Proning with Coronavirus Disease 2019 Acute Respiratory Distress Syndrome

Rebekah D. Gunderson

Brigham Young University – Idaho

NURS 422

Sarah Hiebert

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Coronavirus disease 2019 (COVID-19) brought many new changes and challenges to intensive care nursing. As COVID-19 swept across the nation, it overwhelmed healthcare facilities everywhere. In addition, with its unique set of respiratory symptoms, new interventions and strategies had to be used. With many hospitalized COVID-19 patients developing acute respiratory distress syndrome (ARDS), critical care nursing became more vital than ever. During the pandemic, prone positioning of COVID-19 ARDS patients was found to be effective in improving oxygenation (Li & Ma, 2020). With changing care for COVID-19 ARDS, the intensive care unit (ICU) nurse's role adapted to meet the needs of these patients, improving patient and family outcomes.

Description and Connection to Nursing

COVID-19 ARDS is a very severe lung condition that can be fatal. It occurs when inflammation and damage happen to the alveoli, including the destruction of epithelial and endothelial cells (Li & Ma, 2020). With this destruction, the alveolar units become more permeable, allowing fluid in, and preventing effective oxygenation. This causes a variety of problems and complications for patients and can even lead to other organ damage or death (Li & Ma, 2020). To prevent further complications from COVID-19 ARDS, improve oxygenation, and even help prevent the development of ARDS in COVID-19 patients, proning has been implemented.

Proning is a positioning of the body in which a person lies with their ventral side or chest down, and with their dorsal side or back up. This position has been found to have many benefits for COVID-19 ARDS patients (Makic, 2020). First successfully used in the 1970s during the treatment of ARDS patients, proning suggested positive results for COVID-19 ARDS patients.

Since the 1970s, studies have shown a significant underuse of prone positioning for patients with ARDS (Stilma et al., 2021). With the onset of the pandemic and the need for quick innovations, proning was revisited, showing a sharp increase in cases where it was used, and is now a standard in therapeutic management of COVID-19 ARDS (Makic, 2020). With the implementation of proning with COVID-19 ARDS patients, many benefits have been seen, such as improved ventilation and perfusion matching, reduced hypoxemia, improved secretion clearance, reversal of atelectasis, and recruitment of posterior lung segments (NursingCenter, 2021). As a result, orders to implement prone positioning have increased, and critical care nurses have had to adapt and incorporate this intervention into their care. With this new intervention, additional considerations and skills are also required of ICU nurses.

Role of the Critical Care Nurse

Critical care nurses are the front lines in patient care. They are the ones in direct contact with patients, and they spend more time with patients than other healthcare professionals, including physicians (Butler et al., 2018). As such, ICU nurses are the ones who implement interventions and orders, and therefore must be knowledgeable and skilled in providing interventions, including proning.

Nursing Interventions

Prior to initiating prone positioning for COVID-19 ARDS patients, ICU nurses must perform a set of assessments and interventions to determine if prone positioning is appropriate, and to prepare the patient for proning. Critical care nurses must be familiar with contraindications of proning such as hemodynamic instability, respiratory distress, or spinal instability (NursingCenter, 2021). Once the nurse has determined that proning is suitable for the patient, measures are taken prior to proning to reduce patient stress and prevent complications.

Tube feedings are ceased for duration of proning, medications are coordinated and administered, and supplies are gathered (Ng et al., 2020). In order to ensure the best outcomes with proning, critical care nurses must effectively assess and prepare their patients.

With proper preparation and assessments completed, the integral intervention of physically positioning the patient to prone is implemented. Patient positioning is a routine part of critical nursing care. Generally, within the hospital setting, nurses reposition their patients regularly to promote perfusion and prevent injury (Makic, 2020). Such repositioning usually only requires one or two staff members, but with proning, a whole team may be required (Cotton et al., 2020). This has altered how nurses plan for and implement positioning. In contrast to the minimal required staff members for standard repositioning, research shows that a majority of proning teams include at least three prone team members (Ng et al., 2020). In addition, and in conjunction with the newest research on proning, a healthcare team consisting of a combination of nurses, physicians, technicians, and respiratory therapists is ideal, with the patient's primary ICU nurse leading the team (Cotton et al., 2020). This requires the nurse to have leadership skills as well as comprehensive knowledge of prone positioning procedures, assessments, and monitoring.

