Opioid Stewardship in Otolaryngology: State of the Art Review

John D. Cramer, MD1, Brad Wisler, MD2, and Christopher J. Gouveia, MD3

Abstract

Objective. The United States is facing an epidemic of opioid addiction. Deaths from opioid overdose have quadrupled in the past 15 years and now surpass annual deaths during the height of the human immunodeficiency virus epidemic. There is a link between opioid prescriptions after surgery, opioid misuse, opioid diversion, and use of other drugs of abuse. As surgeons, otolaryngologists contribute to this crisis. Our objective is to outline the risk of abuse from opioids in the management of acute postoperative pain in otolaryngology–head and neck surgery (OHNS) and strategies to avoid misuse.

Data Sources. PubMed/MEDLINE.

Review Methods. We conducted a review of the literature on the rate of opioid abuse after surgery, methods of safe opioid use, and strategies to minimize the dangers of opioids.

Conclusions. Otolaryngologists have a responsibility to treat pain. This begins preoperatively by discussing perioperative pain control and developing a personalized pain control plan. Patients should be aware that opioids carry significant risks of adverse events and abuse. Perioperative use of multimodal nonopioid agents enables pain control and avoidance of opioids in many otolaryngologic cases. When this approach is inadequate, opioids should be used in short duration under close surveillance. Institutional standards for opioid prescribing after common procedures can minimize misuse.

Implications for Practice. Otolaryngologists need to acknowledge the potential harm that opioids cause. It is essential that we evaluate our practices to ensure that opioids are used responsibly. Furthermore, opioid stewardship should become a priority in otolaryngology.

Keywords

otolaryngology, head and neck surgery, pain, postoperative pain, opioids, narcotics, analgesics

History of the Opioid Crisis: How Did We Get Here?

The United States is in the midst of an opioid epidemic that has been building for several decades. In the 1990s, pain was elevated to the “fifth vital sign” by the American Pain Society.1 This coincided with a shift in medical provider attitudes toward eliminating all pain, relaxation in regulations for opioid prescribing, and aggressive marketing by pharmaceutical companies.2 As a result, opioid prescribing skyrocketed. Between 1991 and 2011, opioid prescriptions nearly tripled in the United States, rising from 76 million to 219 million.3,4 This number of prescriptions is enough to supply every adult in the United States with 5 mg of hydrocodone every 6 hours for 45 days.5 Sadly, this coincided with dramatic increases in opioid dependence and opioid-related deaths.6 Opiates are now responsible for greater than 30,000 deaths each year, more than motor vehicle accidents7 or the number of deaths during the height of the human immunodeficiency virus epidemic.8 In response to this public health crisis, the president declared the opioid epidemic a public health crisis on October 26, 2017.9

Otolaryngologists’ Role in the Opioid Epidemic

As surgeons, otolaryngologists are active participants in the opioid epidemic and are in a unique position to institute change. Surgeons have the second highest rate of opioid prescribing (37% of all prescriptions written) after only pain medicine specialists (49% of all prescriptions written).10 Despite the frequency with which surgeons prescribe opioids, many underappreciate the risks of developing chronic opioid use after short-term prescriptions.11 Up to

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10% of opioid-naive patients prescribed opioids postoperatively will continue to take them 1 year after surgery. Perhaps more concerning, the rate of chronic opioid use may not differ after major compared with minor surgery, with 6% of patients continuing to fill prescriptions 90 days after surgery, irrespective of extent. Because of this, otolaryngologists have a duty to be responsible opioid stewards to minimize the potential for abuse and dependence.

The risks of short-term opioids for acute postoperative pain in the context of the national opioid epidemic call on all otolaryngologists to critically evaluate their opioid prescribing practices. This demands an evidence-based review of the literature on the risk of opioids for acute postoperative pain and on strategies to avoid misuse.

