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OPIOID USE FOLLOWING GYNECOLOGIC AND PELVIC RECONSTRUCTIVE SURGERY

Lekha S. HOTA, MD[1,3], **Hussein A. WARDA, MD**[1,3], **Miriam J. HAVILAND, MSPH**[2,3], **Frances M. SEARLE, NP**[1], and **Michele R. HACKER, ScD**[2,3]

[1]Department of Obstetrics and Gynecology, Mount Auburn Hospital, Cambridge, MA

[2]Department of Obstetrics and Gynecology, Beth Israel Deaconess Medical Center, Boston, MA

[3]Department of Obstetrics, Gynecology and Reproductive Biology, Harvard Medical School, Boston, MA

Abstract

Introduction/Hypothesis—Opioid use, addiction, and overdose are a growing epidemic in the United States. Our objective was to determine if the amount of opioids prescribed following gynecologic and pelvic reconstructive surgery was insufficient, adequate, or in excess. We hypothesized that we were overprescribing postoperative opioids.

Methods—Participants who were at least 18 years old and underwent gynecologic and/or pelvic reconstructive surgery from April through August 2016 were eligible to participate. Routine practice for pain management is to prescribe 30 tablets of opioids for major procedures and 10-15 tablets for minor procedures. At the two-week postoperative visit, participants completed a questionnaire that asked about the number of tablets prescribed and used, postoperative pain control experience, and relevant medical history. Fisher's exact test was used to compare data.

Results—Sixty-five participants completed questionnaires. Half (49.1%) reported being prescribed more opioids than needed, while 2 (3.5%) felt the amount was less than needed. Though not significant, participants who underwent major surgeries were more likely to report being prescribed more than needed (53.5%) compared with participants who underwent minor surgeries (35.7%; p=0.47). Though not significant, participants with anxiety were less likely to report being prescribed more tablets than needed compared to participants without anxiety (44.4% vs. 57.1%; p=0.38). This was also true of participants with depression compared to those without depression (37.5% vs. 58.3%); p=0.17), and those with chronic pain compared to those without chronic pain (33.3% vs. 60.0%; p=0.10).

Corresponding author: Lekha S. Hota, Boston Urogynecology Associates/Mount Auburn Hospital, 725 Concord Ave. Suite #1200; Cambridge, MA 02138, Phone: 617-354-5452; Fax: 617-497-7503; lhota@mah.harvard.edu.

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Authors' Contribution:

LS Hota: Protocol/project development, manuscript writing/editing
HA Warda: Protocol/project development, manuscript writing/editing
MJ Haviland: Protocol/project development, data analysis, manuscript writing/editing
FM Searle: Data collection, manuscript writing/editing
MR Hacker: Protocol/project development, data analysis, manuscript writing/editing

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Conclusions—Our current opioid prescription practice for postoperative pain management may exceed what patients need.

Keywords

postoperative opioid use; gynecologic and pelvic reconstructive surgery

INTRODUCTION

Prescription opioid addiction and overdose is a growing problem in the United States. Deaths from drug overdoses involving opioids have increased from approximately 4,000 in 1999 to 14,800 in 2008[1]. Many of these deaths are attributed to prescription opioids, such as morphine, hydrocodone and oxycodone [1]. In 2013, the U.S. Department of Health and Human Services deemed deaths from prescription opioid overdose an epidemic [2].

The prescription opioid overdose epidemic is partly related to high opioid prescribing practices among health care providers and subsequent dependency or abuse of these analgesics [3]. Previous research has shown that many patients keep their leftover opioids for future use [4, 5]. The 2013 National Survey on Drug Use and Health reported that most adults obtain opioids for nonmedical use through family or friends who were prescribed opioids [6]. These findings suggest that changing prescribing practices and reducing the quantity of opioids prescribed may decrease the potential for nonmedical use of these medications.

While the Centers for Disease Control and Prevention has published guidelines to improve opioid prescription practices for chronic pain [7], there is limited data about the need or use of opioid analgesia following surgical procedures, including gynecologic and pelvic floor reconstructive surgery Given the lack of guidelines for prescription practices for acute pain, clinicians often use best judgment and experience to determine the amount of postoperative analgesia to prescribe for each patient. The objective of this quality improvement project was to determine if the amount of prescription opioids used after gynecologic and pelvic floor reconstructive surgical procedures in our practice was insufficient, adequate, or in excess of the patient's needs. We hypothesized that in our practice we likely were overprescribing postoperative opioids. We also sought to determine if health conditions, such as anxiety or depression, were associated with higher use of opioids and what patients did with their leftover analgesia.

