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Opioids and Orthopedic: How should we prepare for post op pain

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PERMISSION

Title

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Degree Master of Science

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Signature Megan A. Grimsley

Date March 14, 2018

Abstract

It is imperative that healthcare providers take the lead in reducing the risk of opioid use. Healthcare providers need to be aware of their role in helping to minimize the current opioid epidemic. Prior to a scheduled major surgery, patients routinely complete a preoperative history and physical exam. This appears to be a great opportunity to discuss pain management and screen for increased risk for opioid dependence. This case included a 62-year-old Caucasian female presenting for a preoperative history and physical for a left total knee arthroplasty. The patient was found to have no significant prior medical history and was subsequently cleared for surgery. During the interview the patient raised questions and concerns regarding post-operative opioid use. A literature review was conducted using the University of North Dakota Harley E. French library to determine what evidence based research was available, within the past five years, to help providers in conducting preoperative screening to address potential risk factors for opioid dependence. It was concluded that more research needs to be focused on preoperative screening guidelines to determine an evidenced based approach to what, if any, assessment and screening could be utilized during a preoperative exam to address “red flags” in regard to risk of postoperative opioid dependence. Research had shown an association between mental health diagnosis and increased use of opioids post operatively. Research revealed that a multi-disciplinary approach should be taken to tackle the possible risk of opioid dependence.

Keywords: Preoperative, pain discussion, opioid risk, preventing opioid dependence

Opioids and Orthopedics

The purpose of this case report is to determine what action steps healthcare providers can do preoperatively to identify patients who may be at risk for opioid dependence. The patient in this case report was having a total knee replacement and brought up concerns about possible opioid dependence following surgery at her preoperative exam. Opioids are commonly prescribed following a total knee replacement and should continue to be utilized appropriately. Finding the best approach to manage post-operative pain while preventing opioid dependence is imperative to patient safety. A literature review was done to determine what actions steps primary care providers can complete preoperatively to help identify patients that who may be at risk for post-operative opioid dependence.

Background

Recently, opioid addiction has been front and center in main stream media. This attention has created awareness of the epidemic of opioid abuse and overdose deaths. Current media attention may lead to many questions by individuals being prescribed narcotic medications. Healthcare workers should be prepared to answer questions, discuss the risks for opioid dependence, and how to prevent potential dependence to these commonly prescribed medications. Providers should take the time during a preoperative visit to discuss these issues with the patient as well as address concerns to help diminish the risk of opioid misuse.

Opioids are a class of drug used to diminish pain by binding to opioid receptors in the brain and spinal cord (National Institute of Drug Abuse website, 2018). They can also trigger the reward centers in the brain that cause a euphoric feeling, much like one would experience with the release of endorphins during exercise. This causes a potential for misuse and abuse much like the epidemic we are seeing in the Unites States currently. In the healthcare setting,

prescription opioids are often prescribed by healthcare providers for moderate to severe pain related to an acute injury or surgery.

The term epidemic is used when there is a wide spread occurrence. The United States is currently experiencing an epidemic of opioid abuse. The United States has less than five percent of the world's population, however, they also consume eighty percent of the global opioid prescriptions (Seymour, Ring, Higgins, & Hsu, 2017, p. e113(1)). Unfortunately, healthcare providers are part of the problem. According to the Centers for Disease Control and Prevention, forty percent of overdoses occurred with prescription pain medications (2017). Orthopedic specialists are the third leading prescriber of narcotics followed by primary care providers and internal medicine providers (Morris & Mir, 2015). According to the American Academy of Orthopaedic Surgeons, in 2014, there was approximately 4.7 million people in the United States with a total knee replacement (2014). The CDC report that in the year 2015, there were over 15,000 overdose deaths related to prescriptions opioids, and that number continues to rise.

