

Multimodal Analgesia in Orthopaedic Surgery and Presentation of a Comprehensive Postoperative Pain Protocol: A Review

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ABSTRACT

Rising opioid use in the United States has now been termed an epidemic. Opioid use is associated with considerable morbidity, mortality, and cost to the healthcare system. Orthopaedic surgeons play a key role in the opioid epidemic by prescribing postoperative narcotics. Although our understanding of the quantity of narcotics to prescribe postoperatively for analgesia is progressing, there is still a paucity of data focused on routine postoperative pain protocols. The purpose of this article is to review the current options for both opioid and non-opioid analgesia and put forth a multi-specialty orthopaedic protocol of postoperative pain. On the basis of study findings and the individual experiences of surgeons within our orthopaedic department, our comprehensive pain protocol includes the following considerations: use of non-steroidal anti-inflammatory drugs on an individual basis, limited use of benzodiazepines, use of diazepam in only pediatric patients undergoing major procedures, lower doses of gabapentin after hip and knee arthroplasty, higher doses of gabapentin after spine procedures, general use of oxycodone owing to its accessibility, use of isolated opioids rather than combined forms, and close collaboration with anesthesiologists for determining use of peripheral nerve block. Our resultant comprehensive pain protocol can provide orthopaedic surgeons with a framework to build upon, which will benefit greatly from future studies that examine narcotic use with specific procedures.

Keywords: Pain, Postoperative, Narcotic, Opioid, Protocol

INTRODUCTION

Nociception is the mechanism by which tissue damage is communicated from the periphery to the central nervous system. The resulting pain has a large variability and is defined as the unpleasant experience associated

with a given stimulus.¹ Pain is a common concern in most fields of medicine, especially in orthopaedics. In fact, treatment algorithms used in orthopaedics are often guided by pain. Despite the common occurrence of pain, little is understood about the variability and postoperative treatment.

The increased availability of opioid medications and the effort to adequately treat pain has led to the dramatic rise of opioid use in the United States.² Accordingly, opioid-related consequences have increased. The United States represents about 4.4% of the world's population but consumes 80% of the global opioid supply.^{3,4} The Centers for Disease Control and Prevention estimates that 32,445 deaths occurred in 2016 due to prescription opioids, which is about 89 deaths per day.⁵ In comparison, 36,161 deaths occurred due to motor vehicle accidents in 2015.⁶

It is estimated that orthopaedic surgeons prescribe about 7% of prescription opioids in the United States.⁷ Additionally, orthopaedic surgeons prescribe more opioids than most other specialty physicians owing to the pain associated with common orthopaedic procedures. Furthermore, orthopaedic surgeons often prescribe more narcotics than patients use,⁸ which can contribute to potential abuse and the diversion of prescription narcotics to other uses and users.

The challenge of prescribing postoperative narcotic medication is learning how to manage an amount needed for pain control during an unpredictable time. The goal is to find a balance in prescribing sufficient quantities of narcotics, offsetting postoperative pain, and minimizing potential risks of habituation and inappropriate use. Finding a sufficient quantity is dependent on multiple variables such as the surgical procedure, operating time, preoperative opioid exposure, use of non-narcotic agents, and patient variability in pain perception.⁹ Although several of these variables remain difficult to quantify, the typical opioid quantity for a given surgical procedure appears

to be more predictable. The aim of this article is to review frequently used postoperative pain regimens and put forth a comprehensive protocol of postoperative pain management that can be applied to common orthopaedic procedures.

IMPLICATIONS OF A STANDARDIZED PAIN PROTOCOL

Use of standardized protocols has become common in medicine. Although protocols often evolve as the studies expand, implementation of routine protocols has proven effective in reducing patient morbidity and mortality in multiple applications—ranging from preoperative timeout¹⁰ to acute management of unstable pelvic ring injuries.¹¹ Despite emerging reports of average amounts of opioids to prescribe postoperatively, data are limited regarding the potential benefits of prescribing a defined amount. Routine protocols of postoperative pain management can potentially improve morbidity and mortality and change the landscape of the current opioid crisis.^{12,13}

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Since the discovery of acetylsalicylic acid (ie, aspirin) in the bark of a willow tree more than 70 years ago, non-steroidal anti-inflammatory medications (NSAIDs) have been used for analgesia.¹⁴ NSAIDs inhibit cyclooxygenase 1 (COX-1) and 2 (COX-2) to provide antipyretic, analgesic, anti-inflammatory, and antithrombotic effects.¹⁵ Historically, the use of NSAIDs in the management of orthopaedic injuries has been controversial because of concerns of bleeding, delayed wound healing, and fracture healing complication.¹⁵ In children, however, NSAIDs have been shown to decrease opioid consumption^{16,17} and are as effective as opioids in reducing pain associated with uncomplicated fractures.¹⁸ Both the risks of NSAIDs and the benefits of decreased opioid use favor the inclusion of NSAIDs in a multimodal postoperative pain regimen.