MATERIALS AND METHODS

This was a quality improvement project, and the institutional review board at Mount Auburn Hospital determined that it did not meet criteria for human subjects' research prior to the start of the project. All patients who were at least 18 years old and underwent gynecologic and pelvic floor reconstructive procedures in our practice from April through August 2016 were eligible to participate. Patients were not eligible to participate if they could not read or write English or if they could not complete the questionnaire for any other reason, such as having dementia.

In our practice, we routinely prescribe 30 tablets of opioids for major procedures and 10 to 15 tablets for minor procedures for postoperative pain management, unless the patient has a contraindication, such as an allergic reaction or intolerance to opioids. The number of opioid tablets prescribed was confirmed at the two-week postoperative visit either by checking the prescription bottle or the electronic medical record system through which the medication was prescribed. All patients also are offered a prescription for ibuprofen. Patients undergoing major procedures are scheduled for a preoperative visit, at which time they are given an opioid prescription and counselled to bring leftover opioid tablets to their two-week postoperative visit for safe disposal. Patients undergoing minor procedures do not routinely have a preoperative visit; thus, they are usually given opioid prescriptions and counselled to bring leftover pills to their postoperative visit on the day of surgery. In order to better assess actual use of opioid tablets for this project, patients were asked to bring any leftover tablets to their two-week post-operative visit so that there would be an accurate count of leftover tablets prior to safe disposal.

At the two-week postoperative visit, all participants completed a questionnaire to evaluate their postoperative opioid usage. This questionnaire asked participants about the amount of opioids prescribed, their postoperative pain control experience, relevant medical history such as anxiety, depression, chronic pain or substance abuse, and what they did with any leftover opioids. All information in the questionnaire was self-reported and no information about long-term use or current opioid use was collected. If a participant did not bring the leftover tablets to the postoperative visit, then she estimated the number of tablets used in the first two weeks after surgery.

Given the number of different gynecologic and pelvic floor reconstructive procedures and the various combinations of procedures performed on each patient, we categorized participants in a standardized way for the analysis. Participants were categorized into mutually-exclusive groups based on their primary procedure. If a participant underwent more than one procedure, she was placed in the procedure group that was deemed the most invasive. We considered abdominal laparotomy to be the most invasive, followed by laparoscopic/robotic surgery, vaginal surgery, mid-urethral sling, sacral neuromodulation and other minor procedures. We also dichotomized participants by whether they underwent a major or minor procedure. Major operative procedures included laparotomy, laparoscopic/robotic or vaginal surgeries that involved pelvic reconstructive surgery and/or concurrent hysterectomy. Minor operative procedures included mid-urethral slings, sacral neuromodulation, vaginal mesh, vaginal cyst or diverticulum excision and hysteroscopy. To assess how chronic conditions may have influenced participants' opinions about how many tablets they were given, we compared participants who felt that they were given more opioid tablets than needed to those who felt they were given an adequate amount or an amount that was less than appropriate. Data are presented as n (%) or median (interquartile range). Categorical data were compared using the Chi-square test. Data were stored using Research Electronic Data Capture (REDCap) and analyzed using SAS 9.4 (SAS institute, Cary, NC).

RESULTS

A total of 65 patients participated in this quality improvement project. Eight participants did not receive a prescription for opioids; four were prescribed ibuprofen only and four were not prescribed any pain medication. Three (30.8%) of these eight participants underwent laparoscopic/robotic surgery, two (25.0%) underwent vaginal surgery, and three (30.8%) underwent minor procedures. These eight women were excluded from the analysis.

Among the 57 participants included in the analysis, the median age was 53.0 (46.0-63.0) years. The majority of participants underwent a major procedure (75.4%) and 24.6% underwent a minor procedure. Most participants (57.9%) underwent either a laparoscopic or robotic surgery. Of the other surgical procedures, three (5.3%) underwent a laparotomy, seven (12.3%) vaginal surgery, 11 (19.3%) midurethral sling and three (5.3%) sacral neuromodulation (Table 1). One-third (33.3%) of participants reported a history of anxiety, 30.4% reported a history of depression and 21.4% reported a history of chronic pain (Table 1). Fifty-one (89.5%) participants reported that they were prescribed oxycodone/acetaminophen, four (7.0%) were prescribed hydromorphone, two (3.5%) were prescribed acetaminophen/codeine and one (1.8%) was prescribed hydrocodone/acetaminophen and morphine. Forty-nine (86.0%) participants reported being prescribed ibuprofen in addition to opioids.

