

## Use of a Novel Biomaterial to Enhance Secondary Intention Healing

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### ABSTRACT

**Objective:** To evaluate the ability of a novel biomaterial to support second intention healing (SIH) of Mohs Micrographic Surgery (MMS) wounds.

**Approach:** Eight patients were treated with MMS for non-melanoma skin cancer with SIH for the surgical defects. For each patient, the biomaterial (APIS<sup>®</sup>, SweetBio, Inc. Memphis, TN) was hydrated, trimmed to fit, and placed in the wound bed in 1-2 layers on the day of surgery unless otherwise noted (Figure 1). The biomaterial was covered by petrolatum-impregnated gauze and a non-adherent dressing. Patients were instructed to leave the dressing in place until follow up, scheduled in 1-2-week intervals for patient convenience. Once granulation tissue filled the entire wound bed to the epithelial level, patients were instructed to continue standard wound care with daily application of petrolatum and a non-adherent dressing until the time of complete re-epithelialization.

**Results:** Results are summarized in Table 1. The mean time to complete re-epithelialization was 6 weeks (42 days). This suggests a reduction in healing time when compared to reported SIH times for the leg/foot and head of 127/182 and 57 (days), respectively. In each case, the authors noted rapid proliferation of granulation tissue at the wound base with minimal clinical signs of inflammation (e.g., erythema and edema) at the wound periphery. There were no infections, and patients reported minimal discomfort or pain during the course of therapy.

**Conclusion:** Use of this novel biomaterial in SIH is hypothesized to minimize inflammation, decrease bacterial load, and reduce healing times when compared to standard wound care practices (i.e., petrolatum and a non-adherent dressing).



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## TABLES

**Table 1: Summary of patient characteristics and outcomes**

Patient	Age (y)/Sex	Anatomical Site	Defect (cm)	Wound Depth	Outcome
1	76M	Left tibia	1.9 x 1.9	Deep dermis	Week 6 CRE*
2	72M	Left calf	1.6 x 1.6	Deep dermis	Week 6 CRE
3	78F	Right tibia	1.8 x 1.3	Deep dermis	Week 5** CRE
4	75M	Left calf	1.6 x 1.2	Mid dermis	Week 6 CRE
5	62M	Vertex Scalp	2.7 x 2.6	Periosteum	Week 6 CRE
6	75M	Left tibia	1.8 x 1.5	Deep dermis	Week 3 granulation tissue filled entire defect
7	76M	Right posterior pinna	4.9 x 2.7	Perichondrium	Week 4 near CRE
8	86M	Left frontal scalp	3.7 x 3.4	Periosteum	Week 9.5 near CRE

\*CRE = complete re-epithelialization  
\*\*Week 5 from starting use of the biomaterial. Week 8 from the date of surgery.

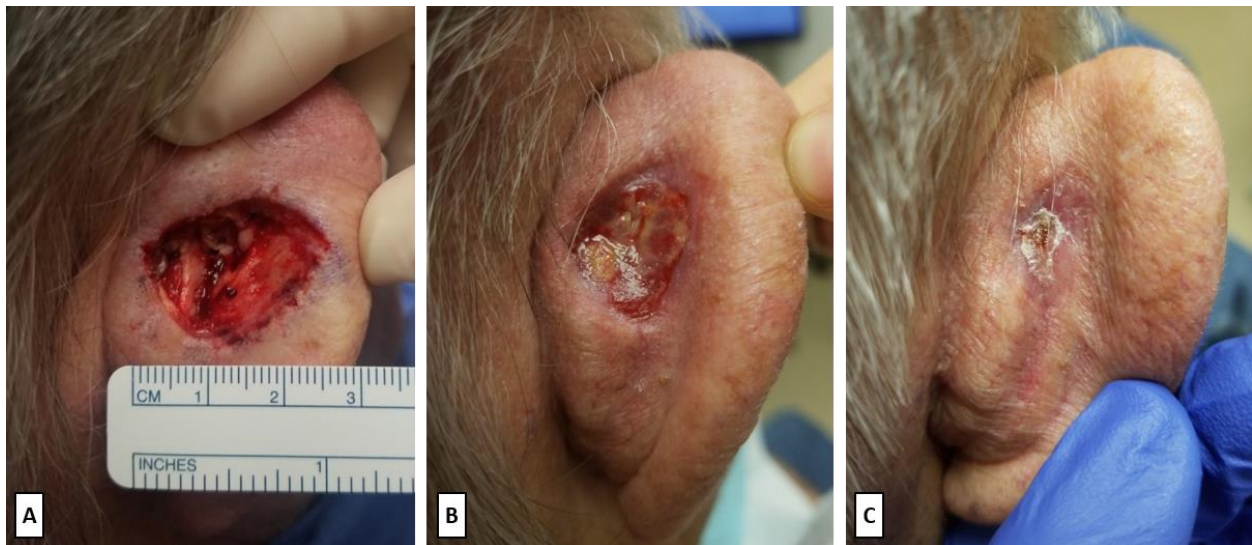
## FIGURES



**Figure 1.** Patient 2 Left calf. A) Post-operative Mohs micrographic surgical defect. B) Biomaterial placement same day of Mohs micrographic surgery. C) Week 1, biomaterial partially removed to visualize wound base



**Figure 2.** Patient 5 Vertex scalp. A) Surgical defect. B) Week 3 of standard SIH following purse string closure. Biomaterial placed at this time. C) 2 weeks following placement of biomaterial. D) Post-operative week 8, complete re-epithelialization.



**Figure 3.** Patient 7 Right posterior pinna. A) Surgical defect. B) Week 2 residual biomaterial seen in the wound base. C) Week 4 near complete re-epithelialization.