EM CASE OF THE WEEK.

BROWARD HEALTH MEDICAL CENTER
DEPARTMENT OF EMERGENCY MEDICINE

BROWARD HEALTH
Care Warriors

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Laceration Repair

A 58 year-old male with no significant past medical history presents to the ED with a laceration to his left thumb secondary to trauma. The patient states that roughly twelve hours prior he was cutting wood on a table saw when his hand slipped and he lacerated his left thumb. He washed out the wound with hydrogen peroxide and applied pressure to stop the bleeding. He denies any fever, chills, nausea, or vomiting. His vital signs are within normal limits. On physical exam, the patient has a 2 cm laceration across the palmar surface of his thumb. Which of the following would be a contraindication to suturing a wound?

A. Uncontrolled diabetes mellitus

B. Swelling, warmth, and erythema of the tissue around the wound

C. A wound that is more than 12 hours old

D. Presence of devitalized or necrotic tissue

Minor skin lacerations can be closed with sutures, staples, tissue adhesives, or surgical tape.

- Sutures are the most common method and should be used in situations that require careful wound approximations.
- Staples can be used in scalp wounds or linear wounds in non-cosmetic areas.
- Tissue adhesives and surgical tape can be used for skin tears and flaps or linear wounds under low tension.

EM Case of the Week is a weekly "pop quiz" for ED staff.

The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

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The correct answer is **B. Swelling, warmth, and erythema of the tissue around the wound.**

An absolute contraindication for wound closure would be if signs of infection are present, such as swelling, warmth, redness, or pain. Other contraindications revolve around factors that increase the risk of wound infection, such as:

- Deep animal bites
- Deep puncture wounds that can't be effectively irrigation
- Wounds that are actively bleeding
- Wounds that are older than 19 hours.

Although there are no established cutoffs on the maximal length of time between injury and laceration repair, the most widely accepted study showed that wounds closed before the 19 hour mark had significantly higher rates of healing compared to those closed later.[1]

Exceptions to this are wounds to the face or scalp because of its superior vascular supply. As long as face and scalp wounds are clean with no signs of infection, they can be closed up to 48 hours after injury.

Discussion

Preparation

Wounds should be copiously irrigated, checked for foreign bodies, and debrided of necrotic tissue. If the wound occurs near a joint or bone, an x-ray should be obtained to rule out any bone or joint involvement. Status of tetanus immunization and allergies to local anesthetics, antibiotics, or latex should be assessed.

Types of Sutures

Suture types are divided into absorbable (Vicryl, Monocryl, PDS, and Dexon) and nonabsorbable (Silk, Ethilon, and Prolene). Absorbable sutures lose their strength over time and are classically reserved for deep sutures, although more recent studies have shown they can be just as effective for skin closures as well.[2]

Wound management and tetanus prophylaxis

Previous doses of tetanus toxoid*	Clean and minor wound		All other wounds¶	
	Tetanus toxoid-containing vaccine△	Human tetanus immune globulin	Tetanus toxoid-containing vaccine△	Human tetanus immune globulin◇
<3 doses or unknown	Yes§	No	Yes§	Yes
≥3 doses	Only if last dose given ≥10 years ago	No	Only if last dose given ≥5 years ago¥	No

Aftercare

Wounds should be covered with an antibiotic ointment, such as bacitracin, or Xeroform nonadherent sterile gauze. Dressings should remain in place for at least 24 hours. Nonabsorbable sutures may be cleaned with mild soap and water. Absorbable sutures break down rapidly if exposed to water and therefore should be kept dry.

Prophylactic antibiotics should be considered in the following patients:

- Bite wounds
- Excessively dirty wounds
- Intraoral lacerations
- Open fractures
- Vascular insufficiency
- Immunocompromised
- Wounds that involve cartilage, joints, or tendons

Suture Removal and Follow Up

Clean wounds do not require follow up until it is time for suture removal. Dirty wounds should be checked for signs of infection after 48 to 72 hours. The timing for suture removal depends on the location.

