Treatment of Hypertrophic Scars

A Comparison of Silicone Gel and Hydrogel Dressings

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Purpose: To compare the treatment of hypertrophic scars utilizing a Silicone gel (Sil-K (Degania Silicone)) and a Hydrogel dressing (Elastogel (Southwest Technologies Inc.)).

Method: Initially, twenty-three patients who had two hypertrophic scars were recruited for the study. However, eight dropped out. Three developed a severe tape allergy, three were lost to follow up, one became pregnant and one developed a significant medical illness. Fifteen patients completed the study. After obtaining informed consent, baseline data was collected which included clinical evaluation of the scars utilizing the Vancouver burn scar assessment rating scale, photographs and a subjective self-assessment of the scars by each participant.

The Vancouver burn scar assessment rating scale (0-13) evaluates four attributes; Pigmentation (0-2), Vascularity (0-3), Pliability (0-5), and Height (0-3). The best scar assessment would have a value of zero and the worst a value of thirteen.

The photographs were taken using print film (Kodacolor 100 ASA) converted to a digital format (Kodak photo CD) and color corrected using PhotoShop 5.0 (Adobe Systems Inc.) prior to final printing. Each photograph included a scale and color control strip (Eastman Kodak Company, Rochester, NY).

The self-assessment consisted of a visual-analog scale evaluating the following scar attributes; 1) pruritus, tenderness or pain, 2) color, 3) induration and 4) overall appearance. The best scar would have a rating of zero and the worst a rating of ten.

Participants of the study were then given verbal and written instructions by the occupational therapist on the application and use of the silicone gel and hydrogel dressings. It was suggested that the dressings be worn for 12 to 24 hours per day. The silicone gel sheets were washed and reused for the duration of the study and the hydrogel dressings were replaced every 5 to 7 days. The treatment period was six months.

Results: All fifteen participants in the study were female. They ranged in age from 14 to 63 years with an average age of 38.6 years (see Fig 1). Thirteen patients had bilateral axillary hypertrophic scars from reduction mammoplasties and two had other postoperative hypertrophic scars.

Eleven patients were followed for six months and four patients for twelve months. The only adverse reaction to either dressing was a “heat rash” which occurred during hot humid weather under both dressings.

Analysis of the scar assessment data revealed that at the commencement of treatment the average scar rating was 6.53 ($\pm$ 1.68 SD) and 6 ($\pm$ 1.85 SD) for the silicone gel and hydrogel respectively. At three months the average for the silicone gel group was 4.9 ($\pm$ 2.18 SD) and 4.93 ($\pm$ 1.91 SD) for the hydrogel group. At six months the average rating was 3.27 ($\pm$ 1.67 SD) for the silicone group and 3.27 ($\pm$ 2.05 SD) for the hydrogel group. At one year the rating was 2.0 ($\pm$ 1.41 SD) for the silicone gel group and 2.5 ($\pm$ 2.34 SD) for the hydrogel group (see Fig 2). There was no significant difference ($p = 0.05$) between either treatment group at the start, three months, six months or twelve month evaluation.

The patient’s scar self-assessment indicated their impression was that improvement occurred in both the silicone gel (77%) and the hydrogel (84%) treated scars. Preference for dressing was almost equal in the post treatment survey (n=13) with seven preferring the silicone gel and six preferring the hydrogel dressing.

Discussion: The effective treatment of hypertrophic scars using silicone gel has been demonstrated. However, the mechanism of action has not been elucidated. Recently a hydrogel dressing has been found to be effective in treating hypertrophic scars (see Ref 3).

A number of silicone gel dressings are currently available and our choice was based upon cost. We selected a durable silicone gel sheet that would only require replacement once during the study period. It is however a rather stiff material and that comment was noted by some patients who felt that this was not as comfortable a dressing to wear.

The hydrogel is an inexpensive dressing which is bacteriostatic and designed to be utilized on open wounds. Anecdotal evidence had been presented suggesting that the treatment of hypertrophic scars was effective. The 1996 paper by Ricketts, et al, indicated a hydrogel dressing was effective in treating hypertrophic scars.

This study had demonstrated that the hydrogel dressing was as equally effective as the silicone gel dressing in the treatment of hypertrophic scars. In those patients who responded well to treatment there was almost equal improvement with both treatment modalities. In the few that had minimal response to treatment again, the two treatment groups were similar.

The cost of a six month treatment course is shown in Fig 3. The hydrogel dressing is slightly less expensive but has the advantage in that it may be utilized on open wounds.

