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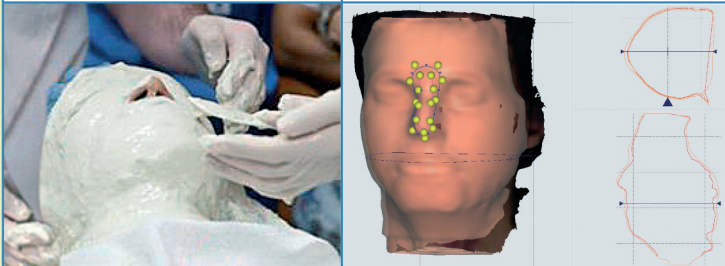
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Introduction

There are a variety of treatment modalities available to manage facial scarring and improve function following burn injuries. The use of Lycra pressure garments, facial splints and silicone gel are the mainstay of current clinical intervention in achieving a positive outcome result. This study demonstrates a team approach in providing the best solution to achieve this by exploring ways of combining effective pressure management with silicone to address the developing scar as it matures. This case study will demonstrate effective splint management utilising a silicone lined high temperature thermoplastic (Silon-ST[®]) to combine pressure and silicone in a single splint which is durable, mouldable and adaptable.

Technological advancements in 3D imaging

Traditional positive mould fabrication process.	Computer scanning fabrication process with handheld scanners.
Labour intensive manual process.	Digital record of the patient's facial surface accurate to within one millimetre.
Technical proficiency and training needed.	Improves the speed and implementation of positive mould process.
Requires direct contact with the skin and sedation in a supine position.	Painless, accurate, simple and quick. Less invasive technique.
Patient must maintain consistent relaxed facial posture.	Any position with no sedation. No direct contact with skin, allows for slight motion. Improvements in software have provided better scanning outcomes.



Methods

Previously we had never felt the need to treat someone's facial scarring with anything other than Lycra pressure garments and silicone. With Patient A he presented with significant hypertrophic scarring and we felt that we needed to be more proactive and explore new technologies. Researching current treatment options we were aware we did not have access to transparent facial masks, however an opportunity for us to work with Jobskin and developments in scanning and fabrication arose. Having no previous experience this allowed us to be very critical in our approach in searching for the "ideal". In close collaboration with Jobskin we have been able to maximise the outcome for Patient A and highlight areas for future advancement in the fabrication and style of fastenings with transparent facial masks.

This is a single case study demonstrating our experience with technology to manufacture a new product previously not available in our service. The patient had agreed to assist us with our plans to improve our treatments for the benefit of other patients in the future.

Case Study Patient A: 26% Flame burns to face hands and trunk. Hypertrophic scarring initially treated with Lycra pressure garments and silicone gel sheeting.



Improvement in scarring on upper face, therefore new modified facial mask fabricated to address hypertrophic scarring on lower half of face.

Results

The initial series of photographs over 4 months show a visual improvement in the hypertrophic scarring. This is confirmed by his POSAS scoring system - reducing from 8 to 6 in the overall opinion of the scar compared to normal skin. Further results will be available to show continued improvement to 9 months. The study highlights the benefits of treatment with a light weight silicone lined thermoplastic facial orthotic splint as an alternative to separate modalities to manage challenging facial scarring. It also demonstrates an alternative technique using 3D imaging technology as a non-invasive mechanism to facilitate accurate fabrication of the splint that is more acceptable to the patient.

POSAS Scar Assessment Scores

	Start	3 months	6 months	8 months
Observer	37	35	29	23
Patient	55	45	35	34

Discussion

Scanners have been shown to improve speed of application, delivery and implementation of facial orthotics. Further research is warranted to access these new technologies and materials to provide long term effective burn rehabilitation solutions. The issues we have had were in getting the coverage of the scar and perfecting the fastenings for donning and doffing in someone with limited hand function. However with further use in clinical burn management and experience in the fabrication this will improve to create a successful well-fitting facial orthotic.

Conclusion

Patient A as shown demonstrates considerable improvement in his cosmetic appearance following the use of this device. He was engaged in the process to assist us in the development and gave constructive feedback. Additionally, the added benefit of a silicone lining allowed for increased fit, transparency and comfort, increasing patient compliance and satisfaction with the overall device. The Silon-ST[®] material proved to be an effective choice in the management of facial scarring and is a treatment modality option for future consideration in burn rehabilitation to effectively manage scar hypertrophy.

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