Various NSAIDs are available, each one with a varying duration of action, adverse effect profiles, analgesic strength, and cost.¹⁹ Regarding orthopaedic surgical procedures, no standard has been set on the “perfect” NSAID, nor is there evidence that one NSAID regimen is more effective for one procedure over another. Therefore, the choice of NSAID should be left to the discretion of the surgeon and patient, taking into consideration the history of gastrointestinal bleed or upset, cardiovascular history, renal health, allergies, and associated anticoagulants. For this reason, our institution’s orthopaedic department has agreed to use NSAIDs on a case-by-case basis rather than universally for every procedure.

OTHER NON-OPIOID MEDICATIONS

Acetaminophen, also known as paracetamol, is a frequently employed and readily available analgesic in the United States.²⁰ Acetaminophen imparts its antipyretic and analgesic effects to the central nervous

system; additionally, it regulates impact on the inflammatory response.²¹ It is available in both oral and intravenous forms, with intravenous typically reserved for the immediate postoperative period when patients may experience limited oral intake. Acetaminophen has become a standard in our pain protocol because of favorable adverse effect profile.

Gabapentin is a gamma-aminobutyric acid agonist that acts primarily on spinal calcium channels, but there are likely other pharmacodynamics that are not understood.²² It has been well established that the role of gabapentin is reducing phantom limb pain after amputation²³; however, the role of gabapentin as a multimodal agent is less clear in other orthopaedic procedures, particularly in arthroplasty.²⁴⁻²⁶ Two randomized controlled trials that used gabapentin postoperatively found slightly decreased opioid use within the 48-hour period in one trial and no benefit in the other.^{25,26} However, a meta-analysis by Han et al²⁷ found that gabapentin significantly reduced opioid consumption within the first 24 and 48 hours after surgery. The use of gabapentin has been shown to be more effective in perioperative pain control after lumbar spine procedures,²⁸ however these data are confounded by considerable preoperative use. As a result of these mixed findings, we incorporated lowered doses of gabapentin (300 mg every night) into our routine postoperative pain protocol for hip and knee arthroplasty. For patients recovering from a spine procedure, we use a higher dose (ie, 600 mg every night) because many of our patients were accustomed to this medication preoperatively.

Benzodiazepines inhibit transmission on the postsynaptic γ -aminobutyric acid (known as GABA) neurons.²⁹ Additionally, they act centrally on the spinal cord and peripherally on muscle tissue to reduce muscle spasms. The risk of respiratory depression with opioids and benzodiazepines has been thoroughly studied,³⁰ and thus our use of this medication is quite limited. In our protocol, diazepam is used solely in treating children undergoing major procedures. In our experience, this medication is typically used instead of opioids for this specific population.

OPIOID MEDICATIONS

In the central nervous system, opioid medications provide analgesia through their agonistic actions on the μ receptor; however, our understanding of the various μ receptors continues to evolve.³¹ Although opioids may be effective for postoperative analgesia, their use is not without drawbacks. Fletcher and Martinez³² linked intraoperative exposure to opioids to hyperalgesia in the immediate postoperative period, highlighting the potential risks and early development of tolerance. The association between duration of opioid use and potential for misuse has also been well studied. Brat et al¹² found that with each refill, an additional week of opioid use, the risk of misuse increased by 44%. The many adverse effects of prolonged opioid exposure

have been well described (eg, nausea, vomiting, constipation, and respiratory depression).³³ Thus, the primary aim of our multimodal pain protocol was to provide sufficient postoperative analgesia while minimizing opioid use.

