SMA | Southern Medical Association
Advocacy, Leadership, Quality and Professional Identity

Professional Development Planner
Vol. 8, Issue 7, August 2011

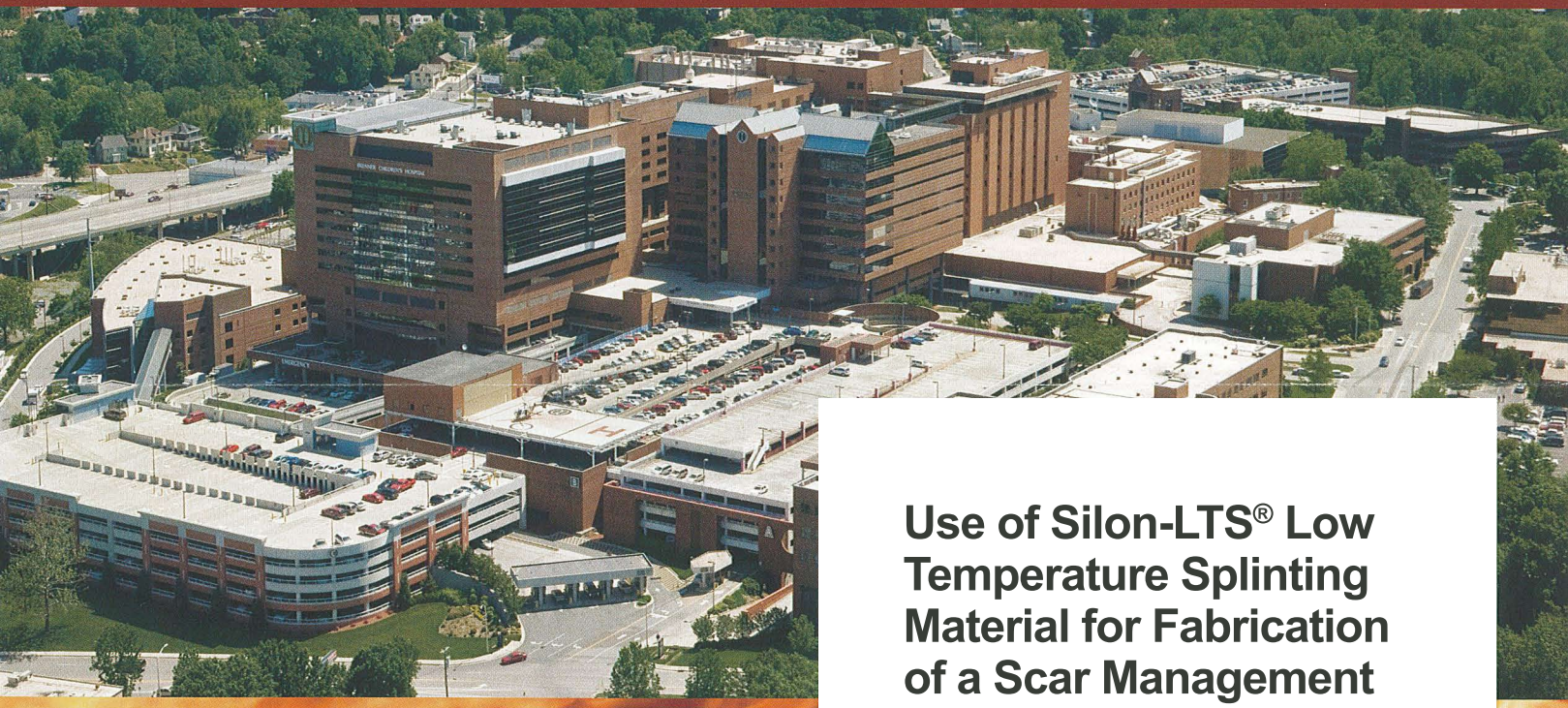
24th Annual

Southern Region Burn Conference

December 2-4, 2011 • Winston-Salem, North Carolina

Benton Convention Center

Hosted by the Burn Center at Wake Forest Baptist Medical Center



Use of Silon-LTS® Low Temperature Splinting Material for Fabrication of a Scar Management Facial Orthosis in a Infant

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

By Dana Y Nakamura, OT, Jonathan Niszczak, MS, OTR/L, and Joseph A Molnar, MD, PhD

Use of Silon-LTS® Low Temperature Splinting Material for Fabrication of a Scar Management Facial Orthosis in an Infant[1].

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Introduction: Management of hypertrophic scars with compression on faces is challenging and requires a high degree of skill, technique and perseverance to create a good fitting device. This challenge becomes amplified when this involves the need to cast the face of a 6-month old infant as an outpatient. Additional complications in this case where extensive- the child was living in the Department of Social Services Custody in a foster home, residing over 3 hours away from the burn center, limited funds available to pay for sedation as well as OR time and the need to keep a burned infant NPO for the procedure. How does one successfully accomplish this task without sedation or computerized scanning systems? The answer: use of a low temperature splinting material and conventional splinting techniques to create a well fitting, effective device and that also minimized the discomfort to the child.

Methods: A proposal was made by the OT and agreed upon by the Plastic Surgeon and Team to try a new low temperature splint material to fabricate the face mask in this case. Silon-LTS® is a composite thermoplastic splinting material consisting of two layers; a rigid low temperature thermoplastic and a soft silicone elastomer. The thermoplastic is easily shaped with warm water to fit anatomical contours and can be applied directly on the face to ensure goodness of fit. The silicone elastomer is placed in direct contact with the patient's skin to manage hypertrophic scars and provides combination therapy of silicone and pressure in a single design. Plans were made for the infant to be given a bottle upon arrival so that he would fall asleep. A pattern of the burn scar distribution was taken, including facial landmarks of the eyes and nose. The pattern was traced onto the Silon-LTS® and cut out. Once heated, the low-temperature material is transparent so it is easy to place onto the infant's face while in supine and scars could be visualized to assess pressure and fit (Figure 1). We were able to easily mold the mask while working with a wiggling target that quickly settled down and fell asleep with the neutral warmth from the material. The mask was trimmed to fit and completed with straps.

