Nursing Care in Traumatic Orthopaedics injury
Traumatic Orthopaedic nursing

• ‘Trauma’ – an injury to living tissue that is caused by force or a mechanism extrinsic to the body (Lovell 1997)

• ‘Orthopaedic’ – the specialty of medicine that focused on the prevention and treatment of musculoskeletal disorders (Judd 2010)
Traumatic Orthopaedics Treatments

• Surgical treatment
  ➢ Emergency case

• Conservative treatment
Traumatic Orthopaedics Nursing Care

• Pre Operative

• Post Operative

• Discharge
Nursing Assessment

FRACTURE

- Pain or tenderness
  - Continuous and increases in severity
  - Muscle spasm accompanies the fracture is a reaction of the body to immobilize the fracture bone
Nursing Assessment

- Loss of function
  - Abnormal movement and pain
- Deformity
  - Displacement, angulations or rotation of the fragments
- Shortening
Nursing Assessment

- Crepitus
  - A grating sensation produced when the bone fragments rub each other
- Swelling
Nursing Management

Traction

- A method of fracture immobilization by applying equipment to align bone fragments
- Used for immobilization, bone alignment and relief of muscle spasm
Types

• Skin traction
The traction force applied over a large area of skin

• Skeletal traction
Applied directly to the bone either by pin or wire through the bone (e.g., Steinmann pin, kirschner wire)
Complication of the skin traction

- Allergic reaction
- Excoriation of the skin
- Pressure sore
- Common peroneal nerve palsy
Complication of the skeletal traction

• Infection into bone
• Incorrect placement of the pin
• Distraction of the fracture site due to heavy weight
• Ligament damage
• Damage to epiphyseal growth plates
Open fracture

- A fractured bone exposed to contamination from the external environment through a disruption of the skin and subcutaneous tissues
Infection is the most common complication of open fractures. Infection can occur early, during the healing phase of the fracture, or even later.

- Open fractures may have difficulty healing.
- Acute compartment syndrome.
Nursing Management : Open fracture

• Pain Management
• Tetanus toxoid
• Antibiotic & side effect
• Wound care
• Psychology support
Wound V.A.C. Dressing
Pelvic Fracture

• the pelvis is in proximity to major blood vessels and organs, pelvic fractures may cause extensive bleeding and other injuries that require urgent treatment
Complication of Pelvic Fracture

- Wound healing problems, including infection
- Damage to nerves or blood vessels
- Pulmonary embolism
Nursing Management : Pelvic Fracture

• Monitoring Hypovolemic shock
• Pain Management
• Prevent complication
Nursing Management of Traumatic Orthopaedics Problem

PAIN

- Assess patient’s perception of pain
- Instruction patient alternative pain management like meditation, heat and cold application
- Administer analgesics as prescribed
  * Usually NSAIDs
- Assess the effectiveness of pain measures
Nursing Management of Traumatic Orthopaedics Problem

**Impaired Physical Mobility**

- Turn and change position every 2 hours
- Instruction patient to perform range of motion exercises, either passive or active
- Provide support in ambulation with assistive devices
Nursing Management of Traumatic Orthopaedics Problem

**Self care deficits**

- Assess functional levels of the patient
- Provide support for feeding problems
- Assist patient with difficulty bathing and hygiene
Risk Management

- Fat embolism
- DVT (Deep Vein Thrombosis)
- Compartment syndrome
- Hypovolemic shock
- Infection
- Pressure sore
Fat embolism

- FES is most commonly associated with orthopedic trauma, with highest incidence in closed, long bone fractures of the lower extremities, particularly the femur.

Long bone fracture, orthopedic procedure, or other insult

Microvascular obstruction and FFA-mediated endothelial injury leading to pro-inflammatory cytokine release (IL-1, IL-6, TNF-alpha)

Arterial hypoxemia and cerebral vascular injury from FFA intermediates

Vascular stasis, microinfarction, and FFA-mediated endothelial damage leading to rupture of thin-walled capillaries

Elevated tissue factor, excess thrombin and fibrin generation, aggregation of platelets, and consumption of coagulation products

ARDS

Encephalopathy and focal neurological deficits

Petechiae

DIC

Thrombocytopenia

Anemia
Early warning sign: Fat embolism

- Sudden dyspnea and respiratory distress
- O2 saturation ↓
- Tachycardia
- Chest pain
- Crackles, wheezes and cough
- Petechial rashes over the chest, axilla
Petechial rashes over the chest, axilla
• ABG: PO2 < 60 mmHg, PaCO2 < 55 mmHg
  Hemoglobin↓ 3-5 gm%, Plt < 150,000/mm
• Chest X-ray showing bilateral patchy infiltrates consistent with acute respiratory distress syndrome (ARDS).
Nursing Management of Traumatic Orthopaedics Problem

FAT EMBOLISM

- Support the respiratory function
  - Administer O2 in high concentration
  - Prepare for possible intubation and ventilator support
Nursing Management of Traumatic Orthopaedics Problem

**FAT EMBOLISM**

- Immobilization of fracture
- Maintain hydration and electrolyte balance
- Medication
Compartment syndrome

- A painful condition that occurs when pressure within the muscles builds to dangerous levels. This pressure can decrease blood flow, which prevents nourishment and oxygen from reaching nerve and muscle cells.

http://orthoinfo.aaos.org/topic.cfm?topic=a00204
neurovascular assessment

- Pain: Deep, throbbing and unrelieved pain by opioids
- Puffiness
- Pallor
- Pulor
- Pulselessness
- Paralysis
- Paresthesia
The classic sign of acute compartment syndrome is pain

- The pain is more intense than what would be expected from the injury itself. Using or stretching the involved muscles increases the pain.
- There may also be tingling or burning sensations (paresthesias) in the skin.
- The muscle may feel tight or full.
- Numbness or paralysis are late signs of compartment syndrome. They usually indicate permanent tissue injury.

http://orthoinfo.aaos.org/topic.cfm?topic=a00204
Nursing Management of Traumatic Orthopaedics Problem

**Compartment syndrome**
- Assess frequently the neurovascular status
- Remove external device
- Elevate limb to cardiac level
- Maintain blood pressure
- Oxygen supplement
- Avoid cold compression
- Cast removal and fasciotomy
Deep Vein Thrombosis

[Diagram showing normal blood flow and blood clots in DVT]
A Prospective Study of Venous Thromboembolism after Major Trauma

- Risk for thrombosis is high in patients with spinal injuries (62%), pelvic fractures (61%), or leg fractures (80%), and it is low (19%) in people with lower limb plaster casts.

William H. Geerts, Karen I. Code, Richard M. Jay, Erluo Chen, and John Paul Szalai

Early warning sign: Deep Vein Thrombosis

- Swelling of leg
- Tenderness in calf
- Positive Homan’s sign
Nursing Management of Traumatic Orthopaedics Problem

Deep Vein Thrombosis (prevention)

• Active/ passive exercise
• On pneumatic cuff continue > 18 hrs.
• Oral fluid > 2000 ml
• Elevate the extremity above
Nursing process

The nursing process consists of five dynamic and interrelated phases:

1. Assessment
2. Nursing diagnosis
3. Planning
4. Implementation
5. Evaluation
Thank You!