball of the foot, resulting in painful callus due to the pressure on skin over bone.

Other causes of pain under the ball of the foot include sesamoiditis (inflammation of either one or both of the sesamoid bones under the big toe’s joint at the ball of the foot), Morton's neuroma (an enlarged plantar nerve in the metatarsal region), as well as anatomical variations of metatarsal and/or toe length. Each person's anatomical differences (the size and shape of your bones) are inherited from your parents, with subsequent changes that can be brought about by trauma or shape compression from the shoes we wear.

Age and trauma related sagging of internal structures in the foot can lead to what is commonly called a "dropped arch", that can occur in any of the many arches of the foot. A common "dropped arch" in women is found in the transverse arch across the forefoot. This leads to one or more of the central metatarsals in the ball of the foot taking all the weight as they hit the ground first. Loss of the arch causes strain on surrounding structures, leading to fatigue.

Other conditions that cause pain in the ball of the foot include plantar warts (verrucae); genetic or metabolic disorders of the skin; pregnancy; toxins such as those from spider bites; drug reactions; hypertension; gout; arthritis; bacterial infection and even growths or tumours beneath the skin. Splinters, carpet fibres and animal hairs can all enter the skin, causing a foreign body reaction with an overgrowth of skin.

What should I know about footwear to prevent metatarsalgia?

Shoes that are too narrow will force the metatarsal bones together, pinching nerves and blood vessels that run between the bones. Continued use of shoes that are too narrow can cause one or more of the metatarsal bones to either shift up or down within the transverse arch, causing the arch to "collapse". In a "collapsed" or "dropped" transverse arch, the load shifts to the middle of the arch (ball of the foot) instead of being carried by the entire structure in its original form.

Shoes that are too wide can cause shearing stress under the foot as it slides around, causing callus to build up under the ball of the foot and under the toes. A narrow foot in a wide shoe will slide forwards, causing compression and curling of the toes. By allowing your toes to curl inside a shoe, you disturb the resting positions of your extensor and flexor muscles. Over time, this can result in fatigue and even cramp. Sliding forward also mismatches the ball of your foot from where it should be in the shoe for maximum comfort. Look for a style with suitable fastening across the instep of a shoe to prevent the slide. (Also future comment in here about the Froggie insole adjusters to accommodate different widths?)

Thin soled shoes or shoes without innersole cushioning will transfer all the hard impact with man-made surfaces directly into the bones of your feet, stimulating callus formation.

If pain is due to callous, remember that pressure or friction is the cause of callus. Avoid clogs, mules, and very low-cut court shoes, if you are prone to callus build-up. Choose styles that do not require
friction from the toes, such as those that grip around the heel (either closed heel or strap) plus a fastening or closure across the instep of the foot.

High-heeled shoes tilt body weight on to the ball of the foot, causing overload on the metatarsal joints under the ball of the foot. Choose lower heels for everyday use and reserve high heels for short one to two-hour functions or events.

What can I do about pain in the ball of the foot?

Find and eliminate the cause. Anatomically correct, well-balanced and cushioned shoes should replace ill-fitting footwear. Avoid the use of high-heeled shoes for general daily wear.

Any generalised and gradual build-up of hard skin (such as that caused by walking barefoot outdoors) can be removed by means of daily light abrasion (using a pumice stone or fine grit foot file) together with regular daily use of a heel balm.

The urea in your heel balm is the important ingredient that weakens the keratin bond, keeping skin supple. Foot creams that do not contain a keratolytic ingredient such as urea may not penetrate the stratum corneum layer satisfactorily.

Use temporary ball of the foot or metatarsal cushions to relieve pressure until such time as you can consult a podiatrist.

Never use any form of chemicals or metal objects (including skin “graters”) or blades to remove callus. Your best efforts will result in an uneven surface - that alone will stimulate formation of more callous by creating micro-overload areas. You may risk self-injury and infection. All thick callous is best treated by a podiatrist.

When should I consult a podiatrist about metatarsalgia?

Always consult a podiatrist for pain in the foot, especially ball of the foot pain. Your medical history and an examination will be needed to accurately diagnose the cause of the pain. Various temporary pads may be applied to relieve the pressure. Permanent solutions may include recommendation of appropriate shoes, or special accommodative innersoles to relieve pressure, or orthotics to correct or accommodate functional problems of your foot structure.

Untreated metatarsalgia can result in complications. The most common is the development of knee, hip or back pain as you change your posture and/or gait (walking on the outside of your feet) to avoid further pressure on the area. Always seek professional help.