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## Nursing care Management of the Patient in a Cast

- A **cast** is a rigid external immobilizing device that is molded to the contours of the body.
- **The purposes of a cast are** to immobilize a body part in a specific position, to apply uniform pressure on underlying soft tissue, and to correct a deformity, or to support and stabilize weakened joints.



### Relieving pain

- The nurse must carefully evaluate pain associated with musculoskeletal problems, asking the patient to indicate the exact site and to describe the character and intensity of the pain. Most pain can be relieved by elevating the involved part, applying cold as prescribed, and administering usual dosages of analgesics.
  - ↳ Pain associated with the disease process (eg, fracture) is frequently controlled by immobilization.
  - ↳ Pain due to **edema** that is associated with trauma, surgery, or bleeding into the tissues can frequently be controlled by elevation and intermittent application of cold, if prescribed. (cold application devices are placed on each side of the cast, if prescribed, making sure not to indent the cast.
  - ↳ Pain associated with compartment syndrome is relentless and is not controlled by modalities such as elevation, application of cold if prescribed, and usual dosages of analgesics used .

**NURSING ALERT** A patient's unrelieved pain must be immediately reported to the physician to avoid possible paralysis and necrosis.

**NURSING ALERT** The nurse must never ignore complaints of pain from the patient in a cast because of the possibility of potential problems, such as impaired tissue perfusion or pressure ulcer formation.

### Improving mobility

- Every joint that is not immobilized should be exercised and moved through its range of motion to maintain function.
- If the patient has a leg cast, the nurse encourages toe exercises. If the patient has an arm cast, the nurse encourages finger exercises.

### Observe signs of infection

While the cast is on, the nurse observes the patient for systemic signs of infection, odors from the cast, and purulent drainage staining the cast. It is important to notify the physician if any of these occurs.

### Maintaining adequate neurovascular function

The patient may complain that the cast is too tight. Vascular insufficiency and nerve compression due to unrelieved swelling can result in compartment syndrome.

- The nurse monitors circulation, motion, and sensation of the affected extremity, assessing the fingers or toes of the casted extremity and comparing them with those of the opposite extremity.
- The nurse encourages the patient to move fingers or toes hourly when awake to stimulate circulation.
- It is important to perform frequent, regular assessments of neurovascular status. Early recognition of diminished circulation and nerve function is essential to prevent loss of function.
- Normal findings include minimal swelling, minimal discomfort, pink color, warm to touch, rapid capillary refill response, normal sensations, and ability to exercise fingers or toes.
- Assessment data including progressive unrelieved pain, pain on passive stretch, paresthesia, motor loss, sensory loss, coolness, paleness, slow capillary refill, and sensation of tightness indicate potential compartment syndrome.

## Monitoring and managing potential complications

### Compartment Syndrome

- Compartment syndrome occurs when there is increased tissue pressure within a limited space (eg, cast, muscle compartment) that compromises the circulation and the function of the tissue within the confined area.
  - ↳ To relieve the pressure, the cast must be bivalved (cut in half longitudinally) while maintaining alignment, and the extremity must be elevated no higher than heart level.
  - ↳ If pressure is not relieved and circulation is not restored, a **fasciotomy** may be necessary to relieve the pressure within the muscle compartment.
  - ↳ The nurse closely monitors the patient's response and records neurovascular responses and promptly reports changes to the physician.

### Pressure Ulcers

- Pressure of the cast on soft tissues may cause tissue anoxia and pressure ulcers.
- Usually, the patient with a pressure ulcer reports pain and tightness in the area.
- The nurse must monitor the patient with a cast for pressure ulcer development and report findings to the physician.
- To inspect the pressure area, the physician may bivalve the cast or cut an opening (window) in the cast. The portion of the cast is replaced and held in place by an elastic compression dressing or tape. This prevents the underlying tissue from swelling through the window and creating pressure areas around its margins.

## Promoting home and community-based care

### Teaching the Patient Self-Care

- The nurse encourages the patient to participate actively in personal care and to use assistive devices safely.
- The patient's participation in Move about as normally as possible but avoid excessive use of the injured extremity and avoid walking on wet, slippery floors or sidewalks.
- Perform prescribed exercises regularly, as scheduled.
- Elevate the casted extremity to heart level frequently to prevent swelling.
- Do not attempt to scratch the skin under the cast. This may cause a break in the skin and result in the formation of a skin ulcer. Cool air from a hair dryer may alleviate an itch.
- Report any of the following to the physician: persistent pain, swelling that does not respond to elevation, changes in sensation, decreased ability to move exposed fingers or toes, and changes in skin color and temperature.
- Note odors around the cast, stained areas, warm spots, and pressure areas. Report them to the physician.
- Report a broken cast to the physician; do not attempt to fixit yourself.
- The nurse prepares the patient for cast removal or cast changes by explaining what to expect.
  - ↳ The cast is cut with a cast cutter, which vibrates.
  - ↳ The patient can feel the vibration and pressure during its use.
  - ↳ The cutter does not penetrate deeply enough to hurt the patient's skin.
  - ↳ There may be extreme stiffness even after only a few weeks of immobilization. Therefore, support is needed when the cast is removed.
  - ↳ The skin, which is usually dry and scaly from accumulated dead skin, is vulnerable to injury from scratching. The skin needs to be washed gently and lubricated with an emollient lotion.
- The nurse and physical therapist teach the patient to resume activities gradually within the prescribed therapeutic regimen.