

Using a soft silicone dressing (Mepiform) to prevent scarring in an acute traumatic wound

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Hypertrophic scarring happens when the body overproduces collagen during the healing process. This type of scarring is seen in about 50% of wounds after surgery and more than 50% of deep burns. Onset is clinically evident by four weeks post-trauma. Healing progresses over months with some late resolution. The scar is red, raised and itchy, and typically occurs where there is tension on the wound, especially near joints where the scarring can cause contracture. Incidence is greater with increased wound inflammation and for wounds that have been open for more than three weeks (Atiyeh, 2007).

Topical silicone gel sheeting has been used successfully for more than 20 years to treat hypertrophic and keloid scars. Its use is supported by evidence from a number of randomised controlled trials (Zurada et al, 2006). Silicone dressings have been shown to be less traumatic when applied to the skin. Mepiform (Mölnlycke Health Care, Göteborg, Sweden), uses Safetac® soft silicone technology where the dressing surface is non-adherent to the moist wound bed but self-adherent to the surrounding skin. The soft silicone technology used in Mepiform has been shown to be less traumatic to skin when compared with other dressing types (Dykes, 2007). There are a number of clinical studies that highlight the benefits of Mepiform in the treatment of a variety of different scars, including RCT data and studies undertaken to model the effects of adhesive dressings on human skin (Morgan, 2002; Mustoe et al, 2002; Clarke, 2005; Majan et al, 2006; Dykes, 2007). For example, Mustoe (2002) focused

upon the management of hypertrophic scars and keloids, supporting a move to a more evidence-based approach in scar management and highlighting a primary role for silicone gel sheeting in the management of a wide variety of abnormal scars. The fact that Mepiform is self-adhesive and causes limited damage to the stratum corneum on removal gives it added value compared with non-adhesive silicone gel dressings (Majan et al, 2006).

Case report

A 24-year-old man suffered a severe laceration to his forehead above his right eyebrow following a motorcycle accident. The wound was cleansed and the viable tissue was brought together where possible. It was sutured and allowed to heal by primary intention using Mepitel (Mölnlycke Health Care, Göteborg, Sweden) as the primary dressing. However, a significant area of the wound could not be sutured due to a lack of viable tissue (Figure 1). Upon removal of the dressing 10 days later it was apparent that this area had formed hypertrophic scar tissue (Figure 2). The presence of this scar tissue caused considerable concern to the patient because of its prominence and unsightliness.

Thus the aims of treatment were to:

- Reduce/prevent scar formation
- Reduce the patient's anxiety about his appearance
- Provide a cosmetically acceptable presentation of the wound area.

Mepiform was applied (Figure 3) in order to meet these objectives. Mepiform is a thin flexible dressing consisting of a viscose non-woven fabric bonded to a semi-permeable polyurethane membrane. The inner surface of the non-woven fabric is coated with a layer of soft silicone, which facilitates application and retention of the dressing to intact skin, but does not cause epidermal



Figure 1. Severe laceration to the forehead.



Figure 2. Hypertrophic scar tissue.



Figure 3. Mepiform was applied to the wound.



Figure 4. The wound after one month of treatment with Mepiform.



Figure 5. Improved appearance after two months of treatment.



Figure 6. Improved appearance after four months of treatment.



Figure 7. Improved appearance after five months of treatment.



Figure 8. The scar after seven months of treatment.



Figure 9. The scar after 11 months of treatment.

stripping or pain on removal. The dressing is waterproof but permeable to water vapour. Mepiform is designed for the management of both old and new hypertrophic and keloid scars. It was chosen in this case because it could easily be applied to the rounded surface of the forehead and the skin-coloured dressing provided discrete camouflage of the scar. The patient was very happy with the way the wound was concealed. The Mepiform dressing was changed every 10–12 days. After one month there was significant improvement in texture and colour of the healed wound and scar (Figure 4). This improvement continued and the patient was very happy with the cosmetic results (Figure 5, 6 and 7). After seven months (Figure 8) the scar tissue had resolved considerably, leaving only slightly raised and red tissue. It was decided that treatment with Mepiform could be stopped as it was thought that the cosmetic objective had been achieved. However, the patient continued to apply Mepiform up to 11 months post-trauma in an attempt to further improve the cosmetic appearance of his scar, which did indeed happen (Figure 9).

