INTRODUCTION TO SURGICAL PATIENT POSITIONING

Alaska Perioperative Nursing Consortium
Oct 20th 2016
OBJECTIVES

- Be aware of the latest AORN recommended practices
- Review patient risk assessment
- Understand the role of the circulating nurse in preventing OR acquired pressure ulcers and neuropathies
- Review correct techniques employed for supine, prone, lateral, and lithotomy positions
According to AORN, the purposes of positioning the surgical patient are:

- Achieve optimum surgical exposure while preventing injury to anatomic structures
- Maintain the patient’s physiological stability
- Maintain a patient airway
- Allow access to physiologic monitoring devises and intravenous lines
A patient under anesthesia is at their most vulnerable. They cannot feel or communicate pressure, pinched skin, numbness or discomfort of any kind. They cannot reposition themselves. Proper surgical positioning can have a dramatic effect on post-op mobility, recovery and surgical complications.
SO, HOW DO WE PROTECT PATIENTS?

Assessment

Nursing Diagnosis

Nursing Process & Critical Thinking

Implementation

Planning

Evaluation
AORN RECOMMENDED PRACTICES INCLUDE...

- Performance and documentation of pre-, intra-, and postoperative positional assessments
- Addition of a pre-procedure positional patient assessment that includes a risk assessment to identify patients who are at high risk for a positional injury
- Intraoperative repositioning of high risk patients
Patient-specific risk factors such as
- Impaired mobility
- Impaired nutrition
- Impaired skin integrity
- Obesity/extremely thin
- Co-morbidities
- Age
- Prosthetics

Procedure Specific risks
- Long procedure
- Awkward Position needed for exposure.
Bony Prominences Review

- Occiput
- Ulnar/Humerus
- Sacrum
- Ischial Tuberosities
- Calcaneus
- Scapulae
- Iliac Crest
- Trochanters
- Coccyx
- Malleolus
BASIC SURGICAL POSITIONS

- Supine
- Lateral
- Prone
- Lithotomy
Arms out <90 degrees with Palms up.

Pillow under knees supports lumbar spine

Pressure points: Heels, scapulae, occipit.

If tucking, sheet under patient, not mattress.
LATERAL

- Side-lying, named for the side the patient is laying on
- Axillary roll
- Op side armrest
- Padding between knees.
- Pressure spots: ankles, knees, hips shoulders
- Watch angle of neck
Lower shoulder slightly forward, elbow flexed
Upper arm supported on gel lined arm holder
Lower leg is flexed
Lower leg lateral knee and ankle padded
Upper leg straight, level with hip & pillow between legs
Upper foot supported level with leg and hip
PRONE

- Face down, arms usually out <90 with elbows bent
- Pillows reduce pressure on knees, toes.
- Allow for chest expansion
- Don’t crush the dangly parts
- Take special care of face, no pressure on eyes or nose.
Supine with legs in Stirrups
- Watch fingers if arm are tucked
- Risk for nerve injury to hips and knees
- Knees should not lean on bars
- Lift and lower legs slowly, simultaneously.
Lithotomy and Anesthesia

- Acute angles of hips and knees may cause the major vessels to be compromised.
- Patient is at risk for circulatory and respiratory insufficiencies that may result of being placed in lithotomy.
- Increased risk of blood pooling in patient’s calf muscles increases risk of DVT.
- When patient’s legs are removed from stirrups at the end of the procedure, blood rapidly returns to the patient’s peripheral circulation and may cause an overall hypovolemic state.
- Increased risk for pulmonary congestion and respiratory compromise in head tilted down position.
OTHER COMMON POSITIONS

Fowlers →

Kidney →

← Traction
Seatbelts are safe for everyone.
POSITIONING CONSIDERATIONS

- Use a draw sheet, lift don’t slide.
- Use assistive devices when possible.
- Use good body mechanics.
- It takes 4 people to safely transfer an anesthetized patient.
- Surgeon should be present for positioning other than supine.
- Use only appropriate approved positional aids and ensure they are in working order
- More is not always better, too much padding increases pressure
- Eggcrate foam is overrated
Periodically check patient’s position and document

For longer cases, AORN recommendation is to check and document every hour

If patient is a high risk and it is possible, reposition the patient and document
IT’S ALL IN THE DETAILS

- Smooth sheets and keep gowns out from under patients
- Pad hands so wrist and fingers are in a natural position
- Padding under the knees reduces sacral pressure
- Spread out pressure, danger zones are areas where pressure is concentrated on a small point
- Keep safety straps off joints
- Avoid maceration
POSTOPERATIVE EVALUATION

- Examine areas under direct pressure to check for reddened skin vs reactive hyperemia.

- Reactive hyperemia will blanch under finger pressure, redness will resolve in a few hours.

- Pressure injury will not blanch under finger pressure, skin is starting to die.

- Allergic response - skin redness in response to adhesives (for example electrodes or bovie pad).
Positioning Injuries

- Stretching, twisting and/or compression injury to nerves and muscles = Neuropathies and compartment syndrome

- Skin shear and abrasion

- Maceration

- Pressure ulcer formation
MECHANISMS FOR SKIN INJURY

- Pressure
- Shear force
- Friction
- Moisture or wetness
- Heat

Examples:
- Adhesive tape applied directly to skin
- Elderly patient’s fragile skin
- Pooling of prep solution under patient
19-66% incidence of postop pressure ulcers may be OR related, some presenting 1-4 days postop.

Stage I or Stage II

- Directly related to length of time on the OR table
- 2.5 hour or greater significantly increases risk
- Patient age

Stotts, N. Predicting and Preventing Pressure Ulcers in Surgical Patients. AORN J. 2005:81986-1006
University of California, San Francisco
**Pressure Injuries**

### Stage: I

Intact skin with non-blanchable redness of a localized area usually over a bony Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

### Stage: II

Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister.

