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ABLS Provider Course

The Use of High-Temperature Silicone Lined Material for Neck and Chin Orthoses

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This program is endorsed by the American Burn Association (ABA) and is held in cooperation with the Midwestern Region Burn Centers of the American Burn Association

The Use of High-Temperature Silicone Lined Material for Neck and Chin Orthoses.¹

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Managing burn scars of the neck and chin can be a challenge for burn occupational and physical therapists. Several methods have been reported to address neck and chin scarring, including high and low-temperature neck splints, silicone gel sheeting and pressure garments. However, no literature was found describing the use of neck and/or chin splints fabricated from high-temperature silicone lined materials. Our centre has been using a high-temperature silicone lined splint material (Silon-STS[®]) as the material of choice for over two years for the management our neck and chin burns and had found distinctive clinical rewards with the use of this material.

Based upon our clinical experiences, we have found that Silon-STS[®] offers many advantages over non-silicone lined high temperature materials, low temperature splint material, pressure garments, and silicone gel sheeting used in isolation. This material provides excellent conformability, allowing greater contact of material to the scar, therefore maximizing scar compression. The material is easy to modify, requiring less time spent using a rotary tool. Silicone incorporated directly into the material ensures treatment in areas where firm contact is undesirable, such as the laryngeal prominence, will still receive effective scar remodeling with this application. Transparency of the material allows the therapist to observe scar blanching, the desired effect of pressure therapy. Additionally, cosmesis is improved, potentially increasing patient acceptance and therefore increasing compliance. Ease of patient application- both pressure therapy and silicone gels are used in a single treatment and readily donned / doffed in a single step. Cost effective treatment – the durability of the Silon-STS[®] material allows the silicone contact layer to last the life of the splint far exceeding the use of other individual silicone gel sheets and splint material for this scar application. Improved comfort – the silicone lining allows for improved comfort and ease of fit for the patient allowing for increased patient tolerance to maximize low load prolonged stretch to insure scar realignment through splint wear.

The use of Silon-STS[®] is as a practical treatment option for the fabrication of neck and chin orthoses. It offers many advantages over traditional methods of managing neck and chin burns, particularly combining pressure therapy and silicone gel, therefore maximizing treatment for patient. This material provides another useful and effective treatment option for the burn therapist to employ in the management of neck and chin scar hypertrophy.

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The Use of High Temperature Silicone-Lined Material for Neck and Chin Orthoses



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Introduction

Managing burns of the neck and chin area can be a challenge to burn occupational and physical therapists (Figures 1 & 2).

The neck and chin are important cosmetic areas, and burns of this area can raise psychological concerns for the patient. Neck contracture is common and can cause functional limitations such as decreased range of motion, feeding and speech concerns.^{1,2}

The goals of rehabilitation include maintaining a functional range of motion, preparation for return to school/work and creating an aesthetically pleasing appearance.³

The use of silicone gel⁴ and pressure modalities^{5,6,7} have been widely documented in the literature as the preferred treatment to inhibit hypertrophic scar development as part of a comprehensive rehabilitation program.

A great variety of splint designs have been reported for managing neck and chin burn scars, fabricated out of both high and low temperature material.^{1,8}

High-temperature silicone lined material has been used to fabricate burn facemasks⁹, however, no literature was found to describe its use in the fabrication of neck and/or chin splints.

Method

For 2 years, our centre has been using Silon-STS[®] as the material of choice in the management of neck and chin burns.

Fabrication is similar to non-silicone lined neck/chin orthoses:

- A traditional plaster mold is created of the patient's lower face and neck, created from a negative impression (figure 3)
- The plaster mold must be carefully prepared to allow for good contour and fit of the device to the patient
 - The scars must be sanded away
 - If using a vacuum-former, the mold must be carved as low-profile as possible or the material will not form a suction
- Silon-STS[®] is heated on a flat panel heater (piece silicone-side down)
- Vacuum-form or hand-pull the orthoses
- The transparent neck or chin orthoses is cut out and fit onto the patient (figures 4 & 5)
- Modifications are made to achieve optimal scar compression

Results

Based upon our clinical experience, we have found that Silon-STS[®] offers many advantages over non-silicone lined high temperature material, low temperature splint material, pressure garments, or silicone gel sheeting used in isolation:

1. Excellent conformability, allowing greater contact of material to the scar, therefore maximizing scar compression (figure 6)
2. Silicone lining creates softer edges, requiring less time using a rotary tool
3. Silicone works without pressure; therefore ensuring treatment of areas where firm contact is undesirable, such as the laryngeal prominence
4. Transparent material allows the therapist to observe scar blanching, the desired effect of pressure therapy (figure 7). Additionally, cosmesis is improved, potentially increasing patient acceptance and compliance.
5. The silicone lining allows for improved patient comfort, increasing patient tolerance
6. Good durability – The material can be spot heated multiple times to increase conformity. The silicone layer lasts the life of the splint.
7. Both preferred scar treatments, pressure therapy and silicone gel, are incorporated into a single modality

Conclusions

•The use of Silon-STS[®] is a viable treatment option for the fabrication of neck and chin orthoses.

•Silon-STS[®] offers many advantages over traditional methods of managing neck and chin burns, particularly combining pressure therapy and silicone gel, therefore maximizing treatment for the patient.

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Figure 1. Significant scarring along the neck.



Figure 2. Scarring of the chin.



Figure 3. Fabrication of the negative impression.



Figure 4. Completed transparent neck orthosis.



Figure 5. Completed transparent chin orthosis.



Figure 6. Patient wearing neck orthosis.



Figure 7. Patient wearing chin orthosis.

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