RESEARCH ARTICLE JSLS

Risk Factors for Postoperative Narcotic Use in Benign, Minimally-Invasive Gynecologic Surgery

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ABSTRACT

Background and Objectives: To evaluate postoperative opioid use after benign minimally-invasive gynecologic surgery and assess the impact of a patient educational intervention regarding proper opioid use/disposal.

Methods: Educational pamphlets were provided preoperatively. Patients underwent hysterectomy, myomectomy, or other laparoscopic procedures. Opioid prescriptions were standardized with 25 tablets oxycodone 5mg for hysterectomy/myomectomy, 10 tablets oxycodone 5mg for LSC (oral morphine equivalents were maintained for alternatives). Pill diaries were reviewed and patient surveys completed during postoperative visits.

Results: Of 106 consented patients, 65 (61%) completed their pill diaries. Median opioid use was 35 OME for hysterectomy (~5 oxycodone tablets; IQR 11.25-102.5), 30 OME for myomectomy (~4 tablets; IQR 15-75), and 18.75 OME for laparoscopy (~3 tablets; IQR 7.5-48.75). Median last post-operative day (d) of use was 3d for hysterectomy (IQR 2, 8), 4d for myomectomy (IQR 1, 7), and 2d for laparoscopy (IQR 0.5-3.5). One patient (myomectomy) required a refill of 5mg oxycodone. No difference was found between total opioid use and presence of pelvic pain, chronic pain disorders, or psychiatric co-morbidities. Overall satisfaction with pain control (>4 on a 5-point Likert scale) was 91% for hysterectomy, 100% for myomectomy, 83% for laparoscopy. Of the 33 patients who read the pamphlet, 32(97%) felt it increased their awareness.

Conclusion: Most patients required <10 oxycodone 5mg tablets, regardless of procedure with excellent patient satisfaction. A patient education pamphlet is a simple method to increase knowledge regarding the opioid epidemic and facilitate proper medication disposal.

Key Words: Laparoscopic, Minimally invasive surgery, Narcotics, Post-operative pain, Robotic.

INTRODUCTION

The opioid epidemic continues to be an evolving problem, including excessive prescribing, drug diversion, and rising morbidity and mortality related to overdose. Prescription opioids are responsible for at least one-third of opioid overdose deaths.[1,2] Younger age, type of surgery, substance use, anxiety, and psychosocial stressors are associated with increased opioid consumption postoperatively.[3,4] A disconnect exists in gynecology between prescriber opioid practices and actual patient usage.[5–7] In a systematic review, the two-week postoperative median opioid consumption after hysterectomy was 32–70 oral morphine equivalents (OME), while the amount prescribed was 125–300 OME.[8] Importantly, one in every 65 patients who initiate opioids after gynecologic surgery will experience prolonged use.[9] However, interventions to reduce opioid diversion through patient education have a positive effect.[10,11] Institution-based Enhanced Recovery After Surgery (ERAS) opioid-prescribing recommendations also result in reduced opioid overprescribing.[12] However, adherence to ERAS protocols for opioid prescribing remains suboptimal.[13] The most recent guidance on multimodal opioid-sparing analgesia recommends prescribing fewer than 15 5-mg oxycodone pills for minimally invasive gynecologic surgery, with adjustments based on inpatient usage; however, this does not account for the type of procedure or plans for same-day discharge.[14]

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Our study aims to evaluate the postoperative opioid requirement in patients undergoing minimally invasive gynecologic procedures, and to evaluate risk factors associated with increased or persistent postoperative opioid use. Furthermore, we implemented a patient education component to increase awareness of the opioid crisis and facilitate proper opioid use and disposal.

MATERIALS AND METHODS

We performed a cross-sectional study enrolling patients from January 1, 2019 to January 31, 2020. This study was reviewed and approved by the Institutional Review Board. Patients in the Minimally Invasive Gynecologic Surgery (MIGS) clinic with planned laparoscopic or robotically-assisted gynecologic surgery for benign indications were included. Patients were not eligible to enroll in the study if they were: on baseline opioid medications pre-operatively, incapable of written informed consent, non-English speaking, or younger than 18 years of age. Patients were excluded from analysis if their minimally-invasive surgical procedure was converted to laparotomy.