### Stage: III

Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscles are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

### Stage: IV

Full thickness tissue loss with exposed tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining tunneling.

### Suspected Deep Tissue Injury

Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft from pressure and/or shear. The area may be preceded tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

### Unstageable

Full thickness tissue loss in which the base of the ulcer is covered by (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.

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*Not pictured.

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MECHANISM FOR NEUROPATHY INJURY

- Compression or prolonged stretching of peripheral nerves
- The longer the period of time the more likelihood of damage
- Ischemic neuropathy
- Prolonged administration of large doses of anesthetic agents
MOST COMMON NEUROPATHIES

#1 Ulnar nerve damage
#2 Brachial Plexus nerve damage
#3 Lumbosacral nerve damage
#4 Common Peroneal nerve damage

** Upper extremity nerves are more susceptible to ischemia

Causes weak grip, inability to oppose or abduct 5\textsuperscript{th} and 1\textsuperscript{st} fingers, tingling, numbness

Common causes: elbow slips off mattress & hangs over metal edge of table compressing nerve between table and medial epicondyle

- Supinate patient’s forearms. Do not forcefully restrain arms
- Maintain arms on armboards at <90 degrees
- To tuck, extend draw sheet above elbows and back between the patient and the mattress. Tucking too tightly or using thick foam may cause ischemia
- Provide support and padding at elbows
A patient undergoing abdominal surgery in a Louisiana hospital was placed on the OR table with arms extended 45 degrees on arm boards. The surgeon stood at the patient’s right side throughout the 1 hr and 20 minute case. Postoperatively, the patient reported numbness and tingling in his right hand which persisted well after his discharge from the hospital. After hearing expert testimony at the trial, the jury found for the plaintiff.

The most likely scenario: The patient’s arms were not properly positioned, the surgeon may have leaned on the arm. The jury assigned fault to the anesthesiologist, surgeon and nurse for failing to meet the standard of care.

The Legal Eye Newsletter for the Nursing Profession, “Robertson vs Hospital Corp of America”
BRACHIAL PLEXUS NEUROPATHY #2

Causes shoulder pain or tenderness, numbness, flaccidity, partial sensation loss and spotty paralysis.

Caused by extreme positions of the head and arm, hyperextending arms in the supine position, arms falling off armboards or table

- Abduct patient’s arms less than 90 degrees
- Secure patient’s arms to avoid slipping off table
LUMBOSacral NEUROPATHY #3

Obturator nerve caused by extreme flexion of thigh at the hip - weakness or paralysis of adductors of thigh

- Minimize flexion of the hip
- Sciatic nerve injury can cause paralysis of muscles below the knee, numbness or foot drop
- Adequately pad OR table beneath patient’s buttocks
- Flex knees, minimally rotate thighs and flex knees
Causes foot drop, loss of dorsal extension, inability to evert foot, loss of sensation of dorsal foot

Caused by lateral knee resting against vertical bars or stirrups in lithotomy

- Place adequate padding between patient’s leg and lithotomy stirrup
MORE OF THOSE “NEVER EVENTS”

- Medicare no longer pays for preventable complications or “never events”

- No longer pays for treatment of stage III and IV pressure ulcers that develop after admission

Joint Commission Patient Safety Goal #14, 2007 - Pressure Ulcer Prevention
Increase surface area

Pad bony prominences

Use Gel positioners and overlays (they maintain normal capillary interface pressure of 32mm hg or less) and redistribute pressure

AORN recommends repositioning, checks, and documentation every hour
FOAM AND OTHER POSITIONING AIDS

Problems with foam and blankets
 foam is basically ineffective, bottoms out
 Blankets, towels, sand bags, sheets increase pressure

More is not better: Thick foam and tightly tucked arms = ischemia
 Patient should lie directly on gel overlays...don’t place foam/sheets on top of gel
More weight = extra pressure

- Risk for fall - paniculous can pull patient off table
- Risk for staff injury...communicate!
- Equipment selection: table weight limit, table side extensions, foot place, Hover Mattress
- Use complete gel table overlay (unless patient on Hover mattress)
- Secure arms and legs to prevent falling off the side of the OR bed
BARIATRIC POSITIONING CONCERNS

- Might need to raise the head and upper chest for difficult induction/intubation

- Additional weight compresses diaphragm
EVERY BED HAS A WEIGHT LIMIT FOR EACH ORIENTATION

can down to 580mm low, for doctors to sit down perform operations

kidney board

remote control for every movement

304# stainless steel

castors for move

blanket
LITHOTOMY AND BARIATRICS

- Use equipment suitable and appropriate for patient size/weight

- Reposition legs if possible during procedure
Not well tolerated due to pressure on the aorta and diaphragm
LATERAL BARIATRIC

- A bit better tolerated than prone
- Large abdomen can shift and pull patient over the side of the table
TRANSFER DEVICES
“Seeing that the patient’s pressure points are checked and the body repositioned every two to six hours to prevent pressure sores and to allow circulation was the responsibility of the nurses and the anesthesiologist”

Court of Appeals of Texas, June 9, 2011, published in the Legal Eagle Eye Newsletter for the Nursing Profession, July 2011
Document  Document  Document

- If you didn’t write it down, you didn’t do it

- Include who positioned, devices used, position, special attention paid, times checked during the operation, document that surgeon and anesthesia OK’d position as well
Patient risk assessment

Type and location of positioning equipment used

Name and title of persons participating in positioning

Patient position and reposition (if this occurs)