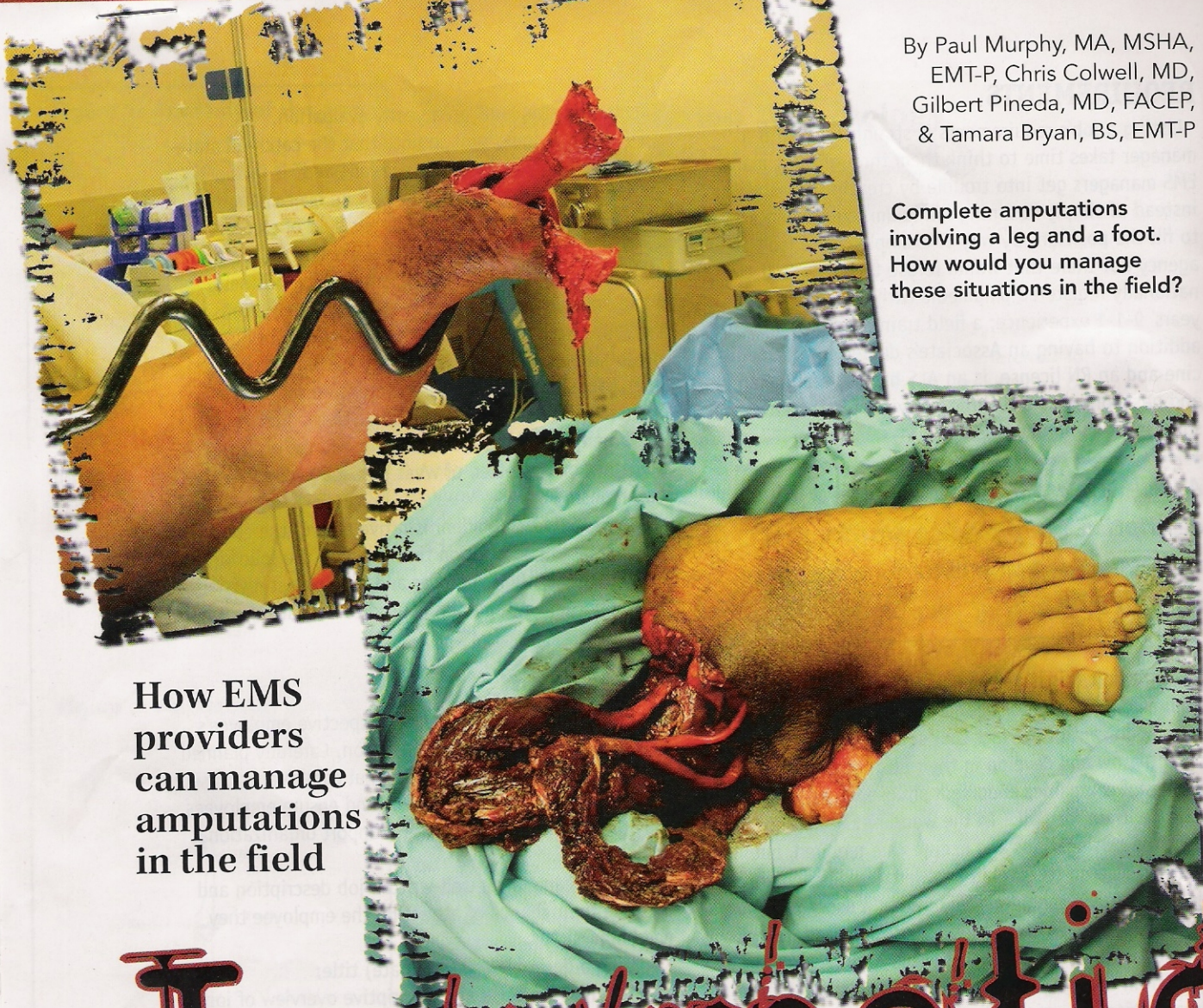


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Complete amputations involving a leg and a foot. How would you manage these situations in the field?



