Report of metatarsal pad intolerance in a cohort of 60 patients treated with customized foot orthotics

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Abstract

Objectives: A metatarsal pad is generally considered a useful addition to the orthotic prescription, but anecdotal reports suggest that this element is not prescribed because of patients' reports of excessive discomfort. The purpose of this study was to determine the occurrence of intolerance to metatarsal pads in a group of patients prescribed customized foot orthotics in a primary care setting.

Methods: Sixty consecutive patients presenting in a primary care clinic in Edmonton, Canada, with chronic (>3 months), nonspecific, low back pain and/or soft-tissue lower limb disorders were prescribed customized foot orthotics, which in each case included a large metatarsal pad as a routine measure. Patients were educated at the outset that the metatarsal pad may produce initial discomfort, but that this should subside within 1 week and that the pad should be retained if tolerable. All patients were assessed 6 weeks later for their tolerance of the metatarsal pad.

Results: All subjects completed the 6-week follow-up. The mean age of the sample was 52.6 ± 10.9 years, with 51% male and 49% female. Ten of the 60 subjects reported pain and/or discomfort that they related to the presence of the metatarsal pad beyond 1 week after initial use and requested adjustment or removal of the metatarsal pad. With reassessment and education, addressing problems of inadequate shoe size or a need for reassurance to persist with orthotic use, only 1 required adjustment to the metatarsal pad to continue orthotic use.

Conclusions: A group of primary care patients prescribed customized foot orthotics seemed to tolerate a large metatarsal pad. This suggests that metatarsal pads should not be avoided or immediately removed in customized orthotics because of initial discomfort, as this discomfort may be transient or responds to reassurance and education.

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Introduction

Although the value of including a metatarsal pad in the customized foot orthotic prescription has not been

sufficiently evaluated in randomized controlled trials, a good theoretical basis exists for its inclusion.¹ Certainly, it has been confirmed that a metatarsal pad reduces both peak and mean plantar pressure.²⁻⁶ It has been pointed out, however, that factors such as pad comfort must also be considered as determinants of effectiveness.³ Clinical experience suggests, however, that many practitioners are not including metatarsal pads either because of lack of awareness of their potential value or, as anecdotally reported, because patients often report excessive discomfort that they perceive to be due to the metatarsal pad. Patients experiencing this discomfort may be noncompliant with orthotics use or be concerned that they are harmful or poorly designed. It is not surprising that practitioners are sometimes choosing to avoid metatarsal pads in their orthotic design.

To date, there have been no observational studies on how common intolerance to metatarsal pads is and how long it lasts. The purpose of this study was to determine the occurrence of intolerance to metatarsal pads in a group of patients prescribed customized foot orthotics in a primary care setting.

Methods

Study design

This is an observational cohort study with analysis of data from a study previously reported.⁷ There was no attempt to verify the effectiveness of metatarsal pads in orthotic prescriptions, but rather to report on the nature and course of metatarsal pad intolerance.

Participants

Subjects included 60 consecutive patients attending a single primary care clinic in Edmonton, Canada, with the primary concern of low back and/or lower limb pain that was determined by the physician to be due to nonspecific (ie, muscular) low back pain or, in the case of leg pain, to be due to tendonitis, bursitis, and similar “soft-tissue disorders.” A subset of these subjects has been previously reported on.⁷ Patients were included if they were 18 years or older and had one or more of the aforementioned diagnoses. Patients were excluded if they had any neurologic disorder (including sciatica), cancer, spinal stenosis, spinal or lower limb surgery, recent or complicated fracture, known inflammatory

arthropathy, severe osteoarthritis of the lower limb joints, prosthetic joints, amputation, or congenital lower limb deformity. Also excluded were subjects who did not speak English, as this may affect their ability to understand the provider instructions. Mild to moderate lower limb joint osteoarthritis was not excluded because these are common conditions in primary care and especially in older patients with chronic low back pain. A single physician examined each patient; confirmed the inclusion and exclusion criteria through direct questioning and chart review; and recorded data on age, sex, pain location, and duration. The study was approved by the University of Alberta Research Ethics Review Board.

