Continuing Medical Education

Management of Wounds in the Trauma Patient

Recommended management varies based on the etiology of the wound.

BY ELLIANNE M. NASSER, DPM

Objectives

- Understand basic principles of wound management in the trauma patient.
- Demonstrate knowledge of treating lacerations, burns, bite wounds, puncture wounds, open fractures, crush injuries, and degloving injuries.
- Recognize indications for hyperbaric oxygen therapy in the trauma patient.

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*Following this article, an answer sheet and full set of instructions are provided (pg. 144).—**Editor***

Treatment of chronic wounds is common practice for the foot and ankle specialist. The typical chronic wound care patient is over the age of 50, neuropathic, with multiple co-morbidities. This creates many obstacles to wound healing given the impaired host. Wounds that occur in the trauma setting are discussed much less frequently. Ranging from minor to severe, traumatic wounds require prompt attention and meticulous wound care and assessment to assure a favorable outcome. Although the traumatic wound care patient is typically younger and with minor or fewer co-morbidities, this patient poses new challenges to wound care as s(he) is typically sensate.

Traumatic wounds require prompt attention and meticulous wound care and assessment to assure a favorable outcome.

Emergency Departments in the United States treat 12.2 million patients

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per year for emergency wound care. It is the most frequently performed procedure second to IV insertion.[1] Given how common these visits are, it is not surprising that wound care comprises 5-20% of all emergency medicine malpractice claims and 3-11% of dollars paid out.[2] Some of the most common reasons for litigation are failure to diagnose foreign bodies, wound infections, and failure to detect underlying injuries.[2] Unfortunately, new patients frequently present for follow-up from an emergency department visit, only to discover a missed tendon injury or foreign body. These injuries are more difficult to treat as time passes, and patient outcomes worsen.

Basic Principles

As with all wound care, the practitioner must check for adequate perfusion. Vascular work-up should be performed to assess for chronic arterial or venous insufficiency, as well as acute compromise. Host factors must be addressed, including smoking status, nutrition, and co-morbidities. Off-loading may be important if the wound is on the plantar foot. Edema control will assist in expediting wound closure. Infection and nonviable tissue must be managed appropriately with antibiotics and debridement. The micro-environment of the wound remains important, and wound care must adapt to the micro-environment as the wound changes. Dry wounds will need added moisture, draining wounds will need absorptive dressings to dry the wound. Pain is a particular concern for wounds in this patient population as patients are typically sensate. Aggressive debridement may need to be performed in the operating room, and office debridements and even dressing changes may require pre-medicating patients, as well as local nerve blocks and topical lidocaine.

Wounds in the emergency setting require thorough irrigation. Baseline x-rays should be performed to rule out underlying bony injury. Tetanus status should be addressed upon presentation to the Emergency Department. The evaluating provider should have a high suspicion for underlying soft tissue injury and assess for tendon injury and foreign bodies. The decision for antibiotics, fixation, and surgical treatment depends on the severity and presentation of the wound.

Figure 2: Burn wound to anterior ankle after spilling hot oil. Wound healed in 5 weeks with local debridement, Silver Sulfadiazine, and compression.

Dry wounds will need added moisture, draining wounds will need absorptive dressings to dry the wound.

Lacerations

The average laceration presenting to the emergency department is 1-3 cm, with 13% considered "significantly contaminated."[1] 3.5 -6.3% of lacerations will develop an infection, which is the most common complication.[1] Thorough irrigation is the most important step for reducing infection. The treating provider should have a high index of suspicion for an underlying tendon injury with lacerations. MRI or Ultrasound are the imaging studies of choice to rule out soft tissue injury. Once underlying soft tissue injury is ruled out, the wound can be closed primarily pending severity and contamination.

