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Outpatient Narcotic Use After Minimally-Invasive Urogynecologic Surgery

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Abstract

Objectives—To quantify outpatient narcotic use in the first 2 weeks following urogynecologic surgery.

Methods—Using a convenience sample, women who underwent minimally-invasive urogynecologic surgery between May and October 2014 were contacted by telephone two weeks postoperatively and given a questionnaire regarding their postoperative pain experience. To quantify narcotic use, patients were asked to count the remaining tablets remaining from their discharge narcotic prescription. Postoperative pain scores and pain expectations were also assessed. Women using > 30 narcotics were in the top quartile for use; therefore those using ≤30 versus >30 were compared. Logistic regression was used to identify independent factors associated with women in the top quartile for postoperative narcotic use.

Results—50 women were included in the study. Median number of narcotics used was 13 (interquartile range (IQR) 1, 30) versus 40 (IQR 35, 60) prescribed. Compared to women who used ≤30 narcotics (n=38), those using >30 (n=12) more frequently were taking narcotics prior to surgery (13.2% vs 41.7%, p = .03) and had a chronic pain diagnosis (15.8% vs 58.3%, p = .003). Although pain scores were similar, women who took >30 narcotics more frequently reported their postoperative pain to be much worse or worse than expected (7.9% vs 33.3%, p = .048). In logistic regression, chronic pain remained the only factor associated with using >30 narcotics (OR 7.36, 95% CI 1.00 – 54.03, p = .0496).

Conclusions—Women used one-third of the narcotics they were prescribed following minimally-invasive urogyencologic surgery. These data may be useful for establishing narcotic prescription guidelines.

Keywords

Narcotic use; urogynecology

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Introduction

From 1990 to 2013, deaths from prescription painkiller overdoses increased more than 400% among women, which was 150% greater than the increase seen in men.[1] However, despite the potential dangers of these powerful medications, there is a paucity of data available to help guide narcotic prescribing in our field. While practice guidelines exist regarding narcotic utilization in management of chronic pain[2], there are no recommendations for appropriate number of narcotics to prescribe for conditions of acute pain, for example during postoperative recovery. Without data regarding the average number of narcotic tablets patients typically require for pain relief, providers have no choice but to use their "best guess" regarding the quantity to prescribe. However, in the era of evidence-based medicine, this strategy seems unacceptable as it may lead to over-prescription of these potentially dangerous medications. Therefore, our aim was to assess the number of narcotic tablets used by women within 2 weeks of uncomplicated, minimally-invasive urogynecologic surgery and to use these objective data to help guide our narcotic prescribing practices.

Materials and Methods

Women undergoing minimally-invasive urogynecologic surgery at the University of Michigan between May and October 2014 were eligible for inclusion. Approval was obtained from the University of Michigan Institutional Review Board on March 31, 2013 (HUM00087608). A convenience sample of women were contacted for inclusion if: pelvic organ prolapse was the primary indication for surgery and one of the following major surgical procedures was performed: vaginal hysterectomy, robotic-assisted laparoscopic supracervical hysterectomy, colpocleisis, sacrocolpopexy or sacrocervicopexy, Michigan four-wall sacrospinous ligament suspension, or uterosacral ligament suspension. Women were excluded if they did not undergo one of the previously listed procedures or if they were seen in clinic, the emergency department, or readmitted for a complication requiring additional pain medications within 2 weeks postoperatively.

Attempts were made to contact women by phone on postoperative day #14; if unsuccessful, 3 total attempts were made through postoperative day #16. Women were excluded if they were unable to be reached after 3 attempts. Telephone interviews were conducted using a telephone script. Phone interviews were performed by 1 of 3 providers who were not involved in the patient's surgery. Women were given a verbal version of the Surgical Pain Scale, which assesses average pain on a scale of 0–10 within the last 24 hours during various levels of activity.[2] Women were questioned regarding types of pain medications used and they were also asked to quantify how many narcotic pills remained unused. Women then rated their overall pain control as poor, adequate, or good and also reported whether their postoperative pain was much worse, worse, about the same, better, or much better than expected. Chart review was performed to obtain basic demographics, and clinical and perioperative data, including pain scores immediately preoperatively and during inpatient stay, as well as number of narcotics prescribed at the time of discharge.