Outcomes

Patients were each advised after initially receiving the orthotics that if they experienced any discomfort after the initial week of use, they were to return to the clinic for evaluation.

Customized foot orthotics

The same physician obtained foam impressions of each patient in the seated position, with the patient asked to relax his or her lower limb and allow the examiner to place downward pressure on the knee, along the axis of the tibia with the knee flexed to 90°. This created the foam impression. As a matter of routine prescription by the physician, all subjects received a standardized orthotic composed of Footmaxx Premium Allsport orthotic (Footmaxx, Toronto, Ontario, Canada) composed of a semirigid module, vinyl reinforcement, polyurethane foam cushioning, and large (peak height of 60 mm) profile metatarsal pad aligned with the third metatarsal ray and placed distal to the semirigid module. Subjects were provided lifts for correction of leg length discrepancies if measured to be 1.5 cm or greater, and the lift was provided at a measure of half this discrepancy. None of the subjects received valgus or varus postings.

Sample size

There are no trials of this type of patient population to assess the frequency of metatarsal pad use with customized orthotics. Thus, a convenience sample was used.

Statistical methods

Data were analyzed using SPSS 10.0 (MacIntosh version, SPSS Inc, Chicago, IL). Descriptive statistics were calculated, and the proportion of subjects reporting initial pain and/or discomfort with the orthotics beyond the initial week after use and the proportion reporting same after 6 weeks of use were determined.

Results

The mean age of the sample was 52.6 ± 10.9 years, with 51% male and 49% female. All subjects were reviewed in clinic after 6 weeks of orthotics use. After 1 week of use, 11 of 60 subjects had additionally returned, reporting pain and/or discomfort that they related to orthotic use, this pain and/or discomfort lasting more than 1 week after initial use. Ten of these 60 reported their perception that the pain and/or discomfort arose from the metatarsal pad region of the orthotic; one reported pain at the heel region.

After assessment, it was determined that 8 of the 10 reporting intolerance in the metatarsal region were wearing shoes with a small toe box. They were advised to change their shoe type. Two of the 10 reporting initial metatarsal pad intolerance had relatively mild symptoms and were advised to persist with use. At 6 weeks, 9 of the 10 reporting initial intolerance had no problems with metatarsal pad use after further education; and only one requested that it be adjusted (it was reduced to half height) at 6 weeks.

Discussion

The purpose of this study was not to determine the effectiveness of the metatarsal pad or their optimal use, but rather to assess if, with proper education, intolerance to the metatarsal pad, even a large pad, is relatively uncommon and may be readily addressed. This study shows that in a primary care setting, initially, reported pain and/or discomfort lasting more than 1 week and arising from the metatarsal pad occurs in 1 in 6 patients. With clinical assessment, the rate of ongoing intolerance to the metatarsal pad at 6 weeks was 1 in 60.

In this study, a large metatarsal pad was included routinely in all patients. If anything, this may have

promoted a higher rate of initial pain and/or discomfort related to the metatarsal pad; but even so, the rate of intolerance was very low. These findings suggest that metatarsal pads in customized orthotics should not be avoided for fear of intolerance or that the patient may view the prescription as harmful. Prescriptions that do not include metatarsal pads run the risk of denying the patient whatever yet-to-be proven benefits lie in the use of metatarsal pads and do so for reasons that are not observable in good clinical orthotic practice.

Limitations

This study only focused on tolerance of metatarsal pads and not on clinical effectiveness. Patient compliance was not measured, so it is not certain if patients complied with wearing their orthotics after expressing discomfort. As well, no long-term follow-up was performed. The group of participants were included in a larger research study, so these participants may not necessarily represent other patients in the population at large. Further comparative and follow-up studies should be performed to address these limitations.

Conclusions

A group of primary care patients prescribed customized foot orthotics seemed to tolerate a large metatarsal pad. This suggests that metatarsal pads should not be avoided or immediately removed in customized orthotics because of initial discomfort, as this discomfort may be transient or responds to reassurance and education.

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No funding sources or conflicts of interest were reported for this study.

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