DEVELOPMENT OF A HANDBOOK OF SURGICAL POSITIONING: EXPERIENCE REPORT

Criação de um manual para posicionamento cirúrgico: relato de experiência

Creación de un manual para posicionamiento quirúrgico: relato de experiencia

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ABSTRACT: Objective: To report the experience of developing a handbook of surgical positioning. **Method:** Experience report on the development of a handbook of surgical positioning to guide nursing professionals, based on theoretical foundation and clinical practice of the nursing staff in a large philanthropic hospital located in the city of São Paulo. We developed the guide as an opportunity to improve prevention of injuries caused by surgical positioning. **Results:** The handbook comprises 64 pages in landscape orientation, colored, and illustrated, validated by the surgical block manager and coordinator. It includes an introduction, risk assessment, devices, and recommended practices. For each surgical position, it demonstrates how to place the patient and the risks involved. The end of the document brings information about prevention devices used by the institution. **Conclusion:** The development of a handbook of positioning allows the perioperative nursing team to have proper guidance on surgical positioning and, consequently, prevent pressure ulcers caused by mistaken positioning.

Keywords: Perioperative nursing. Patient positioning. Pressure ulcer.

RESUMO: Objetivo: Relatar a experiência da criação de um manual de posicionamento cirúrgico. **Método:** Relato de experiência da construção de um manual de posicionamento cirúrgico para direcionar os profissionais de enfermagem, com base no fundamento teórico e na prática clínica da equipe de enfermagem de um hospital filantrópico de grande porte localizado no município de São Paulo. O guia foi desenvolvido como oportunidade de melhorar a prevenção de lesões por posicionamento cirúrgico. **Resultados:** O manual é composto de 64 páginas, em apresentação paisagem, colorido e com ilustrações, validado pela gerente e coordenadora do bloco operatório. Contém introdução, avaliação de risco, dispositivos e práticas recomendadas. Para cada posição cirúrgica, é demonstrado como realizar o posicionamento e os riscos envolvidos. Ao final do documento, são informados os dispositivos de prevenção utilizados pela instituição. **Conclusão:** A criação de manual de posicionamento permite à equipe de enfermagem perioperatória o direcionamento adequado para o posicionamento cirúrgico e, consequentemente, para a prevenção de lesões por pressão decorrentes do posicionamento equivocado.

Palavras-chave: Enfermagem perioperatória. Posicionamento do paciente. Lesão por pressão.

RESUMEN: Objetivo: Relatar la experiencia de la creación de un manual de posicionamiento quirúrgico. **Método:** Relato de experiencia de la construcción de un manual de posicionamiento quirúrgico para direccionar los profesionales de enfermería, con base en el fundamento teórico y en la práctica clínica del equipo de enfermería de un hospital filantrópico de grande porte localizado en el municipio de São Paulo. La guía fue desarrollada como oportunidad de mejorar la prevención de lesiones por posicionamiento quirúrgico. **Resultados:** El manual está compuesto por 64 páginas, en presentación paisaje, colorido y con ilustraciones, validado por la gerente y coordinadora del bloque operatorio. Contienen introducción, evaluación de riesgo, dispositivos y prácticas recomendadas. Para cada posición quirúrgica, es demostrado como realizar el posicionamiento y los riesgos involucrados. Al final del documento, son informados los dispositivos de prevención utilizados por la institución. **Conclusión:** La creación de manual de posicionamiento permite al equipo de enfermería perioperatoria el direccionamiento adecuado para el posicionamiento quirúrgico y, consecuentemente, para la prevención de lesiones por presión decurrentes del posicionamiento equivocado.

Palabras clave: Enfermería perioperatoria. Posicionamiento del paciente. Úlcera por presión.

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INTRODUCTION

Surgical positioning is a procedure performed by nursing professionals, together with anesthetic and surgical teams, during the intraoperative period[1]. It must take into account the patient's anatomy and movement limitations, and the access area for the surgeon and his or her assistants[2].

The objectives of positioning include: offering adequate access to the surgical site; maintaining the dignity of the patient during body exposure; providing ventilation and maintenance of patent airways; allowing venous access; monitoring and controlling physiological elimination, according to the position, and easy access to evaluate and measure the output; observing and protecting fingers and genitals; keeping the circulation; and protecting muscles, nerves, and bony prominences[3].

Surgical positioning complications are described mainly as pressure ulcers (PU)[4], but they can also result in musculoskeletal pain, joint dislocation, damage to peripheral nerves, cardiovascular and pulmonary involvement, and even compartment syndrome[1].

