

THE USE OF SHEET HYDROGELS* IN THE MANAGEMENT OF COMMON FOOT PROBLEMS

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ABSTRACT

The use of sheet hydrogels* in the management of common foot problems represents a novel and somewhat underutilized treatment modality for this versatile wound care product. Sheet hydrogels* are routinely used for stage 1 and stage 2 pressure ulcers, partial thickness wounds and burn wounds.

In this nurse-managed foot care clinic, sheet hydrogels* are used for skin protection and as a dressing for hyperkeratotic lesions such as corns and calluses. The clinic has predominately elderly and diabetic populations who have various acute chronic foot and lower leg problems. Of the 750 patients seen in 1995, sheet hydrogels* were used in approximately 25% of the patients with primary and secondary skin lesions.

For example, the sheet hydrogel* is used to decrease friction from ill-fitting footwear for padding corns and calluses. It is also used to relieve abnormal weight bearing on the metatarsal heads, thus preventing callus formation.

Excellent results have also been achieved when using sheet hydrogels as a primary, and occasionally as a secondary wound dressing. Wounds that healed quickly and without complications include non-exudating or very lightly exudating diabetic foot ulcers and multiple, partial thickness heel fissures.

Sheet hydrogels* are cost effective, they can be reused and modified quickly and easily. They are easy to use by professionals, patients and home caregivers.

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ABSTRACT

The use of sheet hydrogels* in the management of common foot problems represents a novel and somewhat underutilized treatment modality for this versatile wound care product. Sheet hydrogels* are routinely used for stage 1 and stage 2 pressure ulcers, partial thickness wounds, and burn wounds.

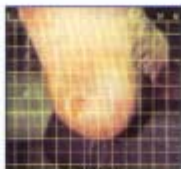
PURPOSE

In this nurse-managed foot care clinic, sheet hydrogels* are used for skin protection and as a dressing for hyperkeratotic lesions such as corns and calluses. The clinic has predominately elderly and diabetic populations who have various acute chronic foot and lower leg problems. Of the 750 patients seen in 1995, sheet hydrogels* were used in approximately 25% of the patients with primary and secondary skin lesions.

CASE STUDY 1



1/3/95



3/13/95



3/28/95



4/17/96

PATIENT HISTORY

Case Study #1

Mr. L. is a 45 YO WM who was referred to the Foot and Wound Care Clinic by the Department of Family Medicine. He presented with a chronic neuropathic ulcer of the left heel. He is an insulin dependent diabetic with adolescent onset. PMH is significant for transmetatarsal amputation of left foot in 1994 from traumatic injury with non-healing wounds of the toes. Current co-morbid conditions include; distal symmetric polyneuropathy, daily alternating hypo and hyperglycemia, and depression. Mr. L. smokes 1 to 2 packs of cigarettes daily. Current medications include: NPH insulin 15 U q am and 15 U q pm, Prozac 20 mg q am. Patient is currently followed by a home health nursing agency for weekly fasting blood glucose levels and blood pressure checks only. Available labs include a CBC and Creatinine and BUN within normal limits.

He has had this ulcer for approximately 12 months. Initial event which lead to ulcer is unknown. Various topical therapies including saline wet to dry, hydrocolloid, dry gauze and leaving it open have been used in the past. Mr. L. has refused non-weight bearing treatment or devices. Right foot had absent sensation by 10 gm monofilament testing and impaired sensation with 75 gm monofilament. Right foot had dry skin but was otherwise normal in shape and function.

Initial wound evaluation: 1.0 cm (W)-X- 1.3 cm (L)-X-0.3 cm deep, full thickness chronic neuropathic mid heel plantar ulcer. Wound bed light red underneath adherent yellow/green slough with hyperkeratotic and partially macerated periwound skin. Pt was ambulating by placing excessive weight on transmetatarsal shafts, and wearing excessively ill fitting and worn tennis shoes. Pt's foot was insensate by 75 gm monofilament testing. Dry and excessively thick hyperkeratotic skin extends from the wound in a 2 cm X 2 cm circular pattern. There was no evidence of wound/skin infection or inflammation. Patient has taken three courses of oral antibiotics over the past year.

INITIAL TREATMENT

(Visit #1): Initial wound care and treatment plan;

Wound cleaned with dermal wound cleanser spray* and hyperkeratotic skin debrided with a #17 podex blade. Inner macerated skin removed and silver nitrate applied to the wound margins for hemostasis. Wound packed with a small amount of combination collagen and calcium alginate rope dressing* sheet hydrogel* placed as a secondary dressing.

