



Final programme & abstracts



14TH EUROPEAN BURNS ASSOCIATION CONGRESS

**Current Rehabilitation Updates in the
Practice Management of Facial
Scar Hypertrophy**

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Current Rehabilitation Updates in the Practice Management of Facial Scar Hypertrophy¹

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Introduction: Rehabilitation management of burn scar hypertrophy involving the face and neck often poses unique challenges for the burn rehabilitation specialist. The physical challenges of creating and manufacturing a well fitting orthotic is a daunting task in and of itself. Coupled with psychosocial and societal implications of the patient, treatment can be severely impacted which limits long term functional outcomes. Fortunately, new advanced materials have emerged which can support the burn specialist in achieving goals and assist the patient in comfort and cosmetics while limiting the need for additional reconstructive procedures and maximizing functional post surgical outcomes.

Methods: A review of the burn rehabilitation specific literature coupled with a review of current treatment guidelines among burn therapists from North America was performed. Additionally, new technologies and materials were highlighted to assess current methodologies to improve patient outcomes.

Results: Current evidence supports the use of advanced materials and tools to assist the burn therapist in designing and manufacturing facial and neck scar management devices. In particular, thermoplastics with a silicone bonded membrane have shown significant advantages over traditional materials and have demonstrated key evidence for their use in daily practice. Critical factors of these materials include: Improved scar aesthetics utilizing silicone and pressure; improved contact and drape over irregular surfaces; and efficacy demonstrating increased tissue perfusion with wear and a sustained perfusion effect upon removal.

Discussion: Engineered silicone boned thermoplastic materials have improved current practice and outcomes for burn rehabilitation specialists. The use of these materials in practice has shown to support patient care and has also improved the design and methodology of traditional burn rehabilitation devices. Coupled with less invasive computerized tools, burn rehabilitation research is further demonstrating improved outcomes and clinical successes.

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Current Rehabilitation Updates in the Practice

Management of Facial Scar Hypertrophy

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Introduction

Rehabilitation management of burn scar hypertrophy involving the face and neck often poses unique challenges for the burn rehabilitation specialist. The physical challenges of creating and manufacturing a well fitting orthotic is a daunting task in and of itself. Coupled with psychosocial and societal implications of the patient, treatment can be severely impacted which limits long term functional outcomes. Fortunately, new advanced materials have emerged which can support the burn specialist in achieving goals and assist the patient in comfort and cosmetics while limiting the need for additional reconstructive procedures and maximizing functional post surgical outcomes.

Methods

A review of the burn rehabilitation specific literature coupled with a review of current treatment guidelines among burn therapists from North America was performed. Additionally, new technologies and materials were highlighted to assess current methodologies to improve patient outcomes.

Literature Review

- OVID literature search - 26 published journal articles (19 JBCR; 2 Burns; 1 BJPS; 2 O&P; 1 AJOT; 1 JME)
- Range of publications 1979 – 2010

Findings (1979 – 1995):

- Historically the use of high temperature thermoplastics is the primary choice in facial and neck orthotics
- Highly labor intensive manual process – requires a significant amount of technical proficiency and training
- Skill not routinely taught in all burn facilities

Findings (1995 – 2010):

- 1995 – First reported case of CAD / Scanning is documented in burns
- 1996 – First reported use of STS material for facemask fabrication (traditional technique)
- Scanning improves the speed and implementation of the positive mold process
- Less invasive technique but still requires high degree of skill to fabricate and fit device
- Thermoplastics bonded with silicone improve the contact of mask, decrease vascularity and improve overall comfort

Traditional Mold Fabrication Process

- Requires direct contact with the skin / difficult with wounds present
- Nearly impossible in children w/o sedation
- "claustrophobic" feeling during process.
- Must be done in supine or reclined
- Patient must maintain consistent relaxed facial posture for intact mold



Computer Scanning Mold Fabrication Process

- No direct contact with the skin / can use with wounds
- Does not require sedation, allows for slight motion
- Can be done in any position
- Can start / stop the process at anytime to allow for movement
- Real time data capture to see mold in 3D prior to fabrication.

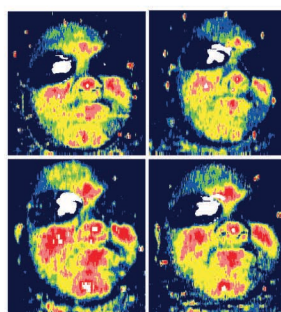


Results

Current evidence supports the use of advanced materials and tools to assist the burn therapist in designing and manufacturing facial and neck scar management devices. In particular, thermoplastics with a silicone bonded membrane have shown significant advantages over traditional materials and have demonstrated key evidence for their use in daily practice. Critical factors of these materials include: Improved scar aesthetics utilizing silicone and pressure; improved contact and drape over irregular surfaces; and efficacy demonstrating increased tissue perfusion with wear and a sustained perfusion effect upon removal.

Technological Assessment to Better Study Outcomes

- Decreases in Vascularity and Perfusion (JBCR 29(1)2008 & JBCR 31(3)2)
 - LDI imaging directly thru thermoplastics and thermoplastics lined with silicone
 - Use of combination therapy (silicone lined thermoplastics) demonstrates increased contact with skin surfaces verses uncoated thermoplastics
 - Masks with silicone consistently diminish perfusion compared to non-silicone masks
 - Measured perfusion decreases with the addition of silicone to transparent face masks and this effect persists over time after removal



Silicone Thermoplastic Masks

- Decreased perfusion
- Increased surface contact

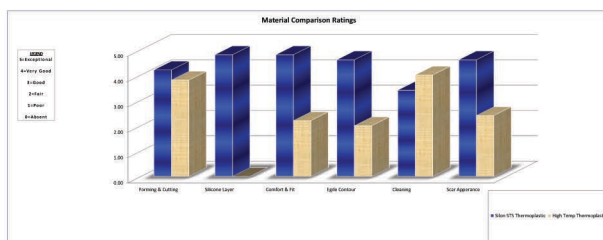
Non-Silicone Thermoplastic Masks

- Increased perfusion
- Decreased surface contact

Enhanced Thermoplastic Materials Improve Outcomes

Silicone Bonded High Temperature Thermoplastics

- Provide increased contact to the skin / scar
- Silicone layer increases overall comfort and fit
- Maintains transparency
- Provides the combined therapeutic effects of silicone and pressure in one application
- Improved compliance with patient comfort
- Same molding and fitting characteristics as conventional thermoplastics



Discussion

Engineered silicone bonded thermoplastic materials have improved current practice and outcomes for burn rehabilitation specialists. The use of these materials in practice has shown to support patient care and has also improved the design and methodology of traditional burn rehabilitation devices. Coupled with less invasive computerized tools, burn rehabilitation research is further demonstrating improved outcomes and clinical successes.

In Summary

- Use of silicone impregnated thermoplastics with graduated pressure therapy are the optimal combination for burn rehabilitation scar management devices involving the face.
- Scanners have been shown to improve the speed, application, delivery and implementation of facial orthotics.
- A high degree of clinical burn expertise is still needed to create and manage a well fitting facial orthotic.
- Further research is warranted to assess these high tech materials and systems to provide long term effective burn rehabilitation solutions.