Appropriate surgical positioning ensures efficiency and safety during the procedure and is one of the main indicators of quality care in perioperative assistance[5]. The recommended devices to assist and prevent PU are viscoelastic positioners, prophylactic adhesive dressings, specific positioners, and foams. The use of fabric is contraindicated[2].

The perioperative nursing staff has been using risk assessment scales — instruments that determine the predisposition risk of positioning injury — to predict the risk of patients developing PU. Among these instruments, we have the Munro Scale[6], which consists of three evaluation periods (pre, intra, and postoperative), but has not been validated in Portuguese yet; and the Risk Assessment Scale for Development of Injuries Resulting from Surgical Positioning (*Escala de Avaliação de Risco para o Desenvolvimento de Lesões Decorrentes do Posicionamento Cirúrgico* - ELPO)[7], which covers intraoperative application and a number of assessment items to establish the lower and higher risk score for developing positioning injury based on a 19 points minimum score. Thus, it is possible to define the risk score of the patient developing PU and warn the professional about higher risk patients, in order to find better prevention strategies.

In a systematic review of surgical adverse events (AE), the authors describe PU as the most common and potentially preventable occurrence[8]. An integrative review of nursing care in the transoperative period details skin complications caused by surgical positioning, and its results showed studies with an incidence of stage I PU[9].

Surgical positioning injuries are classified as events with damage to the patient and require preventive measures performed by perioperative nurses. In this regard, the conception of a handbook of surgical positioning aims at guiding the nursing team to perform the positioning correctly and prevent surgical AE associated with PU.

OBJECTIVE

To report the experience of developing a handbook of surgical positioning in a highly complex hospital in São Paulo.

METHOD

This is an experience report on the production of a handbook of surgical positioning based on theoretical foundation and clinical practice of the nursing staff in a large highly complex philanthropic hospital located in the city of São Paulo, in the period between September and October of 2017.

A perioperative nurse with over ten years of experience developed this handbook, as an opportunity to improve prevention of injuries caused by surgical positioning.

Among the care indicators of the surgical center (SC) are positioning injury events. Despite not being a specific indicator, as the report of this event is part of the PU record, the presence of the AE in low and moderate risk is noticeable.

Therefore, to minimize PU incidence, the development of a handbook of surgical positioning to guide the nursing team in the implementation of best practices to prevent positioning injuries was proposed.

Phase I: content of the handbook of positioning

Material collection started by reading recommendations from American, European, and Brazilian perioperative nursing associations, as well as integrative reviews, and national and international literature, in association with the clinical

practice performed at the institution. The purpose was to find national and international recommendations of best practices to prevent positioning injury.

Next, general points were listed for the introduction of the material, such as risk assessment, evaluation scale, positioning devices, and common practices for any surgical position.

Subsequently, surgical positions and the sequence for proper positioning were identified, as well as the risks involved. In a meeting with the coordinator and manager of the surgical block (SB), it was decided to include images — drawings — of surgical positions, and pictures — photographs — of injury prevention devices, available at the institution.

Phase II: material production

The concept of material production should cover different professional levels. Therefore, the language of the handbook is simple and oriented in topics to facilitate the identification of the steps for each surgical positioning. The manual was designed in Microsoft PowerPoint, font size 22, in presentation format.

After finalization of the content and format of the proposed handbook, the SB coordinator and manager, who have vast professional experience in perioperative nursing, validated the material by analyzing its content, format, and layout.

At the end of the process, the established handbook was printed in color, on bond paper with landscape orientation, and bound in a spiral. It was then presented to the nursing staff for reading and made available as reference material at the SC nursing station for daily access to all professionals.

RESULTS

The handbook of positioning comprises 64 pages, with each topic consisting of one color. The "Risk Assessment" topic presents the objective, assessment items, and the ELPO risk scale.

The "Surfaces and devices" item recommends checking the devices available in the institution and use them according to the weight and capacity necessary to safely move the patient; position the patient on a smooth surface that redistributes the pressure; and use prophylactic dressings in bony prominences and other areas subject to pressure, friction, or cutting. Also, it warns not to lay the patient on the thermal mattress without protection and not to use towels, sheets, or blankets as positioning devices.

The topic "General positioning practices" indicates to keep the patient's body alignment; have a sufficient number of people to move the patient; protect the patient's body from metallic surfaces and pressure areas; proceed with eye protection; avoid cervical hyperextension; use the safety strap; and monitor the positioning during the intraoperative period.

For each surgical position, a drawing representing the positioning precedes the description — by topics — on how to proceed. After each description, there is a box with a reminder of attention to the positioning, followed by the risks involved.

