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Perioperative Tube Feeding Guidelines for the Pediatric Burn Patient

By: Jordan Swanberg RN, BSN, CCRN, TNS, SRNA

Introduction of the Problem

Consistent nutritional support for the pediatric burn patient is vital to the healing process (Cork et al., 2019). However, most NPO guidelines required for surgery hinder this process significantly. As a result, many require multiple surgeries, and each time they go back to surgery, their nutritional support is interrupted for at least eight hours (Cork et al., 2019). This interruption leads to impaired wound healing, caloric deficits, weight loss, and increased length of stay. This problem demands a solution to prevent these unwanted side effects (Sunderman et al., 2019).

The tube feeding regimens these patients are on should continue to run throughout the perioperative process to improve patient outcomes after surgery. Doing this would require a confirmed post-pyloric feeding tube as this is the best way to minimize the chances of having an aspiration event during surgery (Sunderman et al., 2019). At a level 1 trauma center, there is a need for a consensus on managing perioperative TF for this population. Exploring the evidence-based research regarding the best management of enteral nutrition perioperatively for pediatric burn patients will provide a multidisciplinary healthcare team with a collective approach for managing this population.

Literature Review

Appallingly, according to the American Burn Association (2018), children are 2.4 times more likely to suffer a burn injury compared to their adult counterparts. In addition, children under 15 years old makeup about 24% of all unintentional burn injuries, making these injuries

the fifth leading cause of death in children in the United States. Due to the high prevalence of burn injuries among pediatric patients, healthcare professionals must be up to date on the best practice when caring for this unique patient population.

One commonly overlooked factor within the perioperative setting is patients' nutritional needs. The stress response from the burn injury itself, along with the stress of surgery, can increase the patients' metabolic demand by up to 200% (Elliot et al., 2020). This demand is nearly impossible to keep up with; therefore, it is imperative not to fall behind on nutritional support, even during the perioperative time. In addition, after the initial resuscitation of the burn injury, the body enters the hypermetabolism phase beginning around the fifth post-burn day. This hypermetabolic phase can continue for up to 2 years, and if not combated, it can lead to loss of bone and muscle density (Mendonca et al., 2011). Therefore, in conjunction with the findings of Cork et al. (2019), nutritional support aims at providing sufficient hydration and nutrients to combat the detrimental catabolic effects of the hypermetabolic state (Mendonca et al., 2011).

Therefore, the literature suggests that TF should be left continuously running throughout each surgery. Often these severely burned patients are already under anesthesia in the ICU to keep them sedated while intubated for airway control. Under these circumstances, their feedings are continuously running. So why should they be treated any differently in the perioperative setting? Especially when the evidence shows that these patients are at no greater risk for aspiration events (Elliot et al., 2020). If the surgery does not involve bowel exploitation or airway changes, perioperative feedings are safe (Elliot et al., 2020).

Methodology

This project involves creating an evidence-based protocol on perioperative tube feeding management for pediatric burn patients. After an extensive literature review, a non-experimental single group design was utilized that consists of certified registered nurse anesthetists (CRNAs), anesthesiologists, surgeons, operating room registered nurses (RNs), and dieticians. Initially, this project assessed the provider's understanding of the subject matter and current practices. The educational PowerPoint and the proposed protocol were evaluated using a simple questionnaire following the presentation. The results of the survey are completely anonymous and voluntary to minimize bias. Depending on the questionnaire results, modifications can be made to the protocol that better serves the specific hospital needs.

After receiving approval from the project committee, the protocol was presented to the providers who provided for pediatric burn patients. Once the support of the evidence-based protocol was achieved, it now serves as a resource tool that can be used for future cases when appropriate.

IRB

This project is a quality improvement project and received approval from the Southern Illinois University Edwardsville Institutional Review Board (IRB). It was submitted and approved as a non-research based. The project received IRB approval before the implementation of the proposed protocol.

Evaluation

Results

A post-presentation survey assessed the evaluation process. Of the five people present for the presentation, four were CRNAs and one anesthesiologist. The years of experience varied

between each of the providers. Three providers had less than ten years of experience, one between 11-20 years of experience, and one provider between 21-30 years of experience. The table below outlines these demographics.

Based on the responses to the “Yes or No” questions on the questionnaire, each audience member knew the current literature and gained new knowledge regarding the subject. They all also thought the proposed protocol was easy to understand and would implement it if hospital policy allowed them to.

One issue with implementing this protocol that each participant noted on their questionnaire was getting the leaders of each department to agree on allowing the tube feeds to run throughout the perioperative period. Getting the collaboration and cooperation of each team member will be a daunting task. Still, if the information on the safety and effectiveness of the proposed protocol is delivered to them, they will be more comfortable with its implementation.

Another limitation to implementing this protocol was that the only people present were anesthesia providers. For this protocol to be successful, it requires the collaboration and cooperation of all medical team members. Each team of doctors, surgeons, anesthesia personnel, nutritionists, and nursing staff must agree with the said protocol.

Impact to Practice

The protocol is still getting approved by each department leader before being administered in a specific case. However, if approved, this protocol can drastically improve the care given to this patient population. Further development of this project could involve studying its effectiveness intraoperatively and monitoring for any adverse effects. If the results are

positive, then the implementation of the protocol can be extrapolated to be used for each of these types of patients.

The utilization of this protocol will improve patient outcomes by consistently giving them the nutritional support they require to heal their wounds and decrease their length of stay (Sunderman et al., 2019). In addition to that, two further goals are accomplished by leaving the TF running—one being that these patients can effectively achieve their metabolic and caloric needs on operative days. The second being they can do this without placing the patient at an increased risk for aspiration (Imeokparia et al., 2018). Collectively, these goals have been shown to improve patient outcomes after such a protocol was implemented.

One primary purpose of any healthcare organization is to provide exceptional care cost-effectively. This protocol can improve cost-effectiveness by optimizing each surgery, which will reduce the total number of surgeries the patient will need, and it will get the patient out of the hospital faster. When these patients are discharged sooner, the hospital no longer must allocate resources to them, thus, saving them money in the long run. Therefore, the implementation of this protocol has a mutual benefit to not only the patient but to the healthcare organization, as well.

Conclusions

As mentioned before, stopping the feedings has led to many adverse outcomes such as increased wound infections, massive caloric deficits, unintended weight loss, and increased length of stay (Elliot et al., 2020). However, enough evidence proposes a protocol that allows for the continued use of post-pyloric feedings throughout the surgery process.

The data shows that these patients are at no more increased risk of aspiration than the fasting groups. With the threat of aspiration being low, it would be reasonable to institute such a

protocol. If this support can reach each medical team, as mentioned before, the protocol has a better chance of success.

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