



OR Positioning Primer for the LNC

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For the non-perioperative nurse, the operating room is a clinical area that represents a black hole. Most nurses have limited surgical experience, if any. The policy and procedures are far more complicated than anywhere else in the hospital. There are rules for everything, from what to wear to how to count and even when you can go to the bathroom. Life in the operating room can be misunderstood by those unfamiliar with it. Patient safety dictates every thought and action.

INTRODUCTION

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else in the hospital. There are rules for everything, from what to wear to how to count and even when you can go to the bathroom. Life in the operating room can be misunderstood by those unfamiliar with it. Patient safety dictates every thought and action.

The goal of this article is to summarize the common surgical positions and provide information on what the legal nurse consultant should look for during an operative record review. This type of case is best reviewed by a perioperative expert with surgical experience and an

in-depth knowledge of surgical procedures, basic nursing assessment skills, proper positioning guidelines, operating room policies and procedures, and standards of care.

Intraoperative positioning is one cornerstone of safe perioperative nursing care. Guidelines for safe positioning are established by AORN, and hospitals develop policies based on these guidelines. Staff follow these recommendations every time a patient enters the operating room. The circulating nurse documents to ensure the operative record reflects what occurred. However, correct and safe positioning is essential and the responsibility of the entire surgical team: surgeon, assistants, nurses, and anesthesiologist. If an injury occurs, it is devastating to both the

patient and surgical team. The injury can range from short term neuropathy, to profound loss of sensation and function (Chandler, 2007) that leads to a permanent injury.

Prolonged stretch and compression due to improper positioning and a lack of padding of peripheral nerves can cause a nerve injury. (Fritzlen, 2003) The AANA Foundation analyzed 44 closed malpractice claims with nerve injuries. The most common nerve injuries were: brachial plexus (15), ulnar nerve (7), radial nerve (5), peroneal nerve (4), paraplegia (4), lumbosacral injury (3), and other injuries (8) (Fritzlen, 2003)

RECORDS REVIEW

The LNC's primary focus will be the intraoperative nursing notes. Do they

completely reflect care provided? Was something documented that was not done? Was something omitted?

Review the history and physical. Did the patient have risk factors? Risk factors include diabetes mellitus, peripheral vascular disease, renal failure, prior neuropathy, and obesity. Were they adequately addressed? Was the patient properly padded? Was the patient positioned correctly? Was the position documented correctly? Could anything have been done differently? An experienced LNC operating room nurse will be able to read between the lines and see what others cannot.

FACTORS TO CONSIDER

The patient relies on the surgical team's knowledge and expertise to provide

SURGICAL POSITIONS



Supine Position



Trendelenburg Position



Reverse Trendelenburg Position



Fracture Table Position



Lithotomy Position



Prone Position



Jackknife Position



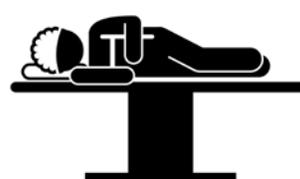
Fowler's Position



Knee-Chest Position



Kidney Position



Lateral Position



Wilson Frame Position

TABLE 1 (adapted from AORN positioning guidelines, 2018)