References:

1. Ahn ST, Monafo WW, Mustoe TA. Topical silicone gel for the prevention and treatment of hypertrophic scars. Arch Surg 1 126:499-504, 1991.
2. Sullivan T, Smith J, Kermode J, McIver E, Courtmanche DJ. Rating the burn scar. J Burn Care Rehab 1 1(3)256-260, 1990.
3. Ricketts CH, Martin L, Faria DT, Saed GM, Fiverson DP. Cytokine mRNA changes during treatment of hypertrophic scars with silicone and non silicone dressings. Dermatol Surg 22:955-959, 1996.

Patient ID	Sex	Age (Years)	Postop (Months)
1	Female	45	6
2	Female	45	4
3	Female	63	5.5
4	Female	30	6
5	Female	43	2
6	Female	44	2
7	Female	17	6
8	Female	54	3
9	Female	33	26
10	Female	42	8
11	Female	14	7
12	Female	34	24
13	Female	48	24
14	Female	33	8
15	Female	34	5

Fig 1 Summary Patient Data

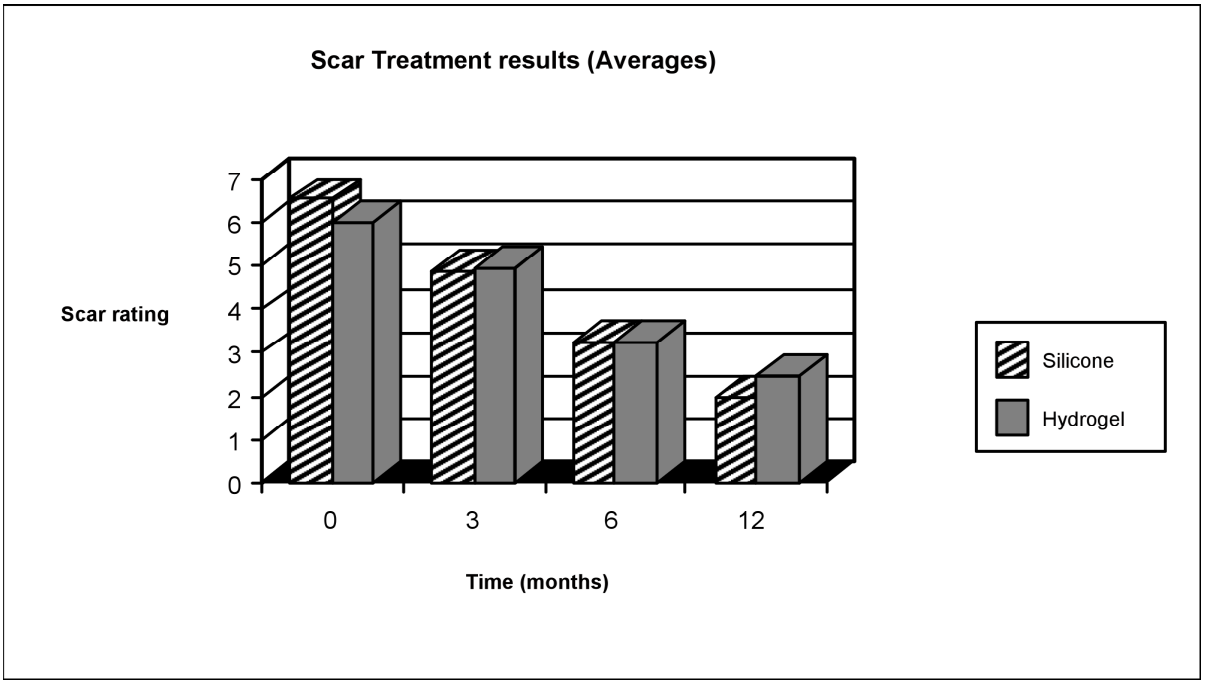

Fig 2

DRESSING	INITIAL COST		6 MONTH COST	OPEN WOUNDS
	Product	Per scar		
Sil-k	$1.00/sq.cm	$30.00	$60.00	NO
Cica-care	$45/sheet 12x15 cm	$7.50	$180.00	NO
Elasto-Gel	$8/sheet 10x10 cm	$2.40	$57.60	YES
Epi-Derm	$60/sheet 14.5x12 cm	$10.34	$248.16	NO

Fig 3 Scar Management Cost Analysis

* Based upon scar being treated requiring 15 x 2 cm dressing