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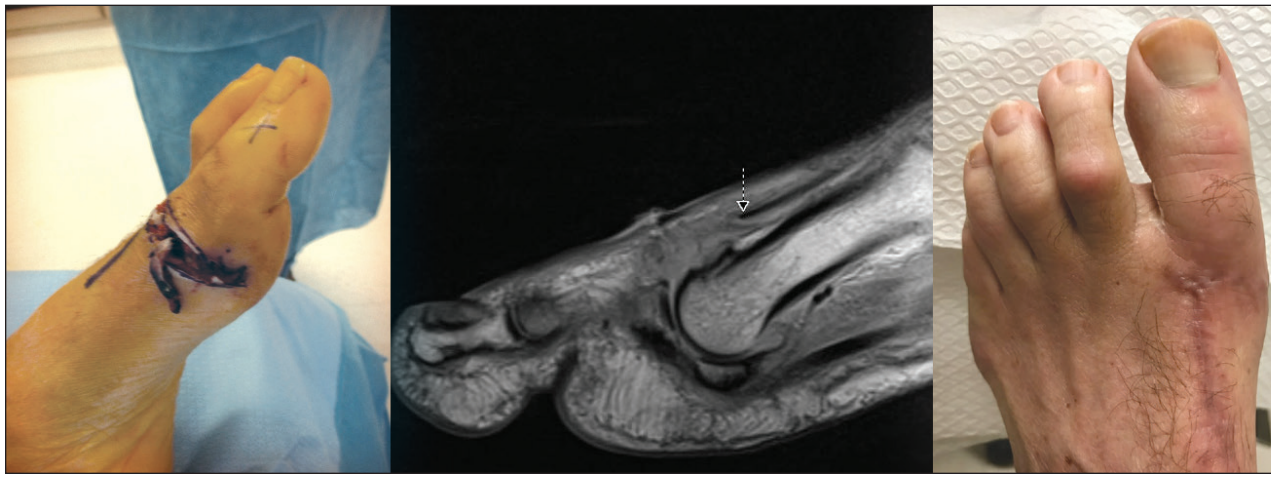

Figure 1: Laceration caused by chain saw injury with associated extensor hallucis longus tendon rupture.

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Figure 1 demonstrates a 61-year-old healthy male who suffered a chainsaw injury. The patient presented to the Emergency Department with a first metatarsophalangeal joint laceration and associated extensor hallucis longus tendon injury. Tetanus status was assessed, antibiotics administered, and irrigation performed in the emergency department. MRI revealed a greater than 2 cm gap at the extensor hallucis longus tendon. Surgical repair was required for irrigation, debridement, tendon repair, and repair of a capsular defect with an autograft. The patient healed the laceration within one month of surgery with no complication. He regained full dorsiflexory strength at his metatarsophalangeal joint with some residual stiffness to the joint.

Figure 3: Wound to lateral leg following cat bite. Wound healed in 8 weeks with debridement, local wound care, and compression.

Appropriate management of burns includes debridement of necrotic tissue.

Burns

Over a million patients sustain burn injuries each year in the United States, with approximately 4.5% of these patients hospitalized.[3] The extent of the burn is measured by the total body surface area of second and third-degree burns. If the second degree burn total is less than 15% of the total body surface area, the burn can be managed as an outpatient.[3] Appropriate management starts with debridement of necrotic tissue. Intact blisters are controversial; if they are large and friable it is recommended to remove them, if they are small they can be left intact to provide protection over the underlying injury. Pain control is difficult in burn patients, particularly with debridement. Topical lidocaine is commonly used prior to debridements, and often oral analgesics or even surgical debridement is necessary. Silver sulfadiazine is a common treatment, combined with a non-adherent dressing. Tetanus status should be addressed.[3]

Figure 2 demonstrates the initial presentation of a 61-year-old healthy male who suffered a burn to his anterior ankle after spilling scalding hot oil while working in a restaurant. The wound healed in five weeks with local wound care consisting of debridement, silver sulfadiazine, and compression. Topical Lidocaine was used prior to debridements.

