

Innovations in Practice

Use of a Glycerin-Based Gel Sheeting in Scar Management

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Abstract

Management of hypertrophic and keloid scars can be difficult. This article presents an initial report on use of a glycerin-based gel sheeting to manage or prevent these scars. The results were comparable to those achieved with silicone sheeting, a typical treatment. Clinically, the glycerin-based sheeting was well tolerated, appeared to be effective, and was less expensive than the silicone sheeting. A prospective study will be done to confirm these findings.

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HYPERTROPHIC AND KELOID SCARRING IS problematic. These scars typically present as red, tender, raised areas that may itch and may be painful.¹ Hypertrophic scars are differentiated from keloids in that they remain within the confines of the wound and often regress spontaneously over months or years,² with most resolving within the first year. Keloids, however, invade the wound margins, proliferating beyond the original wound (Figure 1).³ They rarely regress in either size or pigmentation and may remain symptomatic for years. They are likely to recur after excision and historically have been difficult to treat.

These scars usually occur within 1 year of trauma, typically within the first 4 weeks. Trauma, in this instance, may result from surgery, lacerations, tattoos, burns, injections, bites, vaccinations, or blunt trauma.² Other factors associated with hypertrophic scar development include African-American or Latino heritage, wounds that heal under tension, location (presteral, shoulder, back, or earlobe), youth, pregnancy, personal or family history, deep laceration, severe acne, healing by secondary intention, and blood type A.⁴ Individuals at risk for hypertrophic and keloid scarring should be monitored closely, as early intervention may prevent or lessen the severity of such scars.

Treatment methods

Various methods have been used to treat hypertrophic and keloid scars, including intralesional corticosteroid injections (alone or following surgical resection), cryotherapy with liquid nitrogen, the neodymium:yttrium-aluminum-garnet (Nd:YAG) laser, external pressure, radiation, topical retinoids, and injection with recombinant interferon gamma.² In the past 10 to 12 years, silicone gel sheeting also has been used successfully.⁵⁻⁷ The mechanisms by which the silicone gel sheets are effective remain uncertain.

In the past, the authors have used silicone gel sheeting, sometimes in conjunction with corticosteroid injections and/or surgical resection, to manage hypertrophic and keloid scars. The underlying causes of these scars varied, and those that most often required treatment were from breast reduction and other surgical procedures, lacerations, trauma, and burns. The silicone sheeting has been effective but has some disadvantages. It must be removed and the skin and sheeting washed twice daily, which may be inconvenient for the user, and it is expensive (\$22 for a 12 cm × 14.5 cm sheet). In addition, the silicone irritated the skin of some patients, and it cannot be applied to open wounds.

Recently, the authors have begun using a glycerin-based gel sheeting (Elastogel,

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Southwest Technologies) in place of the silicone sheeting. The sterile glycerin-based sheeting, measuring approximately $\frac{1}{8}$ inch thick, is covered with a soft fabric on one side and is available in several sizes. It is semipermeable and mildly adhesive to intact skin; however, it must be held in place with tape, a secondary dressing, or clothing.

Several advantages set glycerin-based sheeting apart from silicone sheeting. Originally developed as a wound dressing, the glycerin-based sheeting can be placed safely on open wounds at risk for abnormal scarring, thus facilitating early intervention. Second, it is removed and the skin and sheeting washed only once a day. Third, the cost is about one-fourth to one-half that of silicone sheeting (\$5 per 10 × 10 cm sheet). Fourth, the glycerin-based sheeting is less likely to cause skin irritation. Wear time for the two products is similar.

Report of initial use

The authors used the glycerin-based sheeting on 34 patients to manage or prevent hypertrophic and keloid scars (Table 1). Four patients were lost to follow-up, and one patient was noncompliant with treatment. Indications for use were scars of less than 18 months in duration, newly healing wounds at risk for hypertrophic and keloid scars, and/or prophylactic treatment following surgical resection of existing hypertrophic or keloid scars. The scars also had to be located in areas in which a gel sheeting could be maintained (e.g., earlobes were excluded). The glycerin-based sheeting was applied to surgical excisions and incisions as soon as the sutures were removed (Figures 1 and 2). Treatment of new hypertrophic and keloid scars began as soon as abnormal scarring became evident (Figures 3 and 4).

One sample of glycerin-based sheeting was provided to each patient, along with a



Figure 1 Patient presented with large keloid 1 year following a motor vehicle accident.