FOLLOW-UP

Follow-up Wound Care:

General impression: wound found without dressing, dirt and long dog hairs found in and around wound with generalized poor hygiene.

wound measures 0.9 cm (L) X 1.3 cm (W) X 0.2 cm (D)
periwound callus 2.0 cm X 2.0 cm periwound maceration: slight
wound bed: brighter red with less adherent yellow/green slough
no sign or symptoms of infection or inflammation

Patient wound care instructions:

clean wound daily with normal saline
apply sheet hydrogel* in precut pieces directly over wound secure with hypoallergenic tape.
stay off foot as much as possible, use crutches, take vitamin C 1000mg daily and a multivitamin daily, return to clinic in 1 week.

FOLLOW-UP

Follow-up wound care: (week #4)

General impression: wound has correct dressing with improvement noted in peri-wound skin and wound bed. Macerated skin resolved, continues to have hyperkeratotic skin (callus) build-up, but not as dry and hard.

Follow-up wound care: (week #5)

General impression: proper wound dressing in place, wound clean without drainage, wound improved with less peri-wound callus and bright pink/red ulcer bed and granulation tissue present. Wound measures: 1.0 cm (L) X 0.9 CM (W) X 0.1 cm (D) no drainage, s/s of infection or inflammation.

Follow-up wound care: (week #7)

General impression: wound found without dressing and small bits of black gravel and dirt in wound, dog hairs present. However, wound remains improved with smallest amount of peri-wound callus to date. Wound measures: 0.5 cm (L) X 0.5 cm (W) X 0.1 cm (D) no drainage, odor, or s/s of infection.

Follow-up wound care: (week #9)

General impression: patient returns with hydrocolloid dressing in place for the previous 3 or 4 days, patient unable to remember exactly when home health nurse placed dressing. Wound noted to have peri-wound maceration, small amount of clear/yellow drainage with slight odor, however, wound bed remains pink/red. Wound measures 0.5 cm (L) X 0.5 cm (W) X 0.2 cm (D)

Follow-up wound care: (week #11)

General impression: wound continues to improve, packing with combination collagen and calcium alginate prevented closure of wound. Wound measures 0.3 cm X 0.3 cm X 0.1 cm

Follow-up wound care: (week #13)

General impression: wound improved, ulcer presents as shallow crater with pink wound bed, no drainage and epithelization almost complete.

Patient wound care instructions: discontinue combination collagen alginate dressing and use only Elasto-Gel™. Pt. unhappy with prosthetic foot, did not obtain therapeutic shoes and requests to go to another therapist to have another foot made and then to obtain therapeutic shoes.

Follow-up wound care: (week # 15)

General impression: wound healed.

Procedure: periwound callus build-up: removed with #17 podex blade. (small amount).

Patient wound care instructions:

continue to use sheet hydrogel* on a daily basis whenever ambulating
obtain prosthetic foot and therapeutic shoes
return PRN and every 3 months to clinic for foot care

SUMMARY

Mr. L.'s wound healed due to aggressive debridement, control of maceration and slough and consistent use of a sheet hydrogel* alternating with absorptive dressings as needed. Overall he required 10 visits to the Wound Care Clinic over a 15 week treatment period. Healing time for this wound was 105 days.

COST

Cost analysis shows that the cost to Medicare was approximately \$500.00 for clinical services and \$300.00 for dressing/supplies. Visit and supplies were reimbursed for products given to the patient at approximately 80% of amount charged.

SHEET HYDROGEL* IN THE OF COMMON FOOT PROBLEMS

HYDROGEL PROPERTIES

For example, the sheet hydrogel* for padding corns and calluses is used to decrease friction from ill-fitting footwear. It is also used to relieve abnormal weight bearing on the metatarsal heads, thus preventing callus formation.

RESULTS

Excellent results have also been achieved when using sheet hydrogels* as a primary, and occasionally as a secondary wound dressing. Wounds that healed quickly and without complications include non-exudating or very lightly exudating diabetic foot ulcers and multiple, partial thickness heel fissures.

COST EFFECTIVE

Sheet hydrogels* are cost effective; they can be reused and modified quickly and easily. They are easy to use by professionals, patients and home caregivers.

CASE STUDY 2



4/16/96 - Left Foot



4/16/96 - Right Foot



5/7/96 - Left Foot



5/7/96 - Right Foot



Dressing Application

PATIENT HISTORY

Case History 2

Mr. C. is a 61 YO WM who is a well known patient at the Foot and Wound Care Clinic. He was referred most recently for bilateral heel wounds s/p hospitalization.

Past Medical History: Diet controlled diabetic x 20 years, 2 PPD smoker x 45 years, hypertension, obesity, hyperlipidemia and dyslipidemia, cataracts, congestive heart failure, and recent episode of pulmonary edema and cardiac catheterization showing 3 vessel disease.

ASSESSMENT

Assessment: Pt. presents with bilateral heel fissures and full thickness ulcer of right heel. Pt. states he thinks the ulcers are from rubbing heels on the bed sheets during hospitalization of 5 days. Pt. is seen 3 days post discharge. No topical care had been started.

