

# A Small WIN: A Case Review on Amniotic Grafting for Wound Healing

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## ABSTRACT

**Abbreviations:** SOC: Standard of Care; TL HAMA: Triple Layer Human Amniotic Membrane Allograft; TL: Triple Layer; RCTs: Randomized Controlled Trials; VLU: Venous Leg Ulcers; dHACA: Dehydrated Human Amnion/Chorion Allografts

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## Introduction

Wound healing is a complex process influenced by various factors, including patient-specific conditions and wound etiology. Chronic wounds, such as diabetic foot ulcers, venous leg ulcers, and post-MOHS surgery wounds, pose significant challenges to patients' quality of life and healthcare systems. In recent years, amniotic grafts have emerged as a promising therapeutic option due to their unique properties and potential to enhance wound healing.

## Human Amniotic Membrane Allografts (HAMA)

The human amniotic membrane, derived from the placenta, possesses several remarkable qualities that make it an attractive wound healing material. These include:

- 1) **Rich Milieu of Bioactive Factors:** The amniotic membrane contains amino acids, growth factors, and other nutrients essential for tissue repair. These components facilitate its intrauterine function and contribute to its healing properties [1].
- 2) **Cell Migration and Repair:** Human Amniotic Allograft Membrane (HAMA) supports wound healing by promoting cell migration and tissue repair. It acts as a scaffold, facilitating the regeneration of damaged tissues [1].
- 3) **The Acceso Biologics product line** encompasses single-layer, double-layer, and triple-layer allografts. These allografts consist of dehydrated, terminally irradiated membranes and are available in various configurations and sizes, catering to diverse phy-

sician preferences. Notably, the product line includes NeoStim TL (Triple Layer)

4) In this specific utilization case study, the triple-layer HAMA (regulated under Section 361 of the Public Health Service Act) was employed. This particular allograft is intended for homologous use.

## Diabetic Foot Ulcers

Diabetic foot ulcers are a common complication in individuals with diabetes. HAMA has been studied extensively in this context. Here are key findings:

- **Clinical Studies:** Randomized controlled trials (RCTs) and observational studies have evaluated HAMA's effectiveness in diabetic foot ulcer treatment. Most RCTs reported significantly higher wound closure rates compared to conventional treatments. Additionally, large chronic ulcers resistant to standard therapy achieved closure with amniotic membrane allografts [1].
- **Reduction in Healing Time:** Despite study heterogeneity, current evidence suggests that amniotic membrane allografts reduce healing time compared to conventional methods [1].

## Venous Insufficiency

Venous leg ulcers (VLUs) are a common manifestation of venous insufficiency. Recent clinical data highlights the efficacy of dehydrated human amnion/chorion allografts (dHACA) in treating diabetic wounds. These grafts contain endogenous growth factors that facilitate wound healing. In a prospective, multi-center trial, dHACA demonstrated superior healing rates compared to other bioengineered skin substitutes [2,3].

## MOHS Surgery Treatment

MOHS surgery, commonly used for skin cancer removal, often leaves sizable wounds. Amniotic grafts have shown promise in this context:

- **Wound Closure:** Studies employing different preparation methods of amniotic membranes have reported successful wound closure in MOHS surgery patients. The unique properties of HAMA contribute to tissue regeneration and expedited healing [1].

## Summary

Amniotic grafting represents a valuable addition to wound healing strategies. While further research is needed to standardize protocols and assess long-term outcomes, current evidence supports its use in diabetic foot ulcers, venous insufficiency, and MOHS surgery treatment. Clinicians should consider individual patient factors and tailor treatment plans accordingly. In summary, the amniotic membrane's regenerative potential holds great promise for improving wound healing outcomes across diverse patient populations.

## Case Review

55-year-old diabetic patient with primary complain of ulcer on the right foot. Past medical history includes diabetes and high blood pressure. For appropriation of this comparison we are reviewing the treatment of two Right Foot DFU on the same patient; first wound treated with standard of care and the second wound treated with a triple layer allograft from Aceso Biologics a human amniotic membrane allograft (HAMA) (Figures 1-3) (Tables 1 & 2).



Figure 1.



Figure 2.



Figure 3.

Table 1.

R Dorsal						Therapy
Treatment Week	Length	Width	Depth	Area	Volume	
Week 1	2	1.4	0.8	2.8	2.24	
Week 2	1.4	1.4	0.5	1.96	0.98	
Week 3	11	2.5	1	27.5	27.5	
Week 4	11.6	2	0.3	23.2	6.96	
Week 5	11.4	2.1	0.3	23.94	7.182	
Week 6	14	2	0.8	28	22.4	
Week 7	13.6	2.2	0.8	29.92	23.936	
Week 8	10	1.9	0.3	19	5.7	
Week 9	9.1	1.6	0.3	14.56	4.368	
Week 10	7.2	1.8	0.3	12.96	3.888	
Week 11	7.6	1.8	0.5	13.68	6.84	
Week 12	7.1	1.9	0.4	13.49	5.396	
Week 13	6.7	1.9	0.4	12.73	5.092	
Week 14	7.2	1.9	0.4	13.68	5.472	
Week 15	5.6	2.1	0.5	11.76	5.88	SOC
Week 16	3.4	1.9	0.3	6.46	1.938	SOC
Week 17	3.1	1.9	0.3	5.89	1.767	SOC
Week 18	3	1.3	0.3	3.9	1.17	SOC
Week 19	2	0.8	0.2	1.6	0.32	SOC
Week 20	1.1	0.8	0.2	0.88	0.176	SOC
Week 21	0.6	0.6	0.2	0.36	0.072	SOC
Week 22	HEALED	HEALED	HEALED			

Table

2.

R Plantar Forefoot overlaying 4th metatarsal						Therapy
Treatment Week	Length	Width	Depth	Area	Volume	
Week 1	3.7	0.8	0.3	2.96	0.888	SOC
Week 2	4	0.5	0.5	2	1	TL HAMA
Week 3	3.8	0.5	0.5	1.9	0.95	TL HAMA
Week 4	2.4	0.4	0.2	0.96	0.192	SOC
Week 5	No Visit	No Visit	No Visit	0	0	Holiday
Week 6	1	0.2	0.1	0.2	0.02	SOC
Week 7	NO Show	NO Show	NO Show	0	0	**
Week 8	NO Show	NO Show	NO Show	0	0	**
Week 9	HEALED	HEALED	HEALED			Confirmation

Note: \*\*Pt feels "good" and not available for follow up.

## Conclusion

In this study, we compared conservative treatment with the established standard of care (SOC) for both wounds. Our focus was on treatment efficacy and patient response, particularly considering the psychosocial aspects. For wound #1, during the period from Week 15 to Week 22 (8 weeks of SOC therapy), there were no missed events, and wound closure was achieved. This was in contrast to the initial 6 weeks (Week 1 to Week 6), which involved two consecutive weeks of advanced treatment followed by one SOC session to achieve closure. Since both wounds were located on the patient's right foot and successfully closed, we must also consider the patient's overall well-being. Notably, the patient healed in half the time when comparing SOC to TL HAMA treatment. Despite multiple breaks in treatment, wound closure was still achieved. In modern medicine, recognizing the importance of a "happy patient" as a crucial component of health

management is essential. If HAMA treatments can be more actively utilized, we can anticipate shorter therapy durations and, most importantly, improved patient satisfaction. However, further research is necessary to validate these healing rates and document any psychosocial changes resulting from expedited treatment methodologies. As poet Amanda Gorman aptly puts it, "We are moving in the right direction."

## References

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