Hyaluronic Acid Filler Injections Under the Metatarsal Heads Provide a Significant and Long-Lasting Improvement in Metatarsalgia From Wearing High-Heeled Shoes, Foumenteze et al, *Dermatologic Surgery*, Volume 44, Issue 7, July 2018

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Level of Evidence: 5

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Metatarsalgia is often caused by wearing high heels. It is an injury from overuse and increased stress on the metatarsal heads. It is presented as a gradual onset of pain in the forefoot and may radiate to the midfoot, aggravated by walking, prolonged weight-bearing or running. The objective of this study is to evaluate the decrease in plantar pad pain by restoring the plantar fat pad volume and cushioning with a hyaluronic acid dermal filler in the forefoot of the participants with metatarsalgia caused by wearing high heels.

The sample consisted of women aged 30 years and older that are experiencing pain at the metatarsal heads from wearing high heels. Women who have had previous injections under the metatarsal heads or topical treatments of the forefeet were excluded from the study. There was no requirement for the pain to be bilateral. There were a total of 15 participants in the sample, only 14 participants went through the whole study. The average age of the participants was 47.7 years who experienced metatarsalgia for an average of 9 years. The study used unlabeled Restylane Kysse (hyaluronic acid gel), with the injection performed using a 25-G cannula, each injection consisted of 20mg/ml of HA with 3 mg/mL of lidocaine. The injection was given in a retrograde or antegrade linear threading technique. The participants came to the clinic after 1,3. and 6 months after the injection. The participants kept a weekly diary of when they experienced pain when wearing heels to intolerable pain and the pain ratings on a scale of 1-10. Baropodometric static exams were done before and after treatments to determine the injection volume needed for each metatarsal head injection and whether a “touch up” injection was needed.

At months 3 and 6 after a single injection treatment, 5 subjects reported that they had no pain when wearing high heels. The patients who still had pain after a single injection treatment had a significant improvement when compared to before the treatment at 3 months. At baseline, the participants were able to tolerate heels for 3.4 hours, with the pain being rated at 8.9, and the onset of pain shoe removal time was at 2.4 hours. After the treatment at 6 months, the patients were able to tolerate heels for 7.2 hours, with the pain being rated as a 4.9, and the onset of pain and shoe removal at 3.2 hours. After the injection at the 6th month, the callus was less severe.

The use of hyaluronic acid dermal filler can be used as a conservative treatment to restore the volume of the plantar pad under the metatarsal head. The injection provides long lasting results in alleviating pain when wearing high heels and metatarsalgia. Further studies need to be done with the baropodometric experiments being recorded to show the changes in pressure and longevity of such treatment.
