AMERICAN COLLEGE OF EMERGENCY PHYSICIANS
SCIENTIFIC ASSEMBLY
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Avoiding a Subpoena: Controversies in Wound Management

Emergency physicians must evaluate and treat patients with retained foreign bodies, puncture wounds, fingertip injuries, and dirty wounds. Using case presentations, the lecturer will address controversial issues involving wound management and how to avoid being sued.

- List the three areas of wound management that are at the highest risk for complications.
- Discuss the management of the dirty wound.
- Discuss the management of retained foreign bodies.

TU-98
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3:00 PM - 3:55 PM
Room # N227
Las Vegas Convention Center

FACULTY

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Why discuss the medico-legal aspects of wound care?

Wound related cases comprised 24% of closed claims against emergency physicians. The wound cases accounted for 4% of the dollars paid out. Wound related law suites are routinely reported to be among the top 8 causes of law suits against emergency physicians

Reference

Karcz A, Holbrook J, Auerbach BS, et al: Preventability of malpractice claims in emergency medicine: A closed claims study. Ann Emerg Med, 1990;19(8):865-873.

Quick review of why Emergency Physicians get sued:

1) Patients and families are frightened with all the un's"
   Uncertainties – what's going to happen to me?
   Unknowns – what's wrong with me?
   Unscheduled - not planned for
   Unframiliars - strange setting and new doctor?
2) Long waits - brief visits
3) Costs
4) Poor communication
5) Lack of an established relationship
6) Missing, illegible - just poor documentation
7) A need to blame someone or something

To recover damages for alleged malpractice the plaintiff must prove the following:

1) That the physician in question breached the applicable standard of care by act or omission during his or her treatment of the plaintiff;
2) That the plaintiff was injured;
3) That the injury was a result of the breach of the standard of care (the 'cause in fact' requirement); and
4) That it would be reasonable to hold the physician liable for the injury because the injury was the foreseeable result of the alleged negligence.

Reference

Studies in proximate cause-breaking the "liability chain", Emergency Physician Legal Bulletin Vol 8, No.6, 1998.

Why do EM physicians get sued for wound care?

Interestingly, poor cosmetic outcome is not the major reason, nor failure to refer to a plastic surgeon. The three most common causes of successful litigation revolve around the following:

1. Failure to diagnose a foreign body (44%)
2. Wound infection (which may lead to a poor cosmetic outcome) (27%)
3. Failure to detect underlying anatomic lesion (penetration of joint capsule, tendon or nerve involvement) (22%)

Physician Insurance Association of America (PIAA)-

email at Research@phyins.org -

Physician run - malpractice insurance - sponsored organization. Sample data gathered by PIAA as it relates to Emergency Medicine Physicians:

1. EM ranks 15/28 specialty groups in claims reported
2. 24% of all claims closed resulted in payment to the plaintiff
3. Median EM indemnity was $130,000 - median overall Was $125,000

Most Prevalent Medical Misadventures

1. Errors in diagnosis accounted for 50%
2. Improper performance 12%
3. Not performed 2%
4. Failure to admit <1%
5. Failure to consult <1%
6. Medication errors <1%

Most Prevalent Patient Conditions

1. Acute MI 18.8%
2. Appendicitis 18.6%
3. Meningitis 9.6%
4. Wound related 8 - 13%

Wounds and clinical situations that warrant caution.

Bites *especially cat bites
The possibility of foreign body - especially organic substances
High pressure gun injuries (grease, paint, hydrocarbons)
Wounds in proximity to joints (the famous fight bite)
Blunt contaminated wounds

Foot wounds
Zone 1 puncture wounds on the sole of the foot
Lacerations extending into a bursae

How to avoid errors and law suits

Talk to the patient - explain risks and benefits of different approaches
Tell the patient that the wound will leave a scar
Prepare a bloodless field for examination
Use good lighting
Examine extremity injuries through a complete range of motion
Liberal use of delayed primary closure
Use xray and ultrasound to identify foreign bodies
Re-examine all suspicious wound in 48 hours
Consult and refer complicated wounds

Of note: major monetary losses against emergency physicians has resulted from the evaluation of intoxicated patients (and the inherent difficulty in their evaluation) and the failure of lines of communication between radiology and emergency medicine.

Cases

The case of Rusty Lafoot: A 16 year old high school basketball player is brought to the ED by his parents for a puncture wound of the right foot. The injury occurred in the family barn on a broken board with a rusty nail two hours prior to the visit. The nail penetrated the sock and athletic shoe on its way to the sole of the foot. A small puncture wound is noted over the second metatarsophalangeal joint. Can we prevent the impending disaster?

