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A SELF STUDY GUIDE

PATIENT POSITIONING BEST PRACTICE

Registered Nurses

OVERVIEW

Proper positioning of the surgical patient provides optimal exposure and access to the operative site while maintaining body system function and structural integrity; for these reasons, it is an important component of a safe patient care. While most body systems are impacted by positioning, two common positioning-related injuries are nerve damage and pressure ulcers. Preventing injuries related to positioning requires a thorough pre-operative assessment to determine patient-specific needs in regards to positioning and the required equipment and devices, pre-planning to meet the patient's needs, and application of the principles of safe patient positioning. In order to ensure physiologically safe positioning for all surgical patients, perioperative nurses should understand their overall responsibilities, including the various types of equipment and materials available today to prevent injury and enhance overall patient safety. This continuing education activity will review best practices and the perioperative nurse's responsibilities for safe patient positioning. The principles of safe positioning will be described, followed by a discussion of two potential injuries, nerve damage and pressure ulcers, that may result from improper or prolonged positioning.

OBJECTIVES

Upon completion of this educational activity, the learner should be able to:

1. Discuss the responsibility of the perioperative nurse in patient positioning.
2. Describe the principles of safe positioning.
3. Identify injuries (nerve damage and pressure ulcers) related to improper and prolonged positioning.
4. Describe the equipment and materials available for safely placing the patient in various surgical positions.
5. Discuss documentation associated with positioning.

INTENDED AUDIENCE

The information contained in this self-study guidebook is intended for use by healthcare professionals who are responsible for or involved in the following activities related to this topic:

- Educating healthcare personnel
- Establishing institutional or departmental policies and procedures
- Decision-making responsibilities for safety and infection prevention products
- Maintaining regulatory compliance

INSTRUCTIONS

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AN 85% PASSING SCORE IS REQUIRED FOR SUCCESSFUL COMPLETION

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PATIENT POSITIONING BEST PRACTICE

INTRODUCTION

Proper patient positioning is a critical factor for a safe and successful surgical outcome; the various positions needed for optimal exposure (ie, multiple and unnatural configurations), combined with the related effects of anesthesia, can result in adverse changes if the principles of patient positioning and safety factors are not taken into consideration and implemented.¹ Two potential injuries associated with surgical patient positioning are nerve damage and the development of pressure ulcers. Perioperative nurses are responsible for protecting patients from these and other injuries due to positioning; this responsibility includes interventions such as an accurate pre-operative assessment, pre-planning and collaboration with other members of the surgical team, as well as knowledge of the equipment and materials available today to safely protect, support and maintain a patient's position. Accurate documentation of the care provided and the use of positioning devices on the patient's intraoperative record is another important aspect of perioperative nursing care.²



RESPONSIBILITY OF THE PERIOPERATIVE NURSE IN PATIENT POSITIONING

In addition to providing optimal exposure and access to the operative site; the goals of patient positioning include:^{3,4}

- Maintaining body alignment;
- Supporting both respiratory and circulatory function;
- Safeguarding skin and neuromuscular integrity;
- Permitting optimum ventilation by maintaining a patent airway and avoiding constriction or pressure on the chest;
- Avoiding poor perfusion due to elevation of extremities (eg, in lithotomy position);
- Protecting the patient's fingers, toes, and genitals;
- Maintaining adequate circulation;
- Protecting muscles, nerves and bony prominences from pressure injury;
- Permitting access to intravenous (IV) sites and other anesthesia support devices and monitoring equipment; and
- Maintaining patient dignity, comfort, and safety by avoiding unnecessary exposure.