Data were initially tested for normality using histograms, the Kolmogorov-Smirnov test, and the Shapiro-Wilk test. Data determined to be non-normal were analyzed using appropriate

statistical tests including Chi-Square, Wilcoxon Signed Ranks test, and Mann-Whitney U. Data are reported using median (interquartile range (IQR)). In an attempt to identify variables associated with increased narcotic use, bivariate analyses were used to compare women whose narcotic use was determined to be in the top quartile versus those in the bottom 3 quartiles. Logistic regression was then used to develop a model predicting top quartile narcotic usage following minimally-invasive, major urogynecologic surgery. Analyses were performed using IBM SPSS Statistics for Windows (Version 21.0. Armonk, MY: IBM Corp.).

Results

Fifty women met inclusion criteria. Demographics are presented in Table 1. The median postoperative day that women were contacted was 14 (14, 15) and the range was 13–16. Ninety-six percent (n=48) of women were discharged home on postoperative day 1.

The median number of procedures women underwent was 4 and hysterectomy was performed in 52% of cases (n = 26). Of the hysterectomies performed, 81% (n = 21) were done vaginally and 19% (n = 5) were robotic-assisted laparoscopic supracervical hysterectomies. An apical suspension procedure was performed in 76% (n = 38) of cases and included: Michigan four-wall sacrospinous ligament suspension[4] (n = 23), uterosacral ligament suspension (n = 7), and laparoscopic sacrocolpopexy or sacrocervicopexy (n = 8). One woman underwent a colpocleisis, Kelly plication, and dilation and curettage. Concomitant other procedures performed were as follows: anterior colporrhaphy (n = 27), posterior colporrhaphy (n = 32), tension-free vaginal tape (n = 14), uni- or bilateral salpingectomy (n = 15), uni- or bilateral oophorectomy (n = 7), marsupialization of left Bartholin’s gland cyst (n = 1), removal of eroded suburethral sling (n = 3), trachelectomy (n = 1), vaginal mesh removal (n = 1), and vulvar biopsy (n = 1). Cystoscopy was performed in all cases.

Twenty-six percent of women (n = 13) had a chronic pain diagnosis, of whom 69.2% (n = 9) reported using narcotics prior to surgery. The chronic pain diagnoses included: chronic back or joint pain (n = 11), fibromyalgia (n = 1), and migraine headaches (n=1). Approximately one-fifth of women were using oral or vaginal estrogen preoperatively. At the time of discharge, 80% of women (n = 40) were prescribed hydrocodone-acetaminophen 5-325 mg only, 10% (n = 5) were given oxycodone-acetaminophen 5-325 mg only, and the remaining 5 women were given both hydrocodone-acetaminophen 5-325 mg and oxycodone 5 mg tablets, oxycodone 5 mg tablets alone, both oxycodone-acetaminophen 5-325 mg and oxycodone 5 mg tablets, acetaminophen-codeine 300-30 mg, and 1 woman declined a narcotic prescription at discharge.

Overall, the median number of narcotic pills used within the first 2 weeks of surgery was 13 (1, 30), which was significantly less than 40 (35, 60), the median number prescribed ($p < .001$). A similar number of narcotics were used by women who had, versus those who did not have, a hysterectomy as part of their surgery (13 (2, 30) vs 11 (0, 35), $p = .97$). Of the women who underwent a hysterectomy, no difference was seen in the number of narcotics used between vaginal versus robotic-assisted laparoscopic supracervical hysterectomy,

although there was a trend toward less use in the vaginal hysterectomy group (12 (1, 30) vs 20 (10, 36) tablets, p = .41).

Median use of narcotics by women taking narcotics prior to surgery was nearly 3 times greater than women not taking preoperative narcotics (30 (11, 45) vs 11 (0, 29) tablets, p = .04), and although a trend was seen toward these women receiving more narcotics at the time of discharge, this difference was not significant (55 (38, 60) vs 40 (35, 60) tablets, p = .21). Women with a diagnosis of chronic pain also took 3 times as many narcotics as those without a chronic pain diagnosis (33 (7, 40) vs 11 (1, 29) tablets, p = .048) and they were prescribed significantly more narcotics at the time of discharge (50 (50, 60) vs 40 (33, 60), p = .02).

