



ELSEVIER

Contents lists available at ScienceDirect

The Journal of Arthroplasty

journal homepage: www.arthroplastyjournal.org

Narcotic Use and Total Knee Arthroplasty

Jourdan M. Cancienne, MD^a, Kishan J. Patel, DO^b, James A. Browne, MD^a,
Brian C. Werner, MD^{a,*}

^a Department of Orthopaedic Surgery, University of Virginia Health System, Charlottesville, Virginia

^b Department of Orthopaedic Surgery, Larkin Community Hospital, South Miami, Florida

ARTICLE INFO

Article history:

Received 26 April 2017

Received in revised form

28 July 2017

Accepted 2 August 2017

Available online xxx

Level of Evidence:

III

Keywords:

narcotics

total knee arthroplasty

complications

revision

opioid prescription

ABSTRACT

Background: Although the United States is in the midst of a narcotic epidemic, risk factors for use and the impact of perioperative narcotic use on total knee arthroplasty (TKA) outcomes is ill-defined.

Methods: A national database was queried for patients who underwent primary TKA from 2007 to 2015. Patients taking narcotics in the preoperative, and for a prolonged period of time postoperatively, were identified. The risk factors for prolonged narcotic use were analyzed with a regression analysis, in addition to evaluating preoperative and prolonged postoperative use as independent risk factors for short-term and long-term complications.

Results: In total, 113,337 patients met inclusion criteria, of which 31,733 patients were prescribed narcotics preoperatively and 35,770 patients were prescribed narcotics more than 3 months postoperatively. There are several independent risk factors for prolonged narcotic use postoperatively, the most significant being the number of narcotic prescriptions prescribed preoperatively. Preoperative narcotic use was independently associated with an increased risk of emergency room visits, readmission, infection, stiffness, and aseptic revision. Prolonged postoperative use was also associated with significantly increased rates of infection, stiffness, and aseptic revision.

Conclusion: Preoperative and prolonged narcotic use following TKA was associated with an increased risk of short-term and long-term complications following TKA. The liberal use of narcotics in the perioperative period should be considered a modifiable risk factor when considering elective TKA.

© 2017 Elsevier Inc. All rights reserved.

Nonsurgical knee osteoarthritis (OA) centers around weight loss, physical therapy, nonsteroidal anti-inflammatory medications, and corticosteroid injections [1]. Although these treatments can provide symptomatic relief, as the severity of OA progresses, pain management can become challenging for the treating physician. Despite poor evidence supporting the use of opioids to treat symptomatic knee OA, recent reports demonstrate a significant number of patients presenting for total knee arthroplasty (TKA) using narcotic medications for pain control [2–5]. Opioid use prior to TKA can make optimal pain control in the postoperative period

challenging, and has also been shown to be associated with prolonged postoperative opioid use [6].

Despite increasing public health and media focus on the mortality associated with narcotic prescription use, there has been a relative scarcity of literature describing the epidemiology of preoperative and prolonged postoperative narcotic use in patients undergoing TKA and its impact on surgical outcomes [7–12]. A recent study by Bedard et al [12] reported an increase in the number of patients receiving opioid prescriptions within 3 months prior to TKA from 2007 to 2014 in addition to several risk factors for use after studying a large US insurance database. This study is in agreement with similar studies detailing alarming trends of opioid use prior to and following TKA, and other reports that patients who use these medications obtain less pain relief from the operation [13,14]. Although population-based studies have provided valuable data on prescribing trends in the perioperative period, there is a relative scarcity data describing the impact of opioid use on adverse events following TKA. A recent study within the US Veterans Affairs (VA) system was the first to demonstrate a significantly increased

One or more of the authors of this paper have disclosed potential or pertinent conflicts of interest, which may include receipt of payment, either direct or indirect, institutional support, or association with an entity in the biomedical field which may be perceived to have potential conflict of interest with this work. For full disclosure statements refer to <http://dx.doi.org/10.1016/j.arth.2017.08.006>.

* Reprint requests: Brian C. Werner, MD, Department of Orthopaedic Surgery, University of Virginia Health System, 400 Ray C Hunt Dr. #300, Charlottesville, VA 22903.

<http://dx.doi.org/10.1016/j.arth.2017.08.006>

0883-5403/© 2017 Elsevier Inc. All rights reserved.

risk of knee revision during the first postoperative year in patients with long-term opioid use prior to TKA [4]. Although this study highlighted the substantive negative consequence of early TKA failure in patients with long-term preoperative use, the study did not investigate the impact or risk factors associated with prolonged postoperative use on TKA outcomes. With an expected increase in primary TKA of 673% by the year 2030, determining the impact of opioid use for the management of perioperative pain for the patient with symptomatic knee OA is of high clinical significance [15]. Thus, the purpose of this study is to utilize a national insurance database to characterize risk factors for prolonged narcotic use following TKA and examine preoperative and prolonged postoperative narcotic use as independent risk factors for complications following TKA.