Bite Wounds

An estimated two billion bite wounds occur each year in the United States. Surprisingly, 3.6-23% of these are human bite wounds.[1] Irrigation and debridement is key to wound management and closure. Deep puncture wounds should be opened for thorough irrigation. Dilute povidone iodine solution can be used for irrigation. The antibiotic of choice for dog and cat bites is amoxicillin/clavulanate.[1]

An 83-year-old patient in Figure 3 presented four weeks following a cat bite, after two courses of antibiotics and local wound care by her primary care physician. The wound was complicated by concomitant venous insufficiency. Following a vascular workup, compression therapy was initiated. The patient healed in eight weeks with debridements every other week. Topical lidocaine was applied prior to debridements. Wound care was initiated with saline wet to dry, as wounds initially connected. Wound care was switched to a freeze-dried collagen matrix with oxidized regenerated cellulose once tunneling filled in.

Puncture Wounds

Puncture wounds are common on the plantar surface of the foot and are caused typically by a sharp object

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Figure 4: Puncture wound after stepping on a gardening tool while barefoot. Wound healed uneventfully following surgical removal of foreign body and washout.

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penetrating the skin. Tetanus status must be addressed upon presentation, and antibiotics initiated. X-rays should be ordered to assess for a bony injury and/or foreign body. MRI or Ultrasound should be ordered if soft tissue injury or a foreign body is suspected.

Figure 4 demonstrates a puncture wound in a 21-year-old female after stepping on a gardening tool barefoot. Her father cut the remainder of the tool off prior to presentation. A tetanus booster and antibiotics were administered in the emergency department. The patient was taken for emergent removal of the foreign body in the operating room. An ancillary incision was created to the dorsolateral foot at the area of skin tenting. Grass and debris were expressed from this ancillary incision, and the area was flushed using gravity lavage. Intra-operative fluoroscopy was used to assure that no residual foreign body was present after removal. Patient healed uneventfully within one month of surgery.

The antibiotic of choice for dog and cat bites is amoxicillin/clavulanate.

Open Fractures

Open fractures are fractures that communicate with the outside environment through a break in the skin. Open fractures of the tibia are the most common open long bone fracture, occurring in 3.4 per 100,000 people annually, primarily from high energy trauma.[4,5] Since its description in 1976, the Guistilo Anderson Classification has been the most widely used classification for open fracture management. The rate of infection correlates with the grade of fracture, with 0-2% in Grade I, 2-7% in Grade II, 7% in Grade IIIA, 10-50% in Grade IIIB, and 35-50% in Grade IIIC.[6]

Historically, emergent surgical debridement of open fractures was recommended within six hours of the injury; however, recent literature has challenged this recommendation. Schenker, et al. performed a systematic review looking at 3,539 open fractures and demonstrated no significant difference in the infection rate between open fractures debrided early or late according to any of the time thresholds used in the studies included.[7]

Figure 5: Open fracture following fall on the ice. Wound healed uneventfully following surgical washout and delayed primary closure.

Recent studies have looked at the duration of administration for antibiotic prophylaxis in adults with open lower extremity fractures.[8] Results are unclear with no consensus. Only one randomized, double-blind, prospective study looked at the duration of antibiotic prophylaxis administration in open tibial fractures, and found that a short course of antibiotics is just as effective as a long course.[9]

Figure 5 demonstrates a 6 cm opening in a 65-year-old female who slipped on the ice and suffered an open trimalleolar ankle fracture. The patient had a history of rheumatoid arthritis and was taking methotrexate, and using tobacco. Antibiotics were administered in the emergency department and tetanus status was assessed. Secondary to the instability of the fracture and contamination of the open wound, the patient was taken within six hours of presentation for application of a delta frame and washout of the opening with gravity lavage. Definitive fixation and closure was performed at a later date, and healing of the opening occurred without incident.

Figure 6: Crush injury and compartment syndrome after patient's foot got stuck under road milling machine. Wound healed at 4 months following emergent fasciotomy, debridements, and skin substitute application.

