Case Report: Utilizing negative pressure wound therapy with instillation (NPWT-i) to achieve source control of complex Aeromonas hydrophila necrotizing infection following a traumatic amputation.

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Introduction:
There are inherent challenges in the management of aquatic injuries due to a number of difficult to anticipate sequelae. Propeller injuries complicate management via significant contamination, delayed ischemia, and exposure to unusual water-associated organisms. The purpose of this case study is to present a unique circumstance where source control was achieved in a patient that suffered from an Aeromonas hydrophila necrotizing infection after traumatic aquatic amputation.

Case Report:
The patient was a 26-year-old female who sustained a propeller injury in a notable brackish water lake. She was swimming to the edge of the boat when the propeller was engaged, causing her right lower extremity to be sucked into the blade and subsequently collide with the caviation plate. This resulted in multiple significant linear lacerations and avulsions as well as a Gustilo IIIB fracture (Figure 1). Due to the extent of damage upon presentation, the patient was rushed to the OR for a transfemoral amputation.

References:

Treatment:
Serial washouts began early in the hospital course but the patient did not hemodynamically tolerate debridement well due to development of significant coagulopathy. Tissue cultures showed Aeromonas hydrophila infection (Figure 2). At this time, it was decided to attempt achievement of source control through use of negative pressure wound therapy with instillation of 0.25% sodium hypochlorite solution. Within two days of NPWT-i initiation, lab values normalized and patient began to clinically improve (Figure 3). NPWT-i was continued throughout the hospitalization until grafting was able to be performed (Figures 4-5). On hospital day 51, nearly 100% take of split thickness grafting was noted with no residual tissue loss (Figure 6). 167 days after initial injury, the patient took her first steps on her prosthetic limb (Figure 7).

Discussion:
Aeromonas hydrophila is a gram-negative bacteria commonly found in brackish water which produces aerolysin, a spore-forming cytolytic toxin which can cause myonecrosis. As was noted in this case, patients that present with sepsis due to A. hydrophila can develop extensive coagulopathy which can make OR debridement an unsafe option thus contributing to the high mortality of Aeromonas sepsis. The typical treatment of Aeromonas necrotizing wound infection is aggressive debridement and tailored antibiotic therapy, but if debridement is not an option, there has been little recourse to date.

Conclusion:
The usage of NPWT-i gives clinicians the option to achieve source control in complex wounds with active, myonecrotic infection through bactericidal solution instillation.

Consent obtained from patient for all photography and publication.