

Clinical evaluation of metatarsalgia in diabetic subjects using rigid rocker-bottom outsole shoes

Parisi, Candida; Trevisan, Rafael Ortiz; Nery, Marcia; Fernandez, Tulio Diniz. Medical School of the State University of São Paulo, São Paulo, Brazil

Introduction: Pain at the forefoot is called metatarsalgia. It usually happens due to mechanical disbalance at metatarso-phalangeal joint (MP) and overpressure at the metatarsal heads. In general population, the established disorders of the forefoot are often treated by conservative measures, and failure of this treatment predicts surgical correction. In people with diabetes mellitus (DM) and peripheral neuropathy this foot disorder may lead to ulceration. Similarly, total-contact inserts, metatarsal pads, therapeutic footwear and even surgery often are prescribed to the DM population in order to reduce excessive plantar stress and prevent skin breakdown. **Objective:** The purpose of this study is to describe our results after two years of exclusive prescription of rigid rocker-bottom outsole shoes in diabetic subjects with metatarsalgia and neuropathy. **Methods:** Thirty four subjects (mean age 53.3 years [SD 9.3], 25 male, 9 female, body mass index 30.5 kg/m² [SD 8.4]) with type 2 DM, peripheral neuropathy, clinical history of metatarsalgia, and without previous ulcer episode participated. Clinical assessment included walking pattern, plantar skin evaluation, presence of calluses, and range-of-motion of forefoot joints. All patients were tested for sensory neuropathy in a standardized protocol with Semmes-Weinstein Monofilament testing and the tuning fork test. The follow-up included outpatient care every four months in the period of time of four years. The patients were given one pair of custom-made shoes (manufactured by our ortesis and prothesis unity) each year. Although these custom-made shoes had the features of regularly prescribed diabetic footwear (as large and deep toe box, padded tongue, cushioned collar, extended heel stabilizer, and cushioned insole), the most prominent feature was the rigid rocker-bottom outsole, which prevent MP dorsiflexion and metatarsal head overpressure. The main outcome measure was foot ulceration. **Results:** Subjects presented good compliance of the prescribed shoes, either on home and not-at-home use. Two subjects (5, 8%) presented one ulcer episode during the studied period, and one of these two subjects died. In both subjects, non-compliance in using the prescribed footwear at their own home was the leading cause of ulceration. **Conclusion:** Rigid rocker-bottom outsole shoes can play an important role in the nonsurgical metatarsalgia management in diabetic foot subjects, reducing ulceration and consequently the amputation rate.