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Crush Injury

Crush injuries occur when a body part is forcefully compressed between two hard surfaces, where the compression blocks the flow of blood and oxygen leading to ischemia.[10] These injuries are often associated with multiple fractures and severe soft tissue damage. Prolonged crush injuries have a higher incidence of neurovascular compromise. Skin necrosis is a frequent complication, particularly with prolonged exposure to the crush. Compartment syndrome is a serious concern, and patients must be monitored closely for possible fasciotomy.

Figure 6 demonstrates a 50-year-old obese male who had his foot stuck under a road milling machine for 45 minutes. The patient presented with signs of acute compartment syndrome, with early skin necrosis to the dorsal foot. A tetanus booster and antibiotics were administered in the emergency department. The patient was treated with emergent fasciotomy, repeat washout and debridement, and debridement with skin substitute at one month following injury. Topical lidocaine was applied prior to debridements in the wound care center, with more aggressive debridements performed in the operating room. The patient healed at four months following initial injury.

Degloving Injury

Degloving injuries to the lower extremity are devastating, complex, limb salvage injuries. These injuries are characterized by separation of the subcutaneous tissue and at times bony architecture from its surrounding anatomy. A multi-disciplinary approach is vital for these cases, with plastic surgery playing a major role in limb salvage and soft tissue deficit reconstruction. Unfortunately, many of these cases result in partial foot amputation or even more proximal amputation. Degloving injuries require multiple washouts using gravity lavage. High pressure lavage is not indicated, and can cause further trauma to the already compromised soft tissue. Negative pressure wound therapy is beneficial in providing a barrier between the exposed muscle/tendon/bone and the environment, as well as promoting granulation tissue which can prepare the wound for a future flap or graft.

In the Gustilo Anderson Classification, Grade IIIB injuries have a 10-50% infection rate.

Figure 7 outlines the progression of a 33-year-old female with a history of IV drug abuse who presented after being struck by a vehicle. A tetanus booster and antibiotics were administered in the Emergency Department. The patient refused transmetatarsal amputation at initial presentation. She was treated with stabilization of concomitant fractures and dislocations, debridement, and application of wound VAC. She underwent multiple washouts using gravity lavage. Secondary to contamination of the site and severe pain with attempt at dressing change or manipulation of the surgical site, all wound VAC changes were performed in the operating room for the first week. She ultimately went on to a transmetatarsal amputation, followed by a combination of partial and full thickness skin grafts with plastic surgery.

Hyperbaric Oxygen Therapy

Hyperbaric oxygen therapy (HBOT) has been widely used in lower extremity wound care. A patient's whole body is physically exposed to 100% oxygen and atmospheric pressure that is greater than 1 atmosphere absolute (ATA).[11] HBOT provides multiple benefits for wound healing including angiogenesis, fibroblast growth, collagen production, improved osteoclast function, inhibition of α—toxin production in clostridial myonecrosis, improvement in leukocyte killing, decrease in neutrophil adherence to capillary walls, and edema reduction.[12-17] An abso-

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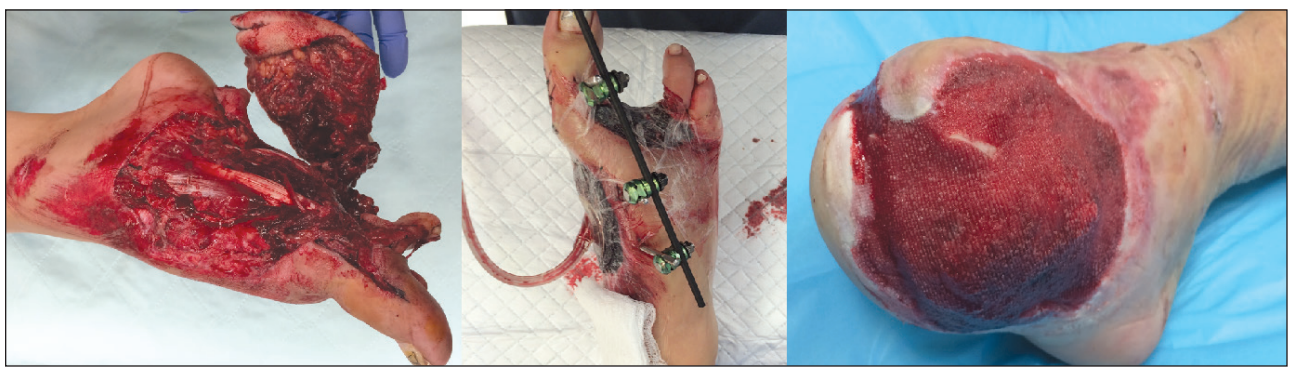

