

Musculoskeletal Trauma

Fall Prevention

- Eliminate scatter rugs
- Use supportive shoes that have good grip
- Use a walker or cane for support

Sports-Related Injuries

- Impingement syndrome
 - Soft tissues or nerves trapped under coracromial arch
 - NSAIDs, rest, ROM and strengthening
- Rotator cuff tear
 - Rest, NSAIDs and strengthening, surgery if severe
- Skin splints
 - Periostitis in shin – ice, stretching and supportive shoes
- Tendonitis
 - Inflammation of a tendon
 - Rest, ice, NSAIDs, brace, gradual return
- Meniscus Injury
 - Injury to fibrocartilage discs in knee
 - R.I.C.E and arthroscopic surgery PRN

Soft Tissue Injuries

- **Sprain**
 - Injury to ligaments at a joint
 - 1st degree = mild, 2nd degree = moderate
- **Strain**
 - Excessive stretching of a muscle, fascia or a tendon

Nursing Care

- Instruct patient to ice and elevate for 24-48 hrs after injury to reduce edema. After this acute phase, heat may be applied for up to 30 minutes at a time
- Encourage the pt to keep the affected joint mobile to maintain blood flow
- To prevent sprains and strains, ensure pt knows to warm up before exercise and progress gradually

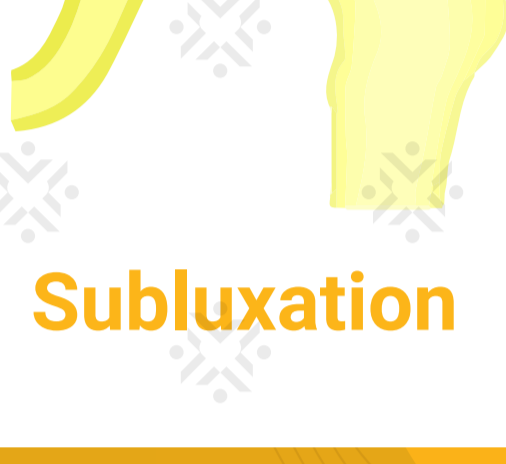
Rest – to prevent further injury
Ice – to reduce inflammation
Compress – to encourage fluid return
Elevate – to mobilize excess fluid

Dislocation and Subluxation

- **Dislocation**
 - Complete displacement or separation of the articular surfaces of the joint
- **Subluxation**
 - Partial or incomplete dislocation

Nursing Care

- Dislocation is an orthopedic emergency d/t the risk of vascular injury. Assist with realignment and pain management. Physical therapy and ROM exercises are imperative to achieve full recovery



Subluxation



Dislocation

Fracture

Common Fractures Types

- **Colles' fracture**
 - fracture of the distal radius
 - **Tx:** Closed reduction
- **Long bone fracture**
 - **Tx:** Immobilization, traction, int./ext. fixation
- **Hip fracture**
 - **Tx:** Hip compression screw, partial replacement or total replacement
 - **N:** encourage early ambulation, assess color, temperature, cap refill, pulses, edema, sensation, motor function and pain, do not position on affected side. Do not allow >90 degree knee flexion
 - **Ed:** teach pt to avoid crossing legs, internally rotating hip or sit in low chairs
- **Stable vertebral fracture**
 - **Tx:** immobilize spine, evaluate existence of cord damage, pain meds, kyphoplasty

Fracture Healing

- Hematoma
- Granulation
- Callus formation
- Ossification
- Consolidation
- Remodeling

Complications

- Delayed union – slow healing
- Malunion – deformed healing
- Pseudoarthrosis – false joint formed at healing
- Myositis ossificans – deposition of Ca++ in muscle tissue

Fx Classifications

- Transverse
- Spiral
- Greenstick
- Oblique
- Comminuted

Fx Manifestations

- Edema and swelling
- Pain and tenderness
- Deformity
- Contusion
- Loss of function
- Crepitation

Open

- through skin

Closed

- no broken skin

Displaced

- two ends of bone separated and misaligned

Nondisplaced

- periosteum is still intact

Possible Complications

- **Infection/osteomyelitis**
 - A serious complication – must monitor for s/sx of
 - **Tx:** antibiotics and surgical debridement
- **Compartment syndrome**
 - Swelling causes increased pressure that can compromise nerves and blood vessels
 - **S/sx:** pain, pressure, paresthesia pallor, paralysis and pulselessness. Cool skin at extremities.
 - **Tx:** Do not elevate or apply cold.
- **Fat embolism**
 - Fat globules from the fracture travel to the lungs, blood vessels or other organs
 - **S/sx:** tachypnea, cyanosis, dyspnea, and low O2 sat.
 - **Tx:** fluid resuscitation, blood transfusion, intubation
 - **N:** encourage cough and deep breathe, provide O2 therapy

Nursing Care of the Orthopedic Patient

Traction

- pulling force to an affected extremity
- Reduces muscle spasm
- Immobilizes
- Reduces a fracture
- Can treat pathologic joint condition

Skin Traction

- Short-term (48-72 hours)
- Reduce muscle spasms
- Applied directly to the skin
- 5-10 pounds

Skeletal Traction

- Long-term (>72hours)
- Alignment of bone
- Pins or wires are surgically inserted into the bone
- 5-45 pounds

Nursing Care

- Ensure traction weights never touch the floor
- Keep patient in correct body alignment to enhance traction
- Assess for s/sx of compartment synd.
- If pulleys are being used, make sure knots have enough slack
- Check skin integrity around pins or skin traction site frequently
- Apply ice to prevent swelling
- Suggest the use of a hairdryer on cool to help relieve itching
- Teach patient importance of keeping proximal joints mobile
- Ensure patient never inserts any object inside the cast

Possible Complications

- **Atrophy**
 - Teach isotonic muscle strengthening
- **Contracture**
 - Reposition frequently and provide ROM
- **Footdrop**
 - Support foot in neutral position
- **Muscle spasms**
 - Heat application reduces spasms
- **Pain**
 - Determine and treat underlying cause

Casts

- A device used for long-term immobilization
- Allows freedom to perform ADLS
- **Hip spica cast** – used for femur fx in children
- **Body jacket brace** – used for stable spinal injury

Nursing Care

- Never cover a plaster cast until it's dry because the heat will build up and cause a burn
- Handle with an open palm to avoid denting
- Ensure edges of cast are smooth to avoid skin irritation or breakdown
- Check color, temperature, cap. refill and pulses
- Monitor for s/sx of compartment syndrome
- A cast on a lower extremity should be elevated for the first 24 hrs after application
- When sling is used, ensure the axillary area is well padded

External Fixation

- Metal pins are inserted into the bone and then attached to external rods
- Indicated in complicated fractures with extensive soft tissue damage
- Close monitoring for infection is very important
- Chlorhexidine is usually used to keep pins clean

Internal Fixation

Internal Fixation devices include:

- Pins
- Plates
- Intramedullary rods
- Screws