

The Use of Cyanoacrylate Tissue Adhesive (Glue) In the Treatment Of Dry Heel Fissures: A Preliminary Investigation

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Introduction

Podiatrists are often asked to treat painful heel fissures that have not responded to patient self-help or traditional over the counter (OTC) remedies. Podiatry management of heel fissures typically involves removal of causal factors (pressure/tension/allergens/tinea pedis), debridement of hyperkeratotic skin and epidermal rehydration with suitable emollients followed by covering with appropriate dressing (tape/hydrocolloid). However, heel fissures may remain painful, look unsightly and difficult to resolve.

There are some anecdotal and literature reports¹ on the use of household/industrial cyanoacrylate ("superglue") adhesives to successfully treat heel fissures, although the use of non-medical grade "superglues" is not recommended due to toxicity/brittleness and potential liability issues.

Medical grade cyanoacrylates, known as topical skin adhesives, have safely and successfully been used in healthcare for the closure of wounds and lacerations in Accident and Emergency and Operating rooms for over 20 years². However, little investigation has been undertaken into these medically approved skin adhesives potential applications in podiatry.

We conducted a case series clinical evaluation using a new medical grade, single patient use, topical skin adhesive to assess the effectiveness of this technology as a heel fissure treatment option.

Method

In order to assess the suitability of cyanoacrylate adhesive, a sample of eighteen patients presenting in four private practices in Hampshire, with dry fissuring of the heels, were recruited. After initial callus reduction by the podiatrist, each patients heel fissure was closed and sealed by application of three thin layers of fast setting (<30 seconds) Octyl-Blend10™ skin adhesive (MedLogic Global Ltd®, Plymouth, UK).

Outcomes were measured using a patient and practitioner questionnaire and digital photography. Patients were followed up, post procedure, for up to three weeks or next treatment.

Case Studies

Patient 1



13-03-09
Initial presentation

13-03-09
Post-treatment

8-04-09
Follow up presentation

8-04-09
Post-treatment

Patient 2



16-07-09
Initial presentation

16-07-09
Post-treatment

27-08-09
Follow up presentation

27-08-09
Post-treatment

Patient 3



25-04-09
Initial presentation

25-04-09
Post-treatment

08-08-09
Follow up presentation

08-08-09
Post-treatment

Results

All 18 patients completed the study with no adverse events. Fissure size ranged from 0.5mm to 3mm in depth (mean = 1.55mm) and 3mm to 20mm in length (mean = 10.55mm). Improvement in terms of immediate and lasting closure of the fissure was achieved in 94% (17) participants along with remarkable instant and long-term pain relief following application (see figure 1).