In addition, prone positioning requires additional time management and communication skills from ICU nurses. In contrast to the short amount of time for required for standard repositioning, the process of repositioning a patient into the prone position on average takes 20 minutes (Ng et at., 2020). Additionally, effective communication with prone team members is required, allowing for coordination of schedules and tasks. A well-coordinated team results in the safest outcomes for patients (Makic, 2020). Then after implementing prone positioning, protocol suggests repositioning and rotating between fully prone, right side lying, sitting up with

elevation of the head of bed, left side lying, then proning again, every 30 minutes to two hours. Protocol also calls for monitoring of oxygen saturations 15 minutes after each repositioning to ensure adequate oxygenation is being maintained (NursingCenter, 2021). Implementation of proper time management from ICU nurses allows for compliance to protocols, thus providing the best patient outcomes.

Other nursing considerations and interventions have also been adapted to prevent and manage complications and risks associated with prone positioning such as corneal injury, endotracheal or vital tubing displacement, or skin breakdown. Patients who undergo proning in the ICU may be intubated or unconscious (Makic, 2020). As such, special care is needed. While prone and unconscious, a patient's eyes can dry out. To combat this and protect from corneal injury, ICU nurses lubricate and tape their patient's eye lids shut (Makic, 2020). Special and complex care is also needed for line and tube management. Complete repositioning from supine to prone positioning requires careful management of tubing and lines (Ng et at., 2020). ICU nurses must ensure that lines and tubes remain patent and functional, while also comfortable for the patient. Tubing that is kinked or bunched up beneath a patient can cause injury and prevent vital medications from reaching the patient (Makic, 2020). In conjunction with injury from bunched tubing, skin breakdown can also occur. Prone positioning places the patient on prominences of the body that are prone to breakdown including the knees, clavicles, hips, and toes. Regular repositioning, proper use of padding or pillows, and careful and continuous assessments allow the ICU nurse to prevent such breakdown (Makic, 2020). Through these considerations and interventions, ICU nurses prevent complications of prone positioning, and improve outcomes for their patients.

Patient and Family Education

There are still many unknowns when it comes to COVID-19 ARDS, especially for patients and their families. One of the primary roles of the critical care nurse is to educate the patient and family. Proning is still a seemingly new practice, and it may seem uncomfortable or harmful patients and families. Therefore, it is vital that the nurse educate them about the benefits of prone positioning including reduced hypoxemia, reversal of atelectasis, recruitment of posterior lung segments, and improved secretion clearance (NursingCenter, 2021). In addition, it is important for patients and families to understand that early intervention is key. Research shows that prone positioning early in the treatment of COVID-19 ARDS improves patient survival (Makic, 2020). With the proper education about proning, patients and their families can have reduced anxiety toward the intervention, and compliance can in turn be increased.

Research Effect on Patient Goals and Outcomes

The primary physiological goal for patients with COVID-19 ARDS is improving oxygenation. COVID-19 ARDS can cause severe respiratory distress or failure, resulting in poor oxygenation and perfusion throughout the body (Li & Ma, 2020). Research on proning these patients has revealed a positive reflection of this goal. Due to alveolar damage and pulmonary edema related to COVID-19 ARDS, oxygen is not able to perfuse all parts of the lungs. This results in severe hypoxemia. However, proning has been shown to optimize and improve oxygenation to these previously unoxygenated parts of the lungs (Li & Ma, 2020). With the recruitment of these previously unavailable parts of the lungs, perfusion and gas exchange of the alveolar units are increased, and overall oxygenation is improved (Makic, 2020). As oxygenation improves, likewise patient outcomes improve. Prone positioning is directly linked with overall decreased mortality with COVID-19 ARDS (Ng et at., 2020). Through this research and through

the ICU nurse's implementation of prone positioning, overall COVID-19 ARDS patient outcomes have improved.

Conclusion

The overall goal with prone positioning for COVID-19 ARDS patients is to improve their outcomes. Through nursing interventions and adaptability of ICU nurses, great success has been found with proning in relation to effective communication and coordination, continuous assessment, time management, and effective proning teams. ICU nurses are an essential part of this success. Although proning with COVID-19 ARDS patients has shown improved oxygenation and recovery, it is the ICU nurse's responsibility to implement the necessary interventions to allow for these improved outcomes.

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