Soft Tissue Injuries

Chapter 24
Introduction

• Soft-tissue injuries are common.
  – Simple as a cut or scrape
  – Serious as a life-threatening internal injury
• Do not be distracted by dramatic open wounds.
  – Do not forget airway obstructions.
Three types of soft-tissue injuries

- Closed injuries
  - Damage is beneath skin or mucous membrane.
  - Surface is intact.

- Open injuries
  - Break in surface of skin or mucous membrane
  - Exposes deeper tissues to contamination

- Burns
  - Damage results from thermal heat, frictional heat, toxic chemicals, electricity, nuclear radiation
A contusion (bruise) causes bleeding beneath the skin but does not break the skin.

- Caused by blunt forces
- Buildup of blood produces blue or black ecchymosis.

A hematoma is blood collected within damaged tissue or in a body cavity.
A crushing injury occurs when a great amount of force is applied to the body.

Extent of damage depends on:
- Amount of force
- Length of time force is applied

When an area of the body is trapped for longer than 4 hours, crush syndrome can develop.
Compartment syndrome

- Compartment syndrome results from the swelling that occurs whenever tissues are injured.
- Severe closed injuries can also damage internal organs.
  - Assess all patients with closed injuries for more serious hidden injuries
An abrasion is a wound of the superficial layer of the skin.

- Caused by friction when a body part rubs or scrapes across a rough or hard surface.
Laceration

• A laceration is a jagged cut.
  – Caused by a sharp object or blunt force that tears the tissue

• An incision is a sharp, smooth cut.
Avulsion/Amputation

- An avulsion separates various layers of soft tissue so that they become either completely detached or hang as a flap.
  - Often there is significant bleeding.
  - Never remove an avulsion skin flap.
- An amputation is an injury in which part of the body is completely severed.
A penetrating wound is an injury resulting from a sharp, pointed object. 

- Can damage structures deep within the body
Stabbings and shootings often result in multiple penetrating injuries.

- Assess the patient carefully to identify all wounds.
- Count the number of penetrating injuries.
- Determine the type of gun and rounds fired, and document your care.
- You may have to testify in court.
• Blast injuries
  – Primary blast injury
    • Damage caused by pressure of explosion
  – Secondary blast injury
    • Damage results from flying debris
  – Tertiary blast injury
    • Victim is thrown by explosion, perhaps into an object
Emergency medical care

- Remember ABC and C-spine
- Treat closed soft-tissue injury using the RICES mnemonic:
  - Rest
  - Ice
  - Compression
  - Elevation
  - Splinting
- Watch for signs of shock
Abdominal wounds

• If organs are protruding: (Evisceration)
  – Cover the wound with sterile gauze.
  – Secure with an occlusive dressing.
  – Keep the organs moist and warm
Impaled objects

– Only remove an impaled object when:
  • The object is in the cheek and obstructs breathing.
  • The object is in the chest and interferes with CPR.

• Otherwise: stabilize the object with bulky dressing
Neck injuries

- Open neck injuries can be life threatening.
- Open veins may suck in air and cause cardiac arrest.
- Cover the wound with an occlusive dressing.
- Apply pressure but do not compress both carotid arteries at the same time.
Small-animal bites

– A small animal’s mouth is heavily contaminated with virulent bacteria.

– Wounds may require:
  • Antibiotics
  • Tetanus prophylaxis
  • Suturing

– Bites should be evaluated by a physician.
Burns

- Burns account for over 10,000 deaths/year.
- Burns are the most serious and painful injuries
- Remember to perform a complete assessment on burn patients for other injuries
Determining Burn Severity

• What is the depth of the burn?
• What is the extent of the burn?
• Are any critical areas involved?
• Are there any preexisting medical conditions or other injuries?
• Is the patient younger than 5 years or older than 55 years of age?
**Depth of Burns**

- **Superficial (first-degree) burns** - Involve only top skin layer
- **Partial-thickness (second-degree) burns** - Involve epidermis and some portion of dermis
- **Full-thickness (third-degree) burns** - Extend through all layers of skin
Extent of Burns