Figure 7: Degloving injury after patient was struck by a vehicle. Following emergent reduction, washout, and partial amputation, patient underwent serial washouts prior to transmetatarsal amputation.

Treatment of degloving injuries may include amputation.

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lute contra-indication to HBOT is an untreated pneumothorax, which may present in the trauma patient. Relative contra-indications include pregnancy, emphysema, pneumonia, bronchitis, cardiac disease, recent thoracic surgery, and hyperthermia.[12]

HBOT has been recommended in lower extremity trauma patients including those with crush injuries, open fractures, compartment syndrome, and thermal burns. These injuries share common pathophysiology of a triad of tissue ischemia, hypoxia, and edema, a gradient of tissue injury, and a capacity for the injury to continue and worsen.[13] All of these injuries include some type of initial "crush" causing a primary zone of destruction which is an area of injured tissue that will be nonviable regardless of intervention. The secondary injury includes a zone of variably injured tissue involving ischemia, hypoxia, and edema. HBOT is targeted at minimizing and preventing secondary injury resulting from ischemia, hypoxia, and edema.[13] A third zone of non-injured tissue may become damaged in a self-perpetuating injury, which is also prevented or improved with HBOT.

HBOT minimizes secondary injury by four main mechanisms.[14,15] Enhanced oxygen delivery can increase the effective diffusion volume up to sixteen-fold. Edema reduction occurs through vasoconstriction, with the high oxygen content of the blood more than compensating for any reduction in blood flow. HBOT disturbs neutrophil adherence to the post-capillary venule leading to re-perfusion and prevention of release of toxic oxygen free radicals. Host factors are improved as leukocyte function is enhanced, which can help to control infection and repair injured tissues.[14,15]

If indicated, HBOT is initiated as soon as the patient is stabilized and any major vascular injury is addressed. Treatment starts at 2.4 ATA for 90 minutes with 100% oxygen. Ten to twelve daily treatments may be required, which would occur alongside debridement, fracture and wound management, and antibiotics.[14]

Although the benefits of HBOT in the trauma patient have been well documented, guidelines for clinical application are limited. Current literature includes case reports and small retrospective series. Garcia-Covarrubias, et al. performed a systematic review including nine papers and 150 patients looking at the use of HBOT in management of crush injury and traumatic ischemia. Most of the studies were retrospective case series with only one prospective controlled randomized trial. The authors determined that eight of the nine studies showed a beneficial effect from HBOT with only one major complication, and concluded that HBOT could be beneficial if administered early.[16]

Hyperbaric oxygen therapy is indicated in patients with crush injuries.

In a retrospective controlled cohort study, Yamada, et al. reviewed patients with crush injuries and open fractures with severities greater than or equal to Guistilo Class IIA. 16 patients received HBOT, and 13 patients were in the control group. The incidence of infection was significantly lower in the HBO group, although durations of the Intensive Care Unit and hospital stays were similar.[17]

A prospective, randomized, blinded, multi-center study is currently underway looking at HBOT in acute open tibia fractures of Gustilo Grade III. Primary outcome measures will look at the incidence of acute complications of the open fracture at 14 days. Long-term follow-up will continue for two years post-injury.[18]

Conclusion

The traumatic wound care patient is complex, typically with associated injuries and contamination of the wound. Patients are typically sensate, which poses a challenge in treatment, debridement, and dressing changes. Recommended management varies based on the etiology of the wound. A thorough exam and assessment for associated bone and soft tissue injury helps to dictate an appropriate treatment plan. Tetanus status should be assessed, and prophylactic antibiotics considered. Basic wound care principles are followed with particular attention to pain control, associated injuries, and infection prevention. **PM**

References

[1] Trott A. Wounds and Lacerations: Emergency Care and Closure. Fourth Edition. Philadelphia, PA: Saunders; 2012.