**Methods**

We searched the PubMed/MEDLINE database for relevant publications related to opioids, pain management, otolaryngology, and head and neck surgery. Postoperative pain management is a complex topic with an extensive literature crossing many fields. To focus the review, we concentrated on three areas. The first literature search was done to identify manuscripts investigating the incidence of postoperative opioid abuse in otolaryngology. A second literature search was done to identify manuscripts investigating safe opioid prescribing practices in otolaryngology. A third search was done to examine manuscripts describing methods of multimodal nonopioid analgesia in otolaryngology. The main search terms were analgesia, pain management, opioid, otolaryngology, and head and neck surgery. These searches were supplemented by searching the references from each relevant manuscript. Whenever possible, evidence from otolaryngology–head and neck surgery (OHNS) was used, and this was supplemented with evidence from other medical specialties. Final article selection was subjectively determined. We synthesized the data from these into a final review. Institutional review board approval was not required for this study.

**Discussion**

**Incidence of Opioid Abuse after Surgery**

Long established side effects of opioids include respiratory depression, sedation, confusion, depression, constipation, nausea, vomiting, and risk of tolerance and physical dependence. In addition to these side effects, there is emerging evidence that opioids may worsen postoperative recovery and are associated with immune deregulation, delayed wound healing, increased postoperative morbidity, worse quality of life, prolonged hospital stay, and higher readmission rates. These risks explain why opioids are among the most common reasons for adverse drug events in the hospital.

Despite these risks, concerns about the potential risks of abuse from short-term opioids used for acute postoperative pain are a relatively recent phenomenon. Estimates suggest that between 3% and 10% of opioid-naive patients undergoing low-risk surgery will continue to take opioids 1 year after surgery. A cross-sectional survey of surgical specialties identified that chronic opioid use was highest for orthopedic surgery (24%) and neurosurgery (19%), but the rates in OHNS were also clinically significant (6%). In a review of 391,139 opioid-naive patients undergoing surgery, those prescribed a postoperative opioid were 44% more likely to become long-term opioid users than patients who were not prescribed a postoperative opioid. In addition, many patients escalated to use more potent opioids or other drugs of abuse over time. Nearly 75% of heroin users report introduction to heroin through prescription opioids. In order for surgeons to avoid being unwitting enablers in the opioid epidemic, safe prescribing practices need to be implemented.

**Acute Postoperative Pain Control Guidelines**

Multiple organizations, including the American Pain Society and American Society of Anesthesiologists, have developed guidelines to help clinicians manage acute postoperative pain. These guidelines emphasize preoperative discussion, creation of personalized pain control plans, multimodal nonopioid pain management, and selective use of opioids under close supervision. The adaptation of these guidelines to OHNS requires modification for the unique anatomic constraints and pain thresholds in the head and neck, as well as the evidence basis in otolaryngology.

**Preoperative Assessment and Pain Control Plan**

Preoperative discussion of the plan to control pain after surgery may identify patient anxiety, strategies that have worked for the patient in the past, or patients who are at risk for dependence. During the preoperative discussion, it is important to set expectations and emphasize that zero pain after surgery is an unrealistic expectation. Using shared decision making, patients can take an active role in a pain management plan that addresses their medical history and values. A survey of patients examining informed consent for postoperative opioid therapy identified that 65% wanted to know the risk of developing chronic pain after surgery, and 25% felt this risk might affect their decision to proceed with surgery. When patients are fully educated about the risks of opioids as well as the alternatives, they frequently decline a prescription. After receiving preoperative pain control education about the risks and benefits of opioid and nonopioid pain control options in the 2 weeks before all types of elective outpatient surgery, 90% declined a postoperative prescription for hydrocodone and chose non-opioid-based alternatives.

**Opioid Prescribing for Acute Postoperative Pain**

When necessary, opioid prescribing requires careful selection of the type of opioid, strength, frequency, and number of pills. However, many physicians indicate that they are not confident about how to prescribe opioids safely, how to detect emerging addiction, and how to talk about these issues with their patients. In an effort to prevent
significant pain and to prevent patients from running out of medications, surgeons tend to overprescribe. These opioid prescribing practices are typically learned during residency: junior residents often learn pain management strategies from senior residents in a manner that is arbitrary and frequently subject to trial and error. These current opioid prescribing patterns result in significant overprescription of opioids, as evidenced by the nearly 80% of filled postoperative opioid prescriptions that are incompletely used. This results in a potential large pool of unused opioids available that are directed toward misuse. Among illicit opioid users, 53% report obtaining the medication from a friend or family for free, 21% obtained them through a prescription, 11% bought them from family or a friend, and only 4% bought them from a drug dealer or stranger.