- The Rule of 9’s
- Each portion of the body is given a percentage to determine how much of the body had been affected
Critical Burns

- Full-thickness burns involving hands, feet, face, upper airway, genitalia, or circumferential burns of other areas
- Full-thickness burns covering more than 10% of total body surface area
- Partial-thickness burns covering more than 30% of total body surface area
- Burns associated with respiratory injury
- Burns complicated by fractures
- Burns on patients younger than 5 years old or older than 55 years old that would be classified as moderate on young adults
Moderate Burns

• Full-thickness burns involving 2% to 10% of total body surface area excluding hands, feet, face, upper airway, or genitalia
• Partial-thickness burns covering 15% to 30% of total body surface area
• Superficial burns covering more than 50% of total body surface area
Minor Burns

- Full-thickness burns involving less than 2% of the total body surface area
- Partial-thickness burns covering less than 15% of the total body surface area
- Superficial burns covering less than 50% of the total body surface area
Pediatric Needs

- Burns to children are considered more serious than burns to adults
- Children have more surface area relative to body mass than adults
- Many burns result from abuse
- Report all suspect cases of abuse to the authorities
Burns in Infants and Children

• Critical:
  – Full-thickness burns covering more than 20% of total body surface area
  – Burns involving hands, feet, face, upper airway, genitalia

• Moderate:
  – Partial-thickness burns covering 10% to 20% of total body surface area

• Minor:
  – Partial-thickness burns covering less than 10% of total body surface area
Emergency Care for Burns
Initial Treatment

- Follow proper BSI precautions
- Move patient away from burning area
- Check ABC’s
- Immerse affected area in cool sterile water or saline solution and cover with cool, wet dressing
Treatment and Transport

- Provide high-flow oxygen
- Prevent body heat loss
- Rapidly estimate the burn’s severity
- Check for traumatic injuries
- Make transport decision
- Call ALS if needed
- Treat the patient for shock
- Provide prompt transport
Chemical Burns

- Occur whenever a toxic substance contacts the body.
- Eyes are particularly vulnerable.
- Fumes can cause burns.
- To prevent exposure, wear appropriate gloves and eye protection.
Care for Chemical Burns

• Remove the chemical from the patient.
• If it is a powder chemical, brush off first.
• Remove all contaminated clothing.
• Flush burned area with large amounts of water for about 15 to 20 minutes.
• Transport quickly.
Chemical Burn to the Eye

• Hold open eyelid while flooding eye with a gentle stream of water.
• Continue flushing en route to hospital.
Electrical Burns
Scene Safety

• Make sure power is off before touching patient.
• There will be two wounds (an entrance and an exit wound) to bandage.
• Transport patient and be prepared to administer CPR.
• The skin protects the body by keeping pathogens out, water in, and assisting in body temperature regulation.

• There are three types of soft-tissue injuries: closed injuries, open injuries, and burns.
• Closed soft-tissue injuries are characterized by a history of blunt trauma, pain at the site of injury, swelling beneath the skin, and discoloration.

• Treat a closed soft-tissue injury with the mnemonic RICES: Rest, Ice, Compression, Elevation, and Splinting.
Open injuries differ from closed injuries in that the protective layer of skin is damaged. Abrasions, lacerations, avulsions, and penetrating wounds are classified as open injuries.
• The assessment of an open injury is generally easier than the assessment of a closed injury because you can see the injury.

• Burns are serious and painful soft-tissue injuries caused by heat (thermal), chemicals, electricity, or radiation.
Burns are classified primarily by the depth and extent of the burn injury and the body area involved.

Burns are considered to be superficial, partial-thickness, or full-thickness based on the depth involved.
• Small animal and human bites can lead to serious infection and must be evaluated by a physician. Small animals can carry rabies.

• Dressings and bandages are designed to control bleeding, protect the wound from further damage, prevent further contamination, and prevent infection.