[2] Pfaff JA, Moore GP. Reducing Risk in Emergency Department Wound Management. Emerg Med Clin N Am 25 (189-201), 2007.

[3] Gomez R, Cancio CLC. Management of Burn Wounds in the Emergency Department. Emerg Med Clin N Am 25 (135-146), 2007.

[4] Browner BD, Jupiter JB, Levine AM, Trafton PG, Krettek C, editors. Skeletal trauma: basic science, management, and reconstruction. 4th ed. Philadelphia, PA: W.B. Saunders Company; 2008.

[5] DeLee JC. Stiehl JB. Open tibia fracture with compartment syndrome. Clin Orthop Relat Res. (160) 175-84, 1981.

[6] Guistilo RB, Anderson JT. Prevention of infection in the treatment of one thousand and twenty-five open fractures of long bones: retrospective and prospective analyses. J Bone Joint Surg Am 58: 453-458, 1976.

[7] Schenker ML, Yannascoli S, Baldwin KD, Ahn J, Mehta S. Does Timing to Operative Debridement Affect Infectious Complications in Open Long-Bone Fractures? A Systematic Review. J Bone Joint Surg (94) 1057-64, 2012.

[8] Isaac SM, Woods A, Danial IN, Mourkus H. Antibiotic prophylaxis in adults with open tibial fractures: what is the evidence for duration of administration: a systematic review. (55) 146-150, 2016.

[9] Dellinger EP, Caplan ES, Weaver LD, Wertz MJ, Droppert BM, Hoyt N, Brumback, Burgess A, Poka A, Benirschke KSK. Duration of preventative antibiotic administration for open extremity fractures. Arch Surg 123: 333-339, 1988.

[10] Boernert K, Ganot G, Ulrich MK, Iselin LD. Preserving the lower extremity after severe degloving injuries to meet the patient's demand in two cases (limb salvage after degloving injury). Trauma Case Reports 15: 8-15, 2018.

[11] Bryant R, Nix D. Acute and chronic wounds: current management concepts. St.

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Louis, MOL Mosby, Elsevier; 2007.

[12] Dougherty JE. The role of hyperbaric oxygen therapy in crush injuries. Crit Care Nurse Q. 36(3) 299-309, 2013.

[13] Buettner MF, Wolkenhauer D. Hyperbaric oxygen therapy in the treatment of open fractures and crush injuries. Emerg Med Clin N Am (25) 177-188, 2007.

[14] Greensmith JE. Hyperbaric oxygen therapy in extremity trauma, J American Ac Othop Surgeons. 12(6) 376-384, 2004.

[15] Strauss MB. Crush injury, compartment syndrome, and other acute traumatic peripheral ischemias. In Kindwall E, Whalen H, editors. Hyperbaric medicine practice. 2nd edition. Flagstaff AZ. Best Publishing Company p 760, 2002.

[16] Garcia Covarrubias L. McSwait N, Can Meter K, Bell RM. Adjuvant hyperbaric oxygen therapy in the management of crush injury and traumatic ischemia: an evidence-based approach. The American Surgeon. 71(144-151), 2005.

[17] Yamada N, Toyada I, Doi T et al. Hyperbaric oxygen therapy for crush injuries reduces risk of complications: research report. UHM 41(4): 283-289, 2-14.