In reaction to disparate prescribing practices and physician uncertainty about prescribing, the first recommendation of the Centers for Disease Control and Prevention (CDC) to prevent opioid-related deaths is to educate providers to improve opioid prescribing patterns. One method to improving opioid prescribing is developing procedure-specific recommendations, which can decrease the pool of unused opioids available for misuse. For example, 80% of patients take fewer than 10 opioid pills after sentinel lymph node biopsy for breast cancer, suggesting that prescribing small quantities of opioids may be sufficient to control pain for many patients after similar procedures in the head and neck. Physicians at Kaiser Permanente Southern California implemented institutional prescribing guidelines for all types of surgery and were able to decrease the average postoperative prescription from 60 tablets of oxycod to 18 tablets. A survey of otolaryngologists on opioid prescribing practices identified wide variation in prescribing opioids after various otolaryngology procedures. While most otolaryngologists reported prescribing between 20 and 30 doses of opiates, after the most common otolaryngology procedures, this ranged from providers prescribing 0 doses to others writing for more than 60 opioid doses.

No procedure-specific recommendations exist for OHNS. However, studies on the level of pain after different types of surgery may prove helpful to surgeons in formulating a strategy moving forward. Gerbershagen et al investigated the level of pain (1-10 scale) after 179 different surgical procedures in a large cohort of 115,775 patients in Germany. Tonsillectomy was one of the top 25 most painful procedures, with an average pain score of 5.89 out of 10. All other head and neck procedures examined were in the lowest third of pain scores. Sommer et al conducted a prospective cohort study of 217 patients to determine the level of postoperative pain in OHNS using a protocol of nonopioid therapy for minor operations, with opioids reserved for intermediate or major surgery. They identified that 40% of patients with surgery on the oral and pharyngeal region; 30% of patients after endoscopic laryngeal, neck, or salivary surgery; and only 20% of patients who had otology or sinus procedures continued to have moderate or high pain after 4 days. The pain scores after different procedure in OHNS are summarized in Table 1.

When opioids are required, the lowest dose of opioids that adequately controls pain should be selected. Death from opioid overdose is linked to the strength prescribed. Caution should be used with opioids with variable metabolism. Codeine is contraindicated in some patients because of pharmacogenetic variations in the CYP2D6 enzyme that metabolizes codeine into morphine. Ultra-rapid metabolizers experience unpredictable and occasionally fatal elevations in plasma morphine, which led the Food and Drug Administration (FDA) to issue a black box warning for codeine in children. Tramadol is a weak opioid analgesic that provides an attractive opioid option for analgesia for many minor and moderate surgeries. Compared with other opioids, tramadol has a low potential for misuse, abuse, and dependency.

**Patient Information on Opioids**

Patients who require opioid therapy postoperatively should be warned about the side effects and alternatives to therapy (Table 2). The patient should be aware that the expected duration of opioid therapy will be short and is typically progressively reduced after surgery. Patients should also be aware that any need for further prescriptions for opioid requires assessment and there should be no expectation of long-term use. Patients should also be aware not to combine opioids with other sedatives; CDC guidelines emphasize avoidance of concurrent opioids and benzodiazepines or other sedatives to minimize the risk of overdose. If patients require opioid therapy for 2 weeks or more after surgery, a tapering plan of decreasing the dose by 25% every 1 to 2 days is recommended to lessen the symptoms of withdrawal. CDC guidelines further recommend that if prescribing more than the equivalent of 50 mg of morphine per day, physicians should increase the frequency of follow-up appointments and the patient should receive a prescription for naloxone in case of overdose. Table 3 includes a list of resources for otolaryngologists, including resources that help convert alternative types of opioids into morphine-equivalent doses.

**Screening for Abuse**

When prescribing opioids, it is important to be aware of the patient’s history and screen for the risk of abuse. Asking patients a single question, “How many times in the past year have you used an illegal drug or used a prescription medication for nonmedical reasons?” is highly sensitive in identifying patients with a current drug use disorder. Risk factors for chronic opioid use developing after surgery include depression, anxiety, and a history of tobacco or alcohol abuse. This suggests that the subpopulations of patients with head and neck cancer may be at an especially high risk for opioid dependence. In patients at high risk for opioid abuse, preoperative referral to psychiatry for treatment of depression and/or anxiety may improve pain control.

