

Role of synthetic dermal matrix (BTM) for reconstruction of complex 'un-graftable' wounds

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BTM reconstruction of complex 'un-graftable' wounds

Aim: To investigate the role of a synthetic dermal matrix, Biodegradable Temporising Matrix (BTM), for coverage of complex 'un-graftable' wounds, defined complex wounds not amenable to reconstruction with skin grafting alone.

Background: Biodegradable Temporising Matrix is a completely synthetic dermal matrix comprised of a 2-mm-thick sheet of biodegradable polyurethane foam bonded to a non-biodegradable polyurethane sealing membrane. Our department has garnered significant expertise in the use of BTM throughout its development from initial animal studies through to recent human clinical trials.

Methods: A retrospective review of a prospectively maintained database of complex wounds was carried out. Clinical and operative notes were reviewed along with a review of an extensive photographic database demonstrating short and long term wound healing progress.

Results: 40 patients were identified who underwent staged BTM and autologous skin graft reconstruction for complex wounds affecting a wide variety of patient demographics, treatment indications and body sites. Wound aetiology varied between burn injury, non-burn related trauma including degloving injury and infective complications. Excellent scar cosmesis, limited contracture formation and a low complication profile were found on review of this patient series. Full results of this study will be reported in a journal article due for imminent publication.

Discussion: Dermal substitutes play an integral role in providing biological wound cover for poorly vascularised wound beds which may otherwise require complex distant flap or microsurgical free flap reconstruction, as demonstrated by this clinical series. BTM has proven robustness in the face of unfavourable wounds, physiologically covering avascular structures while allowing robust graft take, expediting rehabilitation and mobilisation following a diverse range of complex wound aetiologies.

Conclusion: . Excellent results can be achieved with dermal matrices such as BTM which provide a valuable alternative to free-tissue transfer in complex 'un-graftable' wound reconstruction for co-morbid patients and/or those for whom long operations/anaesthetics are undesirable.



Day 8 post burn

66 year old male with 75% full thickness burns from bushfire including scalp, pericranium and neck

Day 35: Outer table of calvarium burred + BTM applied

Day 43 post BTM: BTM integrated over calvarium

Day 46 post BTM: Non-biodegradable BTM seal removed, neo-dermis dermabraded and meshed skin graft inset

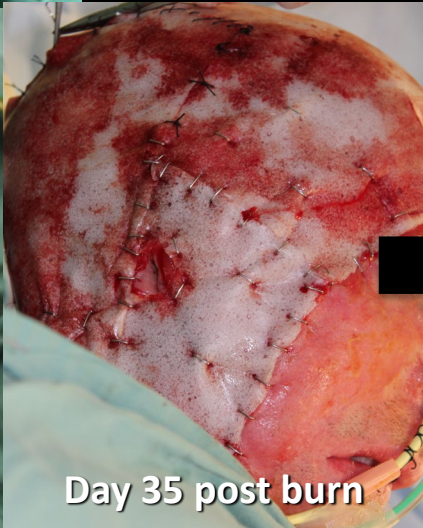
Day 26 post split thickness graft: Uncomplicated healing



Day 43 post BTM



Day 32 post burn



Day 35 post burn



Day 46 post BTM



Day 26 post graft



32 year old lady with sequelae of left ischaemic hand injury post extravasation of inotropes for massive post partum haemorrhage with cardiac arrest requiring brachial artery revascularisation

Day 26 post injury: Appearances following full demarcation of injury, pre and post debridement and following immediate BTM application over exposed extensor tendons, denuded of paratenon with no local options

Day 42 post BTM: BTM delamination and meshed skin graft inset

Day 90 post BTM : Excellent long term functional and cosmetic result



Debridement



BTM application



Day 42 post BTM



Delamination & SSG



45 year old lady with 22% Full Thickness flame burn
transferred from an outside unit after multiple failed skin
grafting procedures and pseudomonas burn wound infection

Day 28 post burn: Bilateral tibial and achilles tendon exposure

Day 49 post BTM: Excellent BTM integration with no infection

Day 5 post grafting: 100% take of autologous split thickness
meshed skin graft with good cosmetic and functional results

Day 28 post burn



Day 30 post BTM



Day 49 post BTM



Day 5 post graft