

**A Step in the Right Direction: A Prospective Randomized, Controlled Crossover Trial of Autologous Fat Grafting for Rejuvenation of the Heel**, James et al, *Aesthetic Surgery Journal*, Volume 41, Issue 7, July 2021

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Level of Evidence: 3

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Atrophy of the heel fat pad is a common cause of heel pain, often seen in advanced age patients, obesity, trauma and overuse. The pain is often localized at the central heel and the plantar fascia tends to be nontender. Current treatments include soft, accommodative orthotics, shoe modification (extra midsole), silicone injections and hyaluronic acid injections, however some of these treatments only provide short term, mild relief. Fat grafting is an ideal soft tissue filler and can often create long lasting pain relief. This article compares a cohort of patients undergoing fat grafting with control patients undergoing the above standard of care remedies.

The patients recruited had to be 18 years old and older with a complaint of heel pain and had to be diagnosed with heel fat pad atrophy. Patients with open foot wounds, infections, cancer, chemotherapy patients, known coagulopathy, known systemic disease, uncontrolled schizophrenia, bipolar disorder, tobacco use within the past year, current pregnancy and diabetic patients were excluded from the study. The patients were split into two groups: Group 1 received fat grafting and was followed up at 1,2,6,12 and 24 months; Group 2 (control) received “standard of care” modalities which included accommodative orthotics, padding, offloading and activity modification and was followed up at 1,2,6, and 12 months postoperatively.

Fat grafting is an office based procedure performed under local anesthesia. The fat harvested was based on the patient's anatomical preference, with a percutaneous incision and a cannula insertion to allow access to the fat. The area is then injected with a tumescent solution and liposuction was performed at the donor site. After the harvest, the fat was centrifuged. The processed fat was transferred to 1 cc syringes for the injection and a tibial nerve block was performed to inject the fat into the heel. There were 2 puncture sites on either side of the heel. The fat aliquoted and was injected in a fan shaped, cross hatching pattern throughout the heel. The inject volume varies based on the individual's tissue, with the endpoint for injection based on palpation. The injection was stopped immediately if skin blanching occurred.

The results were measured using ultrasound to measure the dermal thickness, pedobarograph to measure the pressure during weightbearing and non weight bearing and the Manchester foot pain and disability index (MFPDI) to assess function, appearance, pain and ability to perform work/leisure activities. These tests were performed at each follow up. Of the 22 patients that were enrolled, only 13 met the inclusion criteria. 7 of the patients were from Group 1 and 6 patients were from Group 2. The fat graft increased the dermal thickness as well as the fat pad thickness under compressive load when compared with controls at 6 and 12 months. Foot function, pain and appearance were significantly improved with controls at 6 and 12 months.

Fat grafting is a safe and effective way to improve heel pain in fat pad atrophy and can also improve the foot's function and appearance. However, this is a very limited case study of only 13 patients; therefore, further larger cohort studies are needed to fully assess this modality's palliative potential.



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