All the right moves!

Positioning the Patient in the OR

By Regina Leonard, R.N., B.Sc.N., M.Ed.

Patient care and safety in the OR is a joint responsibility of nurses, surgeons and anaesthetists. The perioperative nurse, however, is becoming more and more recognized as the main manager of the OR patient's care co-ordination. Although other personnel may change from case to case, the nurse is the constant and consistent personnel member in the OR theatre. The responsibility for patient care co-ordination includes the management of patient positioning.

Advance care planning for surgical positioning assures team preparation for the patient, thus avoiding or minimizing patient delays, and avoiding prolonged anaesthesia and surgical time. The goal of OR planning is that the patient will receive continuous, efficient, safe, quality care in the OR. Once the care plan is defined, implementation of the planned actions is more efficient. Throughout the procedure, on-going evaluation occurs to ensure that all is in order from the patient, nursing and medical perspective. At the completion of the surgery, the patient's overall surgical experience is re-assessed for overall integrity and needs, and the case is re-assessed for the purpose of noting what was done well and what, if anything, could be improved.

Assessment, planning, implementing, and evaluation become quite automatic to the experienced surgical team. The use of procedure preference lists and team communication are but two effective tools that can be used to avoid errors, discrepancies, and patient injury. The major concerns for injury and liability during the OR surgical experience are foreign bodies left in wounds, electrosurgical burns, prep solution burns, and circulatory and nerve impairment due to pressure injuries.

With todays trend toward surgical procedures being completed in outpatient departments, day surgeries, offices, clinics, etc. where local and block anaesthesia are used more frequently, patients are awake for surgery and can more readily alert the caregivers as to their operative concerns including uncomfortable positions. With this trend, the number of positioning-associated problems is expected to decrease. It is in the main operating room, where the already compromised patient is having a lengthy procedure, that positioning of the unconscious patient is more likely to cause injury.

The remainder of this presentation deals with the "rights" of surgical positioning, objectives of positioning, patient assessment, anatomical and physiological integrity, and positioning documentation.

"Rights" of positioning

Right patient

The importance of correct patient identification goes without saying. The patient ID band should be accessible throughout the procedure.

Right operative procedure

It is imperative that the patient demonstrate knowledge about the procedure, that the correct procedure is on the completed consent and doctors' orders, and that the OR team members be knowledgeable regarding the procedure.

Right location

The site of the surgery is to be identified and stated by the patient and on the consent form: is the surgery on the foot, the abdomen, the face, etc.? On which side is the surgery to be performed? If any doubts occur, ensure that the physician and patient are both in agreement as to the location of the surgery.

The nursing personnel need to know and integrate their anatomy and surgical technology with the surgical position. Placing a patient, for a thyroglossal cyst (thinking that the cyst is behind the knee), in a prone position is unacceptable.

Right surgical approach

As perioperative nurses we need to know the surgeon's approach to surgery. A hemorrhoidectomy, for example, can be completed in prone position, lateral position, or variations thereof. It is important to place the patient in the correct position the first time. Patient movements and re-positioning should be limited in order to offset any anaesthetic problem and unnecessary physiological patient disruption.

Right equipment

This relates to the above rights, the need to assess the patient beforehand, and to devise and implement the plan of action. Ensure that equipment is available, functional, and fits this patient's needs. Have enough personnel resources available to place and maneuver the equipment while effecting safe patient practice.

Right documentation

All nursing actions are recorded on the OR nursing record. Note position, side, equipment used, padding completed, deviations, and unusual occurrences. Remember, if it isn't documented, it isn't done.

Objectives of surgical positioning

Maximum patient safety and comfort

The patient is the number one concern in the OR. All efforts of personnel are directed at treating the patient's condition in an efficient, safe, dignified, and comfortable manner. The aim is to have the patient leave the OR free from unintentional injury.

Optimal anaesthetic administration

The anaesthetist needs to access the patient for anaesthetic induction, during maintenance of anaesthesia, and during the reversal stage of anaesthesia. The majority of patients for general anaesthesia are initially placed in supine position and then re-positioned to afford surgical access. Whenever a position is changed, the anaesthetist needs to be notified as changes in physiological conditions can and do occur.

Optimal surgical exposure

The surgeon needs to be able to access the operative site and most times requires surgical assistants to help. The position of the patient should allow freedom for movement and ease of placement for personnel, resources and lighting. It is important that the surgical team is comfortable and located as near as possible to the operative site to facilitate quick, efficient surgery.

Anatomical and physiological integrity

The systems of the body which are most affected by surgical positioning are circulatory, respiratory, integumentary, musculoskeletal, peripheral neural, and vascular. These will be addressed in more detail further on in this article.