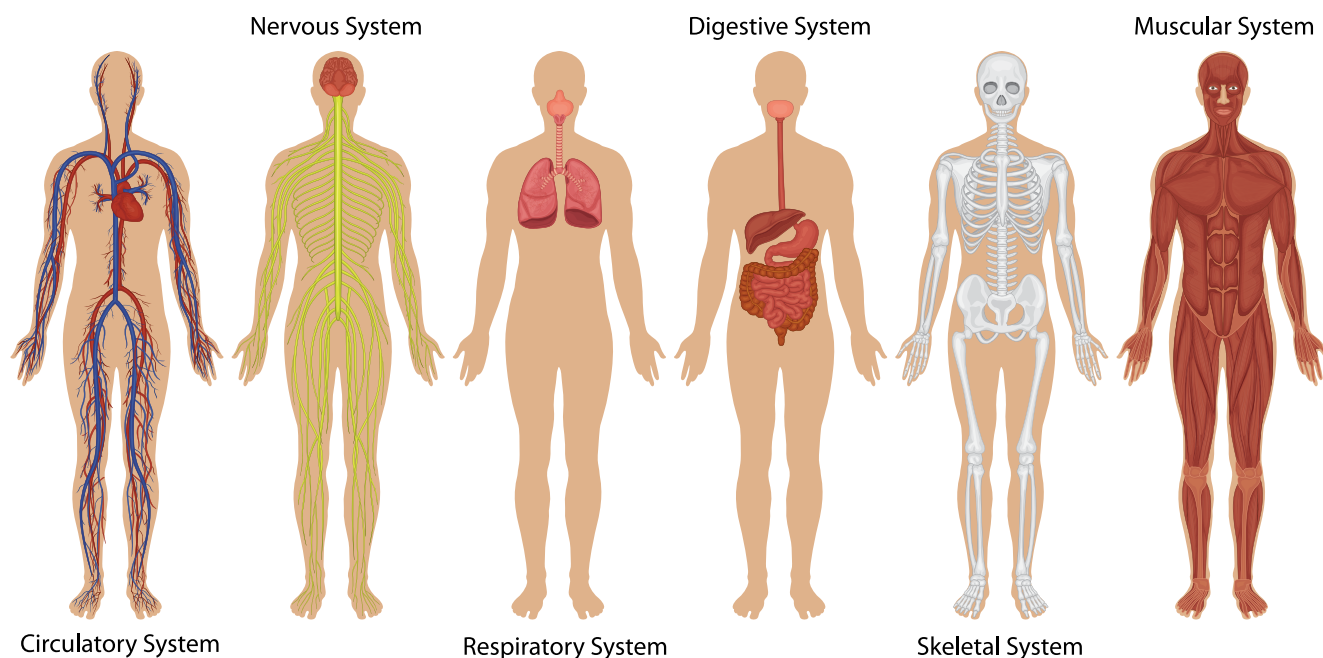
In regard to safe patient positioning, the perioperative nurse's responsibilities also include:⁵


- Understanding the goals of patient positioning;
- Performing an assessment in order to determine how the goals can be met;
- Planning for the needs of both the patient and members of the surgical team to promote an efficient and effective transfer and positioning;
- Collaborating with team members to plan positioning;
- Completing safety checks to verify proper equipment functioning;
- Documenting positions and patient-specific care that is provided; and
- Evaluating the outcomes of patient positioning.

Perioperative nurses are also responsible for having a thorough understanding of the anatomic and physiologic changes that occur as the result of positioning; most often, these changes impact:⁶

- The skin and underlying tissue;
- The musculoskeletal system;
- The cardiovascular, nervous, and respiratory systems; and
- Other susceptible areas, such as the eyes, fingers, breast, and perineum.

Human Body Systems





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There are several factors related to positioning that affect these changes, including the:⁷

- Type of surgical position;
- Length of time that the patient remains in the surgical position;
- Operating room (OR) bed, padding, and positioning equipment and devices used;
- Type of anesthesia the patient receives; and
- Surgical/operative procedure performed.

Perioperative nurses should also recognize that other factors, such as improper positioning, poor pressure distribution, improper use of positioning devices, twisting or compression of a limb, can result in an unexpected injury to the patient and also expose the entire surgical team to potential litigation.⁸

Advance planning is a key strategy for achieving the goals of surgical positioning; the goals cannot be met without a clear understanding of anatomy and physiology, knowledge of the patient's history and specific surgical needs.⁹ The first step in advance planning is performing a pre-operative assessment. Perioperative nurses routinely complete pre-operative assessments in order to identify patients who are at high risk of developing a positioning injury and also identify specific patient considerations that necessitate additional precautions to be taken for procedure-specific positioning.^{10,11} This assessment is particularly important since many patients are not seen until the morning of the surgical procedure.

Patient pre-operative assessment parameters should include, but are not limited to:¹²

- The patient's age;
- The patient's height, weight, and body mass index (BMI);
- The patient's nutritional status;
- Any allergies (eg, latex);
- Any preexisting conditions (eg, vascular, respiratory, circulatory, neurological, immune system suppression);
- Any physical or mobility limitation (eg, range of motion); and
- The presence of prosthetics, corrective devices, implanted devices (eg, pacemakers, orthopedic implants), or external devices (eg, catheters, drains, orthopedic immobilizers).