[18] Millar IL. McGinnes RA, Williamson O, Lind F, Jansson K, Hajek M, Smart D, Fernandes T, Miller R, Myles P, Cameron P. Hyperbaric oxygen in lower limb trauma (HOLLT); protocol for a randomized controlled trial. BMJ Open 2015.

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CME EXAMINATION

SEE ANSWER SHEET ON PAGE 145.

1) Basic principles of wound care include all of the following except:

- **A) Addressing host factors such as smoking status, nutrition, and co-morbidities.**
- **B) Ignoring signs of infection when they present at the area of the wound.**
- **C) Edema control**
- **D) Assessing the patient for adequate perfusion**

2) Methods of providing pain control when performing debridement or dressing changes in the sensate patient include:

- **A) Topical lidocaine**
- **B) Local Anesthesia injection**
- **C) Oral analgesics**
- **D) All of the above**

3) Which of the following is NOT true about lacerations:

- **A) You do not need to repair them.**
- **B) Thorough irrigation is the most important step for preventing infection.**
- **C) The average laceration presenting to the ED is 1-3cm.**
- **D) The treating provider should have a high index of suspicion for underlying soft tissue injury.**

4) Appropriate management of burns includes:

- **A) Debridement of necrotic tissue**
- **B) Deferring debridement secondary to pain**
- **C) Saline wet to dry**
- **D) Leaving the wound open to the air**

5) The antibiotic of choice for dog and cat bites is:

- **A) Bactrim**
- **B) Clindamycin**
- **C) Amoxicillin/clavulanate**
- **D) Ciprofloxacin**

6) All of the following are true regarding management of puncture wounds except:

- **A) Tetanus status must be addressed upon presentation.**
- **B) X-rays should be ordered to rule out bony injury or retained foreign body.**
- **C) Ultrasound or MRI may be necessary to rule out soft tissue injury.**
- **D) If present, the penetrating object should be left in the foot.**

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CME EXAMINATION

7) Which of the following is true regarding the rate of infection in the Gustilo Anderson Classification?

A) Grade I injuries have a 10% infection rate.
B) Grade II injuries have a 10% infection rate.
C) Grade IIIA injuries have a 10% infection rate.
D) Grade IIIB injuries have a 10-50% infection rate.

8) All of the following are true regarding crush injuries except:

A) Crush injuries occur when a body part is compressed between two hard surfaces.
B) Crush injuries often lead to ischemia.
C) Compartment syndrome is common in crush injuries.
D) Crush injuries are not painful.

9) Treatment of degloving injuries may include:

A) Conservative care without surgical intervention
B) Amputation
C) High pressure lavage/washout
D) Discharge from the hospital after presentation in the emergency department

10) Hyperbaric oxygen therapy is indicated in patients with the following injury:

A) Crush injury
B) Toe fracture after stubbing foot on bed stand
C) 2 cm laceration
D) Dog bite

SEE ANSWER SHEET ON PAGE 145.

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EXAM #1/19
Management of Wounds in the Trauma Patient (Nasser)

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2.	A	B	C	D	7.	A	B	C	D
3.	A	B	C	D	8.	A	B	C	D
4.	A	B	C	D	9.	A	B	C	D
5.	A	B	C	D	10.	A	B	C	D

Medical Education Lesson Evaluation

Strongly agree [5]	Agree [4]	Neutral [3]	Disagree [2]	Strongly disagree [1]

1) This CME lesson was helpful to my practice ____

2) The educational objectives were accomplished ____

3) I will apply the knowledge I learned from this lesson ____

4) I will makes changes in my practice behavior based on this lesson ____

5) This lesson presented quality information with adequate current references ____

6) What overall grade would you assign this lesson?

A B C D

7) This activity was balanced and free of commercial bias.

Yes _____ No _____

8) What overall grade would you assign to the overall management of this activity?

A B C D

How long did it take you to complete this lesson?

_____hour _____minutes

What topics would you like to see in future CME lessons ? Please list :

_____

_____

_____

_____

_____