Caring for Clients with Musculoskeletal Trauma

CHAPTER 41

Musculoskeletal Trauma

- Tissue is subjected to more force than it can absorb
- Severity depends on:
  - Amount of force
  - Location of impact

Musculoskeletal Trauma

- Mild to severe
- Soft tissue
- Fractures
  - Affect function of muscle, tendons, and ligaments
- Complete amputation

Preventing Trauma

- Teach importance of using safety equipment
  - Seat belts
  - Bicycle helmets
  - Football pads
  - Proper footwear
  - Protective eyewear
  - Hard hats

Older Clients

- At highest risk
- Falls
- Safety in the home
  - Lighting
  - Handrails
  - Throw rugs
  - Bath mats and grab bars
  - Shoes with good treads

Soft Tissue Trauma

- Contusion
  - Bleeding into soft tissue
  - Significant bleeding can cause a hematoma
  - Swelling and discoloration (bruise)

Soft Tissue Trauma - Sprain

- Ligament injury
- Twisting motion
- Overstretching or tear
  - Grade I—mild bleeding and inflammation
  - Grade II—severe stretching and some tearing and inflammation and hematoma
  - Grade III—complete tearing of ligament
  - Grade IV—bony attachment of ligament broken away

Soft Tissue Trauma - Strain

- Microscopic tear in the muscle
- May cause bleeding
- “Pulled muscle”
- Inappropriate lifting or sudden acceleration-deceleration

Soft Tissue Trauma

- Diagnosis
  - X-ray to rule out fracture
  - MRI

Soft Tissue Trauma

- To decrease swelling and pain, and encourage rest
  - Ice for first 48 hours
  - Splint to support extremities and limit movement
  - Compression dressing
  - Elevation to increase venous return and decrease swelling
  - NSAIDs

Soft Tissue Trauma – Nursing Care

- Assessment
  - Mechanism of injury
  - Protective devices
  - Pain assessment
  - Inspection for redness, swelling, deformity
  - Range of motion
  - Palpation for warmth, tenderness, crepitus

Soft Tissue Trauma – Nursing Care

- Teaching
  - Promote comfort
  - Prevent further injury
  - Allow healing

Soft Tissue Trauma – Nursing Care

- Pain control
  - RICE
    - Rest
    - Ice
    - Compression
    - Elevation
  - Heat after several days
  - NSAIDs
- Impaired physical mobility

Fractures

- Break in the continuity of bone
  - Direct blow
  - Crushing force (compression)
  - Sudden twisting motions (torsion)
  - Severe muscle contraction
  - Disease (pathologic fracture)

Fractures

- Closed or simple
- Open or compound
- Complete or incomplete
- Stable or unstable
- Direction of the fracture line
  - Oblique
  - Spiral
  - Lengthwise plane (greenstick)

Fracture Healing

- Affected by age, physical condition, and type of fracture
- Damage occurs to blood vessels forming a hematoma
- Local inflammatory response

Figure 42-1. Fracture healing.

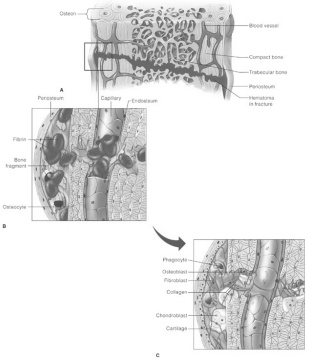
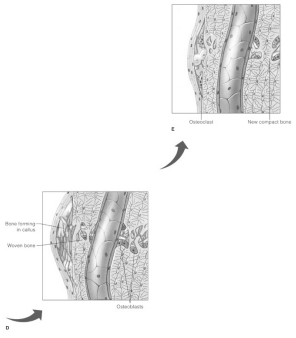


Figure 42-1. (continued) Fracture healing.



Fracture Healing

- Starts within 48 hours
- Healing time varies
  - 6–8 weeks to 12–16 weeks for a fractured hip

Fractures

- Deformity
- Swelling, ecchymosis
- Pain
- Tenderness
- Numbness
- Crepitus
- Muscle spasms

Fractures - Complications

- Infection
  - Risk with open fractures
  - Shock
  - Pelvic and femur fractures
  - Compartment syndrome

Compartment Syndrome

- Excess pressure restricts blood vessels and nerves within a compartment
- Bleeding or edema
- External compression of the limb
- Nerve damage occurs within 30 minutes
- Impaired tissue perfusion and necrosis
- “5 Ps”

Compartment Syndrome

- Pain unrelieved by narcotic analgesics
- Pallor and decreased capillary refill
- Paresthesias
- Paresis or paralysis
- Pulselessness

Fractures - Complications

- Fat embolism
  - Fat globules lodge in a pulmonary vessel or peripheral circulation
  - Femur (long bone) is at high risk
  - Occurs within few hours to a week after injury

