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## **CASE REPORT:**

This case highlights the use of Friction Management Techniques using ShearBan® Friction Relief Patches.

### **Patient Demographics:**

Name: Mr. X  
Age/sex: 67 yrs / Male  
Primary Diagnosis: Type II Diabetes with re-occurring ulcers on feet  
Secondary Diagnoses: Right foot: 1<sup>st</sup> Metatarsal Plantar Surface Ulcer; 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> ray amputations

### **Clinical presentation:**

Mr. X presented to me originally as a new patient with a history of re-occurring ulcerations on his right (neuropathic) foot. On this foot he has sustained multiple ray amputations due to these ulcers, and continues to be at great risk. He has been seeing a vascular surgeon for the past 5 years for these problems. At our original consultation he had plantar surface ulceration of the 2nd metatarsal head of his right foot and an ulcer on the dorsum of the second ray. Although his other foot (the left foot) appeared to be in good condition, he presented with considerable metatarsal prominence with neuropathic toe extension and clawing of the toes. At the time of consultation, Mr. X was wearing a commercially available forefoot offloading boot with a plantar foot bed which terminated proximal to the metatarsal heads (this is the location of the first MTH plantar ulcer).

Although biomechanical principles seemed appropriate with this off-loading boot, the termination of the plantar footplate prevented the ulcer from healing.

**Recommendations for improved intervention/design (Rx):**

For orthotic management of Mr. X, I recommended depth inlay shoes (with extended steel shanks and forefoot/hindfoot rocker soles), custom multi-density accommodative inserts (1/2" blue puff, PPT, and pink plastizote using usual pressure management designs/techniques), and local friction management using ShearBan<sup>®</sup> applied to the areas of plantar ulceration and high pressure.

**Describe use of the ShearBan<sup>®</sup>:**

In addition to the usual pressure management techniques, shoe fit and modifications, ShearBan<sup>®</sup> was applied to the areas of plantar ulceration and high pressure on the accommodative inserts. The patch of ShearBan<sup>®</sup> material was heat/vacuum inlayed into the insert.

**Results:**

Mr. X was seen for follow-up of orthotic management every two weeks after the initial visit, and remained compliant wearing his shoes and inserts full time. Over the course of 11 weeks of treatment (6 office visits) the ulcer healed completely, and as of this writing, he remains ulcer-free for an additional 20 weeks.

The addition of friction management techniques, using ShearBan<sup>®</sup>, was simple and inexpensive. Approximately 4 sq. in. was used per application. The ShearBan<sup>®</sup> material was replaced during the course of treatment, and will continue to need periodic replacement. The amount and frequency of ShearBan<sup>®</sup> will depend on each patient.

**Describe how this approach was simpler, more effective, less expensive or more profitable than other more common approaches:**

Clinically speaking, the orthotic management with the use of ShearBan<sup>®</sup> on this at-risk diabetic patient was a simple and effective way to promote healing and increase his margin of safety. Here, the use of ShearBan<sup>®</sup> was also a less expensive approach to manage this at-risk patient because he healed quicker thereby reducing the amount of time and resources spent in overall orthotic management.

Commonly, these types of at-risk patients are fit with accommodative arch supports and depth inlay shoes. The inserts are fabricated by creating voids and reliefs in areas of callusing and ulceration, as well as bony prominences. If compliance is an issue and at-risk patients do not return for follow-up appointments, they often continue to ambulate on an insert that is beyond its life expectancy. As the material bottoms out, there is no longer a margin of safety for these patients and breakdown of the skin often reoccurs. With the use of ShearBan<sup>®</sup>, the patient is able to ambulate with an increased margin of safety. In the event of noncompliance, either the patient does not keep follow-up appointments and/or continues to wear a multi-density insert beyond its life expectancy, the ShearBan<sup>®</sup> patch helps to prevent the reoccurrence of complications. In sum, the patient heals quicker and is better protected, the physician is pleased with outcomes and follow-up appointments are often reduced.



Right foot at 1<sup>st</sup> consultation



After 11 weeks of treatment

\*Note: Area beneath the calcaneus appears to be callusing, but is actually dermatitis. This is not a pressure/shear situation.



Devices provided for right foot



Sagittal view of right foot  
(rigid deformity)



Left foot at treatment onset



Devices provided for left foot

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