This calls for an alliance between primary care providers and orthopaedic surgeons to work together to prevent opioid dependence post operatively. In the following case report, the patient voiced concerns about opioid dependence. As a student clinician, preoperative pain discussions and risk reduction has not been observed. All healthcare providers play a role in patient safety and preventing opioid dependence.

Case Report

This case report demonstrated how post-operative pain is not a routine discussion in a preoperative history and physical. The patient in this report is a 62-year-old Caucasian female presenting to the office for a preoperative history and physical prior to a left total knee arthroplasty. She has visited with her orthopedic provider and a surgical date is yet to be

determined. During the exam the patient denied any current health concerns. Past medical and surgical history is positive for: hypertension, dyslipidemia, diabetes mellitus type II, and wisdom teeth extraction. She denies any personal or family problems with anesthesia including malignant hyperthermia, also denies any family or personal history of bleeding and/or clotting disorders. The patient's home medication regimen includes: Lisinopril 10 mg daily, Metformin 1000 mg twice a day with meals, Simvastatin 20 mg at bedtime and Aspirin 81 mg daily. She has no known drug allergies. Her family history includes a father with type II diabetes, a mother deceased in her 80's with congestive heart failure, all four grandparents with type II diabetes, and a maternal grandfather with colon cancer. The patient is up to date with vaccinations. She currently smokes cigarettes, 1 pack per day for the last 15 years and does express interest in quitting after surgery. She consumes 1-2 drinks of alcohol most days, and denies illicit drug use. She has not been as active as she would like but is hoping that will change after her surgery.

Review of systems included: skin, head, eyes, ears, nose, throat, neck, respiratory, cardiovascular, gastrointestinal, genitourinary, peripheral vascular, musculoskeletal, psychiatric, and endocrine. All systems were negative, with the exception of pain in the left knee. The patient's vital signs were as follows: blood pressure 142/92, heart rate 78, respirations 24, temperature 98.6. Physical exam was unremarkable. The following orders were placed: EKG, CBC, CMP, HgbA1c. All tests came back within normal limits.

The patient was medically cleared for left total knee arthroplasty. There was a discussion regarding smoking cessation and limiting alcohol consumption at least prior to surgery. She did voice concerns about narcotic use and the possibility that she could become dependent.

Discussed at length that post-operative pain management is important but that precautions should

be in place to prevent opioid dependence. Encouraged her to discuss these concerns with her orthopedic surgeon as well.

Primary care providers need to be educated and ready to answer questions regarding pain control and the use of opioids. The opioid problem is multifaceted including key stakeholders including the patient, the surgeon, and primary care providers therefore, this problem not be solved solely with providers changing their prescribing habits. It is important to educate individuals on opioid use and potential side effects as well as having discussions regarding expectations with post-operative pain. Providers need to be educated on what may place a patient at an increased risk for opioid dependence and what preoperative screenings and discussions can help assist with delivering the best post-operative outcomes.

Literature Review

Search Strategies

The United States is currently in an opioid abuse epidemic. Healthcare providers should use a standardized evidence based approach practice to help decrease the possibility of post-operative opioid dependence. A literature review was completed to determine what evidence is currently available to present added screening/guidelines for a preoperative history and physical exams.

To address this issue, a search was completed using the University of North Dakota's Harley E. French Library of Health Sciences. Specifically, PubMed, CINAHL, and Clinical Key. Clinical Key was chosen because of its platform being geared towards clinicians. Keywords used for searching included: "total knee replacement" and "opioid pain management". this returned 1251 articles, it was narrowed further by including: only the past five years, full text, systemic reviews, and guidelines. This narrowed it to 7, of which 2 were pertinent. PubMed

was chosen based on the comprehensive background of literature and emphasis of medical and scientific areas. PubMed's MeSH words option was utilized with the keywords of "opioid related disorders" and "pain, postoperative" limiting the search to the last five years and full text, it resulted in 137 results. Adding the subheading "prevention and control" under opioid related disorders, resulted in 9 articles of which 3 were pertinent. Cochrane Library was reviewed based on their evidence based practice modules but results ended with no pertinent articles. CINAHL was chosen for its large journal base. With the use of their "headings" section keywords used "preoperative" and "pain discussion" with parameters of English only, within the last five years resulted in 27 articles of which 2 were found to be pertinent. A second search using the words "preoperative" and "opioid assessment" with the same parameters resulted in 31 results of which 1 was pertinent. A third search was conducted using "post-operative", "pain management" and "guidelines" which resulted in 12 articles with 1 being pertinent.

