The Basics of Positioning Patients in Surgery

UPSTATE
UNIVERSITY HOSPITAL

Objectives

1. Describe the most commonly used surgical positions.
2. State techniques for preventing injury to surgical patients.
3. Describe collaborative process for positioning patients.

Introduction

- When our patients enter the surgical suite their safety and well-being are in the hands of the perioperative team. It is our responsibility to ensure each and every patient is positioned correctly for his/her procedure
- This education is being implemented to create a safe environment for our patients and staff

Intraoperative Positioning Policy OPER P-04

Applies to:

- Downtown and Community Campuses
- RNs, anesthesiologists, surgeons, residents, surgical technologists, medical students, NPs, PAs, CRNAs, anesthesia techs
- Corresponding Procedures
  - PROC OPER P-04A - Lateral Positioning
  - PROC OPER P-04B - Lithotomy Positioning
  - PROC OPER P-04C - Prone Positioning
  - PROC OPER P-04D - Supine Positioning
  - PROC OPER P-04E - Trendelenburg/Reverse Trendelenburg Positioning

Goals of Positioning

- **Providing adequate exposure**
- **Maintaining patient dignity**
- **Optimal ventilation & airway management**
- **Providing adequate access**
- **Avoiding poor perfusion**
- **Protecting fingers, toes, genitals**
- **Protecting muscles, nerves, bony prominences**

Positioning Injuries

- General/Regional anesthesia
  - Physiologic changes
  - Reduced movement/sensation

Positioning Injuries

Pressure	• Force placed on underlying tissue
Shear	• Folding of underlying tissue
Friction	• Force of two surfaces rubbing against one another

Positioning Injuries

Moisture

- Produces maceration

Heat

- Increases Metabolism

Cold

- Reduces O2 delivery

Negativity

- Increases Pressure

Positioning Injuries

Nerves

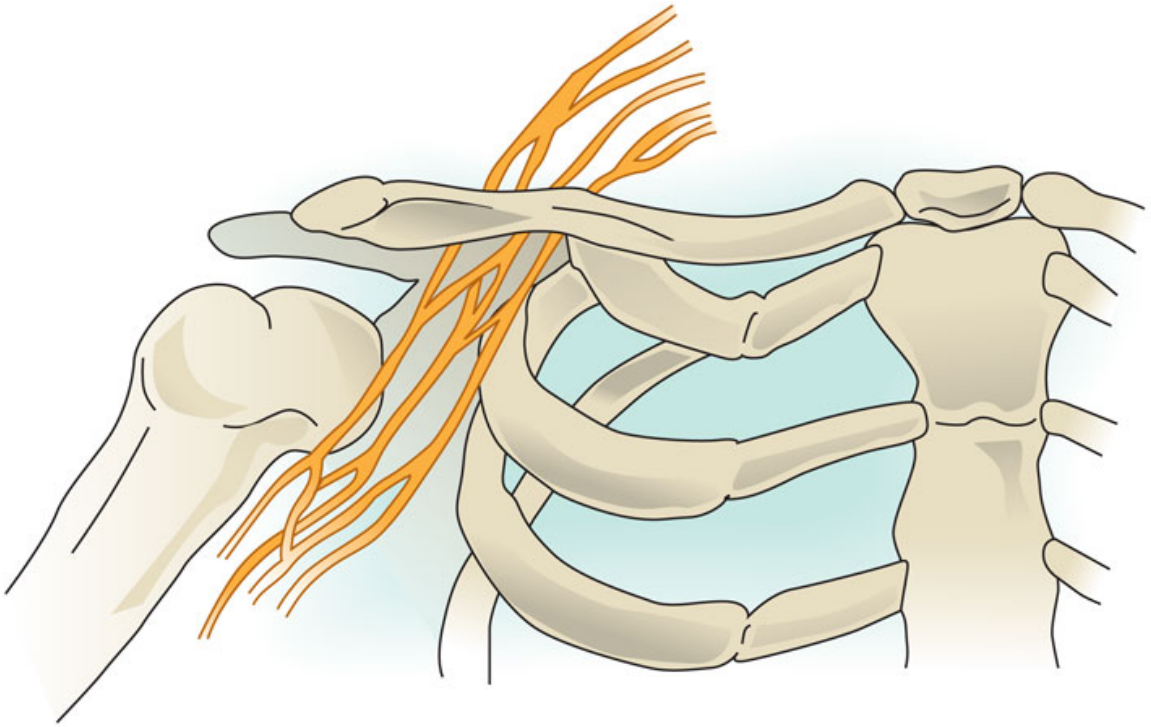
- Stretching or compression
- Transient or permanent damage