How EMS providers can manage amputations in the field

Traumatic AMPUTATIONS

Photos courtesy of Gilbert Pineda, MD, FACEP

An amputation is the surgical or traumatic separation of a body part from the body.¹ It is estimated that one out of every 200 individuals in the United States has had an amputation.² Medical conditions like peripheral vascular disease (PVD) account for most surgical amputations, which are most often planned procedures that occur within operative suites in healthcare facilities. In contrast, traumatic amputations are not planned and usually occur outside of the hospital setting. More than 30,000 traumatic amputations occur every year.^{3,4} This article focuses on traumatic amputations involving adult patients in the prehospital environment. EMS providers who are knowledgeable and well

trained in the management of traumatic amputations may contribute significantly to the successful reattachment of amputated body parts and reducing patient morbidity and mortality.⁵

BASIC ANATOMY

A traumatic amputation can involve any body part, including the arms, hands, fingers, legs, feet, toes, ears, nose, eyelids and genitalia. Upper limb amputations account for more than 65% of traumatic amputations.² While anyone can be involved in an amputation, most victims are between ages 15 and 40.^{2,3,6,7} A majority of the victims (80%) are male.^{3,7}

Table IV: Prehospital Treatment for Amputations**BODY PART/
INTERVENTION****GENERAL TREATMENT**

Stump

- Cover with moist dressing
- Elevate stump

- Avoid excessive manipulation
- Immobilize stump

Amputated body part

- Cover with moist dressing
- Place body part in dry plastic bag that can be sealed

- Place bag into ice water
- Avoid direct contact between body part tissue and ice

PROCEDURES**GENERAL NOTES**

Intravenous access

- Normal saline or lactated Ringer's
- Fluid bolus administration PRN

Airway/oxygen

- Manage airway appropriately
- Provide supplemental oxygen

Medication

- Consider analgesia
- Morphine sulfate 2–5 mg IV
- Fentanyl 1–2 mcg/kg IV

with ice, as this can result in tissue damage.^{5,6,8,12,14,20}

Anatomy that has been located

It is important to avoid delays in the treatment or transport of the patient and/or the amputated body part(s) that have been located. One reason is that the exact amount of time that an amputated part can survive before reattachment occurs has not been completely agreed upon in the medical community. Traumatic amputation tissue survival time continues to be researched. In the prehospital setting, timely delivery of the patient and any amputated parts to the emergency department should be a priority (see Table IV).^{17,18}

Anatomy that has not been located

In cases where the amputated part has not yet been found, a comprehensive search may be initiated. The amount of time and resources used when searching for amputated anatomy varies with each scenario. Factors such as the involved amputated anatomy, scene dynam-

ics, mechanism of injury, number of patients and availability of resources will influence this decision. Whenever possible, efforts should be made to locate and salvage amputated anatomy, as successful reattachment may significantly enhance the patient's outcome and post-incident level of function.^{19,21}

Entrapment & extrication

Extrication from entrapment should be accomplished with preservation of the limb in mind. Unless it is absolutely necessary to get the patient to a safer environment (e.g., out of a burning vehicle), the entrapped anatomy should not be pulled with force, as this may cause more injury. Dismantling the machinery may be the best option for extrication, and this may take hours to accomplish.

If dismantling the machinery is not possible, or for other reasons a "field" amputation is anticipated, providers are encouraged to consult with medical control. It may be possible for the prehospital crew to request that a physician (e.g., surgical team, "go team" or similar) be dispatched

complicated by the concern for additional injuries. Blunt trauma amputations are often caused by mechanisms of high-energy transfer, such as motorcycle accidents, auto-pedestrian accidents, significant crush injuries and work-related accidents involving large machinery. These accidents often involve the potential for multi-system trauma, and the provider must stay alert to the possibility of other injuries. It is critical to remember that the most obvious injury is not always the most significant.

Your next steps will be influenced by many factors, including the mechanism of injury, body part involved in the amputation, presence of additional injuries, estimated fluid loss and proximity to a hospital.

Incomplete (partial) amputation

Partial amputations should be assessed and treated as if they are fully intact. Regardless of the amount of injury, in the prehospital setting, partial amputations should be considered eligible for reattachment. If an extremity is involved, it should be splinted. Dressings, such as a saline-moistened sterile dressing, placed over exposed tissue will help to reduce additional contamination or injury. Initial efforts to control bleeding should include direct pressure and use of pressure points. Elevation may be considered.^{3,5,8,12,14–18} Similar to splinting an extremity, assess distal neurologic function and circulation prior to and following any manipulation. If available, pulse oximetry may be used as the patient is assessed and treated.¹⁹

Complete amputation

If there is complete amputation and the anatomy is retrieved, it should be handled with the goals of preservation and reattachment in mind. Cover the amputated anatomy with a saline-moistened gauze, tightly seal it in a clean or sterile plastic bag and place the bag over ice. Providers should make every effort to avoid direct contact of amputated tissue