There are many available choices for oral opioid analgesia. The options can be broadly categorized into isolated versus combined forms, long versus short acting, or by route of administration. For the purpose of this review, we limited our discussion to oral, short acting isolated, and combined forms. Isolated forms include hydrocodone, oxycodone, morphine, hydromorphone, methadone, among others. Potency, duration of action, and half-life are unique to each medication. To provide study uniformity for the comparison of opioids, the use of milligram morphine equivalents has become standard and is readily available on the Centers for Disease Control and Prevention website³⁴; however, the accuracy of conversion remains debatable.^{35,36} The isolated opioid should be chosen by both the patient and provider because the adverse effect profile and analgesic effect are similar and dependent on dosage.³⁷ Furthermore, Basilico et al³⁸ found no difference between the risk of prolonged opioid use and prescription opioid type after orthopaedic procedures. For the purposes of our protocol, oxycodone is the most easily accessible and readily available.

A few combined forms of opioid include oxycodone and ibuprofen, oxycodone and acetaminophen, or hydrocodone and acetaminophen.³⁹ Many studies have found no differences in the analgesic efficacy of combined opioid and NSAID forms or opioid and acetaminophen forms.⁴⁰⁻⁴³ Furthermore, when combining opioid and NSAID medications, there is no evidence of synergistic analgesic effect.⁴⁴ Anecdotally, there is a potential benefit of minimizing opioid overdose in combined forms, which suggests that a patient attempting to misuse or overdose oxycodone and acetaminophen will reach toxic levels of acetaminophen before respiratory depression. However, there is no evidence to support this claim and we strongly recommend that providers not rely on this method for safety when prescribing opioids. Although combined opioid forms may offer convenience, calculating safe dosages of acetaminophen and NSAIDs to use in conjunction can be burdensome and even dangerous for patients. Therefore, the use of isolated opioids in our protocol allows us to emphasize narcotic use solely as needed after maximizing use of non-narcotic agents. Additionally, it allows the patient to discontinue opioids early in the postoperative period while continuing the use of non-narcotics during recovery.

REGIONAL ANESTHESIA

Regional anesthesia refers to the use of peripheral nerve blocks for intraoperative and postoperative analgesia. Additionally, it can be used in conjunction with general anesthesia or monitored anesthesia care for a given procedure. The safety of regional anesthesia has been well established.⁴⁵ Furthermore, regional anesthesia has been shown to significantly reduce opioid consumption in arthroplasty, fracture treatment, and arthroscopy.⁴⁶⁻⁴⁹ Although the use of peripheral nerve blocks has been widely adopted into our practice as orthopaedic surgeons, collaboration with anesthesiologists is crucial. Peripheral nerve block locations, medications, and dosages continue to change. Because of this, we defer their use to our anesthesia colleagues rather than implement them into a uniform and standardized protocol. Although the choice of peripheral nerve block may vary between cases, our anesthesia colleagues typically provide interscalene blocks for shoulder procedures; infraclavicular blocks for elbow, wrist, and hand procedures; combined femoral and sciatic blocks for arthroscopic knee procedures; popliteal and saphenous blocks for foot and ankle procedures; and spinal anesthesia for hip and knee arthroplasty.

CONCLUSION

To address the lack of a standardized pain protocol, surgeons of our orthopaedic department synthesized their individual protocols, with gaps subsidized by agreeable surgeon-specific preferences. In Appendices 1 through 7, we present the resultant comprehensive postoperative pain protocol. The purpose of the protocol is to maximize non-narcotic analgesia and provide a standard quantity of opioid for various orthopaedic procedures.

Notably, the protocol focuses on common procedures and does not address every possible procedure that an orthopaedic surgeon could perform. However, it can be applied as a framework for less common procedures. Within the protocol, some procedures are identified as major or minor depending on the severity of the treatment and anticipated postoperative pain experienced. Furthermore, we expect deviations from the protocol in cases of patient allergies, prior opioid exposure, and preoperative medications.

Early results of implementing a standard pain protocol are encouraging but limited to single subspecialties.¹³ To our knowledge, this is the first review to put forth a multi-subspecialty protocol. Studies evaluating the benefits of a multi-subspecialty protocol are currently underway, and future work dedicated to minimizing narcotic use remain paramount.

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Appendix 1. Postoperative protocol for managing pain after common foot and ankle procedures

Drug	ORIF for Ankle Injuries	Bunion Surgery
Acetaminophen		
Quantity	80 tablets (500 mg)	80 tablets (500 mg)
Duration ^a	2 every 8 h	2 every 8 h
Ibuprofen		
Quantity	40 tablets (800 mg)	40 tablets (800 mg)
Duration	1 TID as needed	1 TID as needed
Oxycodone ^b		
Quantity	30 tablets (5 mg)	20 tablets (5 mg)
Duration	1 every 6 h as needed	1 every 6 h as needed

TID, three times a day.