The case of Arthur Dekko@ In a domestic squabble Mr. Dekko smashes his right fist through a glass window. Dr. Torren Flexor notes two lacerations of the right wrist and hand: a 3.5 cm lac (that raised it to the next billing level) at the base of the right thenar eminence extending into the abductor pollicis brevis muscle and a 0.5 cm puncture wound of the volar wrist. The wound is irrigated and sutured. A complete laceration of the flexor carpi radialis is diagnoses 6 weeks later. How was this missed?

The case of Sam Carp: A 20 year old man is filleting a fish when his knife slips and cuts him on the left nondominant hand. He sustains a 1 cm laceration over his index finger MCP joint. He is able to fully extend his finger

at the MCP, PIP and DIP joints. There is no pain on palpation of the joint itself. He is normally healthy and sustained the injury 2 hours ago. What would you do?

To close or not to close? : A 47 year old homeless alcoholic is sleeping in a trash dumpster. He is suddenly awakened by a garbage truck and sustains a scalp laceration from the dumpster lid. He presents to your ED 6 hours later. What steps can be taken to minimize the risk of wound infection? What if you decide not to close the wound?

The case of Rex Ray: A 6 year old boy is riding his bike when he crashes on a gravel driveway. He sustains lacerations of his right palm and both knees. Two small pieces of gravel are removed from a 5 cm laceration of his R knee. What imaging modalities, if any, would you consider using as part of your would evaluation and treatment?

A little brutane please - call in the gang: A muscular 19 year old male wearing gang colors sustains a facial laceration in an altercation. He presents to your ED 4 hours later. As you approach him with a syringe to anesthetize the wound, he informs you that he will not tolerate any pain. What steps can you take to make the wound repair a pleasant experience for both you and the patient?

The case of Jock Law: A 60 year old man steps on a nail and sustains a puncture would of his right foot. He has a history of hypertension and ulcers. He cannot remember when the last time was he received a tetanus shot. What would you do?

Could it be the dog?: 32 year old women presents to the emergency department complaining of “shooting pains” in the left arm followed by numbness. 2 months earlier she had been bitten by a dog in Nepal

Rabies cases; 32 cases reported from 20 states from 1980 - 1996. Source of the rabies was confirmed in 7 cases and suspected in the others. 6 were confirmed to come from dog bites outside the U.S. and 1 from a bat. Of the suspected; 17 were from bats, 12 from dogs outside the U.S. , 2 from domestic dogs indigenous to the U.S. and 1 from a skunk.

Case Records of the Massachusetts General Hospital, N Engl J Med, 1998;339:105-112.

A. Wound Evaluation and Exploration

History:

1) Tetanus immunization status of the host.

2) Mechanism of trauma (blunt vs sharp), bite, potential for foreign body. Clay and organic soils markedly increase the risk of wound infection.

3) Assess of the immune status of the host. High risk hosts include those with malnutrition, obesity, steroid use, peripheral vascular disease, insulin dependent diabetes, lymphedema, asplenism, liver disease, or other chronic debilitating illnesses.

Physical Examination:

1) Assess the neurovascular status and the risk of such an injury.
2) Effective anesthesia/analgesia before the thorough exam
3) A bloodless field with proper lighting
4) Range of motion to completely assess tendons

Reference:

Simon B, Principles of wound management, In Rosen P, Barkin R (eds): Emergency Medicine, ed 4, St. Louis, 1998, Mosby-Year Book inc.

Howell J, Chisholm C: Pitfalls in Wound Management. EM Clinics of North America. 1996. 14: .

B. Preventing Wound Infection:

1) Wound preparation;
   - scrub the intact skin around the wound periphery with antiseptic cleanser (Betadine, Hibicleans) or nonionic surfactant (Shurclens, Pharmaclens). Irrigated with NSS or 1% Betadine solution with 5-8 psi. An 18-20 gauge plastic catheter on a 30 cc syringe provides optimal irrigation pressures.
   - debride devitalized tissue, remove all foreign matter
   - clip hair
2) Delayed primary closure of wounds at 4 - 6 days
3) Oral antibiotics may in selected high risk wounds (cat bites and large through and through lip lacerations)
4) Elevation, splint, follow up.
5) Careful not to undermine too much

References:

Edlich, RF: Principles of Emergency Wound Management. Ann Emerg Med 17:1284-1302, 1988

Chisholm CD: Wound Evaluation and Cleansing. EM Clin North

America 10:655-72, 1992

C. Foreign Bodies

1) Metals, gravel, glass, and most bones are visible with plain radiographs. glass and gravel > 1 mm thick is detectable (Light bulb glass might be missed) (Some fish bones are not radio-opaque).
2) Organic substances such as wooden splinters, thorns and cotton fibers constitute the most risk of going undetected. CT scanning has the highest ield but may be impractical in the acute setting. Ultrasonography is less expensive and more practical but is not as reliable,

Note: Never tell the patient that there is nothing left in the wound ("to the best of my ability I cannot find any more gravel in the wound, but there may he small pieces still present that I cannot detect")

Reference:

Hudson DA, de Chalain TM, Hand infections secondary to fish bone injuries, Ann R Coll Surg Eng, 1994, Mar 76(2):99-101

Hone SW, Fenton J, Clarke E, Hamilton S, McShane D, The radio-opacity of fishbones: a cadaveric study, Clin Otolayngology 1995 Jun;20(3):234-5

Lammers RL, Magee T. Detection & Management of Foreign Bodies in Soft Tissue, FM Clinics of North America Nov. 992; 767-78

Russell RC, et al. Detection of Foreign Bodies in the Hand. J Hand Surgery 1991; 16A:2-1 1.

