PART 2

A Review of Foot Pain - A Step Forward for the Pedorthist

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Commercial media report symptoms of foot pain as being very common among adults. The exact prevalence rates in the general population are unknown. Historically, the National Health Interview Survey (NHIS) included questions on bunions, corns, calluses and toenail problems.\(^1\) Hawke and Burns compiled data and concluded that foot pain is experienced by 17 to 42% of the adult population.\(^2\) Foot and ankle conditions in older adults are associated with mobility and balance impairment, disability, falls, and fractures.\(^3-5\) Irrespective of the underlying cause, foot pain has a significant impact on health-related quality of life. Pedorthists can have a tremendous impact on involving and motivating their patients with foot pain. One major advantage for pedorthists is their availability. The aim of this review is to offer a comprehensive appraisal of the literature on foot pain, with specific reference to its definition, etiology, and common foot pain syndromes.

**Turf Toe**

“Turf toe” is a common athletic injury in which the tendon under the joint at the base of the big toe is strained. Turf toe is a hyperextension injury of the great toe, causing a sprain to the metatarsophalangeal joint and damage to the joint capsule. Turf toe can be either an acute or a chronic condition.

An acute turf toe often occurs when the athlete’s shoe sticks into the ground while he/she is trying to stop quickly. The shoe sticks as the individual’s body weight shifts forward, causing the big toe to jam into the shoe and ground. The chronic condition occurs from frequent running or jumping in shoes that allow excessive great toe motion. Turf toe is a condition characterized by a painful, red, swollen great toe caused by acute inflammation of the tendons on both the dorsal and plantar surfaces.

Trauma to the toenail can cause pooling of blood under the nail and the temporary or permanent loss of a toenail. Turf toe is especially common in athletes who compete on artificial turf, including those who play football, rugby, beach soccer and wrestling.

Classification of this injury is based on clinical findings and imaging studies, including plain radiographs and MR imaging. Pedorthists could suggest to the patients with a turf toe condition to wear stiff insoled shoes to prevent excessive motion. Patients should be made aware that if left untreated, turf toe may cause permanent decrease range of motion in the great toe and bone spurs may develop.
Injuries

Forefoot pain is a common clinical problem. Numerous disease processes produce pain in the region of the metatarsal bones, and the cause may be difficult to establish based solely on clinical findings. Injury to the bones and joints of the foot can be caused by a single blow or twist to the foot, or also by repetitive trauma that can result in a stress fracture.

A blunt-force injury such as someone stepping on your foot may result not only in a bruise (contusion) injury but also damage to the muscles and ligaments of the foot. Direct blows to the foot can cause bruising, breaking of the skin, or even fracturing of bones. Metatarsalgia is the irritation of the joints of the ball of the foot. Repetitive trauma to the bones, muscles, and ligaments can result in extra bone growth known as spurs or exostosis. The pharmacist should strongly recommend to any patient who presents with foot and ankle traumatic related injury needs to be evaluated by a clinician.

Injuries to both the skin covering and the internal structures may also be caused by multiple small repetitive traumas. Micro-trauma injuries can be caused by running on uneven surfaces, surfaces that are too hard or too soft, or shoes that have poor force-absorption qualities or fit incorrectly. Repeated overstressing of the same structure of the foot may cause stress fractures, tendonitis, plantar fasciitis, and acute and chronic osteoarthrosis. Stress fractures in the metatarsal bones are common in runners, ballet dancers, gymnasts, and military recruits.

Sesamoiditis is a painful inflammatory condition produced by repetitive injury to the plantar aspect of the forefoot. Bursitis can occur in the forefoot and may involve the intermetatarsal bursae or the adventitial bursae beneath the metatarsal heads. Trauma, infection, rheumatoid arthritis, and gout may all cause bursitis. The most important distinguishing feature of a bursa is its location.

