

REDUCING PERIOPERATIVE INJURY DURING POSITIONING OF THE SURGICAL PATIENT

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INTRODUCTION

The geriatric surgical patient is at heightened risk of experiencing surgical complications. Thus, interventions are necessary to reduce this prevalence. It is important for the surgical team to accurately assess individualized risk, determine a plan of action, as well as evaluate the success of implemented interventions.

COMMON COMPLICATIONS

Pressure Ulcers
Neuropathic Injury

Proper positioning technique and use of aids, diligent monitoring throughout the perioperative process, and individualized assessment decrease these occurrences.

This project will provide greater perspective on the significance of perioperative positioning in influencing better patient outcomes. In increasing these safety measurements during the perioperative process, the circulating nurse, and the rest of the surgical team, become a priceless advocate for the sedated (anesthetized) patient.

METHODOLOGY

This literature review was conducted through the use of Sarasota Memorial Hospital's access qualifications. The primary two databases which were selected for their information were [1.] ClinicalKey and [2.] MEDLINE (PubMed).

Research was refined using the filters, as follows: 5-year relevancy [2013 - 2018]; English language; human subjects; and, adult patients (18 years of age and older).

Keywords: perioperative; positioning aids; surgical injuries; pressure ulcers; neuropathy; intraoperative positioning; anesthesia



Kamel, I., & Barnette, R. (2014). Positioning patients for spine surgery: Avoiding uncommon position-related complications. *World Journal of Orthopedics*, 5(4), pp.425-443. Retrieved from <http://doi.org/10.5312/wjo.v5.i4.425>

RESULTS

Five studies were selected during the literature review, reflecting effectiveness of positioning devices reducing prevalence of perioperative injuries [pressure ulcerations and neuropathic injuries]:

In Bouyer-Ferullo's (2013) non-research review on "Preventing Perioperative Peripheral Nerve Injuries (PNI)," it was found that factors which increase risk for perioperative injury include: lengthy procedures (>3 hours leads to increased risk of compromised tissue integrity), increased age, weight, and comorbid diseases. The use of additional padding at nerves and nerve bundles, and between the patient and operative bedding under dependent knees diminish the occurrence of lithotomy position injuries.

In Kamel's & Barnette's (2014) systematic review, "Positioning Patients for Spine Surgery: Avoiding Uncommon Position-Related Complications," 0.5% of acquired ulnar neuropathy occurred in the older surgical patient--primarily males between 50-75 years of age. The use of a chest roll reduces the incidence of brachial plexus injury due to its compressible focal points. In the ASA closed claims project, patient positioning was responsible for 10% of brachial plexus malpractice claims.

In a descriptive research study, conducted by Lopes, Haas, Dantas, de Oliverira, & Galvão (2016), findings evidenced the creation of an assessment scale helped influence the surgical team's decision-making for patient-care. Safeguards suggested were interventions, such as: surgical table foam mattresses and cushions; viscoelastic cushions and tables; and, so forth. Eighty-eight percent of the experts considered the ELPO (version 1) a relevant tool to assess the patient risk for the development of injuries due to the positioning.

In a systematic review of 53 papers and 2 databases conducted by Kwee, Ho, & Rozen (2015), it was evidenced that the use of interventional padding for prone positioning reduced surgical complications, like pressure ulcers and neuropathic injuries. Rates of pressure sores as an intraoperative complication have been reported to be between 5% and 66%. Guidelines evidenced in their review, include: chest rolls to assist the abdominal pressure distribution; a Jackson table to decrease visceral congestion; and, supportive padding along the arms to decrease risk for brachial plexus injury.

In a review "Back to the Basics: Positioning the Patient" conducted by Spruce & Van Wicklin (2014), evidence was found on the use of positioning aids to decrease pressure ulcer formations. Chest rolls were suggested for relieving both the abdomen and thorax, increasing diaphragm and lung expansion. Continual monitoring and reviews of the patient during the intraoperative process quantitatively shows decreased prevalence, as well.