Most common sites

- Brachial plexus
- Peroneal
- Facial

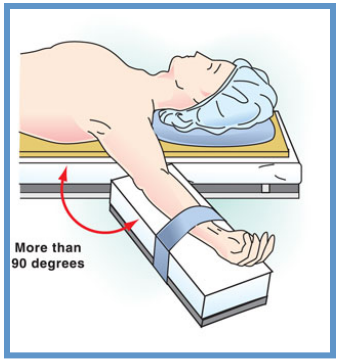
Positioning Injuries

- Brachial plexus
  - Shoulder
  - Arm
  - Hand



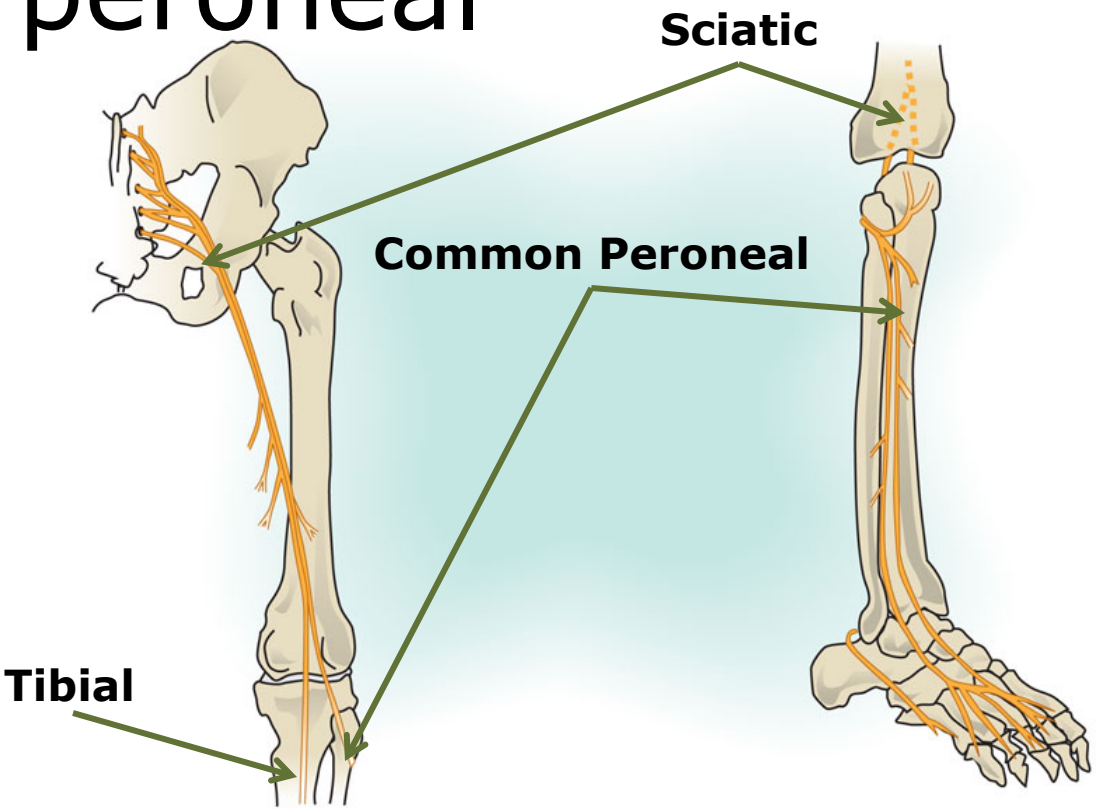
Positioning Injuries

- Brachial plexus injury due to:
  - Arm boards extended beyond 90 degrees
  - Arm boards higher or lower than the OR bed
  - Lateral rotation of the patient's head
  - Leaning against the shoulder or arm
  - Shoulder braces



Positioning Injuries

- Common peroneal
  - Lower leg
  - Foot
  - Toes



Positioning Injuries

- Common peroneal injury due to:
  - Direct compression
  - Patients who are thin
  - Hyperextension of knees
  - Pressure behind knee
  - Graduated compression stockings too tight
  - Foot drop/Lower-extremity paresthesia

Positioning Injuries

Pulmonary

- Hypoxia
- Respiratory compromise
- Decreased O_2 saturation
- Pulmonary edema
- Congestion
- Atelectasis

Positioning Injuries

Ocular

- Corneal abrasion
- Central retinal artery occlusion

Risk factors

- Prone
- Length of procedure
- Blood loss

Increased Risk for Positioning Injuries

- Obese or underweight
- Poor nutritional status
- Advanced age (>70 years)
- Preexisting conditions
- History of skin breakdown/pressure ulcers
- Smoking (vasoconstriction)

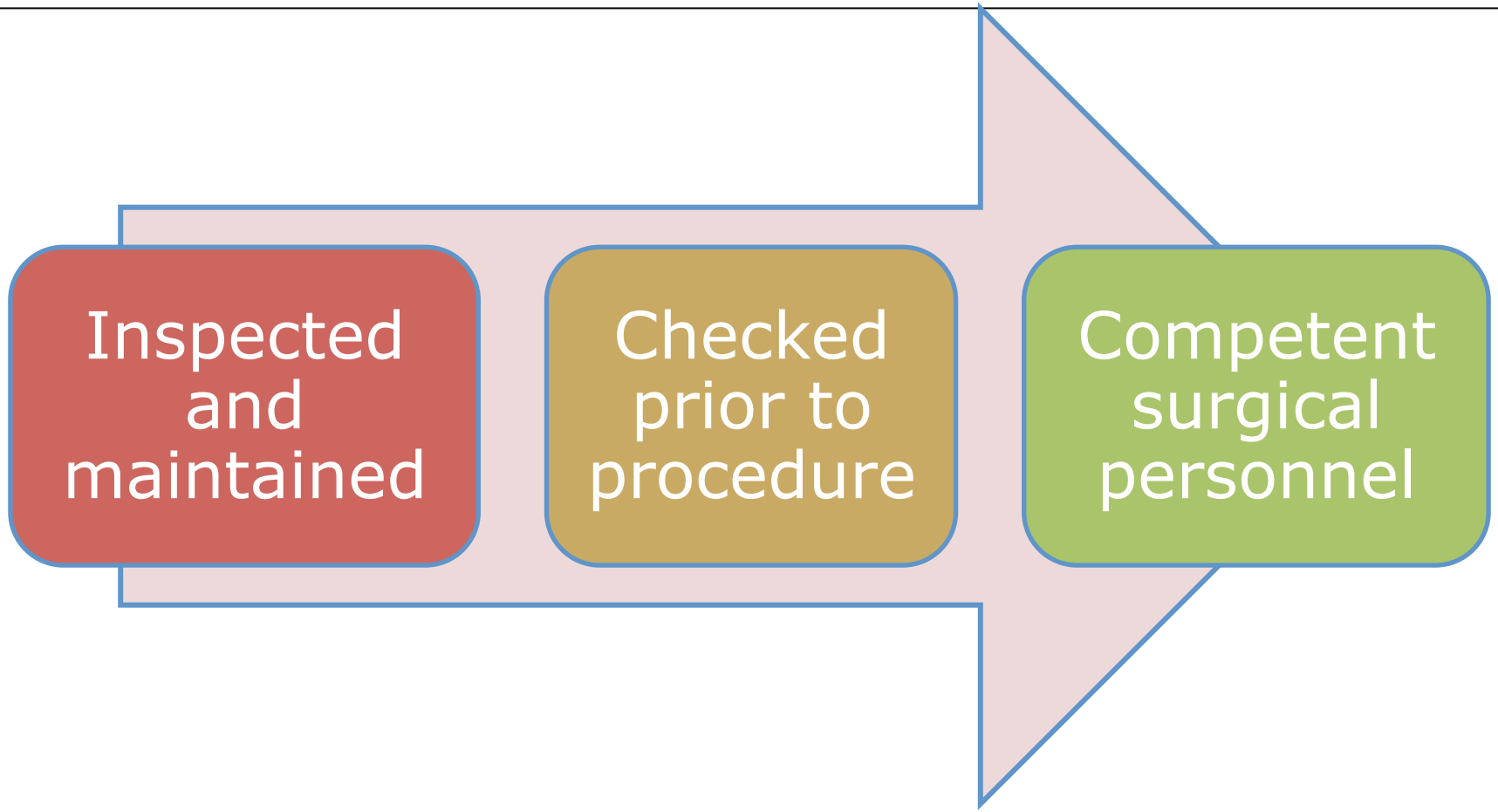
Positioning Process

- Collaborative process
  - Selection of equipment
  - Preoperative assessment
  - Positioning
  - Documentation
  - Postoperative evaluation

Preoperative Assessment

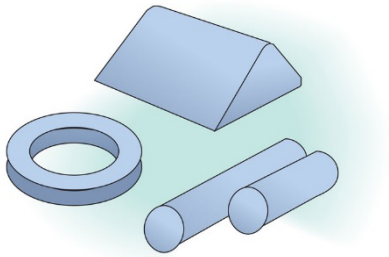
- Age/Height/Weight/Body mass index (BMI)
- Nutritional status
- Blood pressure
- Skin integrity
- ROM/Physical limitations
- Internal/External devices
- Preexisting conditions
- Medical history
- Diagnostic studies
- Psychological/Cultural considerations
- Length of surgery