Chart 1 presents the surgical positions with their corresponding risks.

After the production of the handbook, the file was sent to SB perioperative nurses (manager and coordinator) for evaluation, with a presentation of the proposed content, material, and layout. They saw no need for amendments, validating the material and forwarding it to color printing and binding. The nursing staff received two copies of the handbook to use as a guide for positioning and strategies to prevent skin injuries.

Staff was requested to read the material during working hours, according to the activities of their shift, a task that took about three days to cover the whole team on multiple shifts. At the end of the process, the booklet became available for consultation at the nursing station.

The handbook, in file form, was also sent to the quality area of the institution, as a product of the plan of action, a measure to prevent surgical positioning injury.

DISCUSSION

There is no description of the development of handbooks of surgical positioning in the literature. In general, professionals learn about the topic during training, and some publications have an orientation about surgical positions and care.

Nurses are responsible for planning and implementing interventions that prevent complications caused by anesthetic-surgical procedure. They assist the patient together with

Chart 1. Surgical positions, positioning, and risks described in the topic "Surgical positions" of the handbook of surgical positioning.

Surgical position	Positioning	Risks involved
Supine	Position the patient's upper limbs according to the needs of the surgical team or the limitations of the patient. If the upper limbs are alongside the body: place the upper limbs in neutral position, with the palms of the hands facing the body; do not hyperextend the elbows; fasten the fabric surrounding the upper limbs between the patient's body and arm; ensure that the fabric holding the patient's upper limbs is tight enough to protect them, but not so tight to create a pressure point. If the upper limbs are in braces: put the brace at surgical table level; keep the upper limbs in an angle lower than 90º; position the upper limbs with the palm upwards; keep the alignment of the upper limbs. Bend the knees of the patient in approximately 5 to 10º. Place the safety strap about 5 cm above the patient's knees. Raise the patient's heels out of the underlying surface. Redistribute the pressure on the heels with positioning devices. The use of adhesives devices in pressure areas is recommended in case of long procedures.	Lumbago due to the loss of normal lumbar curvature. Ulnar and radial nerve injury. Brachial plexus injury. Cervical plexus or spinal cord injury caused by hyperextension of the head. Alopecia caused by compression of hair follicles. Ischemic pressure ulcer.
Prone	Place the patient's head in a neutral position, without excessive bending, extension, or rotation. Use a head positioner when the patient's head is in the midline. Monitor the position of the patient's face. Avoid direct pressure on the patient's eyes. Position the upper limbs according to the needs of the surgical team and the physical limitations of the patient. If the upper limbs are alongside the body: place the upper limbs in neutral position, with the palms of the hands facing the body; do not hyperextend the elbows; fasten the fabric surrounding the upper limbs between the patient's body and arm; ensure that the fabric holding the patient's upper limbs is tight enough to protect them, but not so tight to create a pressure point. If the upper limbs are in braces: put the brace lower than the thorax, abducting the upper limbs in less than 90º with elbows bent and palms facing downwards; keep the upper limbs in neutral alignment; do not position the upper limbs above the head. Place the patient's thorax on two roll positioners from clavicle to iliac crest. Position the breasts, abdomen, and genitals, so they are free of pressure or torsion. Put a roll positioner under the iliac crest. Protect the patient's knees. Raise the patient's feet and place protectors under the legs so the feet can be higher and freer. Evaluate the patient's wrists after positioning and aligning the body. Lay the patient in a 5 to 10º Trendelenburg position. The use of adhesives devices in pressure areas is recommended (chin, clavicle, thorax, iliac, knees).	Cervical injury caused by neck rotation. Eye edema or blindness. Compression or ischemic injury of facial structures. Abdominal compression with decreasing venous return. Brachial plexus injury. Ulnar and radial nerve injury. Compression of genitalia in men, causing edema, hematoma, and ischemia. Breast compression in women.

Continue...

Chart 1. Continuation.