POSITIONING PATIENTS



Kamel, I., & Barnette, R. (2014). Positioning patients for spine surgery: Avoiding uncommon position-related complications. *World Journal of Orthopedics*, 5(4), pp.425-443. Retrieved from <http://doi.org/10.5312/wjo.v5.i4.425>

CONCLUSION

Through this literature review, the evidence analyzed consistently agrees with an increased usage of positioning aids, pre- and intra-operative individualized assessments, and education to reduce perioperative pressure ulcers and neuropathies in the geriatric surgical patient.

Advanced age, impaired skin integrity, weight, and comorbidities heightens the risk for surgical complications. It is affirmed that an increase in intervention and education of proper positioning technique in the surgical team influences decision-making and the quality of received care.

All articles agree that diligent, individualized assessment can ensure the proper employment of necessary interventions (ie. foam pads, RIK mattresses, gel rolls). An increase in education, communication, assessment, and monitoring in the surgical team is necessary to reduce the patient's risk for developing surgical complications.

REFERENCES

- Bouyer-Ferullo, S. (2013). Preventing perioperative peripheral nerve injuries. *AORN Journal*, 97(1), 110-124.
- Engels, D., Austin, M., McNichol, L., Fencil, J., Gupta, S., & Kazi, H. (2016). Pressure ulcers: factors contributing to their development in the OR. *AORN Journal*, 103(3), 271-281.
- Kamel, I., & Barnette, R. (2014). Positioning patients for spine surgery: Avoiding uncommon position-related complications. *World Journal of Orthopedics*, 5(4), pp.425-443. Retrieved from <http://doi.org/10.5312/wjo.v5.i4.425>
- Lopes, C. M. de M., Haas, V. J., Dantas, R. A. S., de Oliveira, C. G., & Galvão, C. M. (2016). Assessment scale of risk for surgical positioning injuries. *Revista Latino Americana de Enfermagem*, 24, e2704. Retrieved from <http://doi.org/10.1590/1518-8345.0644.2704>
- Melissa M. Kwee, Yik-Hong Ho, and Warren M. Rozen. (2015). The prone position during surgery and its complications: A systematic review and evidence-based guidelines. *Int Surg*, 100 (2), pp. 292-303. Retrieved from <https://doi.org/10.9738/INTSURG-D-13-00256.1>
- Spruce, L., & Van Wicklin, S. A. (2014). Back to basics: positioning the patient. *AORN Journal*, 100(3), 298-305.

IMPLICATIONS FOR PRACTICE

Encouraging the continuation of enhanced education and communication, as well as increasing competency verifications, can greatly improve and more better guarantee an individual's techniques.

Increasing techniques for communication styles, interdisciplinary coordination, and improving assertiveness for patient advocacy can encourage the use of critical interventions during assessment, positioning, and monitoring for the patient. Increasing competency in manufacturer's guidelines for surgical devices can greatly influence their effectiveness in the decision-making for discerned interventions.

Conclusively, the vigilant nurse should, as follows: (1.) recognize the individualized needs of the autonomous patient; (2.) make precise pre-assessment judgments; (3.) adjust decision-making and interventions based on patient needs; and, (4.) continually monitor and evaluate effectiveness of interventions (ie. positioning aids).

LIMITATIONS

During this research, the limitation for each article was the positioning and topic. Certain articles, such as Bouyer-Ferullo (2013) and Kamel & Barnette (2014), focused primarily on peripheral nerve injuries, while other articles, like Spruce & Van Wicklin (2014), focused on pressure ulcers. This, in a way, heightened the possibility for research; yet at the same time created limitations in gathering adequate amounts of similar quantitative data. Another limitation that was seen was the specifications and focuses on different positions for certain articles. For example, both Kamel's & Barnette's (2014) and Kwee's, Ho's, and Rozen's (2015) research focused on prone positioning. When only focusing on one type of position, this can lead to decreased data on patients in other positioning techniques, such as: lithotomy, lateral, and supine.

This review was a subset of articles as selected for a school project; and, it is not reflective of the full scope of evidence available on this topic.

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