The Efficacy of Cyanoacrylate Liquid Skin Protectant on Pedal Fissures

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Heel fissures are a common dermatologic condition caused by excessive dry skin, numerous systemic diseases, and backless shoe gear. They are defects in skin that fall more into the category of damaged skin, as opposed to full thickness wounds. Patients with deep heel fissures are at an increased risk for developing infection which could cause more severe issues, especially in patients with diabetes and PVD. In this study, five patients from Temple Foot and Ankle Institute with a total of eight heel fissures and two hallux fissures were included. Patients were dispensed nine vials of Marathon liquid skin protectant to be applied to the fissure every three days. Patients returned every two weeks for follow-up in the clinic. The hallux fissures and four of the heel fissures achieved closure after two weeks. There was an average decrease in length of the heel fissures after two weeks of 1.16 cm and an average decrease in length of the hallux fissures of 1.1 cm. This novel product proved to be a comfortable and fast method of protection.

### ABSTRACT

Skin fissures are a common dermatologic condition caused by excessive dry skin, numerous systemic diseases, and backless shoe gear. They are defects in skin that fall more into the category of damaged skin, as opposed to full thickness wounds. Patients with deep heel fissures are at an increased risk for developing infection which could cause more severe issues, especially in patients with diabetes and PVD. In this study, five patients from Temple Foot and Ankle Institute with a total of eight heel fissures and two hallux fissures were included. Patients were dispensed nine vials of Marathon liquid skin protectant to be applied to the fissure every three days. Patients returned every two weeks for follow-up in the clinic. The hallux fissures and four of the heel fissures achieved closure after two weeks. There was an average decrease in length of the heel fissures after two weeks of 1.16 cm and an average decrease in length of the hallux fissures of 1.1 cm. This novel product proved to be a comfortable and fast method of protection.

### METHODS

This is a pilot study of the product on pedal skin fissures. A total of five patients with heel fissures and two hallux fissures were enrolled. Patients were included if they had a fissure(s) on their feet and agreed to follow-up in the clinic every two weeks for a total of one month. Discomfort in and around the fissure was also part of the inclusion criteria. All patients had heel fissures except one who had fissures of the hallux laterally. All of the heel fissures and hallux fissures were considered not symptomatic of infection by clinical history and examination. One patient had failed treatment of her heel fissure using a moisturizing skin barrier foam daily for a period of four weeks prior to using the liquid skin protectant. Patient demographics are listed in table 1.

All fissures were cleaned with sterile saline and surrounding hyperkeratotic skin was debrided. After debridement each heel fissure was measured and photographed. The liquid skin protectant was applied to the heel fissure and surrounding area according to the directions supplied by the manufacturer at the first visit. The product was allowed to dry before patients donned their socks and shoes. Patients were educated on home application of the product and all patient questions were answered. Patients were then supplied with nine vials of marathon liquid skin protectant to be used over a two week period and a product use diary. Patients returned to the clinic every two weeks. At subsequent visits, the fissures were measured and evaluated for signs of infection and closure rate. Photographs of the fissures were also taken at the follow-up appointment. Patients were instructed to bring their study medication and diaries with them at follow-up visits to ensure compliance.

### RESULTS

Two of the heel fissures were lost to follow-up leaving a total of six heel fissures and two hallux fissures. All of the fissures reached the study end-point. Fissure size data is listed in table 3. There was an average decrease in length of 1.16 cm of the heel fissures and an average decrease in length of 1.1 cm of the hallux fissures after two weeks (Figure 1). There was an average decrease in depth of 0.12 cm of the heel fissures and 0.1 cm of the hallux fissures (Figure 2). The hallux fissures and four of the heel fissures were achieved closure after two weeks. Of the other two heel fissures, one completely closed in depth and decreased in length by 1.5 cm and the other decreased in length by 0.3 cm after a period of four weeks (Figure 3). Patients reported an average application of once every three days of the study product.

### CONCLUSION

Heel fissures are a common dermatologic condition that has been given relatively little attention in the literature. The use of keratolytics in treating heel fissures typically takes several weeks to see improvement and patients must apply the keratolytic twice daily. Debridement of fissures is also a common practice and can be painful for the patient. Patients with a deep heel fissure, especially in patients with psoriasis and diabetes, can have difficulty in ambulation due to the pain and deformity as well as an increased risk of infection at the site.

Patients in the study felt that liquid skin protectant was very simple to apply using the applicator via packaging. Patient compliance was high due to only applying the device every three days. The only complaint about the product was the purple stain that accumulates after each application. One of the patients expressed embarrassment to wear sandals while using the product, but covered the area with a consumer bandage. Although a small sample size was included in this study, a significant improvement in the size of the fissures in the study was noted after only two weeks of using the liquid skin protectant. After just four applications most of the fissures in this study had begun to close. An average closure time of two weeks using this novel liquid skin protectant equated to increased patient compliance with the ease of application and ultimately a decrease in the discomfort associated with the heel fissure and a cosmetically acceptable result. Overall, the liquid skin protectant proved to be a useful and fast treatment method for painful pedal skin fissures.

### REFERENCES


"Marathon" Liquid Skin Protectant, Medline Industries, Inc.