Prescription drug monitoring programs (PDMPs) offer otolaryngologists another opportunity to screen for prior opioid use or abuse. PDMPs are statewide electronic
databases to monitor drugs of abuse, including opioids. PDMPs have been enacted in 49 states. Use of PDMPs is associated with a decrease in multiple opioid prescribers and opioid-related deaths.44 If a pattern of opioid use is identified, it is important to stress that the purpose of screening for abuse is not to deprive patients with acute pain of opioid therapy. Rather, the purpose is to avoid duplicate prescribing and identify those at risk for overdose so that they can be provided with treatment to reduce adverse outcomes.45

**Opioid Disposal**

Patients must also be counseled on the proper disposal of unused opioids. Despite the high rate of unused opioid prescriptions, few opioids are stored or disposed of appropriately.46 The FDA recommends disposal at Drug Enforcement Administration–approved collection sites or other community take-back programs if available.47 If no take-back program is available, then the FDA recommends flushing strong opioids down the toilet or mixing weaker opioids with compostable material and placing in a sealable plastic bag.47

### Special Populations When Prescribing Opioids

When prescribing opioids, several populations are at an increased risk of adverse events and deserve special attention. Opioids worsen obstructive sleep apnea and are associated with postoperative re-intubation.48 Patients with a history of cardiopulmonary disease are at increased risk of respiratory depression with opioids.49 The elderly are

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<tr>
<td>Intermediate pain</td>
<td>Neck surgery, including selective, modified radical or radical neck dissection, excision of branchial cleft cyst, thyroidecToMy, parathyroidectomy, wide local excision, or sentinel lymph node biopsy</td>
<td>Preoperative: acetaminophen 1000 mg once, gabapentin 400 mg once, celecoxib 400 mg once</td>
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<td>Salivary gland surgery, including parotidectomy and submandibular gland excision</td>
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<td>High pain</td>
<td>Oral or pharyngeal surgery, including tonsillectomy, uvulopalatopharyngoplasty, transoral robotic surgery of the oropharynx, laser excision of the hypopharynx, partial glossectomy, and neck dissection</td>
<td>Postoperative: acetaminophen 500 mg Q6 scheduled, celecoxib 200 mg Q12 or naproxen 500 mg Q8-Q12, consider gabapentin 400 mg Q12, add tramadol 50 mg Q6 if needed for breakthrough pain</td>
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<td>Any type of surgery</td>
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*Do not use celecoxib if patients have a history of cardiovascular disease.*

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Table 1. Categories of Otolaryngology–Head and Neck Procedures Based on Pain Level. a

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opioid use was identified in 41% of patients. Pain related to surgery, and after surgery for oral cavity cancer, chronic opioid use is common after head and neck cancer treatment. Elderly patients and those with sleep apnea are especially susceptible to the sedating side effects of opioids, increasing the risk of falls, fractures, and death from any cause. Thus, elderly patients and those with sleep apnea or cardiopulmonary disease should start with low-dose opiate medications and require vigilant titration to avoid adverse events. Pediatric patients similarly deserve special attention and require developmentally appropriate pain assessment and dose adjustments based on age and weight. Furthermore, children are at risk for accidental ingestion of opioids, and thus the safe storage and disposal of opioids with pediatric patients or patients with young children are paramount.

The incidence of pain in patients with cancer is exceedingly high and requires a nuanced approach. It is estimated that 25% of cancer pain is related to treatment, including surgery and chemoradiation. Some patients with cancer-related pain will experience pain relief after removal of their cancer, and it is important to continue to assess the postoperative pain needs and decrease appropriately. Chronic opioid use is common after head and neck cancer surgery, and after surgery for oral cavity cancer, chronic opioid use was identified in 41% of patients. Pain related to radiation and chemotherapy is also extremely common. In patients with head and neck cancer actively receiving chemotherapy, 80% take opioids for pain. While adequate control of pain related to cancer and treatment is vital, after treatment and disease control, it is necessary to assess pain needs if they persist. If chronic pain persists after treatment of the disease, patients should be referred for multidisciplinary evaluation, as chronic opioid use after treatment for head and neck cancer is associated with decreased survival.