During the treatment of this patient, Mepiform was applied each time for a minimum of 10 days, thus proving to be cost-effective because of the long periods between changes. It also allowed the patient considerable freedom as he did not have to return so often to the clinic to get his dressing changed and the cosmetic presentation of the dressing gave the patient more confidence. The patient was also very satisfied with its application and removal but was most pleased with the cosmetic advantages during wear and the final resolution of the scar.

Discussion

There is a large amount of clinical evidence to support the use of silicone dressings, gels and sheets in the treatment of hypertrophic scars (Musgrave et al, 2002; Amicucci et al, 2005; Majan, 2006; Zurada et al, 2006). Although the mode of action is as yet unclear, it is thought that it may be due to the silicone dressing's ability to hydrate the damaged tissue (Sawada and Sone, 1992), but more recently, Gilman (2003) has proposed that there are two mechanisms for the effectiveness of silicone sheets in the prevention and treatment of hypertrophic scarring. First, silicone sheets limit moisture loss from the skin surface and aid hydration and second, the sheet does not limit the access of oxygen to the surface of the skin due to its high permeability. This causes a localised increase in oxygen tension leading to a down-regulation of signals that stimulate growth near the skin surface, thus preventing or reducing scar formation.

The results presented in this case report are consistent with the literature, providing further evidence that this soft silicone dressing is effective in preventing/reducing hypertrophic scar formation. Additional benefits include being cosmetically acceptable to the patient while in use, having a long wear-time thus reducing the need for frequent dressing changes and easy and painless application and removal.

Conclusion

Mepiform is a silicone gel sheet that has been shown in this case report to be successful in the treatment of an acute traumatic wound with positive results in the prevention and reduction of scar formation. **WUK**

References

- Amicucci G, Schietroma M, Rossi M, Mazzotta C (2005) Silicone occlusive sheeting vs silicone cushion for the treatment of hypertrophic and keloid scars. A prospective-randomized study. *Ann Ital Chir* 76(1): 79–83
- Atiyeh BS (2007) Nonsurgical management of hypertrophic scars: evidence-based therapies, standard practices, and emerging methods. *Aesthetic Plast Surg* 31(5): 468–92
- Clarke C (2005) Scars How Pharmacists can help. *Pharmaceutical J* 275: 451–3
- Dykes PJ (2007) The effect of adhesive dressing edges on cutaneous irritancy and skin barrier function. *J Wound Care* 16(3): 97–100
- Gilman TH (2003) Silicone sheet for treatment and prevention of hypertrophic scar: a new proposal for the mechanism of efficacy. *Wound Repair Regen* 11(3): 235–6
- Majan JI (2006) Evaluation of a self-adherent soft silicone dressing for the treatment of hypertrophic postoperative scars. *J Wound Care* 15(5): 193–6.
- Morgan D (2002) Wounds – what should a dressing formulary include. *Wounds* 9: 261–6
- Musgrave MA, Umraw N, Fish JS, Gomez M, Cartotto RC (2002) The effect of silicone gel sheets on perfusion of hypertrophic burn scars. *J Burn Care Rehabil* 23(3): 208–14
- Mustoe TA, Cooter RD, Gold MH, Hobbs FD, Ramelet AA, Shakespeare PG, Stella M et al (2002) International clinical recommendations on scar management. International Advisory Panel on Scar Management. *Plast Reconstr Surg* 110(2): 560–71
- Sawada Y, Sone K (1990) Treatment of scars and keloids with a cream containing silicone oil. *Br J Plast Surg* 43(6): 683–8
- Zurada JM, Kriegel D, Davis IC (2006) Topical treatments for hypertrophic scars. *J Am Acad Dermatol* 55(6): 1024–31