Eligible patients were introduced to the study prior to their procedure. Consenting participants were provided with a pill diary to track their postoperative pain medication use (Appendix A), as well as a patient education pamphlet (Appendix B). The pamphlet provided an overview of the opioid epidemic, especially as it pertained to surgical recovery, in addition to instructions for safe and proper opioid disposal to prevent opioid diversion or misuse. On the day of surgery, patients were reminded regarding their participation in the study, and the use of the pill diary and education pamphlets were briefly reviewed again. Postoperative prescriptions of narcotic medications were standardized depending on the type of surgery as follows: 25 tablets of oxycodone 5 mg after hysterectomy or myomectomy procedures, and 10 tablets of oxycodone 5 mg after other/minor laparoscopic procedures. Comparable OMEs were prescribed to those patients who required alternative narcotic medications due to allergies or personal preferences.

Postoperative visits occurred around two weeks and six weeks after hysterectomy, two to four weeks after myomectomy, and approximately two weeks after other/minor laparoscopic procedures. At each postoperative visit, pill diaries were reviewed and collected, and patient surveys were distributed for completion during the visit. Patient surveys included questions focused on postoperative pain control, postoperative recovery milestones, and use of the patient education pamphlet (see Appendix C). Electronic medical records were reviewed to collect relevant data. Demographic information included the following: age, race (White, Black, other), body mass index, and insurance (private, public, other/self-pay). Consultation notes were reviewed to assess whether the patient reported concerns regarding pelvic pain involving dysmenorrhea, dyspareunia, and/or noncyclic chronic pain. Presence or absence of any comorbid psychiatric or chronic pain conditions were also noted. Relevant perioperative data included the type of minimally invasive surgery (hysterectomy, myomectomy, other/minor laparoscopic surgery), peri- (intraoperative injury, conversion, transfusion) or postoperative complications within 30 days (delayed injury, re-admission, representation to emergency department, surgical site or deep space infection, vaginal cuff dehiscence), and length of stay (in days). The primary outcome was total opioid use (in OME) after minimally invasive gynecologic surgery. For same-day discharge, opioid use was collected from the pill diary. For patients who were hospitalized after surgery, inpatient opioid requirements prior to discharge were calculated via medication administration logs and added to outpatient data from the pill diaries. Secondary outcomes included: opioid requirements at 48 hours postoperatively (in OME), length of time (postoperative days) that opioid medications were used after surgery, refills of opioid medications required (if so, dose and number of tablets), whether there was continued use of opioid medications at six weeks, and patient response data from study surveys.

Continuous variables were described as medians and categorized by type of surgery. Patient survey data was described as proportions per response for each question. A Wilcoxon rank-sum test was performed to determine whether there were any differences in total opioid requirements between patients with and without pelvic pain, comorbid chronic pain conditions, and comorbid psychiatric conditions. Statistical significance was defined as p-value < 0.05. All statistics were performed using Stata (version 140.2, College Station, TX).

RESULTS

A total of 106 eligible patients were consented and enrolled into the study (**Figure 1**); 65 patients (61%) completed their pill diaries and provided postoperative opioid usage data: 36 hysterectomy, 17 myomectomy, and 12 other/minor laparoscopic cases. Indications for hysterectomy included abnormal uterine bleeding secondary to

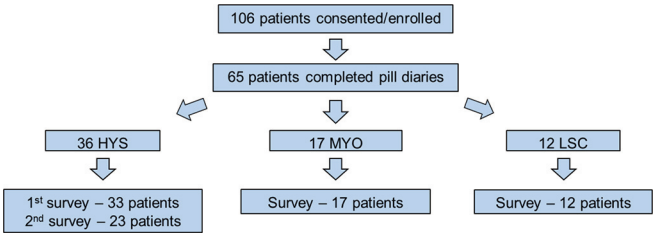

Figure 1. Study cohort flow chart.

fibroids (58%), suspected adenomyosis (25%), pelvic pain (31%), and endometriosis (11%); these percentages do not add to 100% due to overlapping diagnoses. Other minor laparoscopic procedures included diagnostic laparoscopy, ovarian cystectomy, oophorectomy, and/or excision of endometriosis with operative time ranging from 30 to 190 minutes (mean operative time of 99 minutes). Patient demographics appear in **Table 1**. The median age was 41 years (interquartile range [IQR] 36–47), with a median body mass index of 28 (IQR 25–32.5). Most patients were privately insured (N = 54, 83%). Our study included a diverse racial mix; 40% were Black, 46% were White, and 14% were of another self-identified race.