- Eyelids – Three days
- Neck – Three to four days
- Face – Five days
- Scalp – 7 to 14 days
- Trunk and upper extremities – Seven days
- Lower extremities – 8 to 10 days

For a list of educational lectures, grand rounds, workshops, and didactics please visit ***BrowardER.com*** and **click** on the ***"Conference"*** **link**.

All are welcome to attend!

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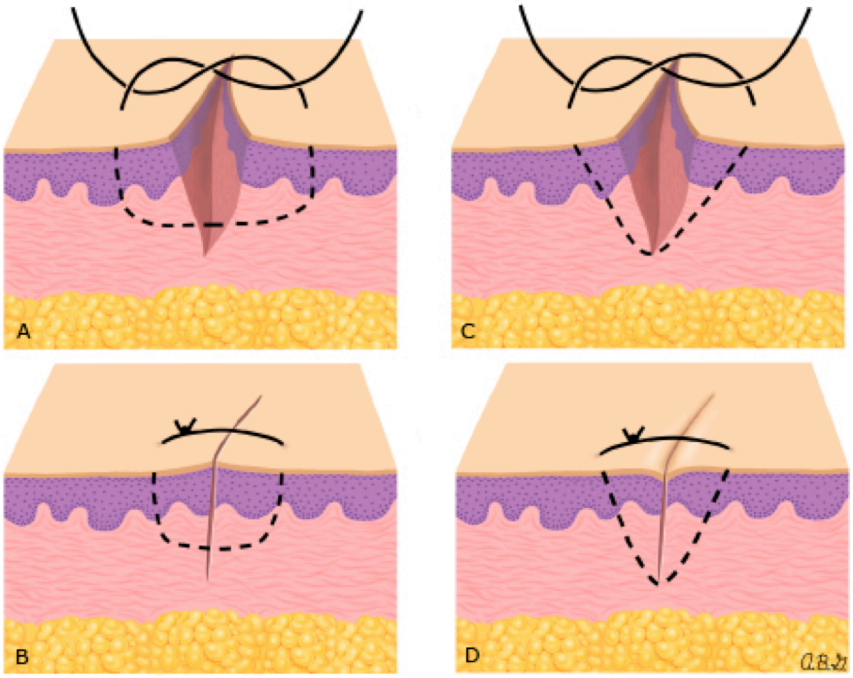
Volume 4 | Issue 24

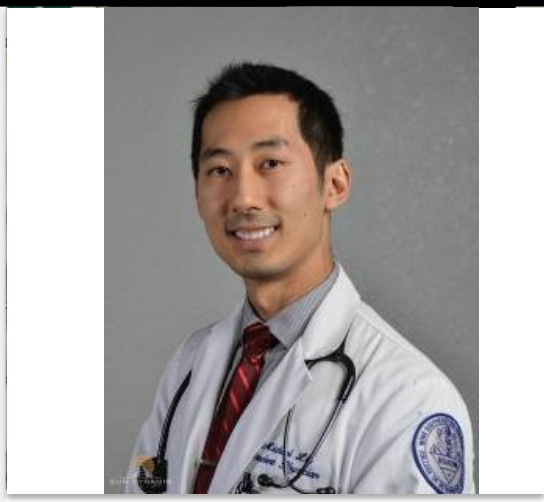


Suture Technique
Proper suture technique results in eversion of the wound edges, as illustrated in panel B above.

1. Needle should be inserted into the skin at a 90 degree angle.
2. Suture loop width should be the same at the surface and at the base.
3. Suture depth and width should be the same on both sides of the wound.

Take Home Points

- To prevent tissue infection, wounds should be copiously irrigated, checked for foreign bodies, and debrided of necrotic tissue.
- Next, status of tetanus immunization and allergies to local anesthetic, antibiotics, and latex should be assessed.
- Wound should be sutured so that wound edges are everted.
- Once sutured, the wound should be covered with an antibiotic ointment and nonadhesive dressing.



ABOUT THE AUTHOR

This month's case was written by Michael Lin. Michael is a 4th year medical student from NSU-COM. He did his emergency medicine rotation at BHMC in October 2017. Michael plans on pursuing a career in Internal Medicine after graduation.

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