Fractures - Complications

- Delayed union
  - Prolonged healing
    - Delayed fracture reduction
    - Inadequate immobilization
    - Infection
    - Age

Fractures – Nursing Care

- Needs prompt treatment
- Goal is to reduce (restore normal alignment) and immobilize

Fractures – Emergency Care

- Immobilize before moving client
- Joint above and below
- Check pulse, color, movement, sensation before splinting
- Sterile dressing for open wounds

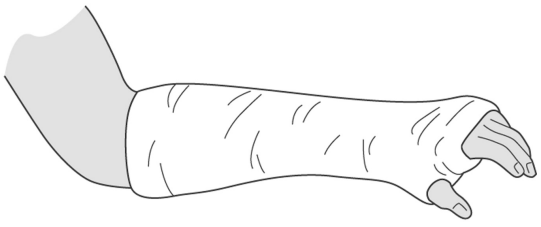
Fractures – Emergency Care

- Fracture reduction
  - Closed—external manipulation
  - Open—surgery

Casts

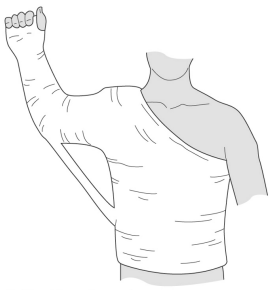
- Rigid device to immobilize bones and promote healing
- Plaster or fiberglass
- Joints above and below fracture
- Avoid pressure until cast is dry
- Type of cast depends on type of fracture

Figure 42-2. Common types of casts.



A Short arm cast

Figure 42-2. (continued) Common types of casts.

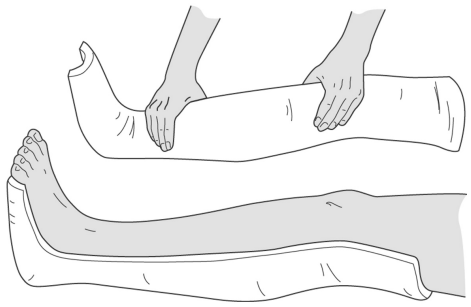


B Shoulder spica cast

Casts – Nursing Care

- Observe for swelling, blood flow, and nerve damage
- Bivalve casts

Figure 42-3. Bivalving a cast.



Traction

- Used to straighten or pull force to decrease muscle spasms and restore proper alignment
- Manual
- Skin
- Skeletal
- Straight
- Balanced suspension

Figure 42-4. (A) Buck's traction, a straight, skin traction.

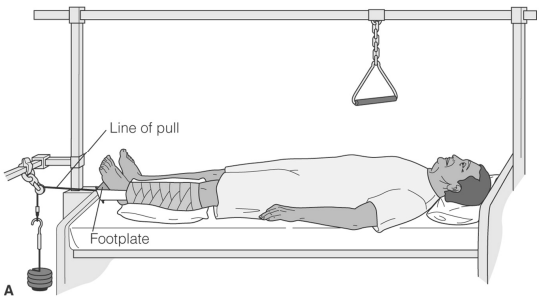


Figure 42-4. (continued). (B) Balanced suspension traction for a femur fracture.

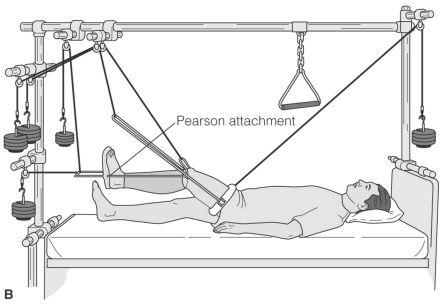
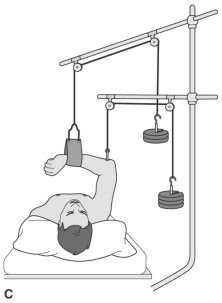


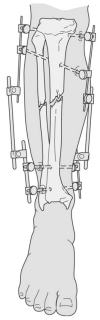
Figure 42-4. (continued) (C) Skeletal traction to stabilize a fractured humerus.