Overall data regarding postoperative opioid use in our sample is presented in **Table 2**. The total OME used by patients undergoing hysterectomy was a median of 35 OME (IQR 11.25–102.5), which is approximately 5 tablets of oxycodone 5 mg. For myomectomy patients, it was a median of 30 OME (IQR 15–75), or about 4 tablets of oxycodone 5 mg. Patients who underwent other laparoscopic procedures used a median of 18.75 OME (IQR 7.5–48.75), approximately 3 oxycodone 5 mg tablets. Total opioid requirements within 48 hours postoperatively were a median of 15 OME (IQR 10–30) after hysterectomy, 22.5 OME (IQR 15–45) after myomectomy, and 15 OME (3.75–37.5) after other laparoscopic procedures. The median last day of postoperative opioid use was 3 days (IQR 2–8) for hysterectomy, 4 days (IQR 1–7) for myomectomy, and 2 days (IQR 00.5–3.5) for other laparoscopic procedures. Out of 65 patients in our sample, only one patient required a refill (10 tablets of oxycodone 5 mg). No patients reported continued use of opioids at the time of their final postoperative visits (two to four weeks for myomectomy/laparoscopy or six weeks for hysterectomy).

Table 1.
Patient Demographics

Demographics	
Median Age, years (IQR)	41 (36 – 47)
Median BMI (IQR)	28 (25 – 32.5)
Private Insurance, n (%)	54 (83)
Race, n (%)	
White	30 (46)
Black	26 (40)
Other	9 (14)
Pelvic pain, n (%)[a]	42 (65)
Chronic pain conditions, n (%)[b]	16 (25)
Psychiatric comorbidities, n (%)[c]	10 (15)

Abbreviations: IQR, interquartile range; BMI, body mass index.
[a]reported dysmenorrhea, dyspareunia, acyclical pelvic pain at time of initial consultation.
[b]conditions reported include endometriosis, pelvic floor dysfunction, vulvar pain syndrome, osteoarthritis, rheumatoid arthritis, irritable bowel syndrome, fibromyalgia.
[c]conditions reported include anxiety and depression.

Within our sample, 65% (N = 42) reported concerns regarding some aspect of pelvic pain at the time of their consultation visit. Comorbid chronic pain and psychiatric conditions were present in 25% (N = 16) and 15% (N = 10) of patients, respectively. Total postoperative opioid requirement for patients with pelvic pain was a median of 30 OME (IQR 15–60), whereas for those without pelvic pain it was a median OME of 22.5 (IQR 7.5–97.5). Patients with and without comorbid chronic pain conditions used a median OME of 48.75 (IQR 7.5–18.75) and 22.5 (IQR 15–60), respectively. Patients with a history of psychiatric conditions required a median total of 45 OMEs (IQR 25–97.5), and those without used a median OME of 22.5 (IQR 7.5–67.5). There was no statistically significant difference in the total postoperative opioid use between patients with and without pelvic pain, chronic pain conditions, or psychiatric comorbidities although there was a trend towards significance for higher postoperative opioid use in patients with chronic pain and/or psychiatric conditions (**Table 3**).

Most patients were discharged on the day of surgery (85%) and the remaining patients were discharged on postoperative day 1. Perioperative complications were noted in six patients. These included the following: bladder cystotomy with intraoperative repair, vaginal cuff cellulitis, incisional cellulitis, pelvic abscess, and postoperative bleeding (no transfusion). In the six patients with a peri- or postoperative complication, the total postoperative opioid use was a median of 27.5 OMEs (IQR 8.13–56.25) compared to 30 (IQR 9.38–69.38) in those without complications, suggesting that peri-operative complications did not increase total opioid use. All patients who underwent myomectomy and minor laparoscopic procedures completed their postoperative

Table 2.
Postoperative Opioid Requirements

Outcome	Hysterectomy	Myomectomy	Laparoscopy
Median Total OME (IQR)	35 (11.25, 102.5)	30 (15, 75)	18.75 (7.5, 48.75)
Median 48-hr OME (IQR)	15 (10, 30)	22.5 (15, 45)	15 (3.75, 37.5)
Median Last day of use (IQR)	3 (2, 8)	4 (1, 7)	2 (0.5, 3.5)
# Patient refills	0	1[a]	0
Use past last postop visit	No	No	No

Abbreviations: OME, oral morphine equivalent; IQR, interquartile range.
[a]single refill of oxycodone 5 mg tablets (#10).

surveys. Of the hysterectomy patients, 92% (N= 33) and 64% (N = 23) completed their first and second postoperative visit surveys, respectively (**Figure 1**). Greater than 95% of hysterectomy and myomectomy patients, and 83% of patients who underwent other/minor laparoscopic procedures reported being satisfied or very satisfied with their postoperative pain control (**Table 4**). We also assessed postoperative milestones. The vast majority of patients (> 90%) reported that they had normal bowel movements at the first postoperative visit. A majority of patients reported they had resumed or fully resumed activities at the time of their postoperative visit: 91% of hysterectomy patients at their second visit, 71% of myomectomy patients, and 83% of other/minor laparoscopic cases.