All findings of the pre-operative assessment must be clearly documented according to facility policy.¹³

Another perioperative nursing responsibility is the identification of patient needs for safe positioning.¹⁴ Through advance planning, the surgical team members will know what patient-specific positioning requirements are needed and have them available in the room prior to the patient's arrival (eg, positioning devices, equipment, the appropriate number of people in the room); this can result in saving time as well as protecting the patient from a potential positioning injury. Equipment needs should be checked for availability before the patient is transferred to the OR and also for proper function in order to prevent delays in the surgical procedure and minimize the risk for patient injuries. Safety checks of all equipment to be used should be completed well before the patient is transferred to the OR.

PRINCIPLES OF SAFE POSITIONING

In order to meet the responsibilities for patient positioning, it is critical that perioperative nurses understand and demonstrate competency in the principles of safe patient positioning regarding the anatomic and physiologic considerations for normal functioning of the vital systems, as well as patient-specific needs identified during the pre-operative assessment. Considerations for safe positioning related to preventing nerve injuries and pressure ulcers, as well as those for obese patients, are discussed below.

- Nerve injuries. Iatrogenic nerve injury due to improper surgical positioning and external compression or twisting is a potential surgical complication.¹⁵ In the United States, 15% to 16% of post-operative litigation cases arise from nerve injury claims.^{16,17,18} The most frequent sites of nerve injury reported are ulnar nerve, brachial plexus, lumbosacral nerve root, spinal cord, peroneal, and facial nerves.^{19,20}

Although the exact etiological cause of post-operative anesthesia nerve injury remains unknown, it has been assumed that external pressure/compression exerted against the nerve during a surgical procedure is the primary cause; the stretching, twisting, and compression of peripheral nerves, and the resulting ischemia, are the primary factors in all nerve injuries.²¹

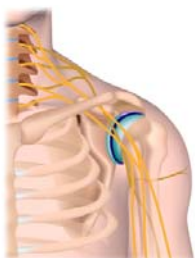
- Pressure injuries/ulcers.²² Millions of surgical procedures are performed annually across the United States. During a surgical procedure, patients are anesthetized and often put into positions that may cause pressure or compression to the tissue for long periods of time. Because anesthetized patients are unconscious and immobile, they cannot complain of pain or discomfort, nor can they reposition themselves to a level of comfort, which is a natural reaction to discomfort.

- The development of an intraoperative pressure ulcer can result in pain, increased length and or number of hospital stays, possible disfigurement,²³ and increased costs of care for the healthcare facility. The costs for treating a pressure ulcer can total as high as \$100,000 to heal one full thickness pressure ulcer.²⁴ Nationally, the estimated cost of treatment of pressure ulcers is closer to \$1.34 billion.²⁵ In addition to the costs of treatment and nursing care, a pressure ulcer acquired in the OR also exposes a facility to potential litigation. More than 17,000 pressure ulcer related lawsuits are filed every year; typically, the settlement involving healthcare acquired pressure ulcers is approximately \$250,000.²⁶

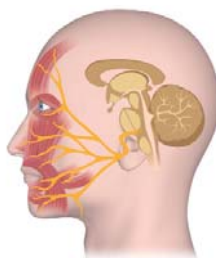
In the OR, pressure ulcers develop from improper positioning, inadequate padding and protection, incorrect use of positioning devices, and extended periods of pressure.²⁷ Shearing and friction can lead to tissue damage as well, thereby increasing the potential for development of a pressure injury.

Another key consideration regarding pressure ulcers acquired in the OR is that they are often incorrectly identified as burns or an area of reddened skin because pressure ulcers in the OR appear differently than pressure ulcers acquired in the general hospital.²⁸ While there are many definitions of an OR-acquired pressure ulcer, the result is the same: deep tissue damage resulting from pressure and ischemia. It has been estimated that one in four patients is at risk for developing an intraoperatively-acquired pressure ulcer.²⁹ Pressure ulcers that originate during surgery may not appear until one to four days post-operatively;³⁰ therefore, they are not recognized as beginning in the OR.³¹