Among participants who underwent major procedures, those who underwent a laparotomy procedure reported using the highest median number of opioid tablets [23.0 (16.0-30.0), while participants who underwent a laparoscopic/robotic [2.5 (0.0-10.0)] or vaginal procedure [2.0 (1.0-12.0)] reported using fewer tablets. Among participants who underwent minor procedures, those who underwent mid-urethral sling procedures reported taking more tablets than those who underwent sacral neuromodulation (Table 2).

When asked their opinion on the number of opioid tablets prescribed, the majority of participants who underwent laparoscopic/robotic surgeries or sacral neuromodulation procedures felt that they were given more than they needed (57.6% and 66.7%, respectively). Most participants who underwent laparotomy or mid-urethral sling procedures felt they were given an adequate number of opioid tablets (66.7 % and 63.6%, respectively; Table 3). Only two (3.5%) participants felt the amount prescribed was less than appropriate; one of these participants had a mid-urethral sling procedure and one had a vaginal procedure. Though not significant, participants who underwent a major surgery were more likely to report that they felt they were prescribed more opioid tablets than needed (53.5%) compared with those who underwent a minor surgery (35.7%; p=0.47).

At the two-week postoperative visit, participants were asked how many opioid tablets they had remaining; 38 (66.7%) participants said that they had excess tablets. Among the 29 participants who underwent major procedures and reported having leftover analgesia, the median number of tablets remaining was 15.0 (6.0-28.0). The amount was 9.0 (6.0-15.0) tablets among the nine participants who underwent minor procedures and reported having leftover tablets. Among the 38 participants with leftover tablets, 16 (42.1%) reported that they planned to keep their excess opioid tablets at home for future use, six (15.8%) reported

discarding the excess tablets prior to their two-week postoperative visit, four (10.5%) brought their excess tablets to their postoperative visit, eight (21.1%) planned to discard them in the future, one (2.6%) did not know what to do with the excess tablets, and three (7.9%) did not answer the question. Participants' opinions about the number of tablets that they were prescribed based on their history of chronic conditions are presented in Table 4. Although not statistically significant, participants with a history of anxiety were less likely to report being given more opioid tablets than needed compared to participants without a history of anxiety (44.4% vs 57.1%; p=0.38). This also was true of participants with history of depression compared to those without a history of depression (37.5% vs. 58.3%); p=0.17), and those with a history of chronic pain compared to those without a history of chronic pain (33.3% vs. 60.0%; p=0.10). The participant who reported current use of recreational drugs felt that she was given more opioid tablets than needed.

DISCUSSION

We found that more than half of the participants reported being prescribed more opioids than needed and the median number of opioid tablets used by the two-week postoperative visit was less than 10 tablets for all types of surgeries except laparotomy. This indicates that we are overprescribing opioids for many procedures. Among those who reported having leftover tablets, more than half of the participants kept the excess tablets at home to either discard or use later. Though not statistically significant, participants with a history of anxiety, depression, and/or chronic pain were less likely to think they were prescribed more tablets than needed compared to participants without these conditions.

Over prescribing of opioids is a major contributor to abuse of these medications. Swenson et al., showed that after minimally invasive urogynecologic surgery the median number of opioid tablets used was 13 and participants only used one-third of the amount prescribed [8]. Bates et al., surveyed adult patients who underwent surgery in a urology practice and showed that only 58.0% of the prescribed pain medication was used and 67.0% of participants had excess medication [5]. In a cohort study by Bartels and colleagues, 53.0% of participants reported taking fewer than five opioid tablets following a cesarean delivery and 45.0% reported the same following thoracic surgery [9]. Based on these studies and our own findings, surgeons in a variety of specialties appear to be overprescribing opioid analgesia, leading to an excess of medication in the home.

