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Fascia Iliaca Blocks for the Treatment of Hip Fractures in the Emergency Department

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Executive Summary

Title: Fascia Iliaca Block Guideline for Hip Fractures in the Emergency Department

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Introduction

It is projected that every year more than 300,000 people ages 65 and older are hospitalized due to a hip fracture (CDC, 2016). According to the Center for Disease Control, falls are the number one cause of injury and death and it is estimated that an elderly individual falls every second (CDC, 2016). As the United States population continues to get older, the number of patients presenting to the Emergency Department (ED) with a hip fracture will likely increase. Patients presenting to the hospital with hip fractures are at high risk of being prescribed opioids, which may lead to a number of adverse effects and outcomes (Bollinger et al., 2015; Groot, Dijksman, Simons, Zwartsenburg, & Rebel, 2015). Unfortunately, use of opioids in the elderly population is associated with negative side effects unique to their age: such as delirium, sedation, and respiratory depression (Dixon et al., 2018).

To minimize the pain associated with hip fractures a fascia iliaca block (FIB) can be administered. The FIB is a compartment block used to deliver local anesthetic around the lumbar plexus, a group of three nerve branches, the lateral cutaneous, femoral, and obturator nerves. Once local anesthetic is injected around the lumbar plexus it provides pain relief to the hip, anterolateral thigh, anteromedial knee, and medial lower leg (Vacchiano & Biegner, 2014). Evidence suggests FIB is effective in limiting pain in the preoperative period, limiting opioid use, decreasing adverse effects in the elderly, decreasing length of hospital stays and costs, and improving patient function

postoperatively (Bang, Chung, Jeong, Bak & Kim., 2016; Callear & Shah, 2016; Groot et al., 2015;; Klukowski et al., 2017; Ma et al., 2018)

Due to an increased number of elderly patients presenting to the ED with hip fractures, stakeholders at a 93-bed facility in Central Illinois are working to minimize opioid use and improve pain with incorporation of FIB. Facility stakeholders have requested help in developing an evidence-based guideline to determine when and how a Certified Registered Nurse Anesthetist (CRNA) or Anesthesiologist should administer a FIB during the preoperative period.

Literature Review

As the population continues to age, the incidence of hip fractures will continue to rise. It is projected that by 2050, 6.3 million individuals will experience a new hip fracture annually (Ma, Wu, Xue, Lan, & Wang, 2018). Hip fractures in the elderly often lead to prolonged hospital stays, functional decline, and increased mortality rate (Basaraba, 2018; Bollinger, Butler, Niles, Sietsema, Jones & Endres, 2015). Patients who present to the ER with a hip fracture often require surgery to repair their fracture. Unfortunately, they are at risk that their pain will be undertreated due to providers' hesitancy to prescribe opioids to the elderly related to their unique adverse effects opioids have on multiple body systems, such as sedation, delirium, prolonged bed rest, pneumonia, nausea, (Basaraba, 2018; Dixon et al., 2018). In addition, opioids can have negative outcomes for those of all ages including the elderly: respiratory depression, constipation, nausea, vomiting, aspiration, pneumonia, intestinal ileus, delirium, hallucinations, and sleep disturbances (Groot et al., 2015; Savarese & Tabler, 2017). These unwanted effects can further lead to prolonged bed rest, reoccurring falls, prolonged hospitalization, cognitive disfunction, pulmonary embolism,

infection, and increased mortality rate (Basaraba, 2018**;** Dixon et al., 2018). Due to the numerous negative side effects of opioids, especially in the elderly, it is beneficial for elderly patients to receive a multimodal approach to treat pain during the intraoperative period.

The use of FIB and scheduled non-steroidal anti-inflammatory drugs (NSAIDS) for pain control is an effective alternative to opioid administration during the preoperative and postoperative period (Bollinger et al., 2016; Cuvillon et al., 2007). The FIB is a compartment block that delivers local anesthetic to the lumbar plexus, which consists of the lateral cutaneous, femoral, and obturator nerves (NYSORA, 2019). FIB is effective in decreasing pain in the preoperative period, limiting opioid use, decreasing adverse effects in the elderly, decreasing length of hospital stays and costs, and improving patient function postoperatively (Bang, Chung, Jeong, Bak & Kim, 2016; Callear & Shah, 2016; Groot et al., 2015; Klukowski et al., 2017; Ma et al., 2018). Elderly patients are also less likely to suffer from delirium and demonstrate improved walking and independence six weeks after hospital discharge with FIB when compared to opioid use (Callear & Shah, 2016; Morrison et al., 2016). Ofirmev, intravenous acetaminophen, can be used as an adjunct with FIB to decrease pain and inflammation, further decreasing the patients' pain. Studies have indicated FIB and scheduled Ofirmev can lead to a decrease in opioid administration, a decrease in breakthrough pain, higher patient satisfaction, fewer missed physiotherapy sessions, and increased rates of being discharged home rather than to a long term care facility (Tsang, Page, & Mackenney, 2013; Bollinger et al., 2016).