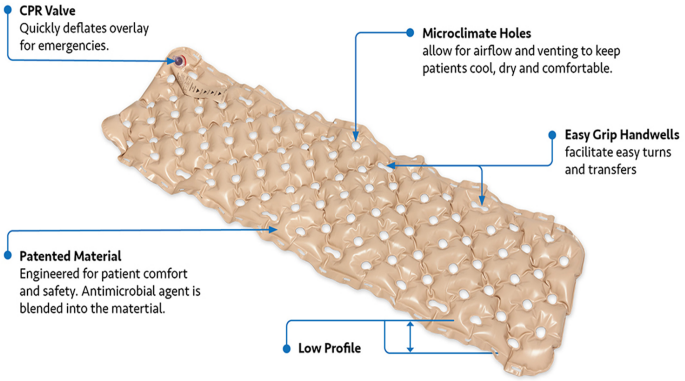
Selection of Equipment



Selection of Equipment

- Pressure relieving surface
  - Disperses weight
  - Prevents "bottoming out"
  - Relieves shear and friction





Selection of Position

Supine

Prone

Lithotomy

Lateral

Trendelenburg

Reverse Trendelenburg

Positioning Check

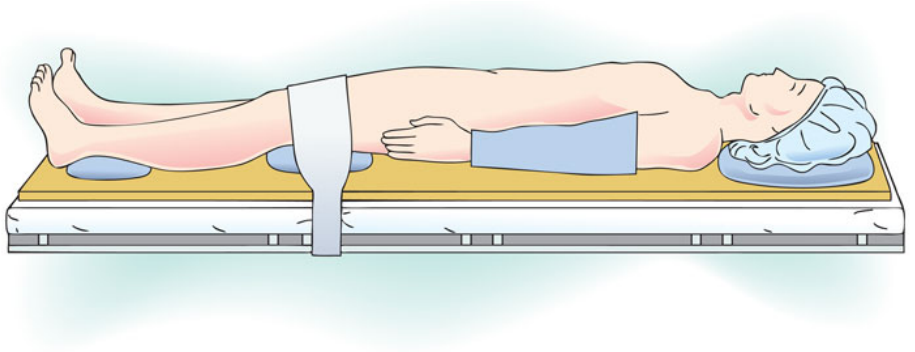
- Assess the patient:
  - Body alignment, tissue perfusion, and skin integrity
  - Checking pressure points during surgery, is especially important in cases that are greater than 2 hours. This is always dependent on the ability to access the patient without compromising the surgical procedure or sterile field.

Safety

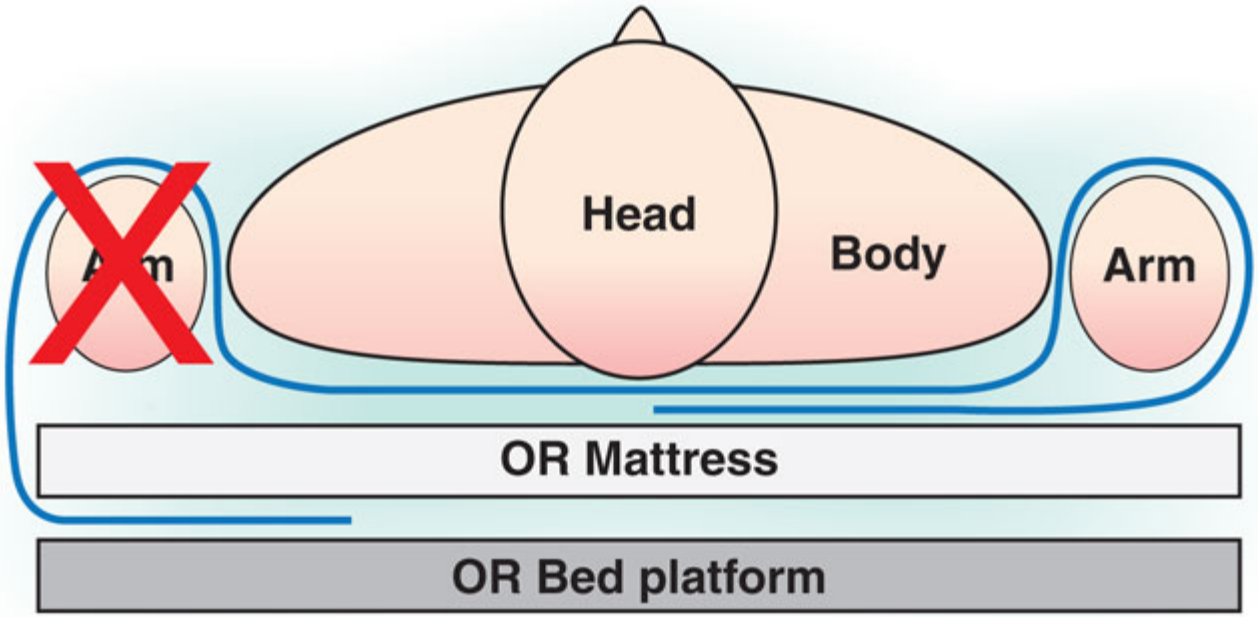
- Care should be taken to prevent laying of instruments and power cords on the patient during the case.
- Scrubbed members of the surgical team should not lean against the patient during surgery.

Supine

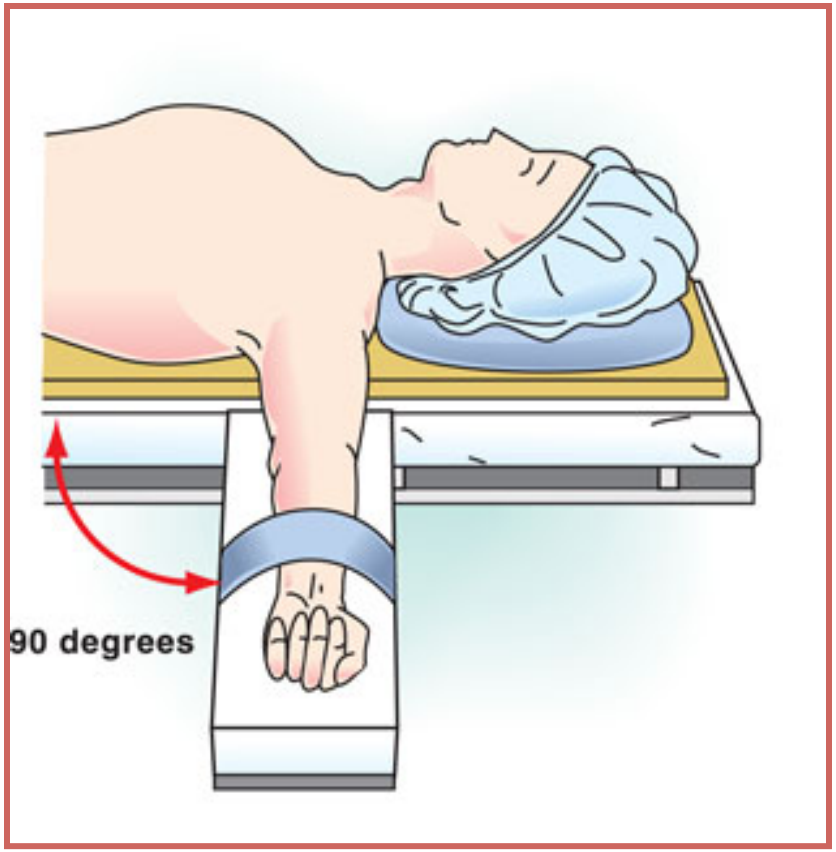
- Most commonly used surgical position
- Common injuries related to the supine position are pressure ulcers on the occiput, scapulae, thoracic vertebrae, elbows, sacrum, and heels
- Arms should either be secured at the sides or extended on arm boards
- Safety strap should be placed across the thighs, approximately 2 inches above the knees with a sheet or blanket placed between the strap and the patient’s skin
- Patient's heels should be elevated off the underlying surface when possible



