

# A CASE REPORT: REVISION CHOPART AMPUTATION WITH RESIDUAL OSTEOMYELITIS TREATED WITH COD XENOGRAFTS

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## INTRODUCTION

Two percent of the population suffers from chronic non-healing foot ulcerations leading to decreased quality of life and increased healthcare costs. Chronic wounds do not advance through the normal phases of healing and are commonly treated with grafting.<sup>1</sup> There are three types of grafts: autograft, allograft, and xenografts. Atlantic cod is an acellular xenograft with a structure similar to human skin allowing for cellular ingrowth and wound healing. The omega-3 polyunsaturated fatty acids within the cod xenograft has properties to decrease inflammation and to advance the ulceration through the phases of healing.<sup>1</sup>

## METHODS

The patient reviewed was a 63 year old male with a past medical history including juvenile diabetes mellitus, osteomyelitis and chronic plantar foot ulceration for 6 months. First application of cod xenograft was 7/18/2022 to the large plantar wound. At that time there was no exposed bone. He was taken to the operating room for a revision Chopart amputation on 9/12/2022 due to the persistent ulceration and osteomyelitis of the cuboid. Cod xenograft was applied to the plantar ulceration. He underwent 2 subsequent xenograft applications in the office on 10/19/2022 and 11/08/2022. The patient was also treated with IV cefazolin from 9/12/2022 until 10/24/2022. He was offloaded and nonweightbearing within a diabetic walking boot.



Picture 1: 7/17/2022



Picture 2: 9/12/2022



Picture 3: 11/29/2022



Picture 4: 1/4/2023



Picture 5: 3/4/2023

## RESULTS

After revisional amputation, course of IV antibiotics, nonweightbearing status and 3 applications of cod xenograft, the patient's plantar ulceration was healed on 11/29/2022. He presented for subsequent follow ups on 12/16/2022, 1/04/2023, 1/23/2023 with the ulceration continued to be healed.

Date	Procedure	Wound measurements
7/18/2022	Intraoperative application of xenograft	12 x 5 x 0.1 cm (60cm <sup>2</sup> )
9/12/2022	Intraoperative Chopart's amputation and application of xenograft	2.8 x 6.8cm (19.04cm <sup>2</sup> )
10/19/2022	In office application of xenograft	3.1 x 2.0 x 0.1 cm (6.2 cm <sup>2</sup> )
11/08/2022	In office application of xenograft	4.2 x 1.9 x 0.1 cm (7.98 cm <sup>2</sup> )
11/29/2022	Epithelialized	Healed (0 cm <sup>2</sup> )
1/4/2023	Epithelialized	Healed (0 cm <sup>2</sup> )
1/23/2023	Epithelialized	Healed (0 cm <sup>2</sup> )

## CONCLUSIONS

The most accepted treatment course for diabetic foot wounds with osteomyelitis is a combination of surgical debridement and antibiotics. Beiler et al. reviewed 50 patients with diabetes and osteomyelitis with ulcerations. It was found those with combined treatment of surgical debridement and antibiotics led to a limb salvage rate of 94%.<sup>2</sup> Michael et al retrospectively reviewed 58 diabetic foot ulcerations for 16 weeks who had acellular fish skin graft during the treatment course. There was a mean reduction of wound surface area by 87.57% at 16 weeks. They also noted 60.34% of the ulcerations were healed at 16 weeks. It was shown the acellular fish skin graft transitioned ulcerations from chronic to acute phase of wound healing leading to closure of the ulceration. They found acellular fish skin xenograft was a safe and effective treatment for diabetic foot ulcerations.<sup>3</sup> Our case study demonstrated the combination of IV antibiotics, offloading and fish xenograft for treatment of a chronic diabetic heel ulceration allowed for the ulceration to heal.

## REFERENCES

1. Seth, N, Chopra, D, and Lev-Toy, H. Fish Skin Grafts with Omega-3 for Treatment of Chronic wounds: Exploring the Role of Omega-3 Fatty Acids in Wound Healing and A Review of Clinical Healing Outcomes. *Advanced Wound Healing*, 2022, 40.
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3. Michael, S., Winters, C., Khan, M. Acellular Fish Skin Graft Use for Diabetic Lower Extremity Wound Healing: A Retrospective Study of 58 Ulcerations and a Literature Review. *Wounds*, 2019; 31 (10): 262-268.