The Brachial Plexus



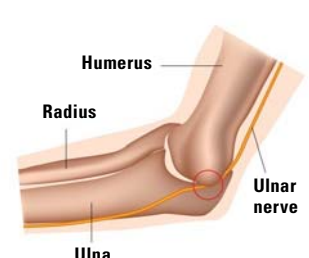
The Facial Nerve



The Lumbar Plexus

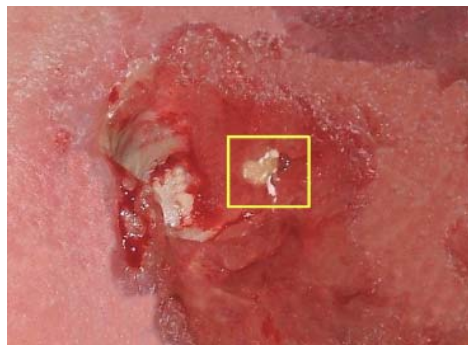


Ulnar Nerve Impingement



Frequent Nerve Injury Sites

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Pressure Ulcer

- **External skin pressure.**³² External skin pressure over the normal capillary interface pressure (ie, 23 to 32 mm Hg) can lead to capillary occlusion that will impede or block blood flow; the resulting tissue ischemia leads to tissue breakdown. Both high pressure for a short duration as well as low pressure for prolonged duration are risk factors for a pressure injury.
- **Obese patients.** As more obese patients present for medical and surgical care, perioperative nurses face additional issues and challenges related to the special positioning needs and equipment for this patient population in order to provide the safest possible environment of care.³³

Obesity is a risk factor for positioning injury for several reasons: a heavier patient may not fit adequately on the surface of the OR bed; this places additional strain on the safety strap that holds him/her in place, thereby increasing the risk for strap-related skin injuries.³⁴ In addition, surgeons might request tilting of the OR bed surface to the side in order to facilitate access to a surgical site in the abdomen; this shifts a significant amount of body weight onto the pelvic bones, which can cause ulcerations in unexpected areas.³⁵

During the pre-operative assessment, the perioperative nurse should also be aware of comorbidities in obese patients that increase their risk for complications, such as:³⁶

- Diabetes;
- Hypertension;
- Hyperlipidemia;
- Cardiac disease;
- Sleep apnea;
- Osteoarthritis;
- Gastroesophageal reflux disease;
- Depression; and
- Stress incontinence.

Adequate padding on the OR bed is essential for the obese patient. The extra weight of the patient places additional pressure on the areas that come in contact with the OR bed or the positioning devices used.³⁷

INJURIES RELATED TO IMPROPER AND PROLONGED POSITIONING

As noted above, the potential for nerve damage and the development of pressure ulcers is a key safety consideration related to patient positioning; these are discussed in greater detail below.

NERVE INJURIES

Peripheral nerve injury can occur during positioning due to compression (ie pressure), stretching, direct trauma, laceration, ischemia, or metabolic derangement; of these, stretching and compression are being the primary causes of positioning-related nerve injuries.³⁸ Prolonged pressure on or stretching of peripheral nerves can lead to a range of injuries, from sensory and motor loss to muscle wasting and paralysis.³⁹ Prolonged stretching associated with hyper-abduction of an extremity or compression due to pressure leads to ischemia, which can result in necrosis; additionally, collateral damage to surrounding tissue and capillaries can impair circulation and thus nourishment to the nerves.⁴⁰ The result of the combination of these forces is structural or functional nerve damage.⁴¹

All patients undergoing surgery are at risk for nerve injury if constant pressure is placed on nerves; both patient-related and procedure-related factors may increase the risk for intraoperative neuropathies.⁴² Perioperative risk factors for the development of pressure ulcers risk include:⁴³

Pre-operative

- Procedures planned for 3 hours or more;
- Patients older than 62 years of age;
- Albumin less than 3.5 g/dl;
- American Society of Anesthesiologists (ASA) physical classification score of 3 or higher;
- Use of cardiopulmonary bypass;
- Procedures performed in the prone position;
- Diabetic patients;
- Patients with a BMI below 19 or above 40;
- Trauma, orthopedic, vascular, transplant or bariatric procedures; and
- Frail, elderly patients with fragile skin and without natural layers of fat to help pad their bones

Intra-operative

- Increase in hypotensive episodes;
- Hypothermia; and
- Use of vasopressors.

Post-operative

- Use of vasopressors and
- Decreased mobility on Post-Operative Day 1.