Results: We were able to successfully fit this infant with a face mask, pre-lined with silicone for optimal scar management. The entire fabrication process from pattern taking to final fit reassessment lasted 70 minutes, including playing with the infant and allowing him to nap for 30 minutes while wearing the mask. Once the mask was in place, the infant napped well, and awakened crying when the mask was removed to check for compression of scars. A comparison and cost / benefit analysis is provided to compare the traditional TFO to the use of this material (Table 1).

Conclusion/Discussion: This face mask material has worked very well for compression of facial scars in this rapidly growing infant. At successive appointments, we were able to quickly modify areas to improve compression and fit and this material was easier to modify

and accommodate the facial scars then traditional high temperature material. Although a typical TFO allows visual feedback of compression under the mask and is more socially acceptable, we felt that this was not an issue for this 6-month old infant. The use of this material has provided a successful alternative in this case in which the patient had good scar cosmetics, did not require any other surgical intervention and demonstrates a useful material for the burn therapist to apply in other difficult scar management scenarios.

Figure 1

Silon-LTS Mask is transparent during the fitting process and causes no discomfort to the patient

Table 1

Comparison of Traditional TFO verses Silon-LTS® for Pediatric Face Mask Fabrication

Fabrication Characteristics	Transparent Facial Orthotic	Silon-LTS® Face Mask
Requires a Cast to be Made	YES	NO
Requires Sedation in Pediatrics	YES	NO
Can be modified in warm water	NO	YES
Can be modified with dry heat	YES	YES
Has thermoplastic memory	NO	YES
Transparent	YES	NO
Silicone Lined Material	NO	YES
Time required to make device	8 hours	40 minutes
Requires heavy tools to cut	YES	NO
Can be cut prior to molding	NO	YES
Can be modified multiple times	NO	YES
Easy to trim and roll edges	NO	YES

[1] [abstract] In: Proceedings of the 24th Annual Southern Region Burn Conference, 1-4 December 2011, Hosted by The Burn Center, Wake Forest Baptist Medical Center, Winston-Salem, North Carolina, p18.

Use of Silon-LTS Low Temperature Splinting Material for Fabrication of Scar Management Facial Orthosis in an Infant

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Introduction

Management of hypertrophic scars with compression on faces is challenging and requires a high degree of skill, technique and perseverance to create a good fitting device. This challenge becomes amplified when it involves the need to cast the face of a 6-month old infant as an outpatient.

Additional complications in this case were extensive:
•The child was living in Department of Social Services custody in a foster home
•Residing over 3 hours away from the burn center
•Limited funds available to pay for sedation as well as O.R. time
•The need to keep an infant NPO for the procedure.

How does one successfully accomplish this task without sedation or computerized scanning systems?

The answer → Use of a low temperature splinting material and conventional splinting techniques to create a well-fitting device and minimize discomfort to the child.

Methods

A proposal was made by the OT and agreed upon by the Plastic Surgeon to try a new low temperature splint material to fabricate the face mask.

•Silon-LTS is a composite material consisting of two layers: a rigid low temperature thermoplastic and soft silicone elastomer

•The thermoplastic is shaped to fit anatomical contours and can be applied directly on the face to ensure a good fit.

•The silicone elastomer is placed in contact with the patient's skin to manage hypertrophic scars.

•Provides combination therapy of silicone and pressure in a single design.

Fabrication Procedure

•Plans were made for the infant to be given a bottle upon arrival so that he would fall asleep.

•A pattern of the burn scar distribution was taken, including facial landmarks as eyes and nose.

•The pattern was traced onto the Silon-LTS and cut out.

•Once heated, the low-temperature material was placed onto the infant's face while in supine.

•We were able to easily mold the mask while working with a wiggling target who quickly settled down and fell asleep with the neutral warmth from the material.

•The mask was trimmed to fit and completed with straps.

Results

•We were able to successfully fit this infant with a face mask, pre-lined with silicone for optimal scar management.

•The entire fabrication process from pattern taking to final fit reassessment lasted 70 minutes, including playing with the infant and allowing him to nap for 30 minutes while wearing the mask.

•Once the mask was in place, the infant napped well, and awakened crying when the mask was removed to check for compression of scars.

Comparison of TFO versus Silon-LTS

Fabrication Characteristics	Transparent Facial Orthosis (TFO)	Silon-LTS Face Mask
Requires a cast to be made	YES	NO
Requires sedation in pediatrics	YES	NO
Can be modified in warm water	NO	YES
Can be modified with dry heat	YES	YES
Has thermoplastic memory	NO	YES
Transparent	YES	NO
Silicone lined material	NO	YES
Time required to make device	8 hours	40 minutes
Requires heavy tools to cut	YES	NO
Can be cut prior to molding	NO	YES
Can be modified multiple times	NO	YES
Easy to trim and roll edges	NO	YES

Conclusions/Discussion

•The Silon-LTS face mask material worked well for compression of facial scars in this rapidly growing infant.

•Silon-LTS was easier to modify and accommodate the facial scars.

•Visual feedback of compression with a TFO and social acceptability was not an issue for this 6-month old infant.

•Silon-LTS provided a successful alternative.

•Silon-LTS is a useful application in difficult scar management scenarios.