^aPatients should take this until pain resolves.

^bPatients should take for breakthrough pain.

Appendix 2. Postoperative protocol for managing pain after common hand procedures

Drug	Trigger finger release	Carpal tunnel release	De Quervain's release	ORIF for DR fractures
Acetaminophen				
Quantity	80 tablets (500 mg)	“	“	“
Duration ^a	2 every 8 h	“	“	“
Ibuprofen				
Quantity	40 tablets (800 mg)	“	“	“
Duration	1 TID as needed	“	“	“
Oxycodone				
Quantity	5 tablets (5 mg)	“	“	15 tablets (5 mg)
Duration ^b	1 every 6 h as needed	“	“	“

TID, three times a day; “, same information as in the row to the left; ORIF, open reduction and internal fixation; DR, distal radius.

^aPatients should take this until pain resolves.

^bPatients should take for breakthrough pain.

Appendix 3. Postoperative protocol for managing pain after common pediatric procedures and conditions^{a,b}

Drug	Minor procedures ^c	Major procedures ^d	Scoliosis
Liquids			
Hycet ^e			
Quantity	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg
Duration	Every 6 h for 5 days	Every 6 h for 14 days	Every 6 h for 14 days
Ibuprofen			
Quantity	10 mg/kg	10 mg/kg	--
Duration	every 6 h for 5 days	Every 6 h for 14 days	--
Diazepam			
Quantity	--	5 mg/5 mL (0.1 mg/kg)	5 mg/5mL (0.1 mg/kg)
Duration	--	Every 6 h for 7 days ^f	Every 6 h for 7 days ^f
Senna			
Quantity	8.8 mg/5mL	8.8 mg/5 mL	8.8 mg/5 mL
Duration	Oral syrup for 5 days	Oral syrup for 14 days	Oral syrup for 14 days
Gabapentin			
Quantity	--	--	300 mg
Duration	--	--	Every evening for 14 days
Miralax			
Quantity	--	--	17 g
Duration	--	--	Every day for 7 days (225 g) ⁱ
Pills			
Ibuprofen			
Quantity	10 mg/kg	10 mg/kg	--
Duration	Every 6 h for 5 days	Every 6 h for 14 days	--
Tylenol			
Quantity	10 mg/kg	10 mg/kg	10 mg/kg
Duration	Every 4 h for 5 days	Every 4 h for 14 days	Every 4 h for 14 days
Oxycodone			
Quantity	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg
Duration	Every 4 h for 5 days	Every 4 h for 7 days ^g	Every 4 hours for 7 days ^g
Diazepam			
Quantity	--	5 mg/5 mL (0.1 mg/kg)	5 mg/5 mL (0.1 mg/kg)
Duration	--	Every 6 h ^h	Every 6 h ^h
Docusate			
Quantity	50 mg	50 mg	--
Duration	BID for 5 days	BID for 14 days	--
Senna			
Quantity	--	--	8.8 mg /5 mL
Duration	--	--	Oral syrup for 14 days
Gabapentin			
Quantity	--	--	300 mg
Duration	--	--	Every evening for 14 days
Miralax			
Quantity	--	--	17 g
Duration	--	--	Every day for 7 days (255 g) ⁱ

--, not applicable; BID, twice a day.

^aFor infants < 1 year: use hycet (7.5 mg hydrocodone / 325 mg paracetamol in 15 mL) 0.1mg/kg every 6 h for 5 days. Solution comes in concentration as above, so typically give 2 mL for a 10 kg baby.

^bConsider a daily aspirin 325 mg for 28 days for all adolescent females, especially those on birth control.

^cExamples of minor procedures are as follows: tendon-Achilles lengthening, surgical fixation of supracondylar fractures, epiphysiodesis, tendon transfers, hardware removal, etc.

^dExamples of major procedures are as follows: acetabular and femoral osteotomies, surgical fixation of femur and tibia fractures, calcaneal osteotomies, etc.

^eHydrocodone or paracetamol.

^fFor muscle spasms.

^gDo not exceed 60 tablets.

^hFor muscle spasms; do not exceed 30 tablets.

ⁱTirate to soft stools.