The review of literature suggests that optimal pain control during the preoperative and postoperative period is imperative to improve patient outcomes and function long

term (Bollinger et al., 2015; Morrison et al., 2016). The FIB and routine use of NSAIDs are effective in controlling pain in the elderly, thus decreasing the use of opioids.

Project Methods/ IRB Information

The purpose of this project was to develop a guideline for the use of FIBs for elderly patients presenting to the emergency department with a hip fracture. The long-term goal was to decrease pain and minimize the use of opioids throughout the intraoperative period. A project proposal was submitted to Southern Illinois University Edwardsville's Institutional Review Board (IRB) and it was identified as a Quality Improvement project and deemed exempt from further IRB review. There was no IRB requirement through the facility per hospital administration. A guideline was created in collaboration with the facility stakeholder. The guideline included a list of inclusion and exclusion criteria to ensure only eligible patients would receive a FIB. The guideline also identified all supplies and equipment needed for the safe administration of the nerve block. Once the guideline was developed and approved by the stakeholder, a PowerPoint presentation was developed to educate staff about the administration of FIB and to introduce the guideline.

Six CRNAs (66% of CRNAs at the facility) were present for the educational meeting. A PowerPoint presentation was used to educate the CRNAs on the FIB and introduce the staff to the new guideline. Following the presentation an open discussion provided further clarity and education.

Evaluation

A survey was developed with the help of expert opinion to evaluate the staffs understanding of the guideline and to provide the presenter and stakeholder with feedback about the guideline. The survey consisted of eight questions aimed to attain overall

information and satisfaction about the FIB guideline and respondents' perception of the likelihood the FIB would be used at the facility. The survey consisted of five questions using a 5-point Likert Scale of strongly disagree/ very dissatisfied to strongly agree/ very satisfied. In addition, there were three open-ended questions designed to provide feedback that could further improve the FIB guideline and gain staff's perception of the likelihood of guideline implementation.

Prior to implementing this project, the survey was presented to the facility stakeholder and the project leader. The survey was reviewed and revisions were made to ensure appropriate topics were evaluated. After the FIB presentation on October 11, 2019 the survey was given to the all certified registered nurse anesthetists (CRNAs) who attended the presentation.

All six CRNAs present for the presentation completed the survey. All of the respondents were very satisfied with the quality and effectiveness of the presentation and the presenter's knowledge of the subject. All of the respondents thought the presentation was clear and informative. One third of respondents agreed and the remaining 66.6% strongly agreed that the presentation was educational and beneficial to their current practice. Finally, all participants indicated they planned to use the guideline in their current practice once all needed providers approved the guideline.

When asked to identify the most beneficial part of the presentation, attendees stated that the presentation was a good review on current practice, that the discussion following the presentation was helpful, and that it is a proactive treatment for a growing patient population. Participants suggested the guideline should identify who would initiate the protocol, the emergency department physician or the on call orthopedic physician. Overall,

all of the CRNAs found the FIB guideline to be helpful in their practice and were willing to use this new treatment.

Due to the small number of attendees at the presentation, there was little feedback to be obtained about the overall presentation and guideline. Another limiting factor for this guideline implementation was the lack of communication between the anesthesia, emergency, and orthopedic departments. While providers in the anesthesia department were willing to implement the guideline, individuals from the other departments were not at the stage to implement due to department resistance and inadequate education at the time. The CRNAs discussed that some orthopedic surgeons at the facility were resistant to the administration of peripheral nerve blocks before undergoing surgery, which would limit the implementation of the guideline. Before this guideline could safely and effectively be implemented, all appropriate providers must be educated about FIB and discussion among staff from all three departments should be arranged.

Impact on Practice

The goal of this project was to develop a FIB guideline to allow CRNAS to expand their practice into the ED by providing a FIB to elderly patients presenting with a hip fracture. The CRNA staff was interested in implementing this guideline and eager to incorporate it into their daily practice. The longterm goal was to standardize the administration of the FIB in the ED to decrease pain, improve patient experience, and improve patient recovery. Providing FIB in the emergency department will decrease opioid use during the intraoperative period and decrease the unwanted adverse effects. Additionally, the guideline will hopefully decrease patient hospital stays, decrease costs, and improve patient outcomes. To further improve the guideline, this author suggests

getting providers of all departments educated and willing to implement the guideline. Once it is implemented and used in practice, the guideline can be adjusted to provide smoother FIB administration in the ED.

Conclusion

This project involved the development of a FIB guideline and educated CRNAs on FIB administration in the ED in hopes to decrease opioid administration. CRNAs at the facility were very interested in implementing the FIB as soon as all departments involved were educated on the guideline.

The guideline will help regulate care for patients presenting to the ED with hip fracture and aid in timely intervention. This will ultimately decrease the amount of opioids the patient receives throughout the intraoperative period. For this guideline to be successful in the future, communication between all three departments must be achieved. Once communication is established and the guideline is approved by all involved providers, the FIB can be implemented and used in the treatment for patients presenting to the ED with a hip fracture.

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