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### Introduction

Vasopressors are administered in critically ill patients suffering from septic shock to raise blood pressure. Vasopressor induced digital ischemia is the consequence of decreased digital perfusion.1 Unfortunately, these ischemic changes are often irreversible and lead to amputation. The extent of soft tissue necrosis varies and can make surgical closure difficult to achieve, especially when full thickness areas of necrosis are proximal to the amputation margins.

To aid in closure and replace the dermis, skin graft substitutes may be utilized. Piscine grafts offer a structure ideal for incorporating human fibroblasts within the matrix, allowing for fast incorporation.2 Acellular fish skin also has antimicrobial, anti-inflammatory and analgesic effects3, which may be beneficial in the sensate immunocompromised patient.

We illustrate a case where piscine graft was used to aid in amputation closure and to facilitate epithelialization of the surrounding full thickness tissue loss.

### Presentation

A 50-year-old male with AML and no history of diabetes presented to the ED for septic shock of unknown origin. He was placed on vasopressor therapy, and subsequently full thickness necrosis of the digits on the left foot occurred, along with full thickness dermal and epidermal loss at soft tissue proximal to the digital necrosis. Full thickness necrosis of the right lower extremity was also present to the level of the ankle, necessitating the need for a BKA.

A transmetatarsal amputation was necessary in order to remove the necrotic digits and for salvage attempts on his remaining lower extremity. Full-thickness soft issue loss at the amputation flaps made closure difficult, with no viable epithelial tissue at the amputation margins. A more proximal amputation was contemplated. Aggressive limb salvage attempts were required given his contralateral BKA.

A 2:1 pre-meshed piscine graft was applied directly over the amputation incision, and directly on the fullthickness deficits at the surrounding soft tissue margins.

The initial piscine graft completely incorporated within 10 days of initial application. The incision site healed completely as well, with no dehiscence present. Epithelialization was beginning at the surrounding soft tissue defects as well.

A second application of the 2:1 pre-meshed graft was applied to facilitate further epithelialization of the soft tissue 3 weeks after the initial application.

# Salvage of Vasopressor Induced Foot Ischemia



















After Care

Following the second graft application, the patient continued with basic local wound care consisting of adaptic and compressive dressing changed daily. He underwent two additional applications of a piscine graft in the wound care center and ultimately underwent full wound healing 3.5 months later.

### Discussion

Amputation is often necessary following vasopressor induced ischemic changes of the digits. Amputation options are often limited due to the extent of surrounding soft tissue loss, necessitating a more proximal amputation.

Our patient underwent two surgical debridements with piscine graft application and two applications of piscine graft in the wound care center with compressive dressings. The piscine graft incorporated rapidly and allowed for full epithelialization in our immunocompromised patient. Pain greatly improved following amputation and following each application of skin substitute as well.

The utilization of a piscine acellular dermal matrix appears to be a feasible option to provide soft tissue coverage when the surrounding skin has full-thickness loss. This allows for the most distal amputation possible to remove the necrotic digits, therefore, preventing the need for a more proximal amputation. This case report may hopefully guide surgeons in the future to prevent the need for a more proximal amputation.

### References

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