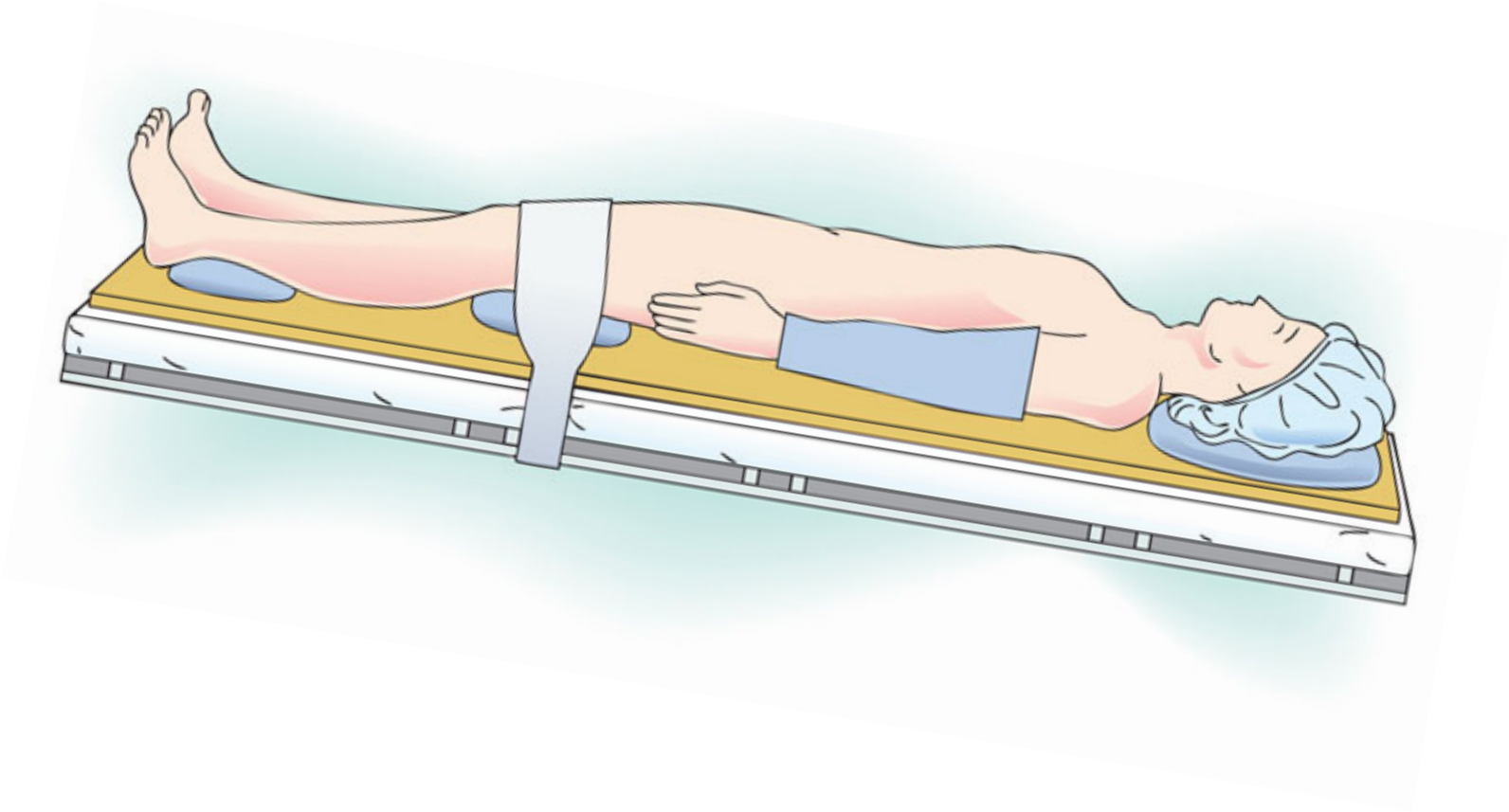
Supine



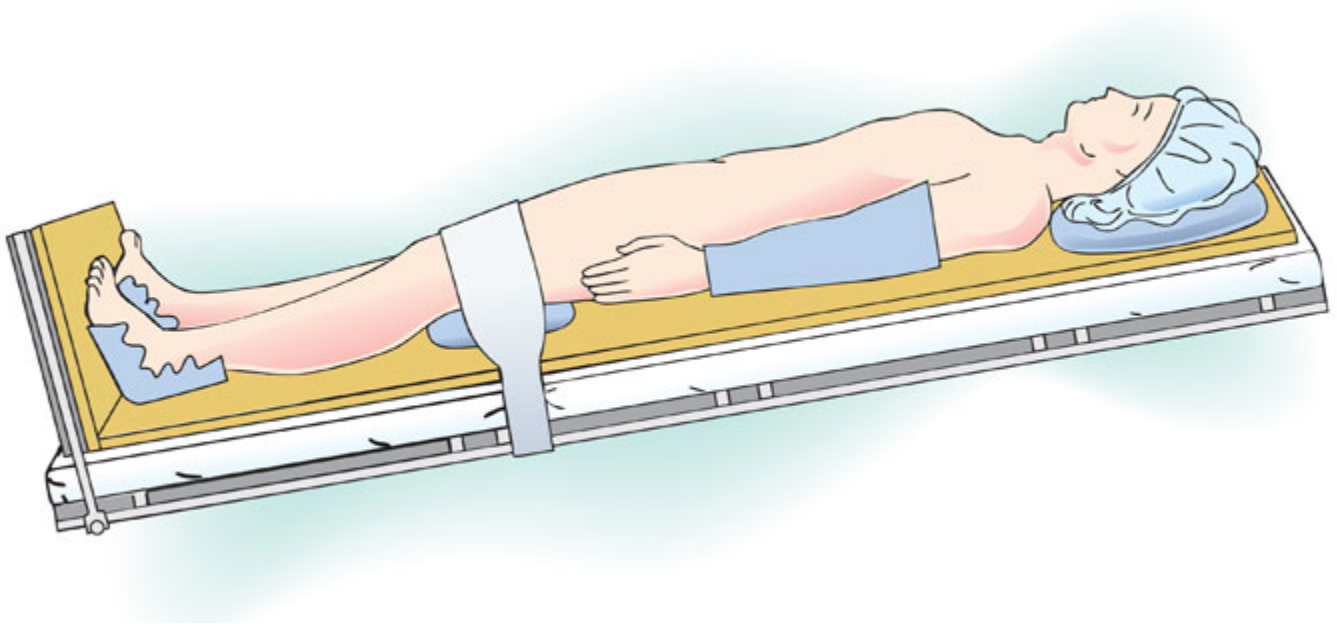
Supine



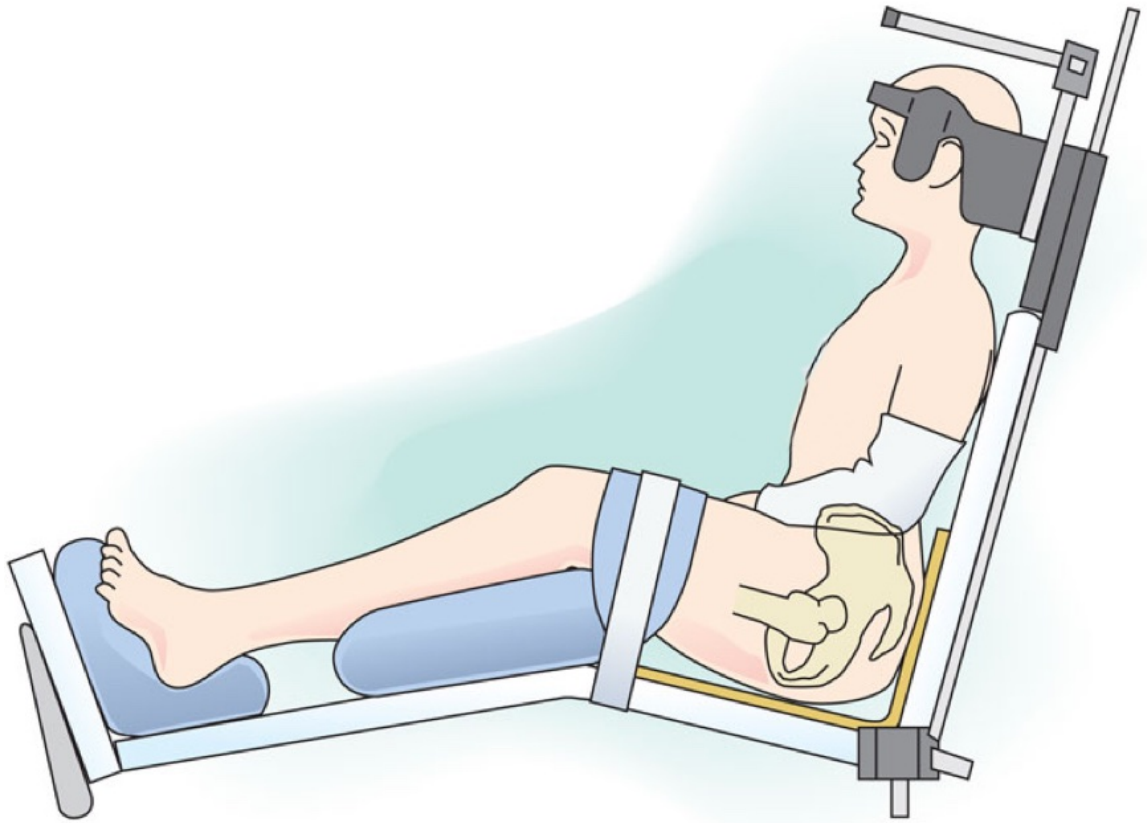
Trendelenburg



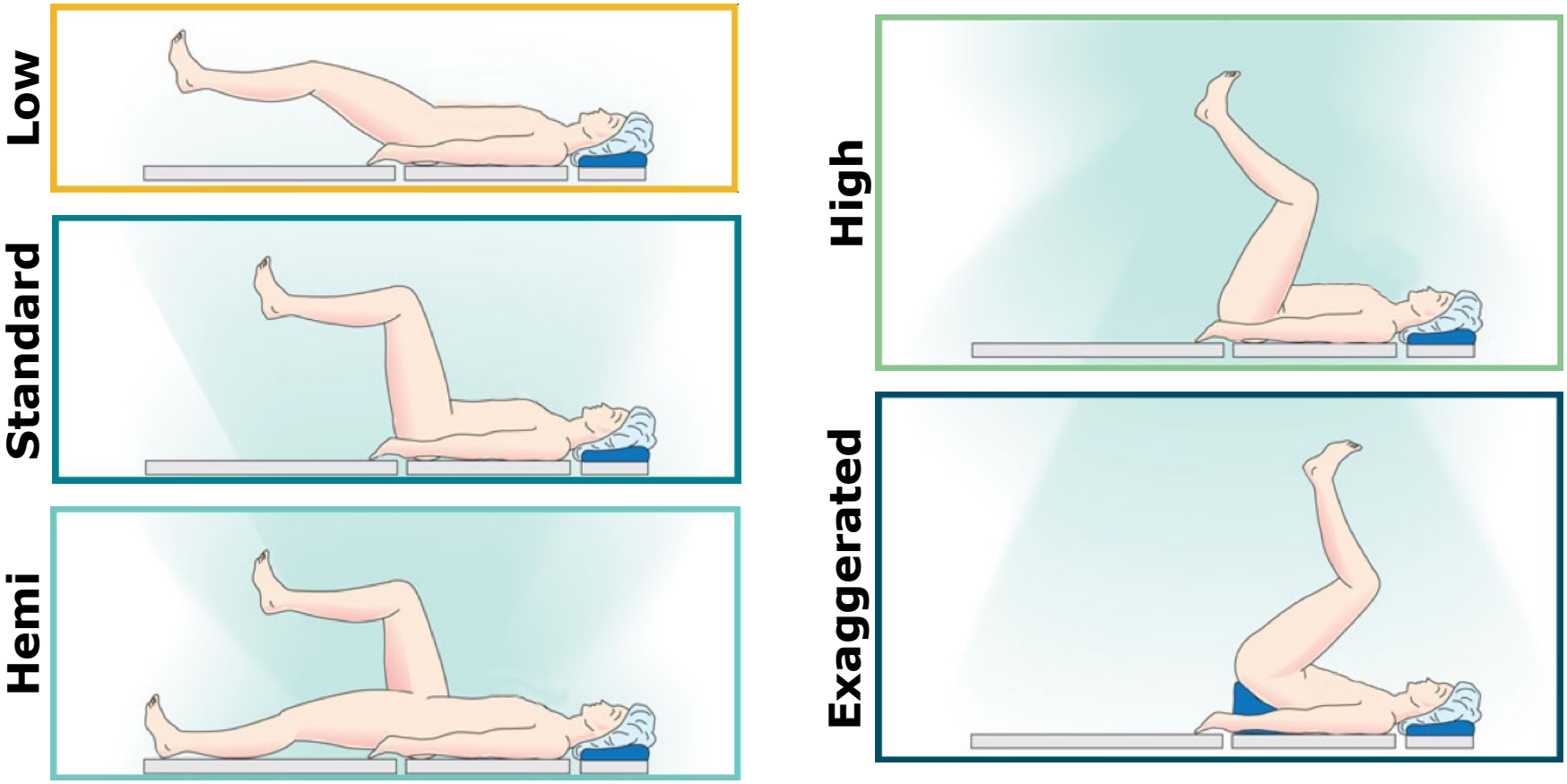
Reverse Trendelenburg



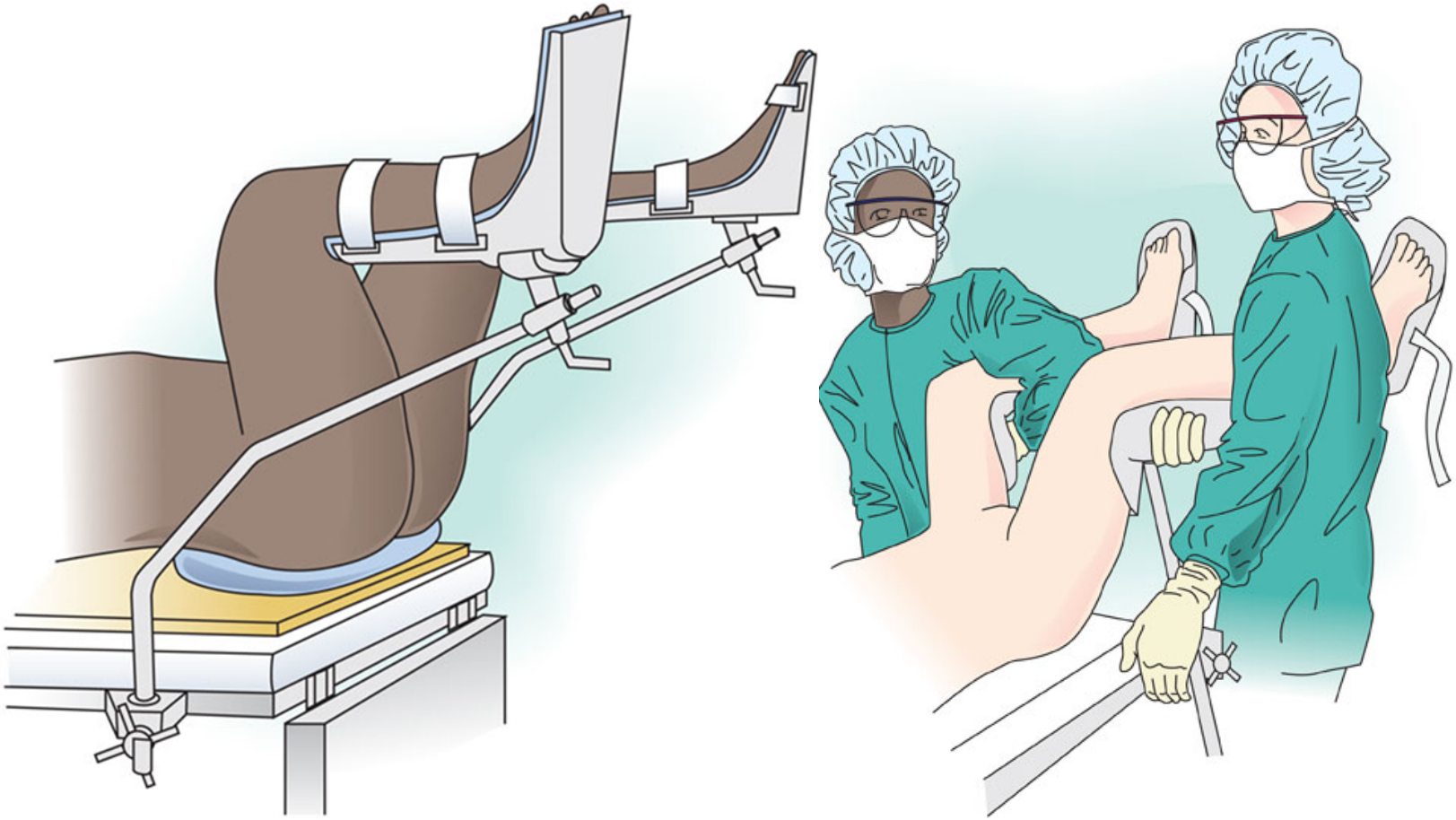
Sitting/Modified-Sitting



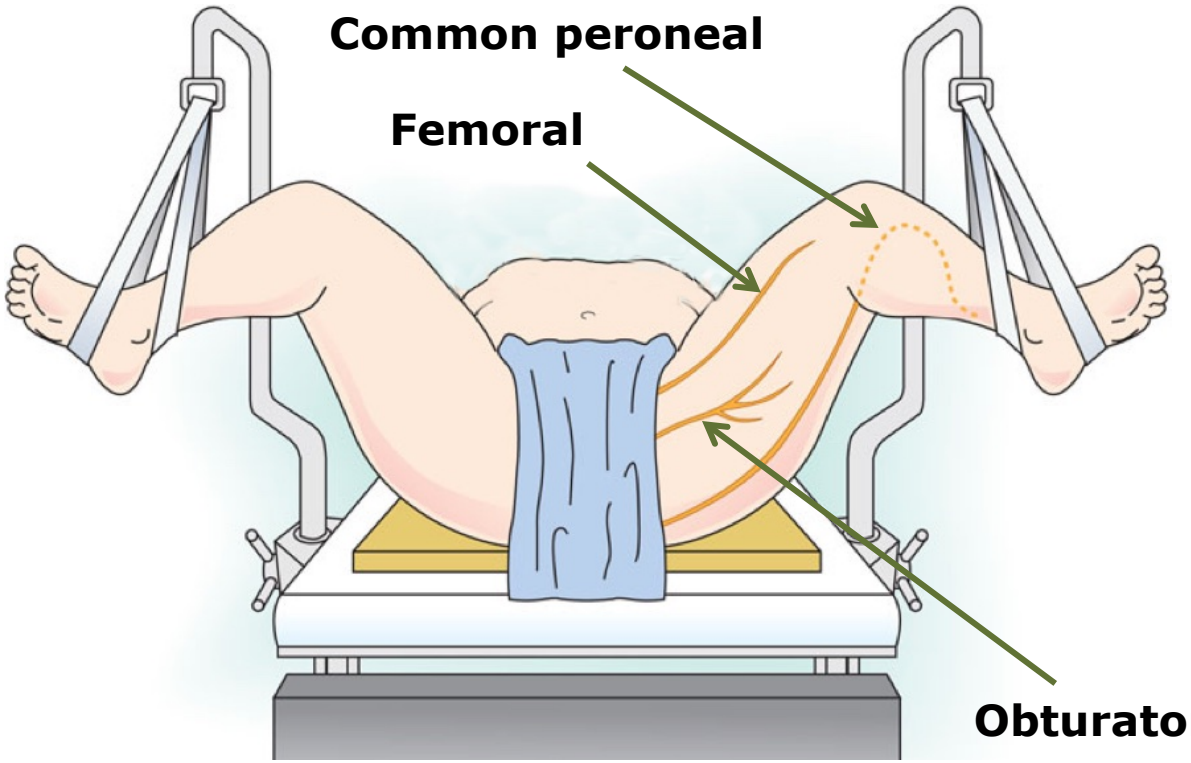
Lithotomy



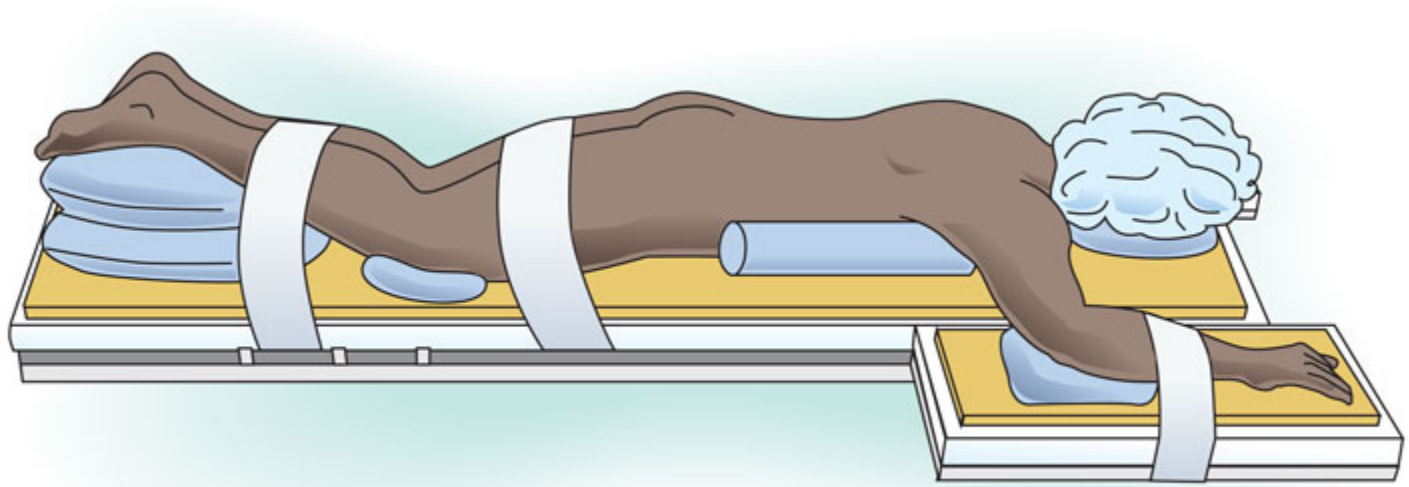
Lithotomy



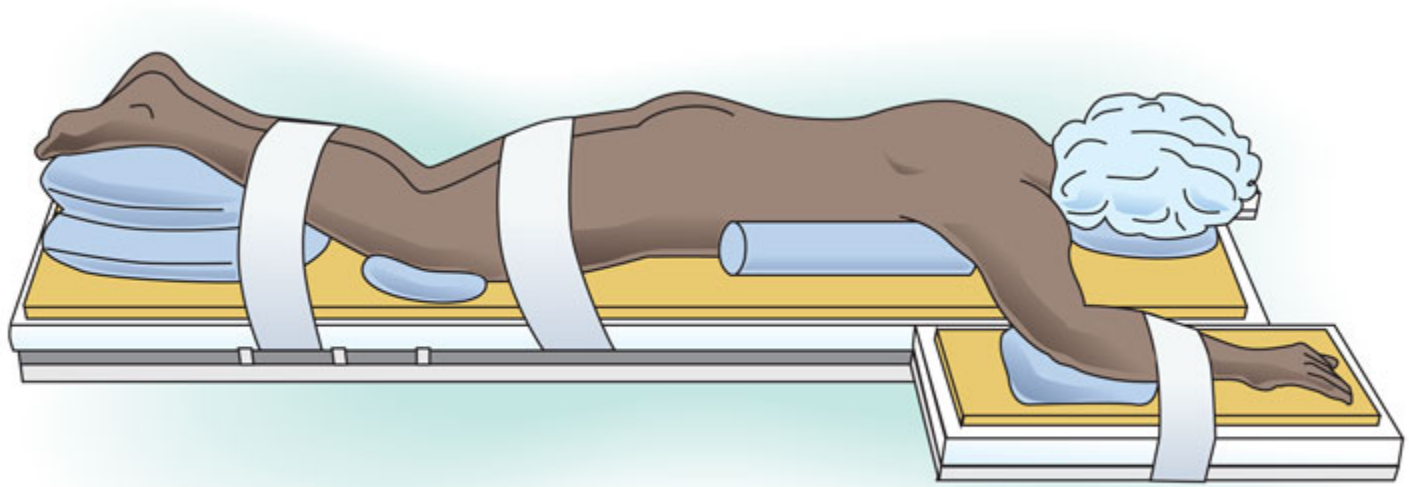
Lithotomy



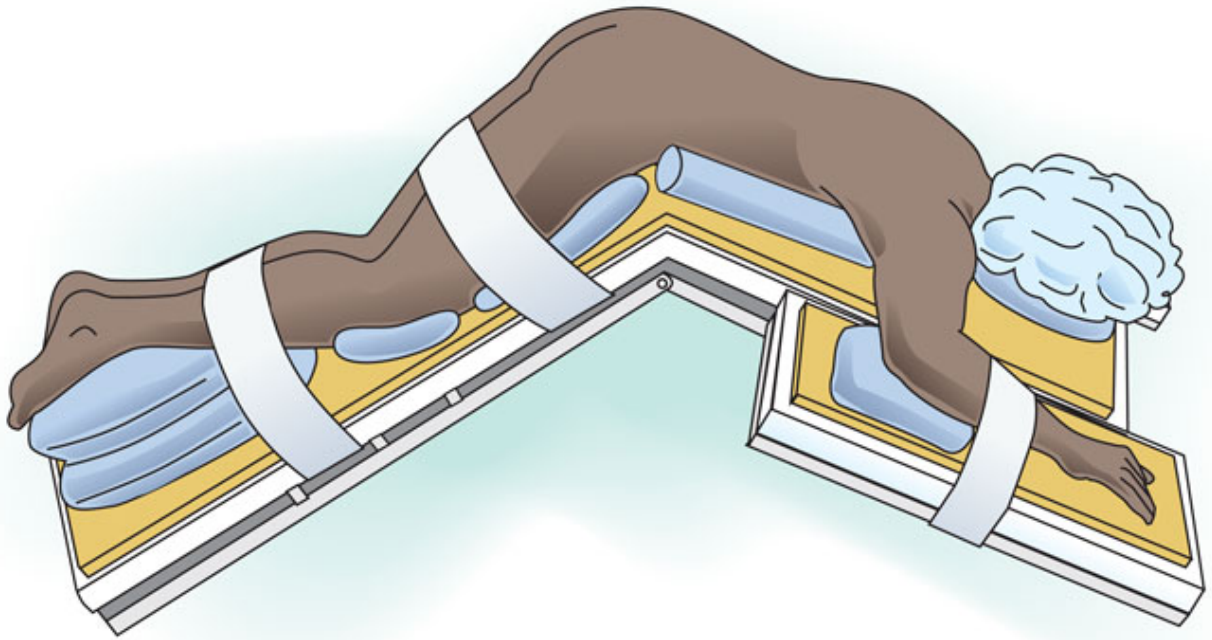