POSITION	KEY SAFETY POINTS	COMMON COMPLICATIONS
SUPINE	<ul style="list-style-type: none"> • Most common position • Causes extra pressure on occiput, scapulae, elbows, sacrum, coccyx, and heels • Maintain neutral position • Elbows and hands are padded • Arms are positioned on arm boards, palms up (supinated) • Safety strap, above knees • Legs parallel and ankles uncrossed • Pillow under knees to prevent lower back issues • Eyes closed with ointment and taped 	<ul style="list-style-type: none"> • Hyperextension of elbow can stretch median nerve, causing upper extremity neuropathy. • IV infiltration from tucking the patients arms at side. • When arms are pronated, ulnar nerve is vulnerable to compression • Brachial plexus injury increases when arms are placed on the arm board lower than OR mattress, and when arms are abducted over 90 degrees • Placing the safety strap over the knees increases risk from nerve injury • Prevents corneal abrasions
TRENDELENBERG	<ul style="list-style-type: none"> • The patient's feet are higher than the patient's head by 15 to 30 degrees. • Implementation should be taken to prevent the patient from slipping on the OR bed. • Arms should be tucked at side • Do not use shoulder braces • Position should not be used for the extremely obese >BMI 40 	<ul style="list-style-type: none"> • Increased intraocular pressure (leads to vision loss) • Rhabdomyolysis- the breakdown of muscle tissue that can lead to kidney damage (medlineplus.gov Jan 2019) • Sliding of arms on arm boards can cause brachial neuropathy. • Compression over the acromion can injure the brachial plexus
REVERSE TRENDELENBURG	<ul style="list-style-type: none"> • The patient's head is 15 to 30 degrees higher than the feet • Padded foot board to prevent patient from sliding down 	<ul style="list-style-type: none"> • Hypotension from venous pooling • Venous air embolism is potentially lethal complication • Peroneal and tibial nerve injury from foot and ankle flexion
LITHOTOMY	<ul style="list-style-type: none"> • The legs and pelvis are elevated • Leg holders at an even height • Legs should not rest against leg holders • Hips positioned to prevent excessive flexion, rotation or abduction • Legs slowly raised simultaneously with at least two people. • Legs removed from the stirrups in a two-step process using 2 people. First remove the legs and bring them together, then slowly lower them to the bed. 	<ul style="list-style-type: none"> • Raises or lowering legs too rapidly causes fluid volume shifts that can affect blood pressure. • Utilize 2 people to raise and lower the legs to avoid torsional stresses at the hip joint and pelvis
SITTING	<ul style="list-style-type: none"> • Semi-fowlers/beach chair position • Head elevation should be minimized • Head maintained in neutral position • Arms flexed across the body and secured (non-operative arm) • Buttocks padded • Knees flexed 30 degrees to prevent pressure on sciatic nerve • Safety strap across the thighs after the patient is positioned 	<ul style="list-style-type: none"> • Hypotension, bradycardia (cerebral desaturation) • Flexion or extension of head can cause injury. In rare cases, quadriplegia can result from c-spine ischemia from neck and head hyperflexion (Rozet, 2007) • Safety strap can tighten during positioning • Venous air embolism complication requires prompt recognition. Signs and symptoms include ST depression on EKG, and signs and symptoms of right heart failure (jugular vein distention, pulmonary edema, cardiac ischemia, arrhythmias, hypotension and cardiac arrest) (Gordy 2013) This can occur from the negative venous pressure and exposure of veins and bony sinuses, causing air to enter the pulmonary circulation. Treatment includes irrigation of the surgical site with saline, doing a head tilt down position or lateral decubitus position, and cardiovascular support with inotropes (Rozet 2007)

TABLE 1 (adapted from AORN positioning guidelines, 2018) continued

POSITION	KEY SAFETY POINTS	COMMON COMPLICATIONS
LATERAL	<ul style="list-style-type: none"> • Positioned on non-operative side • Head pillow under head • Arms supported on 2 level and parallel boards • Axillary support • Spinal alignment is maintained by the bottom leg flexed at hip and knee with top leg straight. Pillow placed between legs • Dependent knee, ankle and foot padded 	<ul style="list-style-type: none"> • Vulnerable to injuries on dependent side • Bilateral radial pulses should be checked after positioning and placement of axillary support
PRONE	<ul style="list-style-type: none"> • Obese patients have increased intraabdominal and central venous pressures in prone position. • Positioned in neutral position • Placed on 2 chest supports from clavicle to iliac crests • Prevent pressure on patient's eyes • Arms tucked at side or placed on arm board parallel to bed • Padded arm boards • Arms should not be positioned above the patient's head • Hands pronated • Arms and wrist in neutral alignment • Arms secured to padded arm boards (padded arm boards prevent some neuropathy) • Knees should be padded 	<ul style="list-style-type: none"> • Increase in cervical spine and brachial plexus injury by excessive stretch by flexion extension and lateral rotation • Incorrect placement of chest supports can cause nerve injury or inadequate chest expansion. • Brachial plexus injury risk is increased when patient's arm is abducted over 90 degrees. • Positioning the arms above the head can cause a stretch in brachial plexus

an experience free from injury and complication. Patient position is determined by the surgeon after discussion with the surgical team and a thorough preoperative assessment. Factors to consider include

- + procedure
- + length of the procedure
- + type of exposure needed
- + age
- + weight
- + preexisting medical conditions
 - vascular, neurological disease, obesity, respiratory issues, nutritional status, medications, overall health and mobility
- + Anesthesia: general block, combination, or various levels of sedation

