

Use of an Esterified Hyaluronic Acid Matrix (eHAM) to Treat Wounds in Complex Pediatric Patients

Brittany M. Cross, PA-C, MPAS, CWS, Primary Children's Hospital as part of Intermountain Health, Salt Lake City, UT

INTRODUCTION

- An esterified hyaluronic acid matrix eHAM* has been shown to provide a suitable scaffold for endothelial cell migration and tissue vascularization.¹
- The eHAM has ideal wound healing properties by providing a three-dimensional biodegradable scaffolding that supports cellular colonization and wound bed granulation.²
- The eHAM creates a microenvironment that promotes wound healing through cellular proliferation, angiogenesis, re-epithelization, and tissue regeneration.³

OBJECTIVE

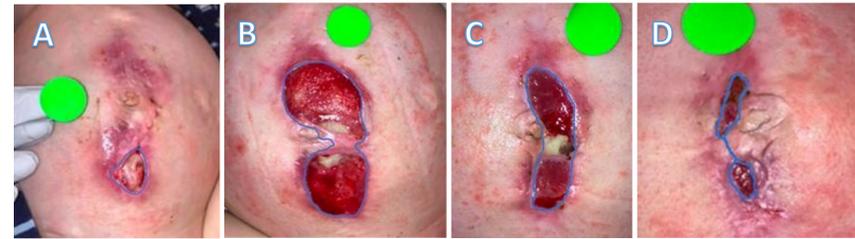
- To evaluate the wound healing capacity of eHAM in four pediatric patients with complex wounds.

METHODS

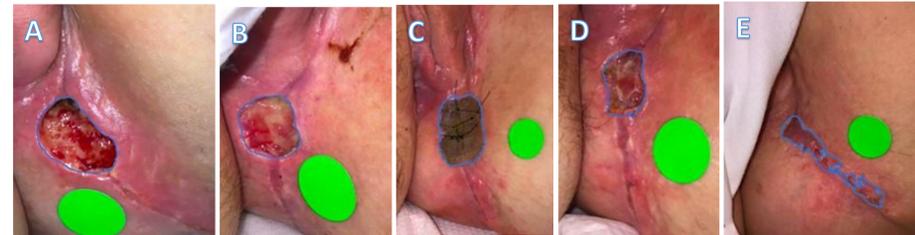
- Patient 1 presented with a surgical abdominal wound s/p necrotizing enterocolitis and bowel resection (initial wound size=15.83 cm²). Patient 1 received one eHAM application.
- Patient 2 presented with a surgical wound s/p resection of left labial/perineal sarcoma after radiation treatment (initial wound size=5.85 cm²). Patient 2 underwent hyperbaric therapy (20 dives) following one eHAM application.
- Patient 3 and Patient 4 presented with spina bifida and stage IV pressure injury of the sacral area (initial wound size=8.34 cm² and 26.91 cm², respectively). Patient 3 received three eHAM applications following debridement.
- Patient 4 received two eHAM applications along with negative pressure wound therapy (NPWT)
- Patient 4 also received a further deep sharp debridement followed by application of a fetal bovine dermal scaffold.

*Hyalomatrix™; Medline Industries LP, Northfield, IL

Presented at SAWC Spring Conference, April 26-30, 2023, National Harbor, MD



Patient 1. 17-month-old male born premature at 31-32 weeks A) initial full thickness wound after umbilical hernia repair s/p bowel resection for necrotizing enterocolitis. B) at 2 weeks with eHAM application and steri-strips. C) at 4 weeks, D) healed at 6 weeks post first eHAM application



Patient 2. 15-year-old non-binary female with history of left perineal sarcoma that was treated with neoadjuvant radiation. A) initial full thickness wound of labial cancer s/p resection. B) at 2 weeks with eHAM application and NPWT C) at 3 weeks with antimicrobial hydrogel and with ultra foam silver and foam Tegaderm™ D) during dressing changes, E) healed at 9 weeks post first eHAM application and 20 hyperbaric dives.



Patient 3. 14-year-old male with spina bifida resulting in chronic wheelchair dependence. A) full thickness (stage IV) pressure injury of the buttocks treated with honey dressing and foam Tegaderm™ for 4 months. B) first eHAM application C) at 2 weeks post eHAM application D) second eHAM application at 7 weeks, E) at 2 weeks and post eHAM application, F) healed at 38 weeks post first eHAM application..



Patient 4. 13-year-old male with history of spina bifida with several cervical sequela resulting in chronic wheelchair dependence. A) full thickness (stage IV) pressure injury on the left buttocks, B) first eHAM application with gentian violet, C) second eHAM application at 6 weeks, D) at 8 weeks prior to debridement, E) after debridement at 8 weeks, F) at 9 weeks prior to NPWT, G) at 12 weeks wound was re-opened due to a fall, H) at 20 weeks, I) at 27 weeks, J) at 32 weeks, third eHAM application, K) at 39 weeks with fetal bovine dermal scaffold application every 2 weeks. L) healed at 47 weeks post first eHAM application

RESULTS

- Patients 1 and 2 received only one eHAM application. Patients 3 and 4 received three and two eHAM applications, respectively.
- Following the first eHAM application, wound healing was observed for Patient 1 (6 weeks), Patient 2 (9 weeks), Patient 3 (38 weeks), and Patient 4 (47 weeks).
- The rate of wound healing for the two patients that underwent surgery (Patients 1 and 2) averaged 1.75 ± 1.52 cm² per week.
- The rate of wound healing for the two patients with stage IV pressure injuries related to spina bifida (Patients 3 and 4) averaged 0.40 ± 0.25 cm² per week.

CONCLUSION

- These results show that 1-3 applications of eHAM is an effective wound healing treatment for pediatric patients with complex surgical wounds and stage IV pressure injuries resulting from spina bifida.
- eHAM can be used effectively in conjunction with repeated hyperbaric dives and NPWT.

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Acknowledgment

Medical writing assistance for this poster and financial support to attend this conference were provided by



Senior Medical Writer: Stephen Smith, PhD