When patients were surveyed about their knowledge pertaining to the opioid epidemic, almost all (97%) reported baseline knowledge of the opioid crisis, with only half of patients (54%) having knowledge about proper disposal methods for unused opioid medications (**Table 5**). Of the 33 patients who reported reviewing the education pamphlet, most felt that it helped increase awareness about the opioid epidemic (82%) as well as increase knowledge proper medication disposal methods (97%). Almost all patients (97%) indicated that they were likely or very likely to appropriately dispose of unused opioid medications. When inquiring about barriers to proper opioid disposal, one patient responded that a barrier would be potential need for additional pain medications in the future.

DISCUSSION

In this study of patients undergoing benign minimally invasive gynecologic procedures, there was a low narcotic requirement with high satisfaction of postoperative pain. The standardized postoperative narcotic regimen (25 tablets of 5 mg oxycodone after hysterectomy or myomectomy and 10 tablets of 5 mg oxycodone after other laparoscopic procedures) was three to five times more opioid medication than used.

Prior studies have noted an association between comorbid pain and psychiatric conditions with perioperative opioid usage.[15,16] While our study did not show this association, there was a trend towards significance, possibly due to small sample size.

Additionally, most patients reported existing knowledge of the opioid crisis prior to our educational intervention, but only half of patients had knowledge proper narcotic disposal. Following review of an educational pamphlet, almost all patients reported both an increase in knowledge regarding disposal and plans for future proper disposal. However, given that pamphlet review was not required, and only a small number of patients reported

Table 3.
Opioid Requirements, Sub-group Analysis by Comorbid Conditions

Condition	Present: Total Median OME (IQR)	Absent: Total Median OME (IQR)	p-Value
Pelvic pain	30 (15, 60)	22.5 (7.5, 97.5)	0.53
Chronic pain conditions	48.75 (7.5, 108.75)	22.5 (15, 60)	0.45
Psychiatric comorbidities	45 (25, 97.5)	22.5 (7.5, 67.5)	0.38

Abbreviations: OME, oral morphine equivalent; IQR, interquartile range.

Table 4.
Postoperative Recovery Survey Responses

Survey Questions	HYS, 1st Visit (n = 33) n, (%)	HYS, 2nd Visit (n = 22) n, (%)	Myo (n = 17) n, (%)	Lsc (n = 12) n, (%)
Satisfaction with postoperative pain control[a]	33 (100)	21 (95)	17 (100)	10 (83)
Needed more opioid medications than prescribed	0	0	0	2 (17%)
Called in for refill	0	0	0	0
Normal bowel movements	30 (91)	21 (95)	17 (100)	11 (92)
Resume normal activities[b]	22 (67)	20 (91)	12 (71)	10 (83)

Abbreviations: HYS, hysterectomy; Myo, myomectomy; Lsc, laparscopy.
[a]reported satisfied or very satisfied.
[b]reported resumed or fully resumed.

reviewing the pamphlet, it is not clear if mandatory review would have motivated additional consented patients to take part in the study, and how this would impact narcotic usage. Many prior studies have shown that in many surgical specialties there is a poor understanding of opioid use, misuse, and best practices.[5,17,18] Our study positively adds to the literature to encourage surgeons to decrease standard quantity of opioids prescribed, and demonstrates that simple education efforts such as a patient education handouts can be effective at improving patients' knowledge and make them more likely to properly dispose of narcotic medications. This expands on prior studies that have looked at procedures other than hysterectomy.[19,20]

Table 5.
Opioid Epidemic and Educational Pamphlet Survey Responses

Survey Questions	Responses n (%)
Had knowledge of opioid crisis prior to reading pamphlet	36/37 (97%)
Knew of different ways to dispose of unused opioid medications prior to reading pamphlet	19/35 (54%)
Pamphlet helped increase awareness and knowledge about opioid epidemic	27/33 (82%)
Pamphlet helped increase awareness and knowledge about disposal of unused opioid medications	32/33 (97%)
Likelihood of proper disposal of unused opioid medications[a]	35/36 (97%)

[a]reported likely or very likely.