FOLLOW-UP

(Week #1, Visit #1)

Wound assessment: left foot: dry, peeling skin surrounding 3 partial thickness fissures, 1.0 cm X .02 cm for all 3 fissures. Heel erythematous and painful. Pt. has decreased sensation to # 5.07 monofilament, hammer toes with large thick corn on the tip of the 4th toe, thin fat pads with prominent metatarsal heads and large diffuse callus over the 4th metatarsal head and pes cavus. Dorsals pedis pulse faint but palpable and audible with doppler.

Right heel: 3 partial thickness heel fissures and 1 full thickness ulcer originating as a fissure. Fissures measure 1.2 cm X .02 cm. Full thickness ulceration has peri-wound skin maceration and peeling with erythema and pain. After sharp debridement, ulcer measures 1.2 cm X .05 cm X .02 cm with red/pink wound bed and small amount of yellow adherent slough in center of wound.

Foot has decreased sensation to # 5.07 monofilament, thin fat pads with prominent metatarsal heads, hammer toes and pes cavus. Dorsals pedis pulse non-palpable, but audible with doppler, foot develops dependent rubor and pallor with elevation, pt. positive for intermittent claudication.

PROCEDURE

Procedure: fissures cleaned with a dermal wound cleanser*, sharp debridement performed on the right full thickness ulcer. Vitamin E 200 IU oil placed on all plantar surfaces excluding the fissures and ulcer. 2" X 4" piece of sheet hydrogel* placed over heel fissures and ulcer bilaterally, secured with stretch elastic netting*.

DISCHARGE INSTRUCTIONS

Patient discharge instructions:

In addition to standard diabetic foot care instructions: keep feet dry and clean, do not go barefoot or soak feet.

Apply Vitamin E 200 IU to feet once daily, avoiding areas of fissures and ulceration.

Apply sheet hydrogel* in pre-cut pieces to both heels and secure with elastic netting.

Use sheet hydrogel* everyday. May take off for 2-3 hours in the evening when resting with feet elevated. Replace sheet hydrogel* after 2-3 hours and do not get dressing wet.

Return to clinic one week for recheck.

Non invasive vascular studies (NIVS) scheduled.

Vitamin C 1000 mg daily with multivitamin daily.

Stop smoking.

FOLLOW-UP

(Week #2, Visit #2)

Right foot: left heel fissures have granulated with soft pink epidermis and generalized softness and decreased peeling and flaky skin of foot and heels.

Left foot: peri-ulcer heel fissures granulated with soft pink epidermis and generalized softness and decreased peeling and flaky skin of foot and heel.

Full thickness ulcer now measures 1.0 cm X .05 cm X .01 cm with pink wound bed without slough. Slight skin peeling adjacent to wound. NIVS results show: ABI of left leg is .53 with a TBI of .40, right leg ABI .35 and TBI is .27, indicating resting ischemia and borderline for adequate healing of distal forefoot lesion.

(Week #4, Visit #3)

Patient presents 2nd day home from hospitalization for 3 vessel angioplasty. Pt. did not wear sheet hydrogel* dressing for the last day of hospitalization and a hydrocolloid was substituted by hospital personnel. Patient is scheduled for right femoral popliteal bypass surgery in 2 weeks.

Left heel: slight maceration and peeling of heel skin, very small fissure noted in the center of the heel. Skin dry and peeling/flaky skin noted on entire foot, worse on plantar surface. Right heel: ulcer has increased amount of peri-wound maceration and adherent yellow/white slough in wound bed.

Procedure: left heel cleaned with dermal wound cleanser*, foam* dressing applied and secured with hypoallergenic tape*. right heel: macerated skin debrided and slough inside wound debrided by sharp debridement. Foam* dressing applied and secured with hypoallergenic tape*.

(Week #5, Visit #4)

Left heel: maceration improved, fissure granulated and rest of heel remains free of fissures

Right heel: great improvement in ulceration noted with small amount of peri-wound maceration and peeling skin.

Procedure: wound cleaned with dermal wound cleanser, sheet hydrogel* applied and secured with hypoallergenic tape.

(Week #11, Visit #7)

Assessment: right heel: wound granulating with pink/red wound bed, size decreased to .5 cm X .5 cm oval partial thickness ulcer. Ulcerated areas of right surgical incision granulating with decreased peri-incisional erythema, small amount of yellow exudate noted over incision ulcerations without drainage.

Procedure: right heel cleaned with saline, covered with 2" X 2" piece of sheet hydrogel* and secured with tape. Vitamin E 200 IU oil to plantar surface and heel of each foot daily. Incisional areas cleaned with saline and sheet hydrogel* replaced and secured with tape.

SUMMARY

Summary: Mr. C. did have a very difficult course with many complications. The topical applications of a sheet hydrogel* alternating with other dressings as needed adequately managed his wounds and improved overall healing time.

REFERENCES

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- * Elasto-Gel — Non-drying Sheet Hydrogel used
- * Karacenz, Fibracol, Elasto-Gel, Hypafix

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