Generally, nerve damage will go unrecognized until the patient is transferred to the post-anesthesia care unit or possible days or weeks after surgery; this delay can cause confusion as to whether the injury occurred during surgery or the patient's course of recovery.⁴⁴

PRESSURE ULCERS

A pressure ulcer is defined as any area of the skin or underlying tissue which is damaged due to unrelieved pressure or pressure combined with friction and shear.⁴⁵ Pressure ulcers develop when the soft tissue is compressed between a bony prominence and an external surface for a prolonged time; the compression leads to a diminished blood supply, which in turn results in reduced oxygen and nutrient delivery to the affected tissues.⁴⁶

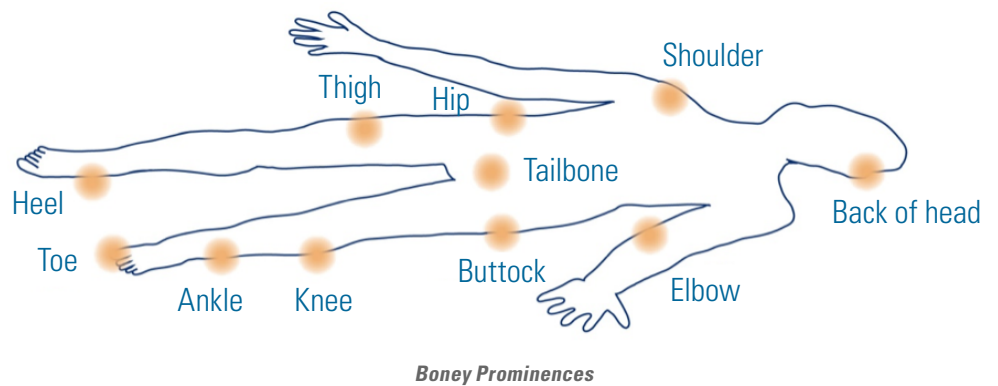
Unfortunately, the incidence of perioperative pressure ulcers is rising;⁴⁷ a nearly 80% increase in hospital stays of patients with pressure ulcers has been reported from 1992 to 2006.⁴⁸ The incidence of pressure ulcers that occur as the result of surgical intervention may be as high as 66%.⁴⁹ In the past, both healthcare providers and regulatory agencies have focused on hospital-acquired pressure injury (HAPI), but not on those acquired in the OR.⁵⁰ While numerous articles in the literature relate to HAPIs generally, very little research has focused on pressure injuries among surgical patients until the past decade. Recently, research findings indicated that the majority of pressure ulcers begin in the OR.⁵¹

In the current U.S. healthcare environment, hospitals are seeing reduced reimbursement for HAPIs.⁵² According to the 2008 ruling on the Inpatient Prospective Payment System by the Centers for Medicare and Medicaid Services (CMS), hospitals are no longer reimbursed for the additional costs of hospitalization and care related to hospital-acquired conditions (HACs) that were determined to be reasonably preventable, including stage III and stage IV pressure ulcers that develop during a hospital admission; in addition, the patient is not responsible for the additional costs.⁵³ This ruling incentivizes hospitals and healthcare facilities to better understand patient risk factors and process of care that may increase the risk for pressure ulcer, and to also implement preventive measures, regardless of where the pressure injuries begin.^{54,55} Additionally, there is the recently implemented Hospital Acquired Condition Reduction Program (HACRP). Under this program, hospitals that rank in the worst performing percentile regarding hospital acquired condition (HAC) quality measures will be subjected to a reimbursement payment reduction of 1% below what they would have otherwise been paid.

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At the April 2016 consensus meeting of the National Pressure Ulcer Advisory Panel (NPUAP), the panel voted to change the terminology from “pressure ulcer” to “pressure injury,” noting that this term more accurately reflects pressure injuries to both intact and non-intact skin.⁵⁶ Therefore, pressure injury will replace pressure ulcer in the NPUAP’s pressure injury staging system (formerly the pressure ulcer staging system). Pressure injury is a more inclusive term than pressure ulcers and represents the pressure damage a surgical patient may incur post-operatively, eg, nerve damage, deep vein thrombosis, or a pressure ulcer. Usually, perioperative personnel are not able to observe these injuries immediately after the surgical procedure; instead, the injuries become apparent later during the patient’s recovery phase. In addition, because pressure ulcers may not fully develop until up to four days post-operatively, as noted above, the distinction between a pressure ulcer and pressure injury is significant for perioperative personnel who can assist in preventing pressure injuries, but may not be involved in caring for the patient days later when an ulcer develops.

