Initial clinical experience using MatriDerm™ to treat a paediatric full thickness facial burn: a nursing perspective

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Introduction

Day of injury

In 2017 the Children's Hospital at Westmead Burns Unit treated a 2 year old girl who sustained a 60% total body surface area full thickness flame burn injury involving her entire face.

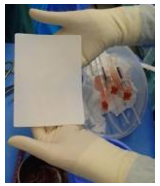
Successful regeneration of dermal tissue following a full thickness burn injury is important in the restoration of normal functionality and aesthetic outcome.[1,2,3,4]

Day 5 post burn

Skin substitutes aim to provide improved elasticity, flexibility, stability and strength of reconstructed skin whilst reducing wound contraction and improving scar appearance.[1,2,3,4]

In regards to outcomes, the face is a high priority for the multi-disciplinary burns team as poor scar outcomes can lead to significant psychosocial consequences.[2]

MatriDerm™



- Collagen-elastin matrix for dermal regeneration (bovine derived) 1mm thick.
- Wound closure achieved in a one stage surgical procedure.
- Apply dry, trim to required size, moisten with saline, expel air bubbles, adjoining pieces may overlap slightly, becomes translucent when completely rehydrated.
- During healing, the patients own fibroblasts will eventually produce their own collagen matrix while MatriDerm™ is resorbed[6]

Wound management

Day 1-3 post burn: face was dressed with a combination of Acticoat & Bactigras

Day 4 post burn: initial debridement and temporary coverage with cadaver skin

Day 11 post burn: debridement, application of MatriDerm™ and split skin graft. MatriDerm™ was laid onto a surgically debrided wound bed then immediately covered with a thin fenestrated split thickness skin graft and secured in place with staples and sutures.

Post-operative management

Maintain moist wound environment
4 to 6 layers of paraffin gauze placed over graft surfaces
Intricate dressing, padded bolsters fashioned around nose & mouth, use of retention dressings as overlay to provide compression (topical negative pressure dressings commonly used on non-facial areas [6])
Prevent shear forces
Patient remained ventilated via oral ETT and sedated in PICU
Extra care taken to manage oral and nasal secretions
Eyelids sutured together in closed position for 5 days
Skin grafts reviewed after 5 days post-op
Grafts can appear paler at first graft review until complete vascularisation has occurred

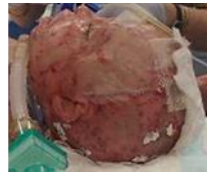
Results

Day 16 post burn:
First review
of facial grafts

Day 25 post burn:
Complication with shearing
of grafts to left side of face,
required re-do of spilt skin
grafting

Day 51 post burn:
Complication with pressure area over forehead which developed following a period of prone positioning, required re-do debridement, MatriDerm™ and split skin grafting.
Tight scar tissue to bilateral nasolabial folds, required scar revision with multiple Z-plasty releases.

Day 79 post burn



Day 94 post burn

The Physiotherapy team initiated an early scar management regime. Treatment included:
- extra thin hydrocolloid
- silicone products
- transparent face orthosis
- custom made fabric compression mask
- mouth splints, stretches and exercises

Conclusion

At 12months post burn injury there is good pliability and elasticity of facial skin (skin pinch test), which enables expression of emotion.
Smiling, raising of eyebrows, mouth opening, eye closing.
The surface of reconstructed skin is soft and smooth.
Her cheeky personality continues to shine.

References
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3. Min J, Yun I, Lew D, Roh T, Lee W. The use of Matriderm and autologous skin graft in the treatment of full thickness skin defects. Archives of Plastic Surgery, 2014
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Please note: consent was obtained for the use of all digital photographs contained in this poster presentation

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