Heel pain (Plantar Fasciitis)

Heel pain is most often caused by plantar fasciitis, a condition that is sometimes also called heel spur syndrome when a spur is present. The pedorthist may inform patients that plantar fasciitis is the catchall term that is commonly used to described pain on the plantar aspects of the proximal arch and heel. The plantar fascia is the aponeurosis that runs the length of sole of the foot and is a broad dense band of connective tissue. The plantar aponeurosis assists in the maintaining the stability of the foot and secures or braces the longitudinal arch. Injury to the plantar fascia is a common cause of arch pain. When the plantar fascia is damaged, the resulting inflammatory response may become a source of arch pain.

Heel pain may also be due to other causes, such as a stress fracture, tendonitis, arthritis, nerve irritation, or, rarely, a cyst. Because there are several potential causes, it is important to have heel pain properly diagnosed. A physician will be able to distinguish between all the possibilities and determine the underlying source of the patient’s heel pain. The most common cause of plantar fasciitis relates to faulty structure of the foot.

Wearing non-supportive footwear on hard, flat surfaces puts abnormal strain on the plantar fascia and can also lead to plantar fasciitis. This is particularly evident when a person is required to be on their feet for long hours. Obesity may also contribute to plantar fasciitis.

People with plantar fasciitis often describe the pain as worse when they get up in the morning or after they’ve been sitting for long periods of time. After a few minutes of walking the pain decreases, because walking stretches the fascia. For some people the pain subsides but returns after spending long periods of time on their feet. The symptoms of plantar fasciitis include: pain on the bottom of the heel, pain that is usually worse upon arising and pain that increases over a period of months.

Pedorthists may recommend the application of ice, and may suggest while sitting patients, roll on a ball the size of tennis ball underneath the medial longitudinal arch to strength the plantar fascia. Also, suggest the patient sleep with their feet off the end of the bed to allow some dorsiflexion while sleeping. Finally, the recommendation of a prefabricated orthosis (arch support) may benefit these patients. Kriple suggests that there is no clinical evidence that custom orthoses are more effective than prefabricated products.

Neuropathy

Neuropathic foot pain is pain instigated by primary dysfunction, lesion or transitory perturbation in the peripheral or central nervous. Neuropathic foot pain encompasses a heterogenous group of symptoms that share similar clinical characteristics, including spontaneous stimulus-dependent and stimulus-independent pain. Symptoms have been proposed to reflect reactive hyperexcitability and sensitization of peripheral and central neural elements, and relative suppression of central inhibitory pathways following central nervous system damage.

Polyneuropathy is a major complication of both insulin-dependent and non-insulin-dependent diabetes mellitus and is the most common form of neuropathy in the developed world. Peripheral neuropathy is characterized by a progressive loss of nerve fibers that predisposes the patient to pain or insensitivity in the extremities as well as neuropathic ulcerations; it can also result in amputation. Neuropathic pain results from primary lesions or dysfunction of the peripheral or central nervous system. Despite its many etiologies, neuropathic pain is usually spontaneous, continuous, burning, paroxysmal, and evoked by various mechanical or thermal stimuli.

Currently, the only treatment that addresses the underlying cause of painful diabetic neuropathy is improved control of blood glucose levels. Although there is strong evidence for the
importance of tight glucose control in delaying and possibly preventing diabetic peripheral neuropathy. Tesfaye noted that the same cannot be said for diabetic peripheral neuropathic pain.\textsuperscript{25} In the absence of a curative therapy for painful diabetic neuropathy, pharmacologic or non-pharmacologic tools, or combination of both, should be used to provide control of symptoms.

Conclusion

Hawke and Burns report that foot pain specifically has been associated with reduce functional ability, increase risk of falls, depression, and reduced physical and mental aspects of quality of life.\textsuperscript{2} Pedorthists may be instrumental in assisting patients with chronic foot pain and improving these patient’s quality of life by providing education centered on pain management therapies or by providing contacts for local support networks. Clinical base evidence has demonstrated that effective treatment of foot pain can lead to important improvements in health related quality of life.\textsuperscript{27}

Medical literature has consistently reported high prevalence estimates of foot pain. The exact prevalence rates of foot pain in the general population are unknown. Footwear can be a contributor to foot pain. Poor fitting shoes in the short term can cause blisters, calluses, bruising be a source of foot pain. Pedorthists can have a great impact on patient care by providing education to patients with common foot pain ailments.

References