Patient dignity

Try and imagine yourself lying on the OR table in that designated position. How would you like to be treated?

Patient assessment

There are several factors to consider when assessing the patient. The following have been selected for brief discussion. The list is not all inclusive and is presented for example only.

Age, weight, sex, medical diagnosis

Let's take the example of a 42-year-old, 110 lb., 5' 2" healthy female and compare her to a 42-year-old, 110 lb., 5' 8" medically compromised male. It is evident that both these patients have unique and very different needs.

Circulatory, respiratory, integumentary, musculoskeletal, peripheral neural, and vascular systems

Areas of deficit and anomalies in these systems need to be identified and accommodated. We are aware that there are several medical diagnoses related to these systems. The patient may have varicosities or ulcers on legs; may be short of breath or a heavy smoker; may have skin that is dry, broken, or displaying a decubitus ulcer; may have severe

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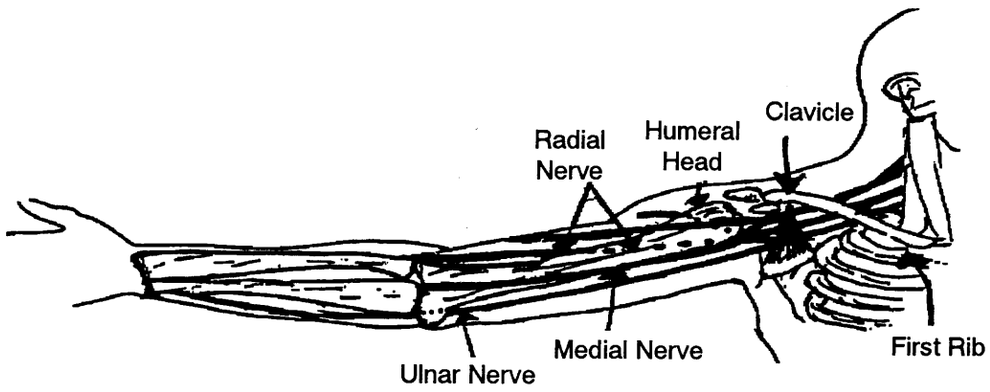

Diagram 1. Brachial Plexus and Peripheral Nerves of Arm

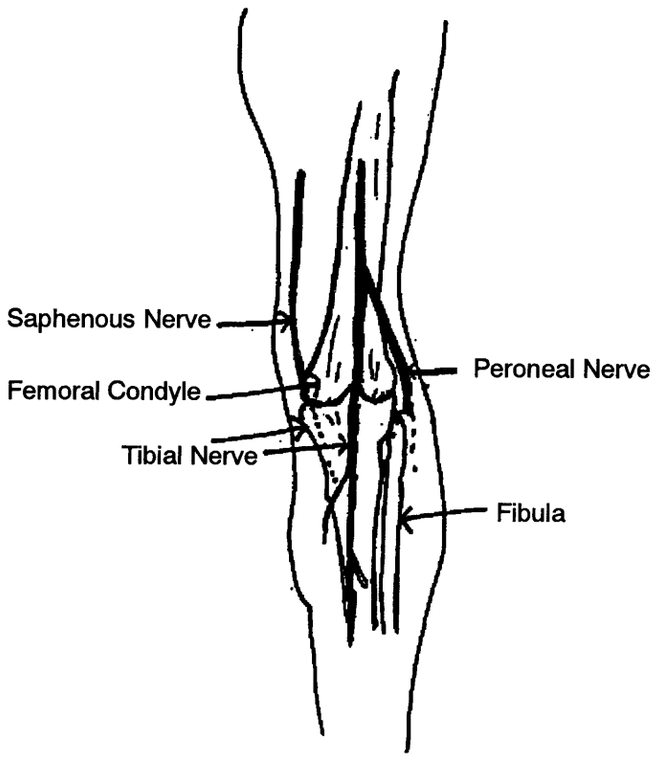

Diagram 2. Peripheral Nerves of Leg

arthritis which limits mobility; and/or may have peripheral neuropathy. These are but a few points of note in planning for the patient's care in the OR.

Sensory ability, restrictions

Patients may demonstrate limitations in hearing, vision, comprehension, development stage. They may be restricted by casts, slings, restraints, and other devices. Patient safety is utmost when facilitating movement and body positions.

