CASE STUDY

Reduction of Postoperative Scar Formation With Silicone Sheeting: 2 Case Studies

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Abstract Elective surgeries account for millions of acquired scars annually. Many of these scars can be problematic, being aesthetically unpleasant and causing discomfort. Silicone gel sheeting has been shown to be efficacious for the prevention and treatment of problematic scars. By wound hydration, along with other factors, silicone dressings are thought to decrease scarring. However, we found the usual treatment was commonly started after epithelialization of the incision site. The current standard of care in wound healing is to promote a moist wound environment to ensure quick epithelialization and decrease excessive scar formation. With that standard in mind, after foot surgery was performed on 2 patients, silicone sheeting was applied immediately in order to compare its effects with those of standard moist wound healing (XEROFORM Petrolatum Gauze).
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Introduction

Elective surgeries account for millions of acquired scars annually.¹ Many of these scars can be problematic, being aesthetically unpleasant and causing discomfort.²

Our literature review revealed that silicone gel sheeting has been shown to be efficacious for the prevention and treatment of problematic scars.^{3,4} By means of wound hydration, along with other factors, silicone dressings are thought to decrease scarring.^{5,6,7} However, we found the usual treatment commonly was started after epithelialization of the incision site. The current standard of care in wound healing is to promote a moist wound environment to ensure quick epithelialization and decrease excessive

scar formation.⁸ With that in mind, foot surgery was performed on 2 patients, and silicone sheeting (Mepitel) was applied immediately after the surgery in order to compare its effects with those of standard moist wound healing (XEROFORM petrolatum gauze). Patient consent was obtained prior to the surgery for collection of data for a possible case study using silicone sheeting for the purpose of post op scar reduction.

Case 1

The first case was a 44-year-old woman who had bilateral bunion surgery. The right foot was dressed with XEROFORM petrolatum gauze, covered by 4 × 4 gauze, gauze roll, and an compression wrap immediately after surgery. The left foot was dressed with Mepitel, 4 × 4 gauze, gauze roll, and an compression wrap. The Mepitel and XEROFORM petrolatum gauze were replaced at day 3 and removed when the sutures were taken out at day 12. Pictures

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Figure 1 Incision site (week 4) on the right foot was dressed with XEROFORM™ Petrolatum Gauze.

were taken at 4 weeks after surgery. The left foot (Figure 1) showed a thinner scar with less erythema and thickening than the scar on the right foot (Figure 2).

Case 2

The second case was a 46-year-old woman who had both a first and a fifth metatarsal osteotomy with 2 separate incisions on the same foot. The fifth metatarsal incision was dressed with Mepitel, and the first metatarsal incision was dressed with XEROFORM petrolatum gauze immediately after surgery. The Mepitel and XEROFORM petrolatum gauze were replaced at day 3 and removed when the sutures were taken out at day 12. Pictures were taken at 4 weeks after surgery. The incision dressed with the XEROFORM petrolatum gauze (Figure 3) is thicker in appearance and

Figure 2 Incision site (week 4) on the Left foot was dressed with Mepitel

Figure 3 Incision site (week 4) on the 1st metatarsophalangeal joint was dressed with XEROFORM™ Petrolatum Gauze.

has more erythema than the incision dressed with Mepitel (Figure 4).

Conclusion

In 2 case studies, silicone sheeting in the form of Mepitel produced a more aesthetic postoperative scar when compared with standard XEROFORM petrolatum gauze. This suggests that applying silicone dressings immediately after surgery rather than after initial epithelialization can hasten favorable results in postoperative scar formation. Although pain was not assessed, a low-profile scar presumably would minimize the potential for long-term postoperative pain associated with the scar. Randomized control studies with large patient populations need to be done to prove statistical significance. These 2 case studies also suggest that silicone dressings may positively affect scar formation beyond just providing a moist wound environment.

Figure 4 Incision site (week 4) on the 5th metatarsophalangeal joint was dressed with Mepitel

References

1. Sund B: New Developments in Wound Care. London, UK: PJB Publications; 2000.
2. Bayat A, McGrouther DA, Ferguson MWJ: Skin scarring. *BMJ*. 2003; 326:88–92.
3. Mustoe TA, Cooter RD, Gold MH, et al: International clinical recommendations on scar management. *Plast Reconstr Surg*. 2002;110(2):560–571.
4. Colom Majan JJ: Evaluation of a self-adherent soft silicone dressing for the treatment of hypertrophic postoperative scars. *J Wound Care*. 2006; 15(5). Available at: <http://www.less-pain.com/documents/evidence/WC-C-008.pdf>. Accessed January 4, 2011.
5. Berman B, Flores F: Comparison of a silicone gel filled cushion and gel sheeting for the treatment of hypertrophic and keloid scars. *Dermatol Surg*. 1999;25(6):484–486. Available at <http://bacillus4.tripod.com/6.pdf>. Accessed January 3, 2011.
6. Hanasona MM, Lum J, Carroll LA, Mikulek AA, Koch RJ: The effect of silicone gel on basic fibroblast growth factor levels in fibroblast cell culture. *Arch Facial Plast Surg*. 2004;6:88–93.
7. Borgognoni L: Biological effects of silicone gel sheeting. *Wound Repair and Regen*. 2002;10(2):118–121.
8. Shih R, Waltzman J, Evans GR: Review of over the counter topical scar treatment products. *Plast Reconstr Surg*. 2007;119(3): 1091–1095.