Figure 2 Same scar 3 months after surgical resection and treatment with a glycerin-based gel sheeting. Treatment was started 2 weeks postoperatively, when sutures were removed. Keloid did not recur.

demonstration of and written instructions for use. To assess effectiveness and compliance, patients initially were instructed to call for a prescription when additional glycerin-based sheeting was needed. They were encouraged to wear the sheeting for at least 12 hours per day and to continue treatment for 8 to 12 weeks. They were



Figure 3 Patient presented with hypertrophic scars 1 month following a motor vehicle accident. Glycerin-based gel sheeting was begun at this visit, along with compression therapy.



Figure 4 Same scar 9 months after initiation of treatment. Scar had flattened noticeably at end of first month of treatment.

Table 1
PATIENT CHARACTERISTICS AND OUTCOMES WITH GEL SHEETING

Patient Gender	Age	Location of Scar(s)	Indication for Sheeting	Number of Months Used	Sheeting Effective?
Female	48	Arm	Hypertrophic, burn*	10	Yes
Female	22	Arm	Hypertrophic, burn	4	Yes
Female	18	Arm	Hypertrophic, burn	3	Yes
Male	26	Arm	Prevention	Non-compliant	No
Female	16	Arm	Prevention after keloid excision	3	Yes
Female	39	Breast	Hypertrophic scar	4	Yes
Female	23	Breast	Hypertrophic scar	4	Yes
Female	38	Breast	Hypertrophic scar	4	Yes
Female	33	Breast	Hypertrophic scar	6	Yes
Female	16	Breast	Hypertrophic scar	3	Yes
Female	20	Breast	Hypertrophic scar	3	Yes
Female	48	Breast	Hypertrophic scar	9	Yes
Female	50	Breast	Hypertrophic scar	4	Yes
Female	29	Chest	Hypertrophic scar	Lost to follow-up	
Female	45	Chest	Hypertrophic scar	1	No
Female	33	Chest	Hypertrophic scar	4	Yes
Male	21	Chest	Prevention after keloid excision	16	Yes
Female	11	Face	Hypertrophic scar*	8	Yes
Female	17	Face	Hypertrophic scar*	12	Yes
Female	33	Face	Hypertrophic scar	3	Yes
Female	19	Face	Hypertrophic scar	Lost to follow-up	
Female	76	Face	Hypertrophic scar	1	No
Female	34	Face	Prevention	3	Yes
Female	23	Face	Prevention	7	Yes
Female	20	Face	Prevention	6	Yes
Female	24	Face	Prevention	8	Yes
Female	16	Face	Prevention after keloid excision	3	Yes
Male	41	Foot	Keloid	Lost to follow-up	
Male	17	Forehead	Prevention	Lost to follow-up	
Female	28	Hand/wrist	Burn	3	Yes
Female	13	Neck	Hypertrophic scar	1	Yes
Female	26	Neck	Prevention	1	Yes
Female	19	Neck	Prevention after keloid excision	4	Yes
Male	4	Thigh	Hypertrophic scar	2	Yes

*Compression used in combination with sheeting

informed that a noticeable flattening and softening of the scar and relief of itching should be experienced within the first 2 weeks of use. Patients were instructed to notify the physician or nurse if irritation developed or if treatment with the glycerin-based sheeting had no effect after 1 month. If the physician determined that the scars appeared to be healing normally after 3 to 6 months (decreased redness, itching and burning, and scar height), patients were instructed to discontinue use of the glycerin-based gel sheeting but to resume treatment if the symptoms of abnormal scarring returned. Patients continued the sheeting until symptoms no longer recurred—sometimes 6 to 12 months.

In follow-up evaluations 3 to 6 months after initiation of treatment with the glycerin-based gel sheeting, 27 of 29 remain-

ing patients (93%) experienced significant softening and flattening of their scars. No hypertrophic or keloid scars developed on patients who used the sheeting prophylactically. In addition, patients reported relief of troublesome burning and itching after 1 or 2 days of the initial application. The glycerin-based sheeting also was well tolerated, with no reported incidents of irritation on healed scars, and patients generally were compliant with therapy. There was one report of irritation on a large, painful, partial-thickness burn. However, as the burn healed, the patient tolerated the sheeting without further irritation. Compression was prescribed in addition to the sheeting for three patients (two patients had facial injuries with uneven scars, and the third patient had a large burn on the arm and was at risk for contracture). However, the sheeting appeared to be effective on the remain-

ing patients without concomitant use of compression. A prospective study is being planned to verify these findings. **AWC**

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