Surgical position	Positioning	Risks involved
Lateral	Place a head positioner or pillow under the patient's head. Assess and monitor the patient's dependent ear after positioning. Support and protect the upper limbs in two levels and with parallel braces, laying a member on each brace with an angle lower than 90º. Put a roll positioner under the patient's dependent thorax between the seventh and ninth rib. Check the bilateral radial pulse of the patient after placing the axillary roll. Keep the patient's physiological spinal alignment. Fasten the safety strap on the patient's hip. Bend the patient's dependent lower limb on the hip and knee. Position the patient's upper lower limb and place a pillow between the legs. Minimize the degree of flexion of the surgical table and the side elevation at kidney level as much as possible. Put the safety strap on the iliac crest for thoracic and orthopedic procedures. For renal procedures, add a strap on the thorax.	Cervical injury caused by excessive bending, extension, or rotation of the neck. Brachial plexus injury presented as paresis, pain, paresthesia, and decreasing strength in the upper limbs. Corneal abrasions, eye edema, partial and total loss of sight. Ischemic necrosis of the ear. Peroneal nerve injury caused by compression of high weight on the knee. Necrosis of the femur caused by the lateral fixing tape compressing the femoral head or positioners compressing the femoral artery.
Trendelenburg	Place the upper limbs alongside the body. Minimize the Trendelenburg degree as much as possible. Implement measures to prevent the patient from slipping on the surgical table. Avoid the use of shoulder pads, if possible. Avoid this position for extreme morbidly obese patients.	Ulnar nerve injury. Ischemic pressure ulcer. Increasing intracranial pressure. Respiratory changes caused by abdominal viscera compressing lung bases.
Reverse Trendelenburg	Use a footboard to prevent the patient from slipping and reduce the potential for nerve injury and flexion of the ankle. Monitor the patient's feet and implement corrective actions.	Brachial plexus and ulnar nerve injury. Ischemic pressure ulcer. Patient slips or even falls from the surgical table. Venous embolism.
Lithotomy	Position the patient's buttocks on the end part of the surgical table, so that the table surface supports the sacral region. Protect the patient's hands and fingers from injury when the leg rests are placed or while moving the lower limbs. Position the patient's hips in order to avoid excessive bending, rotation, or abduction. Place the leg rests at a uniform height. Lay the patient's lower limbs on the leg rests slowly and at the same time. Support the patient's lower limbs on the widest surface possible. Place the patient's heels at the lowest point possible. Prevent the patient's lower limbs from becoming support for the leg rests. At the end of the procedure, lift the lower limbs out of the leg rests slowly and bend them before laying them on the surgical table.	Paresthesia in the affected nerve distribution is the most common complication, and injuries may occur on the obturator nerve, lateral femoral cutaneous nerve, sciatic nerve, peroneal nerve, and femoral nerve. Deep venous thrombosis. Compartment syndrome of the lower extremities.
Fowler or sitting	Keep the patient's head in a neutral position, without excessive bending, extension, or rotation. Bend and protect the patient's upper limbs or limb that will not undergo surgery, keeping them alongside the body. Support the patient's sacral region. Bend the knees of the patient in 30º. Prevent the patient's abdomen from resting on the lower limbs. Fasten the safety strap on the patient's thigh.	Excessive cervical flexion, which can block arterial and venous blood flow, causing cerebral hypoperfusion or venous congestion of the brain, in addition to torsion of the tube, and face and tongue edema. Brachial plexus, ulnar, and sciatic nerve injury. Blindness. Air embolism.

the multi-professional team, and decide on the best positioning for the patient, in order to facilitate activities during the anesthetic-surgical procedure[4].

Any patient undergoing a surgical procedure has a risk of suffering a positioning injury. These injuries can be a result of stretching or compression of tissues — which leads to ischemia —, friction and shearing, or prolonged pressure[2].

In a study conducted in Minas Gerais, the incidence of injuries caused by surgical positioning was 74%. They were characterized as stage I ulcers, more frequently located in the sacral region, followed by the calcaneus[9]. In São Paulo, a study with only cardiac surgeries had 19% of positioning injuries, most of them also of stage I[10]

Preventing positioning injuries is a responsibility of the surgical team, which includes the nursing staff, anesthesiologist, surgeon, and assistant. It is necessary attention to support conditions, time of use during the procedure, and any condition that might interfere with patient positioning[2,11]

At times, understanding pressure areas for each surgical position and basic interventions to prevent PU is not something the nursing staff masters, which makes the handbook of positioning a care guide.

Effective interventions to prevent skin injuries relate to pressure relief during and immediately after the patient stay on the standard mattress of the surgical table[11]

The use of illustrative images of each surgical position and devices available in the institution helps the nursing team to better understand how to proceed and which resources to apply.

While reading the material, some nursing technicians reported being unaware of some topics elucidated and that they would be more attentive to the recommendations during their daily activities.

Another characteristic is the insufficient number of attending nurses in SC, which makes it impossible for these professionals to be present during the performance of every positioning. In this case, the nursing technician (OR circulating nurse) and the medical team are the ones in charge of this activity.

Thus, during the training of the team, the perioperative nurse has the opportunity of developing educational actions to ensure the safety of the surgical patient and reduce the risk of surgical positioning injuries[5].