Patients with Chronic Pain

Acute and chronic pain are distinct entities. Acute pain is a physiologic response to tissue damage, producing a noxious neurologic response. Chronic pain lasts 3 months or longer, and the extent of pain does not correlate with the extent of injury or noxious stimuli. Chronic pain often starts as acute pain. Chronic pain is characterized by an abnormal state and function of nociceptive neurons that become hyperactive. The development of chronic pain is associated with duration of opioid use, scheduled opioid use, and the type of opioid used. Vigilance about the normal response to acute pain to identify early stages of opioid dependence and chronic pain enables early referral to a chronic pain specialist.

Operating on patients with preoperative chronic pain syndrome who are opioid tolerant prior to surgery is a particular challenge. In the perioperative care of these patients, surgeons should be comfortable involving a multidisciplinary team of pain specialists and pharmacists. Patients with chronic pain frequently have coexistent depression that can complicate pain control. Preoperative referral for treatment of depression prior to elective surgery may improve postoperative pain control. Patients who are opioid tolerant prior to surgery will have considerably greater opioid requirements postoperatively secondary to opioid tolerance and hyperalgesia. However, patients receiving chronic opioids do not develop tolerance to opioid-induced respiratory depression. Thus, they are at increased risk of respiratory depression. Discussing the pain plan preoperatively helps to set expectations, and multimodal nonopioid agents preoperatively can lessen the need for increased opioids postoperatively. The CDC has published guidelines on control of chronic pain that may be helpful to otolaryngologists caring for patients with chronic pain but are beyond the scope of this review.

Nonopioid Strategies for Treating Acute Postoperative Pain

In many patients, the risks of opioids can be avoided altogether or minimized with use of multimodality nonopioid anesthesia in the perioperative period. A concept that is essential to understand when considering the multimodal nonopioid analgesia discussed below is preventive analgesia. The concept of preventive analgesia is that agents administered prior to a painful stimulus can modify processing of noxious stimuli by the peripheral and central nervous system, decreasing central sensitization and hyperalgesia. Preventive analgesia requires multiple agents to block nociceptor activation, inhibiting activation or transmission of neurotransmitters. Meta-analysis of preventive analgesia
Local and Regional Anesthesia

Head and neck surgery provides several unique challenges in regards to use of local and regional anesthetics. Local anesthetics have been used safely for decades but require consideration of proximity to cranial nerves in surgery on the head and neck to avoid inadvertent paresis complicating identification or postoperative assessment.

Preincisional infiltration of tissues with local anesthesia provides preventive analgesia and reduces analgesic consumption postoperatively without an increase in postoperative pain. However, use of local anesthetics as a mainstay of postoperative analgesia is limited by the brief duration of most traditional local anesthetics (<8 hours). Newer options for administration of local anesthesia allow for a longer duration of action with the prospect of improved pain control. Liposomal bupivacaine was approved by the FDA in 2011 and provides pain control for up to 96 hours after surgery. Pooled analysis of 9 studies shows that injectable liposomal bupivacaine is associated with lower pain scores, reduced consumption of opioids, and fewer opioid-related adverse events compared with conventional local anesthetics.

Pain pumps are another strategy to provide long-duration pain control by infusing local anesthesia via a catheter into the surgical wound bed continuously, bolused, or via a patient-controlled system for up to 5 days postoperatively. There are several on the market, including ON-Q PainBuster (Halyard Health, Alpharetta, Georgia), Stryker Pain Pump 2 (Stryker Corporation, Kalamazoo, Michigan), and Accufuser disposable silicone balloon infuser (Woo Young Medical, Seoul, Korea). Meta-analysis of 44 randomized controlled trials of pain pumps in general surgery, cardiothoracic surgery, orthopedic surgery, and urology found that continuous infusion lowers both pain scores and the need for supplemental opioids. Small series in thyroid and parathyroid surgery have found the ON-Q pain pump to have similar efficacy and be safe without cranial nerve paresis from infusion of local anesthesia. In this series, the ON-Q catheter was placed superficial to the platysma in conjunction with use of surgical drains in the deeper aspect of the wounds. There is no definitive evidence on whether drains interfere with pain pumps.