In the OR, a pressure ulcer or injury usually results from extended periods of pressure with the inability to move, inadequate pressure redistribution surfaces, incorrect use of positioning devices, or improper positioning.⁵⁷ Because pressure ulcers can develop in a short period of time post-operatively, one important measure for preventing pressure ulcers is to accurately identify all patients who are at risk for this complication.⁵⁸



Several critical factors related to the mechanism of skin and underlying tissue injuries that are inherent to the OR environment are described below:⁵⁹

- Patients undergoing general or regional anesthesia are at higher risk for skin injury because of the physiologic changes associated with anesthesia as well as the inability to move or feel pressure or pain.
 - The physical forces of pressure, shear, and friction are often used to establish and maintain a surgical position; these forces can damage both the skin and underlying tissue.
 - Pressure is defined as the force placed on underlying tissue; it can result from the weight of the body as gravity presses it downward toward the surface of the OR bed. Pressure can also result from the weight of equipment or personnel resting on or against the patient.
 - Shear is defined as the folding of the underlying tissue when the skeletal structure moves, but the skin remains stationary; eg, when the head of the OR bed is raised or lowered or when the patient is placed in the Trendelenburg position.
 - Friction is defined as the force of two surfaces rubbing against one another. On the patient's skin, friction can occur when the body is dragged across the bed linens instead of being lifted. Friction can denude the epidermis and increase the skin's vulnerability to pain, infection, and pressure ulcer development.
- Conditions in the OR environment, eg, moisture, heat, cold, and negativity further increase the susceptibility of the skin and underlying tissues to injury.
 - Moisture. In excess, moisture can lead to maceration, which exacerbated the effects of pressure, shear, and friction. Maceration occurs in the presence of prolonged moisture on the skin, which saturates the epidermis to the point that connective tissue fibers dissolve and therefore can be easily torn apart. There are several situations in which maceration may occur, eg, when a patient perspires excessively or remains in a pool of prep or irrigation solution, blood, urine, or feces.
 - Heat. When heat is applied to the body surface, tissue metabolism increases and multiplies the oxygen demand. If the tissue is also under pressure, vasoconstriction of may impede blood flow so that the increased metabolic demands are not met.
 - Cold. The cold environmental conditions found in the OR can lead to hypothermia. A cold core temperature can diminish peripheral circulation, thus reducing oxygen delivery to both the skin and underlying tissue.

- Negativity. Negativity occurs when layers of materials, eg, extra sheets or blankets, are placed over the OR bed mattress or padding. Extra linen is abrasive and lessens the pressure-reducing properties of the mattress or padding; for these reasons, extra layers of linens or other materials placed between the patient and the OR bed mattress should be avoided as much as possible. It is also important to ensure that the patient's gown is untied and that the gown and blanket do not become lodged under the patient.

EQUIPMENT AND MATERIALS AVAILABLE FOR SAFELY PLACING THE PATIENT IN VARIOUS SURGICAL POSITIONS

The major safety feature consideration for positioning equipment, devices, and materials is that they redistribute pressure, (known as off-loading of weight), particularly at bony prominences on the patient's body; positioning equipment should be used in a safe manner and in accordance with the manufacturers' written instructions in order to decrease the risk for injury.⁶⁰

GENERAL CONSIDERATIONS

Some general considerations for the safe use of positioning equipment, devices, and material include:⁶¹

- All positioning equipment, devices, and materials should be inspected on a regular basis and maintained in good operating condition. Any piece of equipment scheduled for use during a procedure should be checked before use to confirm that the surface is smooth and intact.
- Perioperative personnel must demonstrate competency when using positioning equipment, devices and materials; this includes knowing and complying with facility policies and procedures, as well as reviewing the manufacturers' instructions that accompany positioning devices and equipment. These documents often state restrictions regarding the use of the devices and also outline patient weight limits. Both patients and personnel are at risk for injury if positioning equipment is not used according to the manufacturers' instructions.

One factor that may be overlooked in safe patient positioning is the age and condition of the OR bed mattress; this is a general risk factor that can be assessed and addressed immediately.⁶² Research studies have found that standard 2-inch thick foam pads covered with laminated vinyl may actually increase the risk of pressure ulcers developing during surgery; moreover,

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pads that are 2 inches thick or less do not provide adequate support for heavier patients. Personnel should consider replacing standard OR bed pads with thicker coverings comprised of multiple layers of dense foam that is specifically designed to disperse load pressure across the surface area. Perioperative personnel should also be aware that additional layers of linen, padding, or warming devices can interfere with the ability of the surface to redistribute pressure.