The best position gives the surgeon optimal access to the surgical site, the

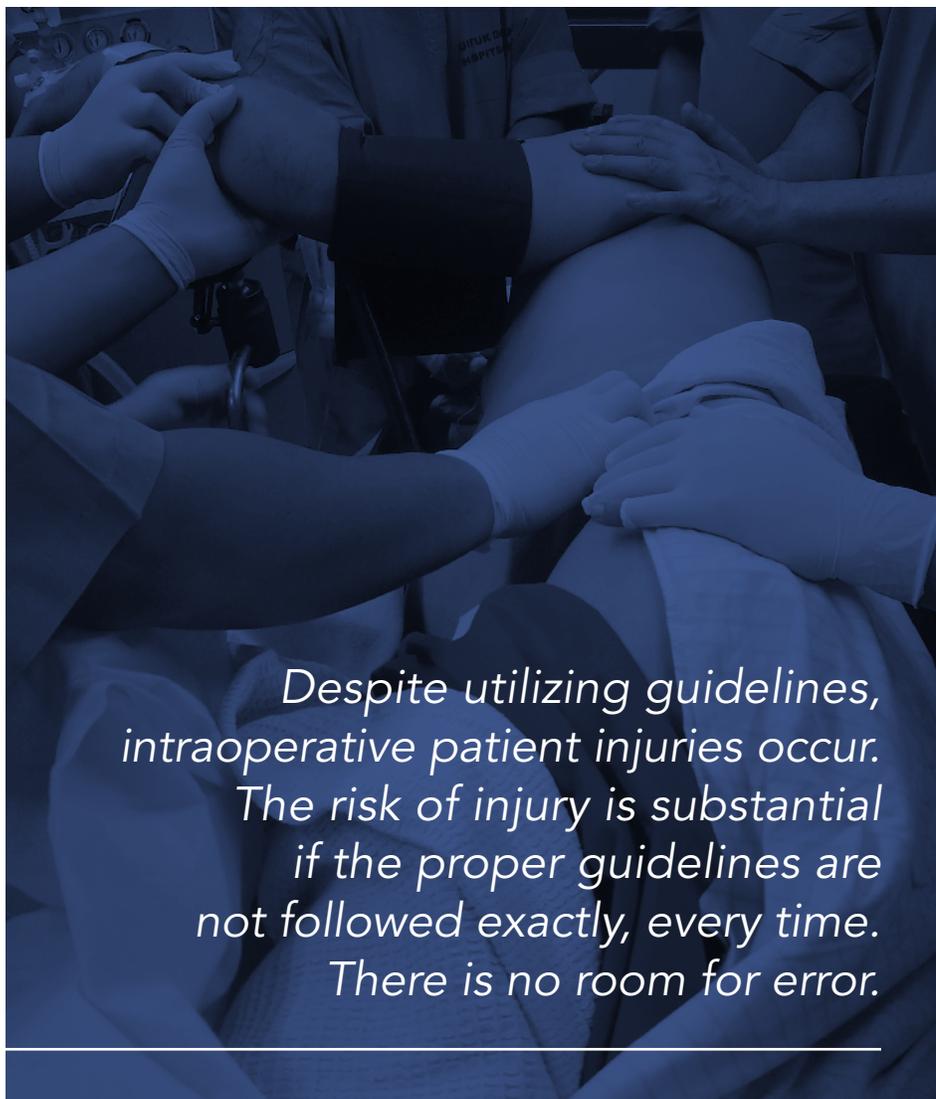
anesthesiologist access to the patients' airway and IV, and minimizes patient risk.

Goals include maintaining proper body alignment, reduction of pressure on bony prominences, and avoidance of awkward positions that can cause injury and postoperative pain. The anesthetized patient cannot speak, move, or comment on an uncomfortable position. They count on the advocacy of the surgical team to ensure their needs are met and they are kept from harm.

The most common surgical positions are summarized in Table 1.

Each position is supported by various devices: arm boards, leg holders, blankets, pillows, gel pads, sand bags, shoulder rolls, axillary rolls, safety belt, or straps. Devices should be used for what they are intended for and not altered. The patient must be maintained in proper body alignment, secured to the OR table and supported using the appropriate adjuncts so

Records review: An experienced LNC operating room nurse will be able to read between the lines and see what others cannot.



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the surgeon has the best access to the surgical field.

Positioning documentation is recorded in the intraoperative nursing notes. It must include who positioned the patient, what devices were used, and the time. Reassessment and updated documentation must be done if the position is altered during the procedure, and after prolonged time intervals. Once the procedure is finished, the patient is returned to supine position. The circulating nurse should do a complete body check for red-denied pressure points. The OR team transfer to the post-anesthesia care nurse provides operative information,

including position, adjuncts used, and events that may have occurred during the procedure that may contribute to an injury.

Breaches in standard of care can include:

- Failure to position correctly
- Failure to maintain proper body alignment
- Failure to adequately pad extremities
- Failure to advocate for the patient as to position
- Failure to document care given
- Inaccurate documentation

Despite utilizing guidelines, intraoperative patient injuries occur. The risk

of injury is substantial if the proper guidelines are not followed exactly, every time. There is no room for error.

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