Regional nerve blocks using long-acting local anesthetics can enhance anesthesia in the head and neck. For example, for facial surgery, external branches of the trigeminal nerve can be blocked. For neck surgery, superficial and deep
cervical plexus blocks can be performed.66 Superficial cervical plexus blocks have been most studied in thyroid and parathyroid surgery, where meta-analysis of 799 patients found that it reduced postoperative pain scores significantly, although the clinical impact of these changes was uncertain.67

Neuraxial regional analgesia (epidural or intrathecal analgesia) is not feasible for head and neck surgery, although these techniques could be considered during harvesting grafts from donor sites outside the head and neck.

**Acetaminophen and Nonsteroidal Anti-inflammatory Drugs**

Acetaminophen is the most commonly used over-the-counter analgesic68 and is available in enteral and intravenous formulations. Acetaminophen provides effective pain control in isolation for minor procedures but does not have the anti-inflammatory properties of nonsteroidal anti-inflammatory drugs (NSAIDs).69 Acetaminophen may be combined with NSAIDs with synergistic effect and improved pain control.69 In the immediate perioperative period, intravenous acetaminophen may reduce short-term postoperative pain and decrease opioid requirements after endoscopic sinus surgery, but this requires further study.70

NSAIDs work by nonselectively inhibiting cyclooxygenase (COX), including COX-1 and COX-2. However, many clinicians are hesitant to use NSAIDs due to concerns about postoperative bleeding.71 Inhibition of COX-1 leads to a decrease in thromboxane A2, impairing platelet aggregation.72 The available literature includes conflicting results on whether this increased risk truly exists.73-75 After endoscopic sinus surgery, a randomized controlled trial of intravenous (IV) ketorolac found that there was no increased risk of bleeding.76 More robust data exist for tonsillectomy, in which meta-analysis of 36 randomized controlled trials found no association with increased bleeding postoperatively.77 However, other data suggest that while rates of bleeding with NSAIDs were similar, the incidence of severe bleeding requiring blood transfusion after tonsillectomy was greater with NSAIDs.75

Highly selective COX-2 inhibitors, such as celecoxib, provide another option to enhance pain control while avoiding the potential bleeding risk.77 Fifteen of 20 randomized controlled trials of celecoxib found that it reduced pain compared with placebo.78 Two randomized controlled trials studied celecoxib in posttonsillectomy pain control in adults, with 1 small trial finding that it reduced opioid use,79 whereas the second small trial did not identify a significant difference.80 Celecoxib is contraindicated in patients with cardiovascular disease.81 although the risk appears associated with long-term use. Premedication with a combination of acetaminophen and celecoxib has been found to significantly improve pain control after otolaryngologic surgery.82 When using acetaminophen, NSAIDs, and COX inhibitors, guidelines recommend around-the-clock dosing unless contraindicated to further improve pain control.24

**Gamma-Aminobutyric Acid Agonists**

Single doses of a gamma-aminobutyric acid (GABA) agonist, such as gabapentin or pregabalin, administered orally 1 to 2 hours preoperatively are associated with lower postoperative pain scores in a diverse surgical population.23 Some trials found postoperative dosing to be effective as well; the optimal dosing regimen is currently unknown.53 In free tissue reconstruction of the head and neck, gabapentin has also been shown to be an effective adjunct in pain control.83 Risks of these medications include dizziness and sedation; however, they have not been associated with respiratory depression.

**Other Agents**

Several adjunct strategies provide promising options to further decrease postoperative opioids. Ketamine administered IV postoperatively has been shown to decrease postoperative pain,23 with emerging data supporting its use. Clonidine is another agent that has high-level evidence from meta-analysis of 57 trials showing that it improves pain control and perioperative hemodynamic stability.84 Cognitive behavioral therapy, teaching patients to learn how to avoid physical and emotional triggers of pain and stress, has been shown to reduce postoperative pain.85 While steroids are occasionally used for analgesic properties in OHNS, 2 randomized controlled trials of steroids as analgesics after tonsillectomy failed to show any decrease in postoperative pain with use of steroids.86,87