Women whose narcotic use was in the top quartile (> 30 tablets used) were compared to those at or below the 75th percentile (≤ 30 tablets used) (Table 1). Groups were similar in terms of age, parity, BMI, race, proportion of smokers, use of preoperative estrogen, total number of procedures, prevalence of hysterectomy, operative time, length of hospital stay, use of ibuprofen, and postoperative day on which they were contacted. Compared to those who used ≤ 30 narcotics, women who used greater than 30 more frequently had a chronic pain diagnosis, were taking narcotics preoperatively, and were prescribed more narcotics at the time of discharge.

Table 2 shows inpatient and 2-week postoperative pain scores. Overall, inpatient and outpatient pain scores were low and similar in women who took more than 30 or ≤ 30 narcotics. All of the patients rated their postoperative pain control as good or adequate. However, women in the top quartile for narcotic use reported different expectations regarding their postoperative pain. Compared to women who took ≤ 30 narcotics, those who took greater than 30 more frequently reported their postoperative pain to be worse or much worse than expected (7.9% vs 33.3%, p = .048). In contrast, compared to women who took greater than 30, those who took ≤ 30 more frequently reported to be better or much better than expected (16.7% vs 73.7%, p = .001). There was no significant correlation between narcotic use in the top quartile and any of the following pain scores: preoperative holding, morning of postoperative day #1, last pain score prior to discharge, or any of the 4 pain scores from the Surgical Pain Scale (data not shown, all p values ≥ .06).

Logistic regression was then performed using the 3 variables found to be significantly related to women in the top quartile of postoperative narcotic use in the bivariate analyses. After controlling for use of preoperative narcotics and number of narcotics prescribed, having a chronic pain diagnosis was independently associated with use of more than 30 narcotics after surgery (Table 3).

Discussion

In this study of women undergoing minimally-invasive major urogynecologic surgery, we found that the median number of narcotics used 2 weeks following surgery was 13, and women typically used only one-third of the narcotics they were given at discharge. Furthermore, women with a chronic pain diagnosis used 3 times more narcotics than women

without chronic pain. To our knowledge, this is the first study quantifying outpatient narcotic usage within 2 weeks of inpatient gynecologic surgery.

Our results suggest that prescribing 30 narcotic pills after minimally-invasive urogynecologic surgery for women without chronic pain would be sufficient for 75% of patients. Furthermore, although having a chronic pain diagnosis increased the odds of using more than 30 narcotics by 7-fold, 75% of women with chronic pain used 40 or fewer pills.

Our finding that chronic pain is independently associated with increased postoperative narcotic use is supported by existing literature showing a positive correlation between chronic pain, postoperative pain scores, and analgesic use.[5, 6] These data are important in order to help providers make objective determinations regarding the number of narcotics to prescribe after surgery. Ultimately, more accurate narcotic prescribing practices will promote evidence-based medicine and reduce over-prescription of these medications.

Over-prescription of narcotic medications is problematic for 2 reasons. One issue is healthcare expenditures. Although the cost of surplus postoperative narcotics may seem trivial on an individual level, on a larger scale, the additive cost of unused prescription medications is significant. A 2014 study estimated that unused prescription medications are projected to waste $2.4 to $5.4 billion in healthcare spending nationally.[7] A second, and more important, issue is patient safety. Prescribing patients more narcotics than they require means that they will bear the burden of managing the surplus. According to a study of patients undergoing urologic surgery by Bates, et al., 91% of those who had excess postoperative narcotics kept the surplus medication at home.[8] Retaining unused narcotics in the home can put the patient, as well as friends and family members, at risk. A report by the Centers for Disease Control and Prevention found that 60% of people who abuse prescription painkillers obtain them for free or without asking from a friend or relative.[1] Furthermore, a study by the National Survey on Drug Use and Health reported that nearly one-third of people 12 years and older who used drugs for the first time began by using a prescription drug non-medically.[9] In addition, disposing of excess narcotics can also pose a challenge. According to the Bates study, 92% of patients prescribed narcotics received no disposal instructions for surplus medication and fewer than 1% of patients returned excess narcotics to a pharmacy. Six percent of patients threw the narcotics in the trash. Although the “wrap and trash” technique can be a safe way of medication disposal, improper disposal in the trash may create an opportunity for illegal use. Finally, 2.4% of patients reported flushing the surplus narcotics down the toilet, which raises environmental concerns[10].

