



# A Minimal Invasive Alternative to Chronic Plantar Hallux Ulcerations: Selective Plantar Fascia Release -- A Case Series



Carmina Quiroga, DPM<sup>1</sup>, Brittany Staples, DPM, AACFAS<sup>1</sup>, Kyle Williams, DPM<sup>2</sup>

1- Private Practice, Midwest Podiatry, St. Louis, MO 2- Resident physician SSM DePaul Hospital Podiatry Residency, Bridgeton, MO

## Introduction

Plantar ulceration at the hallux interphalangeal joint is a common occurrence for the diabetic neuropathic patient population. These wounds are difficult to treat due to the difficulty in offloading the specific area and high infection rate. These ulcerations are not only detrimental to the patients but also to the healthcare system in general as these ulcerations can lead to digital and further pedal amputation.

## Case Study & Results

Eight patients with hallux interphalangeal joint ulcerations underwent a selective distal plantar fascial release. Patients were all selected with inclusion criteria consisting of chronic & non-infected wounds. Two patients had bilateral ulcerations, thus indicating bilateral procedures. The fasciotomies were all performed by a single surgeon. Six of these procedures were performed within the clinic setting and one within the operating room as an adjunctive procedure for a secondary elective procedure which was unrelated.

A full workup was performed to exclude patients with osteomyelitis or peripheral vascular disease. The patients were also put through a full course of conservative wound care with proper offloading prior to being considered for the procedure.

This procedure was performed in accordance with Chui et al. The procedure was performed under local anesthesia in the office or in one specific example, the operating room. The medial band of the plantar fascia was palpated approximately 2 cm proximal to the tibial sesamoid and was marked. The local anesthesia was infiltrated proximal to the point that was marked, in order to obtain adequate effects of the anesthesia. Next, an 18 gauge needle was inserted into the marked site and the band was released using gentle swiping motion in the frontal plane. The incision of the fascial band was made with the hallux held in maximum dorsiflexion. Following the release of the fascial band, the area was palpated to feel for any residual fibers within the treatment area. The hallux was placed through a range of motion exam to test for any increase in dorsiflexion.

Digit No.	Time to healing after SPFR (Months)	Start ROM (Degrees)	Post Procedure ROM	Delta	Reulceration within 6 months
1	0.8	8	35	27	N
2	1.0	12	35	23	N
3	0.3	8	35	27	N
4	1.3	10	25	15	Y
5	2.2	10	30	20	N
6	3.8	10	25	15	N
7	2.2	8	35	27	N
8	1.0	15	23	8	N
Mean	1.58			21.1	
Standard Deviation	1.11			5.62	

**Table 1:** Patient by patient results of each procedure. Mean time to skin healing was just over 1 month. Mean change in range of motion was 21 degrees following the distal release

## Analysis & Discussion

Limitation in great toe range of motion in dorsiflexion inherently places increased pressure during toe off at the level of the interphalangeal joint during the gait cycle. This will often result in excess pressure leading to ulceration formation which is further exacerbated by diabetic neuropathy. Although there are procedures to help improve the range of motion, such as arthroplasty, or hallux IPJ fusion, The reality is that most of these patients are not necessarily candidates for elective surgery, and require immediate and continued weight-bearing.

Patients can suffer from biomechanical limitations which lead to these recalcitrant ulcerations in the form of either hallux limitus or hallux rigidus, which is the main component resulting in limitation of dorsiflexion of the hallux. In order to improve range of motion at the 1st MPJ and to reduce the propensity of infection and noncompliance in a difficult patient population, a limited in-office procedure is indicated over invasive surgical intervention.

## References

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**Figures 1 & 2:** Distal fascia release example. Patient healed in 3 weeks and did not re ulcerate



**Figure 3 & 4:** Patient healed within 1 month and was ambulatory throughout the entire process. Patient did not re ulcerate