Prone



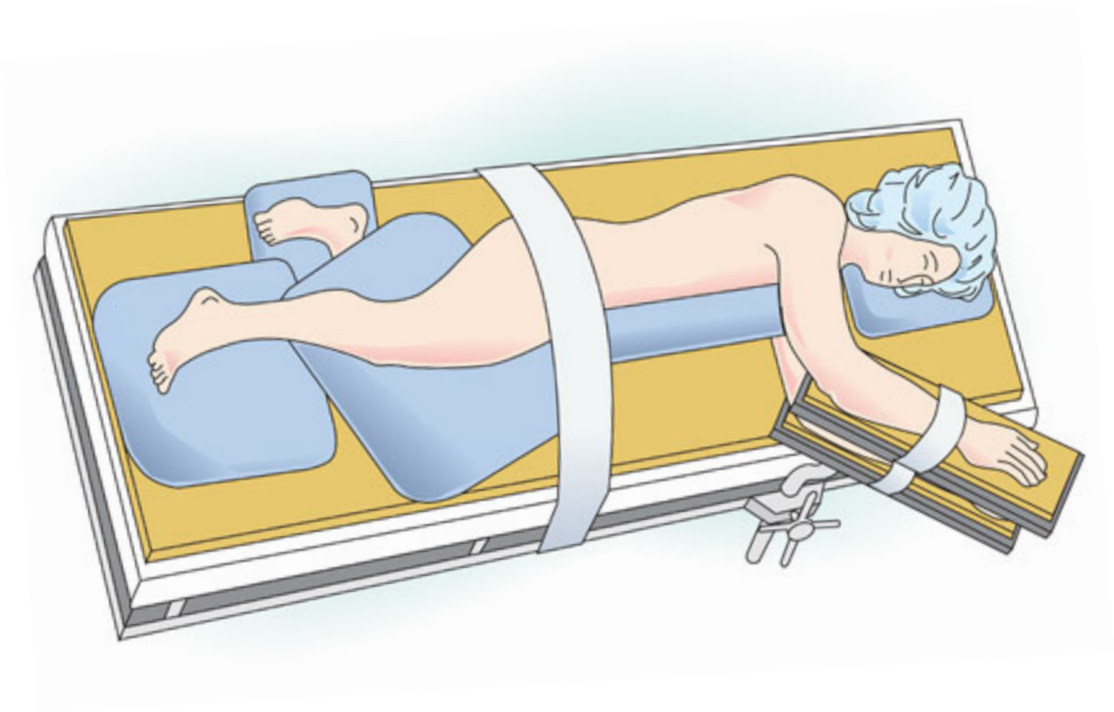
Prone

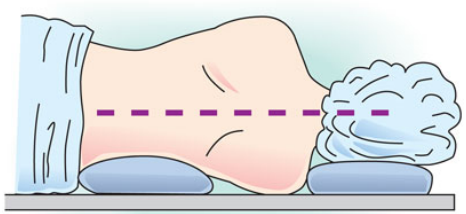


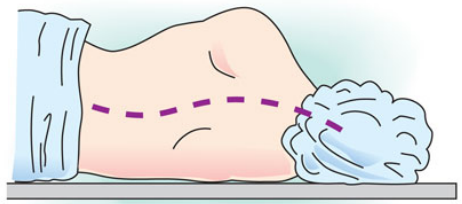
Jackknife



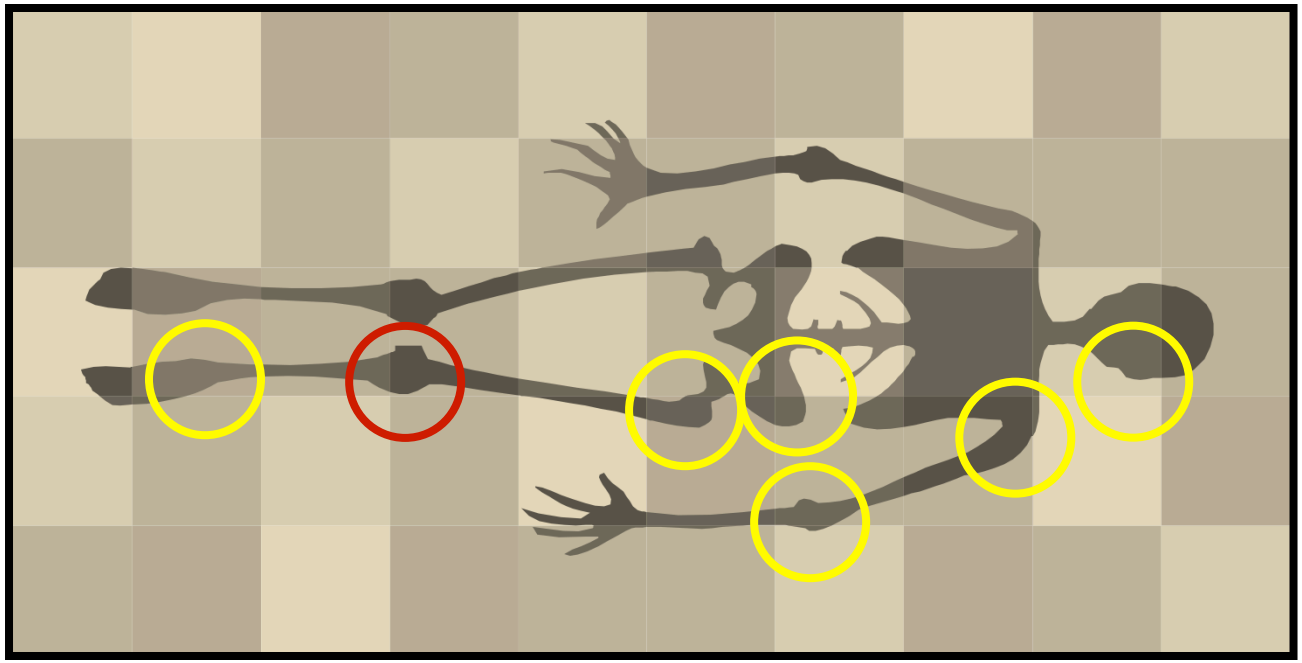
Lateral







Lateral



Obese Patients

Health Conditions

- Type II diabetes
- HTN
- Artherosclerosis
- Sleep apnea

Respiratory Issues

- Airway compromise
- Difficult intubation
- Aspiration
- Hypoxia
- Intra-abdominal pressure

Circulatory Issues

- Increased cardiac output
