

Fish-skin grafts rich in Omega3 for trans metatarsal amputationKimberly Gondos¹ and Rajan Patel²¹Prime Healthcare Services, USA²St. Mary's General Hospital, USA

Introduction: Kerecis Omega3 Wound is a fish-skin graft that is homologous to human skin [1] and is used for tissue regeneration [2]. Kerecis Omega3 Wound is FDA indicated for multiple clinical applications [3]. Because there is no risk of a viral-disease transfer from Atlantic cod to humans, the fish skin needs only mild processing for medical use and maintains its natural structure and elements, including Omega3 fatty acids[3,4] When grafted onto damaged human tissue such as a burn or a wound, the fish-skin graft recruits the body's own cells, supporting the body's own ability to regenerate [5-7].

Patient History: 66 year old female who presented initially with gangrene of her right 5th toe. Patient has a significant medical history, including diabetes, chronic kidney disease, morbid obesity, peripheral vascular disease, hypertension, sarcoidosis and, cirrhosis of the liver. Patient underwent 5th toe amputation. Three weeks later, a necrotizing infection had progressed across the plantar aspect of her foot. The 4th and 5th rays were partially amputated one week later. (Figure 1) Age of wound: 2 months.

Treatment: 1st application of Fish-skin graft was applied after transmetatarsal amputation and secured in place with staples. (Figure 2) Negative Pressure Wound Therapy applied to surgical site immediately after procedure. 2nd application was applied 1 month later. Wound base with mostly granular tissue over 4th and 5th metatarsalsr (Fig. 3). 3rd application-2.5 months. Wound base with mostly granular tissue; no clinical signs or symptoms of infection. Skin now present over 1st and 5th metatarsals. Minimal pain. 4th application-3 months: Wound is 100% granular with Epithelialization. Wound healed after 7 months (Fig. 4)

Conclusion: Fish-skin grafts can be used to heal challenging amputation wounds where other treatments have previously failed. The pain reducing properties of the fish-skin due to the presence of naturally occurring Omega3 fatty acids is a benefit.



1. Initial Presentation

2. 1st application



2nd appl. 1 month



4 Wound healed. 7 months

Recent Publications:

1. Rakers, S. et al. 'Fish matters': The relevance of fish skin biology to investigative dermatology. *Exp. Dermatol.* 19, 313–324 (2010).
2. Baldursson, B. T. et al. Healing rate and autoimmune safety of full-thickness wounds treated with fish skin acellular dermal matrix versus porcine small-intestine submucosa: A noninferiority study. *Int. J. Low. Extrem. Wounds* 14, (2015).
3. Magnusson, S. et al. Decellularized fish skin: Characteristics that support tissue repair. *Laeknabladid* 101, 567–573 (2015).
4. Magnusson, S., Baldursson, B. T., Kjartansson, H., Rolfsson, O. & Sigurjonsson, G. F. Regenerative and Antibacterial Properties of Acellular Fish Skin Grafts and Human Amnion/Chorion Membrane: Implications for Tissue Preservation in Combat Casualty Care. *Mil. Med.* 182, 383–388 (2017).
5. Kirsner, R. S. et al. Double-Blind, Prospective, Randomized Clinical Trial on 170 Acute Wounds Shows Significantly Faster Healing Rate with Intact Fish Skin Compared to Human Amniotic Membrane. *Natl. Am. Podiatr. Med. Assoc. Annu. Sci. Meet.* (2018)

Biography

Kimberly Gondos is a Certified Wound, Ostomy RN with over 13 years of experience in nursing and over 8 years of experience in the specialty field of wound care and hyperbaric medicine. She is affiliated with Prime Healthcare Services as Regional Corporate Manager of 8 wound care centers. She earned her BSN from LaSalle University in 2006, became Wound Care certified in 2012, Ostomy certified in 2014, and earned her Master's degree in Nursing Leadership in 2016.

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