The writer also utilized the resources list from multiple articles within the database. The "similar articles" function was applied when given the option. A remaining article was taken from the American Academy of Orthopedic Surgeons Journal on their website as well as the guidelines for chronic pain management sent for by the Centers for Disease Control and Prevention.

Literature synthesis

All ten articles were reviewed to determine what evidence supports preoperative pain discussion and screening to better assist in post-operative pain control. No articles were found that specifically looked at preoperative screenings as a practice modality. However, there were multiple research articles that found certain diagnosis or diseases that placed an individual at increased risk of possible opioid dependence. Therefore, these articles were included to help

educate providers on these potential risk factors. Many of these could have been reviewed with the patient from the above case study to help determine risk factors for dependence, educate her on the risk and benefits of opioid use, and determine a pain management plan prior to her elective surgery. This would assist in helping answer her questions and hopefully alleviate some of her concern.

Each article was given a grade based on the American Academy of Critical Care Nurse levels of evidence. The following table 1 was constructed using the table found in the Critical Care Nurse Journal (2014). The articles found were placed within categories A (2), B (1), C (2), D (2) and E (3). This level of evidence system was chosen based off its acknowledgment of inconsistent vs consistent results. As stated before this literature review did not find articles looking specifically at preoperative assessment of risks of post-operative pain challenges in regard to opioid disorders but did find more professional organization standards and expert opinions.

Table 1		
Experimental Evidence	A	Meta-analysis or meta synthesis of multiple controlled studies with results that consistently support a specific action, intervention, or treatment (systematic review of a randomized controlled trial)
	B	Evidence from well-designed controlled studies, both randomized and nonrandomized, with results that consistently support a specific action, intervention, or treatment
	C	Evidence from qualitative, integrative reviews, or systematic reviews of qualitative, descriptive, or correlational studies or randomized controlled trials with inconsistent results
Recommendations	D	Evidence from peer-reviewed professional organizational standards, with clinical studies to support recommendations
	E	Theory-based evidence from expert opinion or multiple case reports
	M	Manufacturer's recommendation only

Summary findings

The UpToDate database is widely used in the medical field for a comprehensive review of current recommendations and clinical practice guidelines for various disease and conditions. Recommendations found within this database for a preoperative history and physical exam mainly focused on identifying and minimizing risks only for those at highest risk for perioperative complications and postoperative withdrawal in regard to reported alcohol and illicit drug use (Smetana, n.d.). UpToDate did not have recommendations to screen patients for risk factors associated with post-operative opioid dependence.

The Guidelines on the Management of Postoperative Pain (2016), recommendation 1 and 3, discuss the importance of providing the patient and their family with education and options preoperatively to manage post-operative pain as well as an assessment of medical and psychiatric comorbidities (pg. 134). Six articles suggested a “multi-disciplinary approach”, or “collaboration” including primary care providers to assist with identifying and caring for patients that are at risk for opioid dependence. Soffin et al. (2017) suggest an “allied opportunity” to educate the patient during a preoperative period on pain expectations and opioid boundaries. Morris and Mir (2015), discuss risk assessment tools in the preoperative phase but do not specifically acknowledge or suggest whom should be collecting this information.