- Increased pressure on pulmonary artery
- Risk of inferior vena cava compression

Skin Issues

- Difficult assessments
- Skin breakdown
- Moisture

Obese Patients

Special Equipment

- Procedure beds
- Extra-wide/long safety straps
- Side attachments
- Pressure relieving surfaces

Position

- Sitting/Modified-sitting
- Lateral
- Supine with wedge under right side

Robotic Positioning

- Prior to draping, the patient's positioning should be tested for sliding, limb impingement, respiratory and circulatory problems.
- Periodic checks throughout the procedure to assess for positional shifts are required. This is always dependent on the ability to access the patient without compromising the surgical procedure or sterile field.
- After the team docks the robot and periodically throughout the procedure, safety checks should be performed to ensure proper positioning of the robotic arms and that they are not in contact with the patient.
- Eye goggles can be used to protect the eyes from the robotic arms, if they are going to be in close proximity to the face.

Documentation

- Preoperative assessment
- Names/titles of participants
- Patient position
- Upper extremities
- Lower extremities
- Equipment/Padding
- Specific actions
- Positioning checks
- Repositioning
- Postoperative assessment

Postoperative Assessment

- Nerve injury
- Pressure injury
- Reposition
- Transfer of care

References

1. Guideline for positioning the patient. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2017.