C

Surgery

- Align and stabilize fractured bone
- External fixator
- Internal fixation
  - ORIF



Fractures – Other Interventions

- Analgesics
- NSAIDs
- Parenteral pain medications
- Stool softeners
- Anti-ulcer drugs
- Electrical bone stimulation

Fractures – Nursing Care

- Assessment
  - Pain
  - Pulses
  - Sensation
  - Skin color
  - Temperature
  - Motion

Fractures – Nursing Care

- Pain
- Impaired Mobility
- Risk for Ineffective Tissue Perfusion
- Evaluate effectiveness
  - Pain control
  - Safety and mobility
  - Tissue perfusion

Fractures

- Teaching
  - Care at home
  - Risk for falls

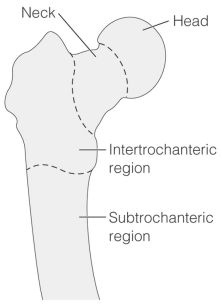
Older Adults

- Decreasing fractures
  - Fall prevention
  - High risk for hip fractures
    - Decreased bone mass and muscle strength
    - Slowed reflexes
    - Medications affecting cognition and balance
    - Osteoporosis

Hip Fracture

- Break in the femur at the head, neck, or trochanter regions
  - Intracapsular
  - Extracapsular
- Pain, shortening, and external rotation of the affected lower extremity

Figure 42-8. The *head* of the femur fits into the socket of the pelvis. The *neck* is the narrower area below the head. The *trochanteric* region is below the neck.



Hip Fracture

- Buck's traction
- ORIF
- Arthroplasty
- Total hip replacement

Hip Fractures – Nursing Care

- Pain
- Impaired Physical Mobility
- Impaired Skin Integrity

Hip Fractures – Nursing Care

- Evaluation
- Documentation
- Continuity of care
- Plan for discharge
- Inclusion of family
- Teaching

Joint Trauma

- Dislocation
  - Separation of contact between two bones of a joint
  - Trauma or spontaneous
- Subluxation
  - Partial separation

Joint Trauma

- Pain
- Change in shape of joint
- Change in length of extremity
- Immobility
- Change in the axis of the bone

Dislocations

- Manual traction to reduce dislocation
- Narcotics
- Muscle relaxants
- Conscious sedation to control pain

Joint Trauma – Nursing Care

- Assessment of pain, neurovascular status
- Traction to maintain alignment
- Implement care to prevent complications of immobility
- Teaching
  - Immobilization recommendations
  - Skin care
  - Pain control
  - Rehabilitation exercises

Repetitive Use Injuries

- Results from repeated twisting and turning of joint
- Carpal tunnel syndrome
- Bursitis
- Epicondylitis

Carpal Tunnel Syndrome

- Most common work-related injury
- More common in women than men
- Tunnel narrows, compressing median nerve
- Numbness and tingling of thumb, index finger, and middle finger
- Weakness of affected hand

Bursitis

- Inflammation of the bursa (fluid-filled sac)
- Shoulder, hip, leg, elbow
- Pain

Epicondylitis

- Inflammation of a tendon
- Tennis elbow, golfer's elbow
- Repeated trauma causes tears, bleeding, and inflammation

Repetitive Use Injuries

- Diagnosis related to cause
- Phalen's test for carpel tunnel
- Initial treatment is rest and immobilization of joint

Repetitive Use Injuries - Treatment

- NSAIDs
- Surgery for carpel tunnel to enlarge tunnel and relieve pressure on nerve

Repetitive Use Injuries – Nursing Care

- Pain control
- Impaired physical mobility
- Teaching focused on cause and prevention

Amputation

- Partial or total removal of body part
- Treat cancer
- Chronic condition
  - Peripheral vascular disease
  - Diabetes
- Trauma

Amputation

- Impaired blood flow
- Untreated infection
- Gangrene
- PVD
  - Impaired circulation
  - Edema and tissue damage
- Level determined by extent of tissue damage

Figure 42-11. Common sites of amputation. (A) The upper extremities and (B) the lower extremities.

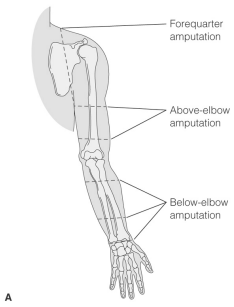
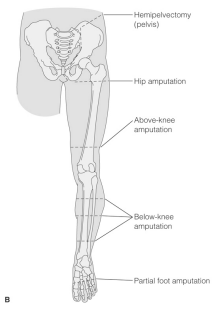


Figure 42-11. (continued) Common sites of amputation. (A) The upper extremities and (B) the lower extremities.



Amputation - Complications

- Infection
- Delayed healing
- Contractures
- Phantom pain

Amputation

- Open wound (guillotine)
- Done when infection is present
- Stump is left open to drain
- Wound closed when infection is cleared

Amputation

- Closed (flap)
  - Skin is formed to cover end of wound
  - Rigid plaster shell or soft compression dressing applied
- May have a temporary prosthesis
- Once the stump is healed, client is fitted for a prosthesis

Amputation – Nursing Care

- Relieve pain, promote healing, and prevent complications
  - Pain
  - Risk for Infection
  - Risk for Dysfunctional Grieving
  - Disturbed Body Image
  - Impaired Physical Mobility

Amputation

- Teaching
  - Knowledge to care for needs
  - Home management