In addition to overprescribing of opioids, at-home storage is another potential contributor to the opioid abuse epidemic. Despite preoperative counseling and instructions to bring excess opioids to their postoperative visit, only 10.5% of participants in our quality improvement project did so. Bates et al., found this in their study as well, reporting that 90.8% of patients who had excess postoperative opioids kept them at home, while less than 1.0% of patients returned the excess opioids to a pharmacy [8]. In a study by Kennedy-Hendricks and colleagues, over half (57.2%) of the participants had leftover opioids and 48.8% of those with leftover medication planned to use them in the future [4]. Approximately 20% of these participants also reported sharing their leftover opioids with another person; the main motivations for sharing were to help the other person manage pain or help with expenses [4].

Better education about the risks of opioid sharing and safe pill disposal may decrease the availability of excess opioids in the community.

Opioids are commonly used to manage both acute postoperative and chronic non-malignancy pain. Prior studies have shown that chronic pain is an independent risk factor for increased postoperative opioid use [7, 10, 11], while other studies have shown that anxiety is also linked to an increase in use of opioids [12, 13]. Although our results did not show a statistically significant difference in those with and without anxiety, depression or chronic pain, participants with these health conditions seemed to be less likely to think they were overprescribed opioids. Further investigation incorporating validated questionnaires for assessment of anxiety and depression, however, is needed to assess this more adequately. Additionally, the assessment of opioid needs preoperatively in patients with chronic pain would also be beneficial as consultation with a chronic pain specialist or psychopharmacologist may be required, depending on the severity of the patient's symptoms and baseline use of opioids.

Limitations of this project include the small sample size from a single female pelvic medicine and reconstructive surgery practice. Another limitation is that we did not assess if chronic pain patients on long-term opioid medications altered their normal intake postoperatively to manage pain. Furthermore, we did not use a validated questionnaire to collect the data for this study; we are not aware of such a questionnaire being available and therefore developed our own. Lastly, we were unable to confirm the exact number of tablets leftover for the majority of participants, as most did not bring them to their postoperative appointment and as a result relied on participant recall of the number of leftover tablets. Strengths of this project included the timing of the administration of the questionnaire at two weeks after surgery, which maximized the accuracy of recall. Additionally, the inclusion of a wide variety of gynecologic surgeries without restriction to only pelvic reconstructive surgeries provides greater generalizability of the results.

Our study evaluated three important aspects regarding current opioid prescription practices: amount of opioid analgesia used, how patients handle excess tablets, and patient perceptions about the amount of postoperative analgesia needed. All three are fundamental to better understand the opioid prescription abuse epidemic in the United States. Our results will improve our current prescribing practices and decrease the number of opioid tablets prescribed as it appears that the current prescription practice is in excess for postoperative pain management. Additional research is needed with larger samples and in more diverse populations to better assess patients' postoperative analgesia requirements and study the impact for specific high-risk patient populations, such as those with chronic pain.

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References

1. Warner M, Chen LH, Makuc DM, Anderson RN, Miniño AM. NCHS data brief no 81. Hyattsville, MD: National Center for Health Statistics; 2011. Drug poisoning deaths in the United States, 1980–2008.
2. Center for Disease Control and Prevention. Addressing Prescription Drug Abuse in the United States. 2013. 1–36. http://www.cdc.gov/HomeandRecreationalSafety/pdf/HHS_Prescription_Drug_Abuse_Report_09.2013.pdf
3. García MC, Dodek AB, Kowalski T, et al. Declines in Opioid Prescribing After a Private Insurer Policy Change — Massachusetts, 2011–2015. MMWR Morb Mortal Wkly Rep. 2016; 65:1125–1131. [PubMed: 27764082]
4. Kennedy-Hendricks A, Andrea G, McDonald E, McGinty EE, Shields W, Barry CL. Medication Sharing, Storage, and Disposal Practices for Opioid MedicationsAmongUSAdults. JAMA Intern Med. 2016; 176(7):1027–1028. [PubMed: 27295629]
5. Bates C, Laciak R, Southwick A, Bishoff J. Overprescription of postoperative narcotics: A look at postoperative pain medication delivery, consumption and disposal in urological practice. J Urol. 2011; 185(2):551–555. [PubMed: 21168869]
6. United States Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. National Survey on Drug Use and Health, 2013 ICPSR35509-v3. Ann Arbor, MI: Inter-university Consortium for Political and Social Research; 2015. Center for Behavioral Health Statistics and Quality; 11–23. distributor
7. Centers for Disease Control and PreventionPublic Health Service U S Department of Healath and Human Services. Guideline for Prescribing Opioids for Chronic Pain. J Palliat Care Parmacothera. 2016 Jun; 30(2):138–40.
8. Swenson CW, Kelley AS, Fenner DE, Berger MB. Outpatient Narcotic Use After Minimally Invasive Urogynecologic Surgery. Female Pelvic Med Reconstr Surg. 22(5):377–381.
9. Bartels K, Mayes LM, Dingmann C, Bullard KJ, Hopfer CJ, Binswanger IA. Opioid Use and Storage Patterns by Patients after Hospital Discharge following Surgery. PLoSONE. 2016; 11(1):e0147972.
10. Taenzer P, Melzack R, Jeans ME. Influence of psychological factors on postoperative pain, mood and analgesic requirements. Pain. 1986; 24(3):331–342. [PubMed: 3960574]
11. Hylan TR, Von Korff M, Saunders K, et al. Automated prediction of risk for problem opioid use in a primary care setting. J Pain. 2015; 16(4):380–387. [PubMed: 25640294]
12. Javier A, Briana C, Yueqin H, Krista J, Krista H. Evaluation of how depression and anxiety mediate the relationship between pain catastrophizing and prescription opioid misuse in a chronic pain population. Pain Med. 2016 Feb; 17(2):295–303. [PubMed: 26235471]
13. Wilsey BL1, Fishman SM, Tsodikov A, Ogden C, Symreng I, Ernst A. Psychological comorbidities predicting prescription opioid abuse among patients in chronic pain presenting to the emergency department. Pain Med. 2008 Nov; 9(8):1107–17. [PubMed: 18266809]