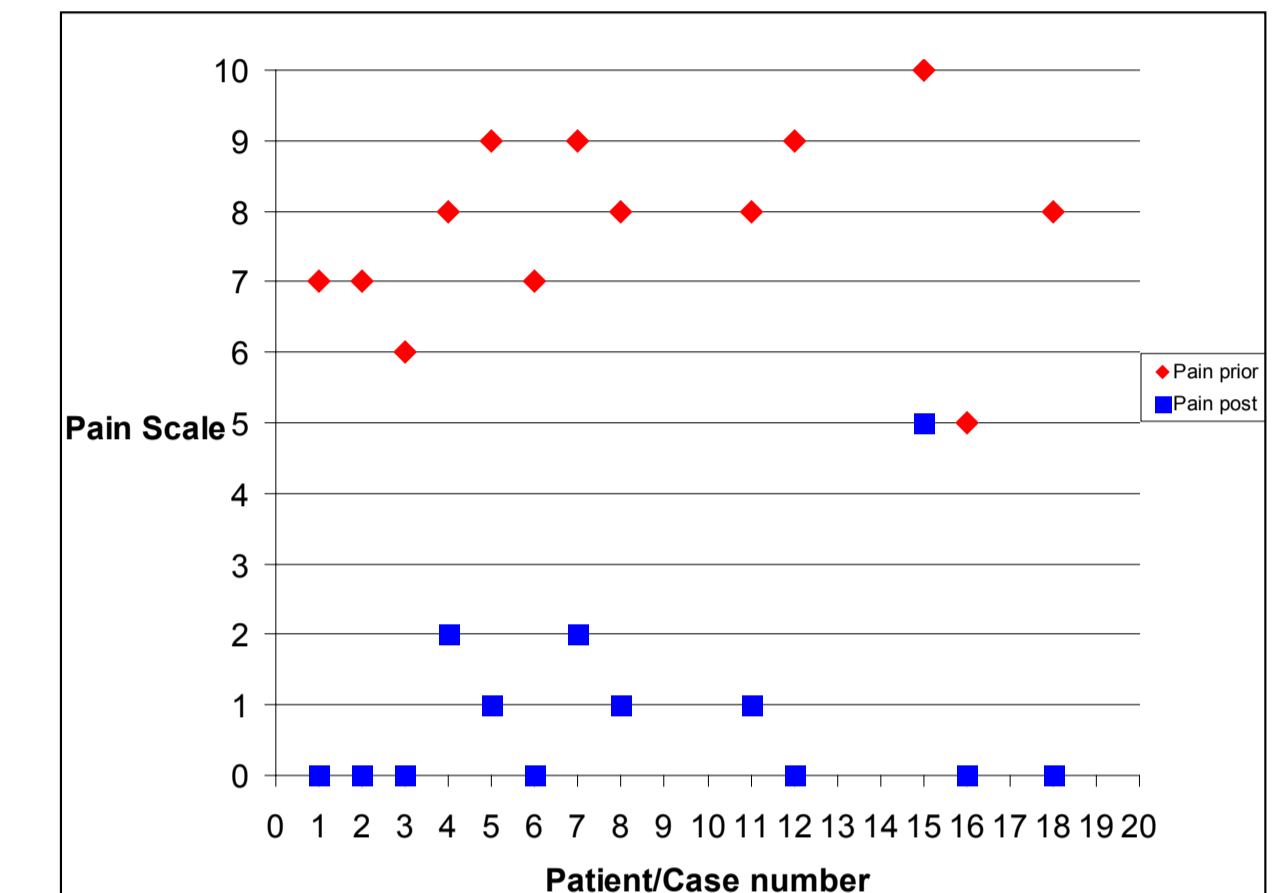


Figure 1: Pain scale before and after application of tissue adhesive.

Patient satisfaction was recorded as 78% (14) with positive comments on the convenience of being able to lightly shower the treated area and no unsightly dressing. Dehiscence of the fissure occurred in only one patient (podiatrist noted that the edges were not easily approximated and the fissure was a high tension wound).

Underlying systemic conditions that could potentially complicate healing were noted to be present in 50% (9) of patients; however this was not observed as a poor outcome marker by practitioners.

Conclusion

This preliminary investigation suggests that medical grade cyanoacrylates, and the new Octyl-Blend10™ skin adhesive in particular, may have a place in the management of painful heel fissures. Of greatest significance was the immediate and long term pain relief reported by the majority of patients with painful dry heel fissures. Further, larger scale studies are required to corroborate these findings.

Summary

Preliminary evidence suggests:

- Medical grade cyanoacrylate may be useful for podiatric treatment of heel fissure
- Simple, clean and quick application - high clinician satisfaction
- Durable heel fissure closure (up to 7 days)
- Immediate and prolonged relief from pain
- Effective treatment of heel fissures in 94% of cases
- Popular with patients as reduced pain, gave good results, can lightly shower/wash the area and no unsightly dressings

References

1. Hashimoto H (1999) Superglue for the Treatment of Heel Fissures. *Journal of the American Podiatric Association* 89:8
 2. Coulthard P et al. Tissue adhesives for closure of surgical incisions. *Cochrane Database of Systematic Reviews* 2009, Issue 3.
- OctylBlend 10™ is a registered trade mark of MedLogic Global Ltd. Plymouth, UK.

Example: Treatment of a heel fissure with medical grade cyanoacrylate

Patient: Male, 70yrs
History: Chronic fissures on left heel due to gait. Last treatment – debridement 6 weeks prior to photographing.



1. Clean and Dry. Skin surface prepared with chlorhexidine gluconate disinfectant.



2. Debridement of callus. Sharp debridement of callus and surrounding area.



Removal of remaining hard/callused epidermis using a Moore's disc.



Area was then cleaned and dried.

3. Application of medical grade cyanoacrylate.

Monomer was applied according to manufacturers instructions for use.

Summary:

1. Clean and dry foot.
2. Foot positioned to facilitate application by having heel uppermost.
3. Applicator activated by holding tip downwards, squeezing wings to break internal ampoule and to wet out the applicator tip (no drips).
4. Approximate the skin edges together (in this case not required) and apply the monomer as a thin film over the length of the fissure. Do not apply excessive amounts of monomer.
5. Maintain approximation of wound edges and allow to dry for 10 seconds.
6. Allow to fully dry (2 minutes) before applying a protective dressing (if required) or clothing.
7. The polymer will naturally slough off after 5-10 days. Light washing and showering of area is permitted but area should not be rubbed dry.



Please refer to full manufacturers indications and instruction for use before use of the product.

Appearance of treated heel after debridement and application of the cyanoacrylate monomer.