OR Table with Standard Mattress

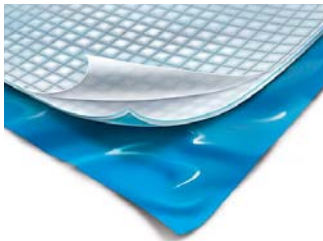
Another important consideration is to avoid using sand bags, rolled towels, or water bottles for padding; these items actually put a great amount of pressure on areas susceptible to pressure injuries.⁶³ If convoluted foam padding (eg, egg crate foam) is used to pad boney prominences, the layers should be doubled, as the valley of a single egg crate does not add very much protection.

PRESSURE-REDISTRIBUTING MATTRESSES

A pressure-redistributing mattress should be used on procedure/OR beds for all patients who are at risk for developing pressure ulcers.⁶⁴ The traditional OR/procedure bed mattress is typically constructed of one to two inches of foam, covered with a vinyl or nylon fabric; however, research studies have demonstrated that foam overlays or replacement pads, which represent the majority of OR/procedure bed mattresses, do not possess effective pressure-reduction capabilities.⁶⁵ Studies that compared the pressure-reducing abilities of standard foam procedure bed mattresses to gel mattresses (ie, viscoelastic polymer) have reported that gel mattresses are more effective.^{66,67} One study found that polyether mattresses generate a lower capillary interface pressure when the patient was in the supine position than either gel or foam mattresses. Another study reported that both foam and gel mattresses are effective for preventing skin changes, but viscoelastic overlays are effective for preventing both skin changes and pressure sore formation.⁶⁹

PADDING

A high-quality, absorbent underpad should be used to manage moisture for every patient.⁷⁰ Many of these pads are strong enough to be used as a drawsheet, and therefore eliminate redundant linen between the patient and the surface of the OR bed.



Disposable Quilted Hydrophilic Table Linen

Foam or gel dressings should be placed over areas of concern, for example:⁷¹

- In the supine position, the heels are common problem areas and need to be positioned off the surface of the OR bed.
- During procedures when the head is elevated (eg, breast surgeries), skin break down can occur on the sacrum.
- In gynecological procedures, skin break down can occur on the lower part of the buttocks.

Reusable gel pads, which are specifically designed to relieve pressure on bony prominences work very well, particularly if they can be molded to conform to a patient's specific body shape.⁷² However, these pads must be thick all the way through to provide full protection; because they can wear out, it is important to check them before use to ensure that the gel has not separated. The manufacturers' written instructions must be followed when applying specific positioning aids to ensure they protect the patient as indicated.

MARKET INNOVATIONS – VISCOELASTIC FOAM PRODUCTS⁷³

Today, viscoelastic foam (also known as memory foam) products - first commercialized during the mid 1960's as a result of a National Aeronautics and Space Administration's (NASA's) research technology transfer program - are being used for patient positioning, as noted above. This open-cell variation of flexible polyurethane foam (FPF) is noted for its properties to redistribute the G-Force experienced by astronauts during take-off and re-entry and also to provide commercial pilots a more comfortable seating surface during long flights. Viscoelastic pressure distribution performance is one of the most significant innovations in comfort from the FPF industry.

Viscoelastic foam is characterized by its slow recovery following compression. When a weighted object (eg, the human body) is positioned on viscoelastic foam, the foam progressively conforms to the shape of the object; once the weight is

removed, the foam slowly returns to its initial shape. Because of this gradual recovery, viscoelastic foam is also described as "slow recovery" foam. Other key characteristics include its ability to dampen vibration and absorb shock; some viscoelastic products also react to body temperature as well as ambient temperatures and soften with heat to more easily adjust to body contours.

The unique physical characteristics of viscoelastic foam have led to its popularity in the healthcare industry, as well as the bedding industry. Due to its conforming properties, viscoelastic material provides a comfortable and supportive mattress or mattress pad; its low resilience also works well for pillows. People with impaired mobility, ie, those confined to wheelchairs or hospital beds (in particular, burn victims) can benefit from the capacity of the foam to redistribute weight and surface pressure, potentially reducing the development of pressure ulcers caused by the increase in pressure between the skin and bony prominences of the body.