Materials and Methods

Database

The PearlDiver patient records database, an insurance-based database of patient records (www.pearliverinc.com, Fort Wayne, IN), was utilized for this study. Data within this database are de-identified and anonymous and are thus exempt from Institutional Review Board approval. This database contains data from several different insurers, including both Medicare and Humana (private insurer). Patients from this study were taken from the Humana and Medicare datasets within the PearlDiver database. These datasets were chosen for this study as they include prescription drug information and procedural laterality, both of which are necessary data fields for the present investigation.

These datasets contain procedural volumes, basic patient demographics, laboratory data, and prescription drug information, among numerous other data for patients with International Classification of Diseases, 9th Revision (ICD-9) diagnoses and procedures of Current Procedural Terminology (CPT) codes. This database covers patients insured from 2007 to the first quarter of 2016, and tracks patients across all inpatient and outpatient locations during the time period studied. Overall, the database contains approximately 20 million patients with orthopedic diagnoses.

Study Cohorts

The database was first queried for patients who underwent primary TKA using CPT 27447. Patients with subsequent contralateral TKA were included only once, for whichever procedure occurred first. Any patients undergoing revision surgery of any sort were excluded, including patients undergoing the second stage of a staged revision for infection, using CPT coding. Only patients with a minimum of 6-month postoperative database activity were included to reduce the effect of transient patients who might have changed health insurance during the study period. This query resulted in 113,337 patients who underwent primary TKA for further study.

Patients with prolonged postoperative narcotic use were then identified within this cohort by querying prescription drug records of the included patients. Only narcotic prescriptions filled by patients generate a charge to the insurance company, thus all prescriptions captured in the database were those filled by patients and not just those prescribed by physicians. In accordance with previously published orthopedic literature on narcotic use, prolonged postoperative narcotic use was defined as a patient filling a prescription for a narcotic pain mediate between 3 and 6 months postoperatively [16]. Six months was chosen as a cutoff to avoid including patients who had subsequent surgeries or injuries that narcotics prescriptions were filled for that were unrelated to the

TKA of interest. Relevant narcotic pain medications were determined through a systematic review of all patient records during that time period and recording and using any narcotic pain medication filled by the patient population during the time period of interest. The following narcotic prescriptions were included in the analysis (both generic and brand name formulations): oxycodone (with and without acetaminophen, controlled and extended release, liquid and pill forms), hydrocodone (with acetaminophen, with ibuprofen, normal and extra strength), hydromorphone, oxycontin, oxymorphone (both normal and extended release), morphine (including controlled and extended release), fentanyl, and propoxyphene.

Patients with preoperative narcotic use were defined as those filling at least one narcotic prescription between 4 months and 1 month prior to the date of TKA to reduce the risk of including patients who filled postoperative prescriptions in the preoperative period (as is done at our institution) and to avoid including patients who filled pain medications in the remote preoperative time period due to other surgeries or injuries. The number of filled narcotic prescriptions in this time period was obtained, and then divided into 1, 2, 3, or ≥ 4 preoperative filled prescriptions in the 3-month preoperative time window. A breakdown of demographics and relevant comorbidities for the overall study cohort, the preoperative narcotic use cohort, and the prolonged postoperative narcotic use cohort is provided in Table 1.

Risk Factors for Prolonged Narcotic Use

Numerous risk factors and comorbidities for prolonged postoperative narcotic use were examined using a binomial logistic regression analysis. Preoperative narcotic use was examined as a risk factor, including filling any of the narcotics in the defined preoperative window, in addition to the number of prescriptions given during that period. The effect of other similar preoperative prescriptions was also examined, including tramadol, anxiolytics (alprazolam, diazepam, clonazepam, lorazepam, temazepam, estazolam), muscle relaxants (cyclobenzaprine, tizanidine, baclofen), and methadone. The effect of preoperative substance use or abuse was examined, including tobacco use, alcohol abuse, marijuana use or abuse, cocaine use or abuse, and amphetamine use or abuse. Pertinent patient demographics and comorbidities were also evaluated as risk factors, and included age, male sex, obesity, morbid obesity, depression back pain and/or lumbago, migraine headaches, and fibromyalgia. Finally, the following variables were controlled for in the regression analysis but not specifically examined as risk factors: diabetes mellitus, hyperlipidemia, hypertension, peripheral vascular disease, congestive heart failure, coronary artery disease, chronic kidney disease, chronic lung disease, chronic liver disease, inflammatory arthritis, current hemodialysis use, and thyroid disease.

For each risk factor odds ratios (OR) were calculated from the regression analysis, and a corresponding 95% confidence interval and *P* values were also calculated. *P* < .05 was considered statistically significant.

Narcotics as a Risk Factor for Postoperative Complications

A binomial logistic regression analysis was also used to evaluate any association between (1) preoperative narcotic use and (2) prolonged postoperative narcotic use and specific early and late complications following TKA. Preoperative narcotic use and the number of preoperative narcotic prescriptions were evaluated as a risk factor for the following complications: (1) an emergency room visit within 30 days postoperatively, (2) readmission within 30 days postoperatively, (3) infection within 1 year, including a diagnosis of

Download English Version:

<https://daneshyari.com/en/article/8799636>

Download Persian Version:

<https://daneshyari.com/article/8799636>

[Daneshyari.com](https://daneshyari.com)