Anatomical and physiological integrity

The peripheral nerves most commonly injured during positioning are the brachial plexus, radial, ulnar, medial, peroneal, saphenous, femoral, supraorbital, and facial. A brief overview of each with suggestions for prevention of injury follows. **(See Diagram 1 - Anterior Arm) and (Diagram 2 - Posterior Leg).**

Brachial plexus

This superficial long plexus originates from C5 to T1 and passes along the acromion process and humeral head. It may be compressed by the humeral head, clavicle, first rib and muscles. To offset injury from stretching and compression, ensure that the arm is extended to no more than 90 degrees, that no pressure is placed on the shoulder, and that the head is in anatomical alignment.

Radial nerve

This nerve arises posteriorly from the brachial nerve and supplies innervation to the triceps, forearm, and hands. It may be injured by compression from the anaesthetic screen on the upper arm and from personnel leaning on the upper arm.

Ulnar nerve

The ulnar nerve is located on the medial arm and innervates the third, fourth and fifth digits. (This is the nerve that is struck when we "hit" our funny bone). It may be injured from pressure if the arm hangs over the edge of the surgical table or if the elbow is flexed too much with the arm over the chest. To avoid injury, secure the padded arm at the side with the palm facing the side of the patient, or secure the arm on the padded arm board with the palm facing up.

Medial nerve

This nerve rests in the antecubital space and continues to first, second, and third digits. This nerve is most commonly damaged through injection at this site either by the hypodermic or by the medication infiltration.

Peroneal nerve

The peroneal nerve is situated on the lateral aspect of the knee and traverses the head of the fibula. Injury may occur from pressure of stirrup or when the patient is in a lateral position. Padding of the leg will help offset this injury.

Saphenous nerve

This nerve runs along the medial tibia condyle on the medial aspects of the leg. To avoid injury, pad well between the knees when the patient is in lateral position and avoid placing patient's legs outside of stirrups.

Femoral nerve

This nerve, located in the groin, can be easily injured when wound retractors cause prolonged compression on the nerve. It may also be injured from incorrect lithotomy positioning. Avoid bringing the knees back over the abdomen in lengthy procedures requiring lithotomy and avoid groin pressure in prone position.

Supraorbital and facial nerves

These nerves can be damaged by face masks and mask straps, anaesthetic hoses and connectors, and leaning on the face.

Peripheral Neural summary

Table 1 and Diagram 3 on the following page illustrate a partial summary of the peripheral neural systems which may be affected by surgical positioning. The ares noted with a dot (•) in Table 1 show the most common alert points, indicating that many peripheral nerves may be damaged. The brachial plexus is the most common nerve of concern and injury. The bottom line is to integrate knowledge between anatomy and surgical positions, and to take precautions by padding the patient well, avoiding stretching and compression, and avoiding poor body alignment.

Musculoskeletal summary

In any position there is potential for injury to the musculoskeletal system. Table 2 depicts some, but not all, of the body parts which can be affected by positioning. Note the absence of pubis, coccyx, toes, fingers, etc.; however, all body parts must be considered when positioning a patient. For example,

Table 1

Peripheral Neural

Position	BODY PART	BRACHIAL PLEXUS	RADIAL	MEDIAL	ULNAR	PERONEAL	SAPHENOUS	FEMORAL	SUPRA ORBITAL	FACIAL
Supine - Dorsal	•			•				•		
- Lithotomy	•			•	•	•	•			
- Trendelenberg	•			•						
- Sitting	•			•				•		
Prone - Full	•			•			•	•		
- Jacknife	•	•		•			•	•		
- Kneechest	•			•			•	•		
Lateral - Right	•	•		•	•	•				
- Left	•	•		•	•	•				
- Kidney	•	•		•	•	•				

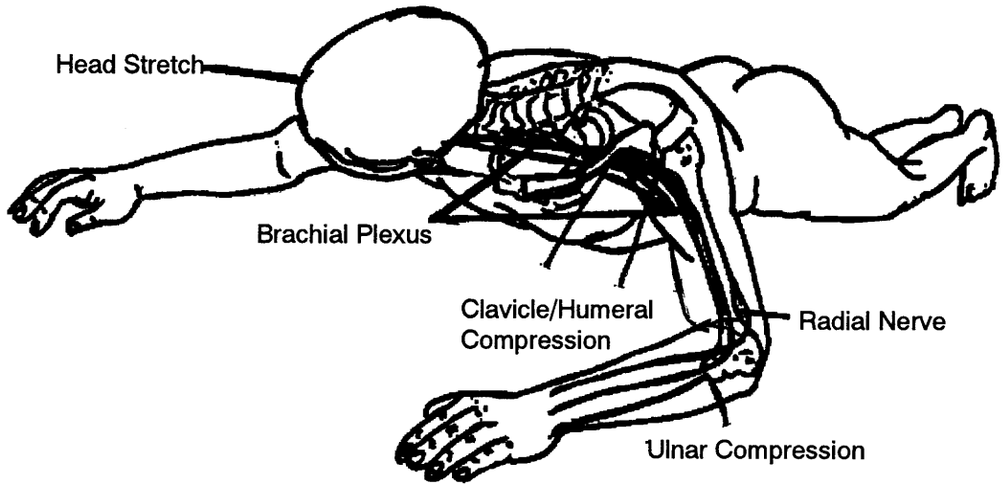

Diagram 3. Brachial Plexus Compromise.