Viscoelastic Memory Foam

As stated above, viscoelastic foam can closely conform to the shape of the human body; therefore, it can efficiently and effectively distribute pressure over the entire surface. Pressure-mapping equipment is often used to compute the degree of weight distribution; some manufacturers perform mapping as an indication of how well the foam can minimize pressure. During the mapping procedure, a computer program monitors pressure; an impression of the body is then graphed to represent which areas bear the most pressure (primarily, the scapulae, posterior region, head, heels, calves, and elbows). In comparing the readings performed on viscoelastic products to those of conventional foam and other common cushioning surfaces, the pressure differences are noteworthy.



Viscoelastic & Foam Positioning Devices



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DOCUMENTATION ASSOCIATED WITH POSITIONING

The AORN Guideline for Positioning the Patient recommends that the registered nurse circulator document patient care and the use of positioning devices on the intraoperative record; documentation should include, but not be limited to the following:⁷⁴

- The pre-operative nursing assessment, including a description of the patient's overall skin condition upon arrival and at discharge from the perioperative suite;
- Both the type and location of equipment used for positioning;
- Names and titles of persons who assist in positioning the patient;
- The patient position as well as the new position, if it becomes necessary to reposition the patient; and
- The post-operative nursing assessment for any type of injury related to the patient's position.

In the event of any injuries due to positioning, photography used to document the injuries should be consistent with the healthcare facility's policies related to medical photography and videotaping. While the American Medical Directors Association's guidelines for pressure-ulcer prevention and treatment recommend the use of photographs as a way to monitor the progress of wound care, risk management experts and healthcare attorneys may advise against including photographs in the patient's medical record.

SUMMARY

Proper patient positioning is a critical factor for a safe and successful surgical outcome; while positioning permits optimal exposure and access to the operative site, it should not compromise body systems or vital structures. Two potential injuries associated with surgical patient positioning are nerve damage and the development of pressure ulcers. Pressure ulcers that originate during surgery may not appear until one to four days post-operatively and often are not recognized as beginning in the OR. Various types of positioning equipment, devices, and materials are available to prevent injury and enhance overall patient safety; today, viscoelastic foam products that closely conform to the shape of the human body can efficiently and effectively distribute pressure over an entire surface, thus providing pressure reduction and pressure relief. As the patient's advocate, perioperative nurses are responsible for protecting patients from positioning-related injuries; in this regard, perioperative nurses should conduct an accurate pre-operative assessment; pre-plan and collaborate with other members of the surgical team; demonstrate competency in the knowledge and skills to prevent injuries and the use of positioning equipment, devices, and materials; comply with manufacturers' instructions for use and professional practice guidelines; and accurately document patient positioning activities and equipment used. Through knowledge and application of patient positioning best practice, perioperative nurses can promote both patient safety and optimal surgical outcomes.

GLOSSARY

Body Mass Index (BMI)

The weight-to-height ratio calculated by dividing weight (in kilograms) by height squared (in meters); it is used as an indicator of obesity and weight categories that may lead to health issues.

Capillary Interface Pressure

The amount of pressure that is placed on the resting surface of the skin over a bony prominence; normal capillary interface pressure is 23 to 32 mm Hg.

Friction

The force of two objects or tissue surfaces rubbing against one another.

Iatrogenic

Medically induced; an adverse illness or condition caused by medical or surgical treatment.

Maceration

The softening and break down of skin resulting from prolonged exposure to moisture.

Morbid Obesity

A person who is 100 pounds over his/her ideal body weight; has a BMI of 40 or greater; or a BMI of 35 or greater and experiencing obesity-related health conditions, such as diabetes or hypertension; morbid obesity is a serious health issue.

Positioning Devices/Equipment

Any device or piece of equipment that is used for positioning the patient and/or providing the maximum anatomic exposure. Positioning devices and equipment include, but are not limited to support devices for the head, arms, chest, iliac crest, and lumbar areas; pads in various shapes and sizes for pressure points (eg, head, knees, heels); securing devices (eg, safety belts, vacuum-pack positioning devices); OR/procedure bed accessories (eg, headrest, overhead arm supports, stirrups, footboards); and specialty surgical tables (eg, fracture table).

Pressure

The force that is applied vertically or perpendicular to the surface of the skin and underlying tissue.

Pressure Injury

Localized damage to the skin and underlying soft tissue, typically over a bony prominence or related to a medical or other device; the injury can manifest as intact skin or an open ulcer and may be painful.

Pressure Ulcer


Localized injury to the skin and/or underlying tissue, typically over a bony prominence as the result of pressure or pressure in combination with shear.

Shear

A sliding movement of the skin and subcutaneous tissue that leaves the underlying muscle stationary.

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