

BACKGROUND

Timely preparation of a wound bed for skin grafting is crucial for optimizing outcomes in reconstructive surgery. Traditionally utilized dermal substitutes such as Integra Bilayer and NovoSorb Biodegradable Temporizing Matrix (BTM) often require prolonged healing periods for granulation tissue to develop. However, XCellistem, a novel acellular regenerative powder, has shown promise in accelerating granulation tissue formation, offering a potentially faster path to skin graft readiness than traditional derma substitutes.

PURPOSE

The purpose of this study is to evaluate the effectiveness of XCellistem in accelerating granulation tissue formation, comparing graft readiness, adherence, and post-operative healing outcomes to traditional methods.

METHODS

Patients (n=2) at the University Medical Center of Southern Nevada who underwent reconstructive surgery requiring skin graft application were included in this case series. XCellistem, in lightly hydrated powder form, was applied directly to the wound bed, followed by Xeroform gauze secured with chromic sutures to maintain a moist environment. Post-operative care consisted of twice-daily wet-to-dry dressings with normal saline, and wounds were monitored for granulation tissue formation until split-thickness skin grafting was performed. The timeline from initial XCellistem application to grafting was compared with published reports for Integra Bilayer and NovoSorb BTM.

RESULTS

Two patients were treated with XCellistem following full-thickness wound debridement. In Case 1, an 80 year-old male patient developed robust granulation tissue by postoperative day (POD) 11. In Case 2, a 52 year-old female patient reached graft readiness by POD 9. Both patients underwent successful split-thickness skin grafting without complication. The grafts demonstrated excellent adherence and minimal contraction. Compared to published timelines for Integra (17.5–25.3 days)¹ and NovoSorb BTM (30.0–56.8 days)², the use of XCellistem resulted in remarkably faster wound bed preparation.

Case 1



Figure 1: 80 year-old male with a traumatic hematoma and associated soft tissue defect.



Figure 2: Bedside application of Xcellistem Petralum gauze over the wound.



Figure 3: Prominent granulation tissue observed on POD11.



Figure 4: Complete graft take observed on POD 48.

Case 2



Figure 5: 52 F with flame burns to the neck and contracture, post-latissimus flap reconstruction.



Figure 6: Bedside debridement of distal flap necrosis with application of Xcellistem.

RESULTS cont.



Figure 7: Xeroform gauze dressing placed over the wound.



Figure 8: Robust granulation tissue observed on POD 9.



Figure 9: Complete graft take observed on POD 30.

CONCLUSIONS

The outcomes of this small case series suggest that XCellistem may reduce healing time and improve surgical efficiency in reconstructive wound management. By accelerating skin graft readiness, it offers a potential alternative to traditional dermal templates that could shorten hospital stays, enhance outcomes, and reduce costs. Further studies with larger sample sizes are needed to confirm these findings and explore applications in both acute and chronic wounds.

REFERENCES

¹Jou, C., & Chepla, K. J. (2024). Reconstruction of Complex Upper Extremity Wounds With Novosorb Biodegradable Temporizing Matrix Versus Integra Collagen-Chondroitin Silicone: A Cost Analysis. *Eplasty*, 24, e38.
²Kidd, T., Kolaitse, V., Bajaj, K., Wallace, D., Izadi, D., & Bechar, J. (2023). The use of NovoSorb Biodegradable temporizing matrix in wound management: a literature review and case series. *Journal of wound care*, 32(8), 470-478. <https://doi.org/10.12968/jowc.2023.32.8.470>

