Starts in the Field: A Multidisciplinary Approach to an Adolescent Farming Injury at A Nonpediatric Trauma Center

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INTRODUCTION

Trauma is the top cause of mortality and morbidity in children over the age of one year. Pediatric limb amputation of the upper extremity accounts for a disproportionately large component of trauma morbidity.[1,2] There is very little literature on overall management of adolescent traumatic lower extremity amputation. We present a case involving an adolescent patient after farming injury that was initially assessed and managed at a level I adult trauma center who was then transferred to a pediatric hospital.

CASE DESCRIPTION

A 16-year-old male presented after an industrial farm tractor rollover with substantial crush and degloving injuries to both legs.

Prehospitalization

- An Emergency Department physician was present in the field to organize care
- The trauma team was placed on standby due to difficulty in extrication and concern for the need for a field amputation
- During the prolonged extrication by the first responders, two torniquets were placed on the right lower extremity. A pelvic binder was also placed.
    - Given the significant left thigh degloving injury and minimal active bleeding from a posterior laceration, a left leg tourniquet was not placed
- He was given 1g tranexamic acid (TXA) and 2g Ancef

Hospitalization

- The patient arrived in the trauma bay extremis with blood pressure of 84/42 and heart rate of 150 bpm and began to actively hemorrhage from his left lower extremity
- His left femoral vessels were found to be exposed through the posterior lacerations, actively bleeding, and were clamped with hemostats

CASE DESCRIPTION

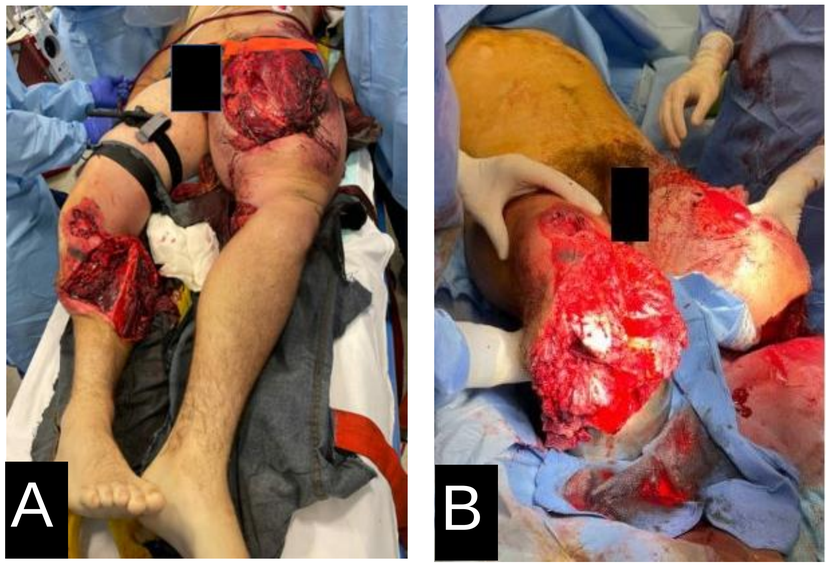

Figure 1. (A) Trauma bay image of patient injuries. (B) Below the knee guillotine amputation of the right lower extremity.

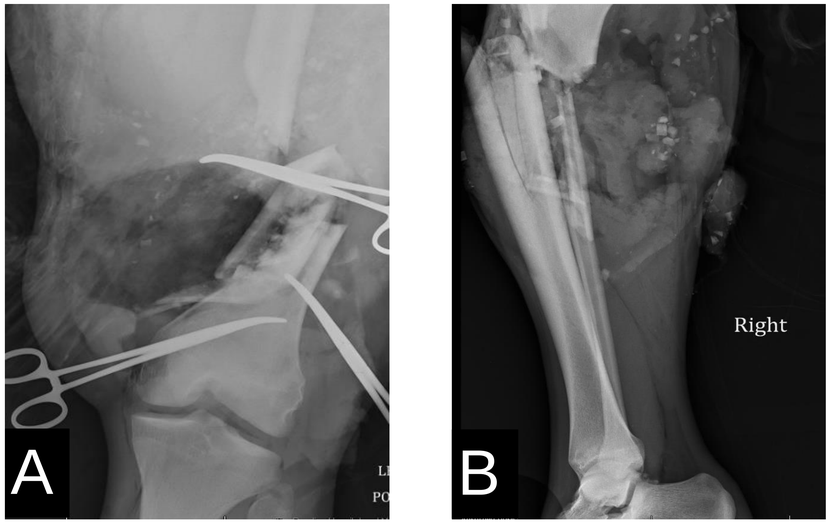

Figure 2: (A) X-ray of left femur. (B) X-ray of right tibia and fibula.

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CASE DESCRIPTION

- He was covered in diesel fuel and was too unstable for preoperative decontamination
- In the operating room, the right tibia and fibula were fractured, and the anterior tibial vessels were transected
    - A right below the knee guillotine amputation was performed
    - The left lower extremity had a large degloving injury with the muscle exposed above the left knee with substantial contamination from grass and debris
    - The left femoral artery, vein, and nerve were found to be transected and a left above the knee guillotine amputation was performed
- From the operating room, the patient was taken for decontamination
- During his hospitalization, he was revised to bilateral above the knee amputations and underwent multiple debridements with trauma and orthopedic surgery.
- He was ultimately transferred to a pediatric level 1 trauma center due to the extent of the soft tissue injury and the need for flap coverage. On patient follow up, the patient is doing well with bilateral lower extremity protheses

DISCUSSION

Upon initial evaluation, management of pediatric trauma patients should be based on the principles of Advanced Trauma Life Support (ATLS) and Pediatric Advanced Life Support (PALS). Once the patient is stabilized, traumatic amputations that require surgical debridement should be performed to preserve soft tissue viability and prevent infections. [4] Our patient presented with an uncommon injury mechanism in the adolescent population resulting in significantly mangled lower extremities. Our case highlights the importance of a multidisciplinary approach in a pediatric patient with bilateral mangled extremities from hemorrhage control and stabilization in the field to subsequent resuscitation and operative management at a non-pediatric trauma center.