

# Artificial dermal templates: A comparative study of NovoSorb™ Biodegradable Temporising Matrix (BTM) and Integra®

Perdita Cheshire<sup>1,2</sup>, Marisa R Herson<sup>1,2</sup>, Heather Cleland<sup>1,2</sup>, Shiva Akbarzadeh<sup>1,2</sup>

<sup>1</sup> Skin Culture Laboratory, Victorian Adult Burns Service, The Alfred, Commercial Road, Melbourne, Victoria, Australia

<sup>2</sup> Department of Surgery, Monash University, Commercial Road, Melbourne, Victoria, Australia

## Abstract

Artificial dermal templates play an important role in physiologic wound closure after burn injury. In addition to contributing to stable, durable and flexible wound closure, they provide a scaffold for tissue repair. Several dermal templates are commercially available, with animal-derived Integra® dermal regeneration template perhaps the most widely used. NovoSorb™ Biodegradable Temporising Matrix (BTM) is a fully synthetic alternative that eliminates any risk of cross-species residual antigenicity. In this study, we aimed to compare NovoSorb™ BTM with Integra® in terms of temporary wound closure, host cell infiltration, neovascularisation and collagen deposition in a mouse model. Twenty athymic nude mice received full-thickness skin excision followed by grafting of the dermal template (n=10 NovoSorb™ BTM, n= 10 Integra®), with the grafts excised and assessed after two weeks. All twenty mice achieved temporary wound closure with no evidence of wound contracture. Microscopically, all twenty grafts became infiltrated with host cells along the entire length of the template, with NovoSorb™ BTM demonstrating a particular abundance of host inflammatory cells. Evidence of new collagen deposition and neovascularisation was observed in both templates, with NovoSorb™ BTM demonstrating a more extensive vascular network at this time point. However, a greater inflammatory response was also observed in the NovoSorb™ BTM grafts at this time point. Our data suggests NovoSorb™ BTM is a potential candidate for the treatment of dermal injury, but further investigation is required to assess the significance of the inflammatory response to its implantation.