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.
Casts – Nursing Care

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