

## **CLINICAL CASE STUDY DEMONSTRATING EFFECTIVE OUTPATIENT MANAGEMENT OF TRAUMATIC HAND INJURIES UTILIZING A HYDROGEL SHEET\***

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### **ABSTRACT**

Two case studies of traumatic hand injuries are presented. One patient involves a deli attendant with slicing, crushing injuries of two digits and the second patient is a bakery worker with a crushing, tearing injury and total traumatic nail loss of one digit.

The goals for these traumatic injuries were to provide comfort and relief, provide moist wound healing, provide a product that was easy to use, and let the patients resume normal life activities.

These active patients healed within an average of 33 days. During the use of the wound care protocol using a glycerine-based hydrogel sheet\*, there was no evidence of infection or wound contamination in any of the wounds.

The hydrogel dressing\* was effective for treatment of these wounds due to its soothing properties offering immediate pain relief and for its cushioning, conformability, ease of use, and bacteriostatic properties.

The benefits of this dressing:

1. There was immediate pain relief, due to the soft protective gel and the complete contact of the gel to the wound surface, with the result of eliminating essentially all other pain medication.
2. No pain was created with dressing changes because this dressing does not dry out and become stuck to the wound.
3. No infection - the bacteriostatic properties of the glycerine dressing helps prevent infection from occurring in wounds.
4. Wounds healed with minimal scar tissue – this is important for finger wounds to retain the sensitivity and dexterity for maximum recovery and efficient use.

Conclusions -- The wounds of the two patients described were healed using a bacteriostatic glycerine gel sheet.\* The benefits determined were: reduced pain, minimal/no scarring, moist healing environment, infection free wound, and total epithelialization. The fingernail re-attachment resulted in a nearly non-detectable injury after 1 year. This dressing has proven very effective for hand and finger reconstruction injuries.

We have used the glycerine-based gel sheet on more than 100 wounds of all types and we have seen exceptional scar elimination, pain relief, and simplicity of wound dressing changes. The ease of dressing changes allows the patient to perform home dressing changes as needed between clinic visits. This greatly improves the cost effectiveness of this wound care system. The wounds healed with minimal scar tissue which gave regeneration of near normal tissue and resulted in maximum recovery and full use of the digits.

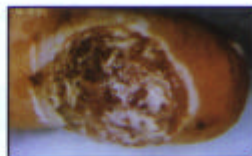
Presented at the 15<sup>th</sup> Annual Clinical Symposium on Wound Care  
October 6-8, 2000  
Nashville, TN



**Deli Attendant - left hand, second finger and middle finger**

**Problem:** A thirty-four (34) year old female "Deli" worker had slicing and crushing injuries on the ends of her index and middle finger digits.

**Initial visit to the wound care clinic 10/19/99 ~ photos #1 & #2:** The patient was released from the Emergency Room and admitted to our wound care clinic two (2) days after the accident. The emergency room clinician had sutured the index finger. Both the index finger and middle finger were damaged and both wounds were covered with a gauze dressing in the E.R. Once the gauze dressings were removed by the wound care clinic, the index finger was highly edematous and the intact skin appeared white in color next to the sutured closure and the middle finger revealed a wound measuring 2cmx2cm in which most of the epidermis and dermis had been sliced away from the finger pad (tip). **New protocol:** Both wounds were cleaned with a wound cleanser and covered with a glycerine-based gel sheet\*. The patient was instructed to clean the wound daily and reapply the glycerine sheet\* after bathing. The next visit was scheduled for 11/03/99.

**Photo 1: 10/19/99****Photo 2: 10/19/99**

**One week later 11/03/99 ~ photos #3 & #4:** Sutures were removed from the index finger by the wound care clinic. The wound on the index finger had a slight crusty scab but was healed. There was no tenderness to the touch and the white area had now turned to healthy pink. The "sutured flap" of skin appeared to be fully attached and repairing itself to the epidermis. The middle finger wound now measured 1.8cmx1.8cm with about 50% yellow slough and 50% red granulating tissue. The surrounding tissue showed bruised and discolored skin. Mechanical debridement was done on the middle finger during the clinic visit. **Protocol:** Cleaned wound with wound cleanser and re-covered with the glycerine sheet\*. The patient was instructed to leave the bandage in place until the next office visit in seven (7) days.

**Photo 3: 11/03/99****Photo 4: 11/03/99**

**Second follow-up visit 11/09/99 ~ photo #5:** The index finger wound had healed, however the glycerine sheet\* was continued to protect the new tissue and to offer padding to the tip. The middle finger wound now measured 1.8cmx1.3cm. The wound base was granulating, the epithelium was migrating from the wound edges and the open wound had a covering of granulation tissue. **Protocol:** Remained the same as above.