Pain is experienced differently by each individual which makes guidelines difficult to produce. Seymour, Ring, Higgins, and Hsu acknowledged that “pain is a cognitive, emotional, and behavioral response to nociception (pg. e113(3)).” They also recognized that “the factors most strongly associated with greater pain intensity for a given nociception’s are greater symptoms of depression and greater catastrophic thinking (pg. e113(4)). Seven out of the ten articles addressed depression/anxiety placing a patient at greater risk for increased post-operative

pain, and pain more difficult to treat. The Centers for Disease Control and Preventions guidelines for chronic pain management also linked mental health disorders with more difficulty controlling pain (Dowell, Haegerich, & Chou, 2016). Morris and Mir (2015) went as far as to say that depression and other psychiatric diagnoses are a risk factor for non-therapeutic opioid use (pg.269). The Information Statement 1045 (2015) released by the American Academy of Orthopaedic Surgeons stated that patients with symptomatic depression and ineffective coping should be identified and treated prior to an elective surgery. They did not state who should be identifying these patients. Thomazeau et al., suggest that providers utilize a preoperative pain profile in regard to anxiety, however, their study was small and noted to have limitations. Further research would need to be completed to make this a recommendation. However, primary care providers should be utilizing screening tools for depression, such as PHQ-9, at every visit. Generalized anxiety disorder could also be screened concurrently.

Chou et al. (2016) from The Guidelines on the Management of Postoperative Pain, recommendation 6, suggests discussing multi modalities to achieve analgesia. This, as well as, an expectation of length of time opioids will be prescribed can be discussed preoperatively. Multiple articles discussed using multi drug options for post-operative pain other than relying on opioids alone. During the preoperative exam, some of these medication modalities can be discussed, others, such as nerve blocks, should be deferred to anesthesiology. Holman, Stoddard, Horwitz, and Higgins (2014) study indicated that a preoperative discussion about time limits that would be placed on opiate prescriptions had a significant impact in the short term (6 weeks post operatively) with patients weening off of opioids on their own by six weeks. The significance was lost however for those extended to 12 weeks. The study findings suggest making patients aware that they will be prescribed opioids for no longer than 6 weeks post operatively (Holman,

Stoddard, Horwitz, & Higgins, 2014). Barth et al., recognize the importance of having some sort of prescribing and weaning guidelines but also recognizes the limitations in research (different surgical procedures, different recovery times). The main strategies suggest education on opioids, including risk for addiction, prior to discharge home following surgery (Barth, Guille, McCauley, & Brady, 2016, p. s24).

If patient safety isn't enough to push for more research, the costs should. Opioid use in the preoperative period has been associated with increased lengths of hospital stay, increased morbidity, worse post-operative outcomes, and extended post-operative opioid use (Seymour, Ring, Higgins, & Hsu, 2017, p. e113(2)). Zywiell et al. (2011) found that patient's using preoperative opioids were also significantly higher for post-operative need for revisions for unexplained knee stiffness and pain (pg. 1991). With current pressure placed on providers for patient satisfaction and decrease healthcare costs this can have an extensive impact.

Learning Points

Following the literature review, it is evident that further research is needed. However, there was some key findings that were consistent across current the research. These include the following:

- The researchers agreed there needs to be a multi-disciplinary approach to addressing the risk of opioid dependence following surgery. No article suggests how this could best be accomplished.
- Mental health disorders are linked to increased risk with post-operative pain management.
- More research is needed to evaluate if a preoperative history and physical would be an appropriate time to screen for increased risks of opioid dependence and address post-operative pain management.

Conclusion

Prior to orthopedic surgery, patient's need a preoperative exam to determine if they are appropriate for anesthesia. During this exam it would be fitting to asses for risk factors for opioid dependence, perform appropriate screening, and have a pain management discussion. This literature review has shown the need for further research in regard to guidelines and best practice for preoperative, perioperative, and postoperative opioid management guidelines. All providers have a role in keeping patient's safe from harm, including the harm that can follow an opioid prescription.

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