Our study is one of the few pertaining to perioperative opioid use after minimally invasive gynecologic surgery that involves a variety of gynecologic procedures beyond just hysterectomy. Other strengths of this study include its prospective design and inclusion of a diverse patient population. Additionally, we explored both pain control satisfaction as well as functional markers for postoperative milestones (passage of gas, bowel movements, return to daily activities) as opposed to simply using visual analog scale scores. While there is no gold standard measurement for the quality of postoperative recovery, our surveys provide a thorough evaluation of postoperative recovery in correlation with narcotic usage. Lastly, this study focused heavily on patient education and feedback regarding education of the opioid epidemic. This not only positively impacts the patient's own opioid use and disposal practices but may also have long-lasting benefits for the community at large, as patients educate friends and family regarding appropriate opioid use and disposal. Indeed, most first-time opioid abusers receive medication from a friend or relative with leftover medication, highlighting the importance of education for safe and proper disposal of unused narcotics.[10,11,21] The comment from a patient about the plan to keep pain medications in case they are needed in the future is a pivotal example of the need for continued re-education and safe handling of medications.

This study certainly has important limitations. First, it is a small study done by a specific cohort of high-volume subspecialty surgeons and may not be representative of the broader population of gynecologic surgeons. Only 60% of initial participants returned the written pill diary which could have been improved by patient phone calls,

electronic pill diaries, and/or pill counting. We are also unable to determine if the patients who did not provide follow-up data differed from those who did, and if their postoperative opioid use differed. Those patients that did complete surveys may have been more motivated patients to return to normal postoperatively and thus use fewer narcotics. Additionally, opioid usage was self-reported by patients and thus could lead to recall bias. However, most patients were seen by two weeks after surgery and filled out their pill diaries prior to the visit with the provider.

While the median total OME was low for each procedure, the interquartile range was wide. Future prospective studies involving larger patient populations are needed to better identify those at risk of greater use. This would strengthen current recommendations for reduced opioid prescribing practices, as well as help to establish future perioperative opioid prescription guidelines, potentially even with stratifications based on type of procedure and patient risk factors for greater use. Additional studies should also be performed to validate restrictive opioid prescribing which has shown no increase in refill requests and reduces the need to locate proper disposal avenues.[22]

CONCLUSION

In summary, our study demonstrates that most patients after minimally invasive gynecologic surgery required < 10 tablets of oxycodone 5 mg, regardless of surgery type, with excellent patient satisfaction. A simple patient education pamphlet increases awareness regarding the proper disposal of unused opioid medications in order to limit opioid diversion. Continuing education for providers and patients is necessary to limit excessive narcotic prescriptions and reduce the impact of surgery on the larger opioid epidemic.

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Appendix

Appendix A. Pill Diary

Post-operative pill diary **Patient name:** _____ **MRN:**_____

	Oxycodone/Dilaudid/Tramadol (circle which used)	Tylenol	Ibuprofen	Colace
	Number of Pills Taken			
Day 1				
Day 2				
Day 3				
Day 4				
Day 5				
Day 6				
Day 7				
Day 8				
Day 9				
Day 10				
Day 11				
Day 12				
Day 13				
Day 14				
Week 3				
Week 4				
Week 5				
Week 6				
Week 7				
Week 8				

List any other pain medications used during the post-operative period and when you used them (for example, Day 2, Week 4…etc):

Appendix B. Patient Education Pamphlet

⇒ Safe medication drug disposal units may also be available at your local pharmacy, call them and ask!

◊ Option 2: Safe Home Disposal

⇒ Remove pills from original medication bottle

⇒ Place them into a separate container with a lid (like a small Tupperware)

⇒ Mix the medication with an inedible substance (like dirt, dish soap or detergent, cat litter)

⇒ Mark out or remove any personal information on the empty medication bottle

⇒ Throw everything into the household trash

For additional questions or resources, contact us!

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Patients and Providers: Partners in Pain Management

Johns Hopkins Department of Gynecology and Obstetrics

Division of Minimally Invasive Gynecologic Surgery

JOHNS HOPKINS MEDICINE

The Opioid Crisis: Did you know?...

◊ Our country is experiencing a major rise in opioid misuse and abuse

◊ Opioid-related deaths recently exceeded motor vehicle accidents as the leading cause of injury-related deaths in the United States; at least half of these deaths were caused by prescription opioid medications

◊ In 2016, about 12 million people had misused prescription opioids in the previous year, and a majority obtained them from excess medication prescribed to friends and family members

◊ Studies have shown that routine opioid use for pain surrounding surgery can be associated with inappropriate long-term use

How does this affect you?