**Photo 5: 11/09/99**

**Third follow-up visit 11/15/99 ~ photo #6:** The index finger continued to improve in color and texture. The same protocol was continued for protection. The middle finger wound measured 1.1cmx1.2cm. The wound base was granulating and epithelium continues to migrate from the wound edges toward closure with increased granulation and collagen. **Protocol:** Remained the same as above.

**Photo 6: 11/15/99**

**Fourth follow-up visit 11/30/99 ~ photo #7:** View of both fingers. The skin texture on the index finger continues to improve with less scar tissue on each visit. Skin is soft and pliable much like the surrounding skin. The use of the glycerine sheet\* is no longer used for this finger, only moisturizing cream to keep it supple. The middle finger wound now measured 0.6cm x 0.4cm. Wound base is beefy red granulated base, almost totally epithelialized. **Protocol:** Remained the same as above.

**Photo 7: 11/30/99**

**Last follow-up visit 4/18/00 ~ photo #8:** Wounds closed in 33 days with full function and little scar. A key note to present is the texture and the fingerprints have reappeared.

**Photo 8: 4/18/00**



## Bakery Worker- right hand, index finger

**Problem:** A forty-eight (48) year old female "Bakery" worker had a crushing, tearing traumatic wound, ripping the fingernail off the index finger. The patient fell carrying a large cookie sheet and caught her finger under the cookie sheet when she hit the floor.

**Initial visit to the wound care clinic 2/16/99 ~ photos #1 & #2:** The patient was released from the Emergency Room and admitted to our wound care clinic two (2) days after the accident. The nail was sewn back on in the E.R. and the wound was dressed with Silver Sulfadiazene and gauze. Once the dressing was removed, the surrounding tissue appeared macerated and bruised on both the top and bottom of the finger; no odor was present and no measurements were taken, depth undetermined. **Protocol:** The wound was cleaned with a wound cleanser and to assist with the drainage, a collagen/alginate\*\* was applied to the wound base then covered with a glycerine-based gel sheet\*. The patient was instructed to leave the dressing in place for seven (7) days and to keep the area dry and clean.

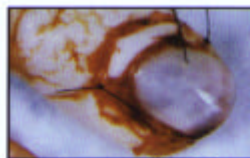


Photo 1: 2/16/99



Photo 2: 2/16/99

**Second follow-up visit 2/23/99 - 7 days ~ photo #3:** Around and under the nail area it had the appearance of blood trapped under the skin and nail. Bruising was present and the wound had no odor. The nail appeared to be viable. The maceration was no longer present. **Protocol:** The wound continued to be dressed with the combination of collagen/alginate and covered with a glycerine-based dressing. The patient was released to go back to work.



Photo 3: 2/23/99

**Third follow-up visit 3/12/99 - 4 weeks ~ photo #4:** No odor, wound is nearly healed. The dried blood had been debrided by the dressing, no mechanical debridement was necessary. The nail had a yellow crust which was collagen fibers and glycerine and showed signs of re-attachment to the tissue. The area was slightly tender to touch. The surrounding tissue was still bruised but was granulating and showed signs of epithelialization. No signs of infection were present. **Protocol:** Discontinue the collagen/alginate\*\* and discontinue the glycerine dressing. A dry bandage was applied and the patient was scheduled for one more follow-up visit.



Photo 4: 3/12/99

**Final visit:** The follow-up visit on 3/22/00 (no photo), wound was totally healed.

**4/20/00 ~ photos #5 & #6:** Photo shoot only. After one year the wound is essentially non-detectable. The fingernail appears to be normal. The re-attached nail simply grew out and was trimmed as needed.



Photo 5: 4/20/00



Photo 6: 4/20/00

**Rationale:** Past experience with the use of the bacteriostatic glycerine-based gel sheet\* on other types of traumatic wounds has resulted in excellent outcomes. This glycerine dressing was selected for these two case studies of traumatic hand wounds with expectations of achieving similar outcomes: keeping the wound infection free, protection of the digits while adding pain relief and comfort to the patient. The collagen/alginate was utilized to promote healing and control drainage.

**Results and Conclusions:** The wounds of the two patients described were healed using a bacteriostatic glycerine gel sheet\*. The benefits determined were: reduced pain, minimal/no scarring, moist healing environment, infection free wound, and total epithelialization. The fingernail re-attachment resulted in a nearly non-detectable injury after 1 year. This dressing has proven very effective for hand and finger reconstruction injuries. Easy to use, dressing changes were required only once a week. End result...healing with little scar - healed wound in 33 days.

**Products used were:** \*Toe-Aid™, \*\*Fibracol™