Although narcotics are an effective tool for controlling pain, the postoperative pain experience is multifaceted and involves many more psychological and physical components than merely narcotic use. In our study, the number of narcotics used was not correlated with either inpatient or outpatient pain scores and 100% of patients in our study reported “adequate” or “good” postoperative pain control. However, our results do show a relationship between narcotic use and expectations regarding postoperative pain. Women in the top quartile for narcotic use more frequently rated their pain as worse or much worse than expected compared to women in the bottom 75th percentile. This is a logical finding, as patients who had pain out of proportion to what they anticipated would be expected to use

more pain medication. As demonstrated in prior studies, patients' expectations regarding postoperative pain may impact their postoperative pain experience; however the direction of the association is somewhat unclear. Waljee et al. performed a systematic review evaluating the effect of patient expectations on patient-reported outcomes, including pain.[11] Of the 13 studies with outcomes related to postoperative pain, mostly from the orthopedic literature, 9 found that patients who expected minimal postoperative pain or had their expectations met reported less pain, 1 found that expectations of high levels of postoperative pain were associated with greater pain, and 3 found no correlation. As our data regarding pain expectations were collected postoperatively, we have limited ability to draw robust conclusions regarding the relationship between postoperative pain experiences compared to expectations prior to surgery in our study. Of note, all of our patients receive standardized preoperative teaching by a nurse or physician assistant using written instructions and verbal information that is consistent and documented via check-list. Postoperative pain expectations are addressed, but the patient's understanding is not documented or validated. A future area of investigation may be the impact of preoperative counseling regarding postoperative pain on pain experiences following gynecologic surgery.

There are several limitations to our study. Our sample size was relatively small and from a urogynecology practice at a single academic institution. All women had pelvic organ prolapse as their primary indication for surgery. Therefore, repeating this study in different populations and at different institutions may yield different results. We did not gather quantitative data on use of non-steroidal anti-inflammatory medications and also failed to ask women if they were still using pain medication at the time of the phone call. Strengths of this study include the use of a standardized interview, data collection shortly after surgery (minimizing recall bias), and the application of self-reported pill counting, which has a long and acceptable history in medication use research. Furthermore, although the Surgical Pain Scale has not been validated for administration in telephone surveys as we did in this study, it is a validated and responsive measure of postoperative pain. Notably, this is the first study attempting to quantify outpatient narcotic use in women following inpatient gynecologic surgery.

At our institution, we have used these data to guide our narcotic prescribing practices following uncomplicated urogynecologic surgery and have reduced the number of narcotics we typically prescribe to patients at the time of discharge by half (from 40–60 to 20–30 tablets of hydrocodone-acetaminophen 5-325 mg). We have also added information to our discharge instructions regarding proper disposal of unused narcotics. For women with a history of chronic pain or who are taking preoperative narcotics, increased attention is now given to patient pain expectations. In the era of evidence-based medicine where guidelines, expert opinions, and best practice advice can be found on almost any topic, using data from this study, and hopefully future larger-scale studies, to develop general recommendations for narcotic prescribing practices in the field of Obstetrics and Gynecology should be considered.

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Table 1

Demographics, perioperative variables, and two-week postoperative narcotic use for women undergoing minimally-invasive urogynecologic surgery