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Brief Summary

Opioid analgesia for the management of postoperative pain appears to be over prescribed for gynecologic and pelvic reconstructive surgery.

Table 1

Participant demographic characteristics

	Participants n =57 n (%)
Age (years)	53.0 (46.0-63.0)
Primary surgery	
Laparoscopic/robotic	33 (57.9)
Laparotomy	3 (5.3)
Vaginal	7 (12.3)
Mid-urethral sling	11 (19.3)
Sacral neuromodulation	3 (5.3)
History of anxiety	19 (33.3)
History of chronic pain	12 (21.4)
History of depression	17 (30.4)
History of alcohol abuse	0 (0.0)
Current use of recreational drugs	1 (1.8)

* Data presented as median (interquartile range) or n (%)

Table 2

Median (interquartile range) number of opioid tablets used by surgical category

	Number of respondents	Median number of opioid pills used
Laparoscopic or robotic	30	2.5 (0.0-10.0)
Laparotomy	2	23.0 (16.0-30.0)
Vaginal	7	2.0 (1.0-12.0)
Mid-urethral sling	9	6.0 (5.0-10.0)
Sacral neuromodulation	3	(0.0-1.0)

Table 3

Patient opinion on quantity of tablets received by procedure type

Procedure Type	Less than appropriate	Adequate amount	More than needed	Unknown
Laparoscopic/robotic	0 (0.0)	11 (33.3)	19 (57.6)	3 (9.1)
Laparotomy	0 (0.0)	2 (66.7)	1 (33.3)	0 (0.0)
Vaginal	1 (14.3)	3 (42.9)	3 (42.9)	0 (0.0)
Mid-urethral sling	1 (9.1)	7 (63.6)	3 (27.3)	0 (0.0)
Sacral neuromodulation	0 (0.0)	0 (0.0)	2 (66.7)	1 (33.3)

* Data presented as n (%)

Table 4

Participant opinion on quantity of tablets by medical history

Condition	N	Less than appropriate	Adequate amount	More pills than needed	Unknown
Anxiety					
History of anxiety	19	1 (5.3)	9 (47.4)	8 (42.1)	1 (5.3)
No history of anxiety	38	1 (2.6)	14 (36.8)	20 (52.6)	3 (7.9)
Depression					
History of depression	17	2 (11.8)	8 (47.1)	6 (35.3)	1 (5.9)
No history of depression	39	0 (0.0)	15 (38.5)	21 (53.9)	3 (7.7)
Chronic Pain					
History of chronic pain	12	2 (16.7)	6 (50.0)	4 (33.3)	0 (0.0)
No history of chronic pain	44	0 (0.0)	16 (36.7)	24 (54.6)	4 (9.1)

*Data presented as n (%)