◊ As your treatment team, we place primary importance on making sure you have an excellent recovery course and adequate pain control after surgery

◊ To meet this goal, it is our job to prescribe the right amount of pain medications for you

◊ However, there are some things you can do to help us combat the growing opioid epidemic!

How can you help?

◊ Store your opioid medication in a secure place; do not take someone else's opioid medications and do not share your pain medications with others

◊ Once you no longer need your pain medications, they should be diposed of safely (don't flush them down the toilet as this could contaminate the water!)

◊ Option 1: Medication Drop-off

⇒ Drop off unneeded medications at drug disposal units available at **outpatient pharmacies** throughout the **Johns Hopkins Hospital** and **Johns Hopkins Bayview** medical campuses

⇒ Keep the medications in their original containers

⇒ Wrap liquid containers in a paper towel, sealed inside a plastic bag

Appendix C. Patient Postoperative Surveys

Post-operative Satisfaction Survey (Minor/Myomectomy)

Patient Name: _____

MRN: _____

1. How satisfied are you with your post-operative pain control since surgery?

1 2 3 4 5

Not Satisfied At All Very Satisfied

2. Do you feel like you needed more narcotic medications than you were prescribed?

Yes No

   a. If yes, did you call in for a refill?

Yes No

3. Have you resumed having bowel movements at a frequency that is normal for you since surgery?

Yes No

4. Have you been able to resume any of your normal activities (walking, light exercise, driving, work)?

1 2 3 4 5

Not at all Fully Resume

5. Have you had a chance to read our pamphlet entitled "Patients and Providers: Partners in Pain Management"?

Yes No

If yes to #5, please continue to the questions on the reverse page:

6. Did you know about the opioid epidemic or opioid crisis in our country prior to reading the pamphlet?

Yes No

7. Do you feel that reading our pamphlet helped to increase your awareness and knowledge of the opioid epidemic in our country?

Yes No

8. Did you know about the different ways to dispose of unused narcotic medications prior to reading the pamphlet?

Yes No

9. Do you feel that reading our pamphlet helped to increase your awareness and knowledge of how to properly dispose of unused opioid medications?

Yes No

10. How likely do you feel you would properly dispose of unused opioid medications, either at a local pharmacy or using home-based methods?

1 2 3 4 5

Very rarely Very likely

11. If you answered below a "3" to #10, what barriers do you think would stop you from properly disposing unused opioid medications? (words or short phrases)

Post-operative Satisfaction Survey (Hysterectomy First Visit)

Patient Name: _____

MRN: _____

12. How satisfied are you with your postoperative pain control since surgery?

1 2 3 4 5

Not Satisfied At All Very Satisfied

13. Do you feel like you needed more narcotic medications than you were prescribed?

Yes No

a. If yes, did you call in for a refill?

Yes No

14. Have you resumed having bowel movements at a frequency that is normal for you since surgery?

Yes No

15. Have you been able to resume any of your normal activities (walking, light exercise, driving, work)?

1 2 3 4 5

Not at all Fully Resume

16. How satisfied are you with your pain control since 2 weeks after your surgery?

1 2 3 4 5

Not Satisfied At All Very Satisfied

17. Do you feel like you needed more narcotic medications than you were prescribed?

Yes No

a. If yes, did you call in for a refill?

Yes No

18. Have you been having bowel movements at a frequency that is normal for you since surgery?

Yes No

19. Have you been able to resume your normal activities (walking, light exercise, driving, work)?

1 2 3 4 5

Not at all Fully Resume

20. Have you had a chance to read our pamphlet entitled "Patients and Providers: Partners in Pain Management"?

Yes No

If yes to #5, please continue to the questions on the reverse page

21. Did you know about the opioid epidemic or opioid crisis in our country prior to reading the pamphlet?

Yes No

22. Do you feel that reading our pamphlet helped to increase your awareness and knowledge of the opioid epidemic in our country?

Yes No

23. Did you know about the different ways to dispose of unused narcotic medications prior to reading the pamphlet?

Yes No

24. Do you feel that reading our pamphlet helped to increase your awareness and knowledge of how to properly dispose of unused opioid medications?

Yes No

25. How likely do you feel you would properly dispose of unused opioid medications, either at a local pharmacy or using home-based methods?

1 2 3 4 5

Very rarely Very likely

26. If you answered below a "3" to #10, what barriers do you think would stop you from properly disposing unused opioid medications? (words or short phrases)