	All Subjects (N=50)	Number of Narcotics Used		p value
		≤ 30* (N=38)	> 30** (N= 12)	
Age, years	63 (54.0, 70.0)	65 (25, 71)	60 (47, 69)	.29
Parity	2 (2, 3)	2 (2, 3)	2 (1, 3)	.33
BMI, kg/m^2	28.1 (26.1, 31.6)	28.1 (26.0, 30.4)	29.1 (26.8, 41.2)	.15
Caucasian	88.0 (44)	92.1 (35)	75.0 (9)	.41
Smoker	18 (9)	18.4 (7)	16.7 (2)	.89
Chronic Pain Diagnosis	26.0 (13)	15.8 (6)	58.3 (7)	.003
Taking Narcotics Preoperatively	20.0 (10)	13.2 (5)	41.7 (5)	.03
Preoperative Estrogen Use	18 (9)	21.1 (8)	25 (3)	.78
Total Procedures	4 (5, 5)	5 (3, 6)	4 (3, 4)	.16
Hysterectomy	52 (26)	55.3 (21)	41.7 (5)	.42
Operative Time, minutes	149.5 (112.5, 191.75)	147.0 (111.5, 201.75)	155.5 (113.25, 174.75)	.66
Length of Stay, days	1.3 (1.2, 1.4)	1.3 (1.3, 1.4)	1.3 (1.0, 1.4)	.51
Number of Narcotics Prescribed	40 (35, 60)	40 (33, 50)	60 (50, 60)	.004
Number of Narcotics Used Postoperatively	13 (1, 30)	11 (0, 29)	30 (11, 45)	.04
Ibuprofen Used Postoperatively	66 (33)	63.2 (24)	75 (9)	.51

Data presented as median (IQR) or % (n)

*At or below 75th percentile

**Top quartile

P values calculated using Chi-Square or Mann-Whitney U and reflect comparison between ≤30 vs >30 Narcotics Used groups.

Table 2

Pain assessments for women undergoing minimally-invasive urogynecologic surgery comparing those in the top quartile for narcotic use versus those in the bottom 75th percentile

	Number of Narcotics Used		p value
	≤ 30 (N=38)	> 30 (N= 12)	
Inpatient Pain Scores (0=no pain, 10=worst pain imaginable)			
Preoperative Holding	0 (0, 0)	0 (0, 0)	1.00
Morning Postoperative Day #1	2 (0, 4)	2 (0, 5)	.59
Last Score Prior to Discharge	2 (0, 4)	3 (0, 5)	.59
Surgical Pain Scale Scores Two Weeks Postoperatively (0=no pain, 10=worst pain imaginable)			
What was the average amount of pain you had when you were at rest?	0 (0, 2.0)	1.0 (0, 2.5)	.41
How much pain did you have during your normal activities (for example walking, climbing stairs, driving a car, getting up from a chair)	1.0 (0, 2.5)	2.0 (0, 3.0)	.12
How much pain did you have when you were exercising, doing strenuous work, or lifting objects you used to be able to lift comfortably?	0 (0, 1.0)	0 (0, 1.0)	.58
How unpleasant or disturbing was the worst pain that you had today?	1.5 (0, 3.0)	3.0 (0, 6.0)	.32
Overall Rating of Postoperative Pain Control Two Weeks Postoperatively			
Poor	0	0	.26
Adequate	21.1 (8)	41.7 (5)	--
Good	78.9 (30)	58.3 (7)	--
Postoperative Pain versus Expectation Two Weeks Postoperatively			
Much Worse Than Expected	0	16.7 (2)	.002
Worse Than Expected	7.9 (3)	16.7 (2)	--
About What Expected	15.8 (6)	50 (6)	--
Better Than Expected	44.7 (17)	0	--
Much Better Than Expected	28.9 (11)	16.7 (2)	--

Data presented as median (IQR) or % (n). P values calculated using Chi-Square or Mann-Whitney U

Table 3

Factors associated with women in the top quartile for narcotic use after minimally-invasive urogynecologic surgery

Variable	Crude Odds Ratio	Adjusted Odds Ratio	95% C.I.	Regression Coefficient	Standard Error	p value
Constant	--	0.03	---	−3.71	1.26	.003
Chronic Pain Diagnosis	7.47	7.36	1.00– 54.03	2.00	1.02	.0496
Taking Narcotics Preoperatively	4.71	1.15	0.14 – 9.65	0.14	1.09	.90
Narcotics Prescribed	1.04	1.04	0.99 – 1.08	0.04	0.02	.09

Logistic regression performed including all variables significant in bivariate analyses for women in the top quartile of postoperative narcotic use.

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