in the supine-dorsal position, note the dotted (•) areas: back of head, heels, ankles, toes, elbows.

Systems summary

In addition to peripheral neural and musculoskeletal systems, attention needs to be paid to the circulatory, respiratory, and integumentary systems during the patient's positioning.

Table 3 depicts the basic surgical positions and the systems which can be affected. The dotted (•) areas illustrate the most frequently affected systems, although all systems can be involved. Note the absence of digestive, genitourinary, and reproductive systems. These are relatively insignificant in effect when positioning the patient for surgery.

Circulatory

Positions should be instituted and maintained such that body perfusion is adequate, blood pressure remains within normals, venous pooling and thrombus formation is avoided, and arterial and venous flow is adequate to all tissue.

Respiratory

Airway access should be optimal, with adequate diaphragmatic movement and avoidance of hypoxia.

Integumentary

Patients should be rolled or lifted - not pulled - along the bed so as to avoid excess pressure on surface tissue and shearing of tissue during movement.

Musculoskeletal

Protect bony prominences with proper padding and maintain body alignment to avoid strain on muscles, and skeletal accessory tissue.

Peripheral neural

Prevent pressure, stretching, obstruction of blood flow, and compression of nerves.

Documentation

From a legal perspective if it is not documented, it is not done. The operating room record should include position and side, equipment and padding, deviations and unusual occurrences.

Position and side

Record the position in which the patient was placed. **(See Tables 1, 2 and 3)** for position descriptions). The documentation should indicate the side if applicable (e.g., left lateral). If the patient is re-positioned during surgery, the position change should be noted.

Table 2

Musculoskeletal

Position	BODY PART	BACK OF HEAD	EYES	HEELS	ANKLES	KNEES	TOES	GENITALIA	ELBOWS
Supine - Dorsal	•		•	•	•	•		•	
- Lithotomy	•							•	
- Trendelenberg	•								
- Sitting			•			•	•	•	
Prone - Full		•		•	•	•	•	•	
- Jacknife		•		•	•	•	•	•	
- Kneechest		•		•	•	•	•	•	
Lateral - Right						•	•	•	
- Left						•	•	•	
- Kidney						•	•	•	

Table 3

Systems / Position	SYSTEMS	CIRCULATORY	RESPIRATORY	INTEGUMENTARY	MUSCULOSKELETAL	PERIPHERAL
Supine - Dorsal			•	•	•	
- Lithotomy	•	•			•	
- Trendelenberg	•	•				
- Sitting	•			•	•	
Prone - Full	•	•			•	
- Jacknife	•	•			•	
- Kneechest	•	•			•	
Lateral - Right	•	•			•	
- Left	•	•			•	
- Kidney	•	•			•	

Equipment and padding

Documentation should include the type of equipment and padding used, and how the patient was secured for the procedure (e.g., legs in stirrups, arms secured on arm boards, anaesthetic screen in place).

Deviations and unusual occurrences

Deviations from the normal should be recorded and reasons noted as to why and on whose orders. An unusual occurrence report should be completed if unexpected events happen. This is filed for patient follow-up, and for personal and hospital protection, and for reference if legal follow-up occurs.

Recommendations

Throughout this article the emphasis has been on ensuring that "all the right moves" are used when positioning the patient in the OR. Discussion has addressed the rights and objectives of positioning, patient assessment, anatomical and physiological integrity, and documentation. In closing, consider the following recommendations:

1. Complete an individual patient assessment: each patient is unique.
2. Have all equipment available and functional.
3. Maintain anatomical alignment of the patient, integrating your knowledge of anatomy with your knowledge of positioning.
4. Be consistent and thorough with documentation.
5. Develop and/or update surgical positioning policies and procedures specific to your patient's needs.
6. H.A.L.T. Ensure C.P.R. is in order. Complete a Head, Arm, Leg, and Torso check to ensure that the integrity of the Circulatory, Peripheral, Respiratory, and other systems is maintained throughout the patient's surgical experience. ■

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