Appendix 4. Postoperative protocol for managing pain after common spine procedures

Drug	Inpatient management plan^a
Gabapentin	
Quantity	600 mg
Duration	QHS
Acetaminophen	
Quantity	1000 mg (≤ 4000 mg)
Duration	Every 6 h
Ketorolac ^b	
Quantity	30 mg (≤ 210 mg)
Duration	Every 6 h for first 24 h
Ibuprofen ^b	
Quantity	800 mg (≤ 3200 mg)
Duration	Every 6 h as needed after first 24 h
Dexamethasone ^c	
Quantity	8 mg
Duration	PO daily for 48 h
Methocarbamol	
Quantity	500 mg (≤ 4000 mg)
Duration	QID as needed for muscle spasm
Opioids after inpatient management plan medications are maxed out^d	
Oxycodone	
Quantity	5 mg
Duration	Every 4 h as needed for pain
Oxycodone	
Quantity	10 mg
Duration	Every 4 h as needed for pain
Morphine	
Quantity	2-4 mg
Duration	Every 4 h as needed for pain
Dilaudid	
Quantity	0.5-2 mg
Duration	Every 4 h as needed
Bowel regimen	
Senna	
Quantity	--
Duration	BID
Miralax	
Quantity	17 g
Duration	Powder BID if no bowel movement by postoperative day 3
Discharge medication (until 2 weeks postoperatively)	
Gabapentin	
Quantity	600 mg (28 300 mg tablets)
Duration	QHS
Acetaminophen	
Quantity	1000 mg (56 tablets)
Duration	Every 6 h (≤ 4000 mg daily)
Meloxicam	
Quantity	7.5 mg (14 tablets)
Duration	Every day as needed
Oxycodone	
Quantity	5 mg (80 tablets)
Duration	Every 4 h as needed
Senna	
Quantity	28 tablets
Duration	1 tablet BID while continuing opioid use
Promethazine	
Quantity	12.5 mg (30 tablets)
Duration	Every 6 h as needed for nausea

QHS, every night before bed; PO, orally; QID, for times a day; --, not applicable; BID, twice a day.

^aApplied to both elective and trauma patients unless contraindicated. If previous opioid use is greater than 120 morphine equivalents (ie, 80 mg of oxycodone) per day, defer to consultation with inpatient pain management service.

^bBecause this is a nonsteroidal anti-inflammatory drug, it should be avoided if there is concern for poor bone healing. Give with proton pump inhibitors (ie, PPI) or H2 receptor blockers.

^cAvoid if concern for poor wound healing.

^dFor continuous opioids, avoid basal rates—to be used in low dose for breakthrough pain in the immediate postoperative period.

Appendix 5. Postoperative protocol for managing pain after total joint arthroplasty

Drug	Inpatient management plan
Toradol	
Quantity	15 mg
Duration	IV Every 6 h for 48 h (hold for h/o GI bleed or GFR < 60)
Meloxicam ^a	
Quantity	7.5 mg
Duration	PO every day for remainder of stay
Tylenol	
Quantity	1 g
Duration	PO every 8 h (hold for hepatitis C)
Decadron	
Quantity	4 mg
Duration	IV every day for 2 days (hold for diabetes)
Gabapentin	
Quantity	300 mg
Duration	PO QHS
Famotidine	
Quantity	20 mg
Duration	BID
	For patients aged < 70 years
Oxycontin	
Quantity	10 mg
Duration	PO BID (monitor closely in OSA)
Oxycodone	
Quantity	5 mg
Duration	PO every 4 h as needed for moderate pain
Oxycodone	
Quantity	10 mg
Duration	PO every 4 h as needed for severe pain
Morphine	
Quantity	2 mg
Duration	IV every 4 h as needed for intractable pain only
	For patients aged > 70 years (hold oxycontin)
Oxycodone	
Quantity	5 mg
Duration	PO every 4 h (monitor closely for AMS and delirium)
Tramadol	
Quantity	50 mg
Duration	PO every 6 h as needed for moderate pain
Oxycodone	
Quantity	5 mg
Duration	PO every 4 h as needed for moderate pain
Morphine	
Quantity	2 mg
Duration	IV every 4 h as needed for intractable pain only
	Outpatient management plan
Aspirin	
Quantity	81 mg (30 tablets)
Duration	BID (vs Lovenox) for 30 days
Meloxicam	
Quantity	7.5 mg (30 tablets)
Duration	PO daily for 30 days
Gabapentin	
Quantity	300 mg (30 tablets)
Duration	PO QHS for 30 days
Famotidine	
Quantity	20 mg (30 tablets)
Duration	PO daily for 30 days