Ultrasound:

Hill R, Conron R, Greissinger P, Heller M, Ultrasound for the detection of foreign bodies in human tissue, Ann Emerg Med 1997 Mar;29(3):353-6.

Manthey D, et al. Ultrasound Versus Radiograph in Foreign Body Detection, Annals Emerg Med, 1996 Jul;28(1):7-9

Al-Zahrani S, et al: Ultrasound Detection of Radiolucent Foreign Bodies in Soft Tissue Compared to Coputed Tomography Scan. Ann Saudi Med 1995; 15:110-112.Glass:

Glass

Avner JR, et al. Lacerations Involving Glass: The Role of Routine Roentgenograms American Journal Dis Child 1992 2 1: 1365-1368.

Courter, BJ. Radiographic Screening for Glass Foreign Bodies - What Does a "Negative" Foreign Body Really Mean? Ann Emergency Medicine 1990; 19:997-1000.

Gravel

Chishoim C, Wood C et al: Radiographic Detection of Gravel Foreign Bodies in Soft -Tissue Wounds. Acad Emerg Med 1996; 3: 542 (abstract). Submitted for publication, Annals of Emerg Med.

D. Pain Reduction

1) Buffer lidocaine or mepivacaine with or without epinephrine by adding 1 cc of bicarb to 10 cc of anesthetic. Bupivicaine is buffered by adding 0.1 cc of bicarb to 10 cc of anesthetic.
2) The slower the injection and smaller the needle the less pain
3) Warming the agent to room temperature will also reduce the pain
4) Tape small low tension
5) Tissue adhesives, topical anesthetics and use of sedation may all be helpful in carefully selected patients.

References:

Bartfield JM: Buffered Versus Plain Lidocaine As a Local Anesthetic For Simple Laceration Repair. Ann Emerg Med 1 9:1 3 87-9, 1990

Parham SM, Pasieka JL, Effect of PH modification by bicarbonate on pain after subcutaneos lidocaine injection, Can J Surg 1996 Feb;39(1):31-5

Ursell PG, Spalton DJ, The effect of solution temperature on the pain of peribulbar anesthesia, Ophthalmology 1996 May;103(5):839-41.

Mizrahi S: Use of Tissue Adhesives In The Repair of Lacerations in Children. Jour Pediatr Surg23:3 12-3, 1988

E. Plantar Puncture Wounds

1) Most are not explored because most do well with no care, it is a difficult area to anesthetize and more harm may be done by the exploration.
2) There is little or no science to refer to. Small case series and case reports suggests the following guidelines for aggressive irrigation and debridement:

-Beware of the plantar surface of the foot from the heads of the metatarsals to the web spaces.

-History or physical exam that suggests the possibility of organic foreign matter must be explored

-Diabetics and other patients with comprised blood flow should be placed on antibiotics with aggressive localized wound care and early follow up.

Reference:

Patzakis MJ, Wilkins J, Brien WW, Carter VS, Wound site as a predictor of complications following deep nail punctures to the foot, West J Med 1989

May;150(5):545-7

Miron D, Raz R, Kaufman B, Fridus B, Infections following nail puncture wound of the foot: case reports and review of the literature, Isr J Med Sci 1993 Apr;29(4):194-7.

Schwab RA, Powers RD: Conservative Therapy of Plantar Puncture Wounds. J Emerg Med 1995; 13: 291-295.

F. Nailbed Injuries:

1) Assess the potential damage to the underlying nailbed.

2) No hard and fast rules: In general hematomas involving less than 50% of the nailbed are treated with drainage only. Hematomas involving greater than 50% of the nailbed surface are treated by removal of the nail followed by nailbed repair with 6-0 absorbable suture. In all cases it is important to warn the patient of the possibility of nail growth disturbance.

3) Adhesion of the eponychium is prevented by using the nail as a splint or by packing the proximal nail fold with nonadherent gauze.

References:

Simon RR: Subungual Hematoma: Association With Occult Laceration Requiring Repair. Amer J Emerg Med *5:302-4,* 1987

Seaberg DC: Treatment of Subungual Hematomas With Nail Trephination: A Prospective Study. Amer J Emerg Med 9:209-1 0, 99