**Enhanced Recovery after Surgery Protocols**

First pioneered in colorectal surgery in Europe 2001, Enhanced Recovery after Surgery (ERAS) protocols serve as an evidence-based approach to minimize the pain and alterations to anabolic homeostasis in the perioperative period.88 Components of ERAS pathways include a multimodal approach to resolve issues that delay recovery and contribute to complications, an evidence-based approach to care protocols, and multimodal pain control. ERAS pathways have since expanded, and now ERAS Society guidelines exist for multiple different surgical specialties, including for head and neck cancer surgery (http://www.erasociety.org). Evidence shows that ERAS protocols decrease length of stay and complications by 30% to 50%88 and significantly decrease opioid use.89 While individual ERAS protocols for multimodal pain control differ by institution, common features include preoperative preventive analgesia with acetaminophen, COX-2 inhibitors, and/or GABA analogues; intraoperative use of long-acting local and/or regional anesthetics; and a postoperative pain control backbone of acetaminophen combined with COX-2 inhibitors or NSAIDs and/or GABA analogues.

Evidence supporting ERAS related to OHNS is rapidly emerging and has found significant reductions in opioid use after surgery associated with ERAS protocols in outpatient head and neck surgery and free tissue transfer.90,91 Guidelines for enhanced recovery in head and neck surgery...
have been developed for free tissue transfer, stating, “Opioid-sparing, multimodal analgesia, utilizing NSAIDs, COX inhibitors, and paracetamol (acetaminophen), are all preferred for patients undergoing head and neck cancer surgery.”92 Several institutions have successfully implemented ERAS protocols for OHNS with success in minimizing opioids and decreasing postoperative complications.90 Multimodal nonopioid analgesia protocols have been used for outpatient thyroid, parathyroid, and parotid surgery, relying on a postoperative opioid-sparing pain control regimen of NSAIDs and acetaminophen in which 92% of patients were satisfied with the pain control strategy.90 ERAS protocols significantly decrease opioid consumption after major inpatient surgery as well. ERAS protocols implemented for microvascular breast reconstruction were associated with a 71% reduction in consumption of postoperative opioids without any significant increase in pain scores.91 Based on these ERAS protocols, we outline a perioperative pain control plan that uses multimodal nonopioid analgesia using ERAS principles adapted for head and neck surgery (Table 1 and Figure 1).

Future Directions
Turning the tide in the opioid epidemic will require practical opioid stewardship from all physicians. While we are not ready to eliminate opioids, current technology exists to minimize their use and potential for abuse. Spreading knowledge on the risks of opioids and alternatives to their use will require a concerted effort. This explains why the first CDC recommendation to control the opioid epidemic focuses on physician education.31 In response, the American College of Surgeons launched an education program on opiates and surgery to address the knowledge gap in the use of opioids after surgery that otolaryngologists can use and build upon.93 Otolaryngologists must engage in educational efforts and integrate safe opioid prescribing into training programs and continued medical educational courses. Going forward, it is essential that otolaryngologists continue to investigate rates of opioid abuse and rigorously research alternatives that integrate multimodal nonopioid analgesia across the broad range of surgeries that we perform.

Implications for Practice
As surgeons, every time we cut, we cause pain. We have a responsibility to treat pain. At the same time, we also have a responsibility to minimize the potential for risks and abuse from the pain management strategies that we employ. This review outlines the problem from current opioid prescribing practices and highlights methods of multimodal nonopioid pain control and improved opioid prescribing strategies available to prevent misuse. Responsible opioid prescribing starts with preoperative discussion of the risks and benefits of opioid and nonopioid pain control strategies. We recommend use of multimodal nonopioid strategies in all patients. Using these strategies, opioids can be avoided for many patients, even after major operations. When patients have pain that is inadequately controlled with nonopioid means, opioid prescribing using institutionally developed prescribing guidelines and close attention to vulnerable subpopulations can minimize the chance of adverse events. The otolaryngology

Figure 1. Sample multimodal pain management pathway. PDMP, prescription drug monitoring program.
community needs to acknowledge the potential harm that we cause when we prescribe opioids, and it is essential that we continue to evaluate our practices to ensure opioids are used responsibly. Antibiotic stewardship has long been an important national campaign, and it is time to elevate responsible opioid stewardship to the same level.

Author Contributions
John D. Cramer, study concept and design, analysis and interpretation of data, drafting and revising manuscript, final approval; Brad Wisler, analysis and interpretation of data, drafting and revising manuscript, final approval; Christopher J. Gouveia, analysis and interpretation of data, drafting and revising manuscript, final approval.

Disclosures
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References