We did not find studies that verify the knowledge of professionals members of the nursing staff about pressure areas or how to perform different types of surgical positioning. Nevertheless, these processes can have flaws for lack of knowledge.

Recently, the authors of a study on positioning for robotic urological surgeries described the positioning protocol for this patient profile, which includes the use of recommended devices for injury prevention[5]. However, we need more studies related to risk and recommendations.

Nursing professionals did not oppose the use of the handbook of positioning and considered reading the content acquisition of professional knowledge.

Systematization and greater use of resources to improve the process are still goals to achieve, but having a guiding content is the first step toward awareness of professionals acting in perioperative nursing.

We expect that this research contributes to the knowledge of nursing professionals so as to promote adequate surgical positioning and prevent possible damages caused by AE.

Among the limitations of this study, we have the adjustment of available resources to the demand for service in the institution, in order to cover a large number of nursing professionals with different knowledge levels. Systematizing the process of surgical positioning with regard to risk score is still a challenge to be overcome.

FINAL CONSIDERATIONS

The handbook of surgical positioning developed in a highly complex hospital institution in São Paulo, based on current literature, encompasses risks, different surgical positions, and available support surfaces. Its purpose is to guide nursing professionals in providing proper surgical positioning, with the use of protection resources to prevent injuries. Illustrations elucidate the positions and their care, and the color arrangement draws the reader's attention.

After the team read and acquired the knowledge of the handbook, it became available at the SC nursing station so that any staff member could consult it at any time.

With the nursing team mastering different surgical positions, and active in PU prevention, the rates of AE related to PU tend to decrease.

REFERENCES

1. Lopes CMM, Galvão CM. Posicionamento cirúrgico: evidências para o cuidado de enfermagem. Rev Latino-Am Enfermagem. 2010;18(2):287-94. http://dx.doi.org/10.1590/S0104-11692010000200021

2. Burglingame BL. Guideline implementation: positioning the patient. AORN J. 2017;106(3):227-37. https://doi.org/10.1016/j.aorn.2017.07.010

3. Spruce L. Back to Basics: preventing perioperative pressure injuries. AORN J. 2017;105(1):92-9. https://doi.org/10.1016/j.aorn.2016.10.018

4. Miranda AB, Fogaça AR, Rizzetto M, Lopes LCC. Posicionamento cirúrgico: cuidados de enfermagem no transoperatório. Rev SOBECC. 2016;21(1):52-8. https://doi.org/10.5327/Z1414-4425201600010008

5. Angelo CS, Pachioni CFM, Joaquim EHG, Silva EAL, Santos GG, Bonfim IM, et al. Efetividade do protocolo prevenção de lesões de pele em cirurgias urológicas robóticas. Rev SOBECC. 2017;22(3):152-60. https://doi.org/10.5327/Z1414-4425201700030006

6. Munro C. The development of a pressure ulcer risk-assessment scale for perioperative patients. AORN J. 2010;92(3):272-87. https://doi.org/10.1016/j.aorn.2009.09.035

7. Lopes CMM, Haas VJ, Dantas RAS, Oliveira CG, Galvão CM. Escala de avaliação de risco para lesões decorrentes do posicionamento cirúrgico. Rev Latino-am. Enfermagem. 2016;24:e2704. https://doi.org/10.1590/1518-8345.0644.2704

8. Anderson O, Davis R, Hanna GB, Vicent CA. Surgical adverse events: a systematic review. Am J Surg. 2013;206(2):253-62. https://doi.org/10.1016/j.amjsurg.2012.11.009

9. Barbosa MH, Oliva AMB, Sousa Neto AL. Ocorrência de lesões perioperatórias por posicionamento cirúrgico. Rev Cuba Enferm [Internet]. 2011 [citado 2017 Nov 10];27(1):31-41. Disponível em: http://www.medigraphic.com/pdfs/revcubenf/cnf-2011/cnf111e.pdf

10. Carneiro GA, Leite RCBO. Lesões de pele no intraoperatório de cirurgia cardíaca: incidência e caracterização. Rev Esc Enferm USP. 2011;45(3):611-6. http://dx.doi.org/10.1590/S0080-62342011000300009

11. Grigoleto ARL, Avelar MCQ, Lacerda RA, Mendonça SHF. Complicações decorrentes do posicionamento cirúrgico de clientes idosos submetidos à cirurgia de quadril. Esc Anna Nery. 2011;15(3):531-5. http://dx.doi.org/10.1590/S1414-81452011000300013