Continued on the next page

Tylenol	
Quantity	1 g
Duration	PO TID for 2 weeks, then as needed for up to 6 weeks
Zofran	
Quantity	4 mg (10 tablets)
Duration	PO every 6 h daily for 2 weeks
Docusate	
Quantity	100 mg (28 tablets)
Duration	PO BID for 2 weeks
For patients aged < 70 years^{b,c}	
Oxycodone	
Quantity	5 mg (60 tablets)
Duration	PO 1-2 tablets every 4-6 h as needed for 2 weeks
Oxycodone	
Quantity	5 mg (30 tablets)
Duration	PO 1 tablet every 6 h (from 2 to 6 weeks)

GFR, glomerular filtration rate; GI, gastrointestinal; QHS, every night before bed; BID, twice a day; IV, intravenous; PO, orally; OSA, obstructive sleep apnea; AMS, altered mental status; TID, twice a day.

^aTake after toradol.

^bNo narcotics beyond 6 weeks, switch to tramadol if as-needed medication is still required.

^cFor patients aged > 70 years, consider oxycodone if well tolerated while in-house and high pain level, or tramadol (50 mg, 60 tablets) at 1 tablet orally every 6 h.

Appendix 6. Postoperative protocol for managing pain after trauma-related procedures

Drug	Minor procedures^a	Major procedures^b
Naprosyn		
Quantity	500 mg	“
Duration	BID 1 tablet every 12 h for 3 days then BID (Disp #30 refill 2) ^c	“
Tylenol		
Quantity	325 mg	“
Duration	2 tablets every 6 h for 3 days then 1-2 tablets every 6 h (Disp #60 refill 2) ^c	“
Oxycodone		
Quantity	5 mg	“
Duration	1 tablet every 6 h (Disp #10) ^c	1 tablet every 6 h (Disp #30) ^c
Lovenox		
Quantity	--	40 mg
Duration	--	Daily for 2 weeks followed by aspirin
Aspirin		
Quantity	81 mg	“
Duration	BID for 4 weeks (Disp #14)	“ to follow lovenox
Zofran		
Quantity	4 mg	“
Duration	Every 8 h (Disp #5 refill 1) ^d	“
Docusate		
Quantity	100 mg	“
Duration	Daily for 14 days (Disp #14 refill 1)	“
Gabapentin		
Quantity	--	300 mg
Duration	--	Every evening for 14 days for amputations

“, same information as in the row to the left; BID, twice a day; Disp, dispense; --, not applicable.

^aMinor procedures include debridement, surgical treatment of flexor tenosynovitis, surgical fixation of finger fractures, etc.

^bMajor procedures include surgical fixation of ankle, tibial plateau, acetabular, patella, both bone, and distal radius fractures as well as amputations, etc.

^cAs needed for pain.

^dAs needed for nausea.

Appendix 7. Postoperative protocol for managing pain after sports medicine procedures^a

Drug	Minor procedures ^b	Major procedures ^c	Hip scope	Shoulder arthroplasty
Naprosyn				
Quantity	500 mg	“	“	“
Duration	1 tablet every 12 h for 3 days then BID ^d (Disp #30 refill 2)	“	1 tablet every 12 h for 30 days (Disp #60 refill 2)	1 tablet every 12 h for 3 days then BID ^d (Disp #30 refill 2)
Tylenol				
Quantity	325 mg	“	“	“
Duration	2 tablets every 6 h for 3 days then 1-2 tablets every 6 h ^d (Disp #60 refill 2)	“	“	“
Oxycodone				
Quantity	5 mg	5 mg	“	“
Duration	1 tablet every 6 h ^d (Disp #30)	1 tablet every 6 h ^d (Disp #10)	1 tablet every 6 h ^d (Disp #30)	“
Aspirin				
Quantity	81 mg	“	325 mg	“
Duration	BID for 2 weeks (Disp #28)	“	QD for 4 weeks (Disp #5 refill 1)	OD for 4 weeks (Disp #28)
Zofran				
Quantity	4 mg	“	“	“
Duration	Every 8 h ^e (Disp #5 refill 1)	“	“	“

“, same information as in the row to the left; BID, twice a day; Disp, dispense; --, not applicable; QD, once a day.

^aPlease use this for all patients undergoing treatment with sports medicine attendings unless directed otherwise by the attending, or if a contraindication is identified for an individual patient.

^bMinor procedures include debridement, non-implant procedures, minimal to no bone work, and implant removal.

^cMajor procedures include those that require use of implants.

^dAs needed for pain.

^eAs needed for nausea.