Chapter 14

Immobilization Techniques

Objectives

1. Demonstrate a range of immobilization techniques.
2. Explain the importance of high-quality communication with the patient.
3. Describe reduction of patient radiation exposure through use of proper immobilization methods.
4. Apply immobilization techniques in routine situations.
5. Use immobilization devices effectively.
6. Describe trauma immobilization techniques as they pertain to specific anatomic involvement.
7. Explain the importance of establishing rapport with pediatric patients.
8. Use various methods of pediatric immobilization.
9. Describe appropriate application of immobilization techniques pertinent to geriatric patients.

Immobilization Principles

• Motion distortion is one of the most significant contributing factors to unacceptable image quality.
• Positioning inaccuracies also contribute to suboptimum image quality.
• Motion distortion can result from involuntary and voluntary patient position.
**Immobilization Principles**
- Communication with the patient is critical to effective immobilization.
- Use the shortest exposure time possible.
- Use immobilization aids when possible.
- Empathy with the patient’s condition can be effective in facilitating good immobilization.

**Immobilization Devices**
- Positioning Sponges
- Velcro Straps
- Sandbags
- Velcro Strap Restraints
- Head Clamps

- Cervical Collar
- Spine Board
- Splints
- Sheet Restraints
- Commercial Restraint Devices
- Stockinettes
- Tape
Positioning Sponges

- A common method of reducing patient motion involves the use of positioning sponges.
- Positioning sponges allow for increased accuracy by supporting the patient or anatomic area of interest.

Sandbags

- Fig. 14-6: Hand in oblique position on sponge with sandbag across forearm.
- Fig. 14-7: Elbow in anteroposterior position with sandbag on elbow.

Tape

- Fig. 14-18 A: Patient positioned for anteroposterior (AP) skull image with tape twisted across forehead.
- Fig. 14-18 B: Gauze pad between the skin and tape for an AP ankle image.
Stockinette

- Stretchable cotton fabric in the shape of a sleeve pulled over a fractured extremity before a plaster cast is applied
- Effective as a restraint when pulled over the upper or lower extremities of a child and secured with tape
- Good for immobilizing the upper limbs above and behind the child’s head

Pediatric Immobilization

- Effective communication techniques and development of a rapport with the patient
- Kindness, patience, honesty, and understanding conveyed to children on their level
- Threats and force must be avoided at all times, and restraints applied gently
- Work with parents
- Follow department policies and procedures

Infant Sheet Restraints

- Effective, simple, inexpensive, and reliable method of restraining or immobilizing a child
Commercial Restraints

- Upright Restraint Devices
  - Pigg-O-Stat Infant Immobilizer
- Restraint Board
  - a contour-fitting pad, mold, or sponge with attached Velcro straps for securing the patient

Pigg-O-Stat Infant Immobilizer

Fig. 14-13 A and B here

Octostop Restraint Board

- Patient can be rotated 360° into 8 different positions
- Radiolucent material
- Durable
- Limited to pediatric patients up to 1 year old

Fig. 14-16 here
Spinal Trauma Immobilization

• The most common spinal trauma traction device is the cervical collar.
• All projections can be produced with the cervical collar in place.
• Often these patients are also on a spinal backboard.

Geriatric Patients

• Greatest fear is falling!
• Communication is critical to effective immobilization of older patients.
• Take extra care to make a geriatric patient feel secure.
• Keep patient warm.
• Work smoothly and avoid working quickly so as not to disorient the patient.
• Reassure the patient with particular attention to their comfort, particularly during positioning.
Conclusion

- Motion distortion is a key factor in final image quality.
- Use very short exposure times in order to lessen the chances of motion distortion.
- Communication is an essential skill in effective immobilization techniques.
- Pediatric immobilization requires creativity and adaptability.
- Deal with parents according to department policy.
- Use immobilization devices when appropriate.