

Opioid-prescribing practices for post-operative patients in Otolaryngology: A multiphasic quality improvement project in a single large institution

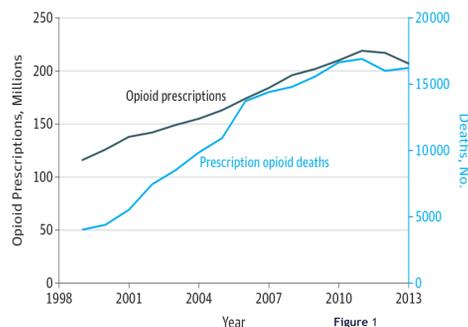
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Introduction

The Opioid Epidemic and Surgery

- Opioids are often prescribed in excess, irrespective of postoperative pain or type of surgery, to prevent acute, pain-related issues in the follow-up period.⁴
- Up to 75% of prescribed pain medication remains unused after surgery, which creates a diversion pool for chronic opioid users.^{2,3,4}
- Opioid prescriptions have risen steadily since the 1990's, alongside the number of opioid-related deaths per year (**Figure 1**).
- Current efforts by the American Medical Association (AMA) and the American College of Surgeons (ACS) utilize a multifaceted approach to the opioid epidemic:
 - Identify high-risk patients
 - Use state-specific prescription drug monitoring programs (PDMP)
 - Implement new legislation
 - Educate both patients and providers.^{1,3}
- Nevertheless, opioid use remains a leading cause of death in the United States.^{3,4}



The Otolaryngology Factor

- The field of otolaryngology represents the third-highest rate of opioid prescription among surgical subspecialties.⁴
- Current otolaryngology-specific studies are largely retrospective chart reviews that identify risk factors for higher use of opioids for postoperative pain:
 - Preoperative opioid use⁴
 - Tobacco use & alcohol abuse⁴
 - Psychiatric history⁴
 - Advanced stage disease^{2,5,6}
- In current literature, there is no existing study on patient postoperative pain experience and subsequent opioid use for major and minor otolaryngology surgeries.

Our Study Objectives

- Investigate current prescription practices within the Department of Otolaryngology-Head and Neck Surgery at Thomas Jefferson University Hospital (TJUH).
- Investigate the average number of opioid pills prescribed and consumed per procedure.
- Observe procedure-specific pain trends.
- Investigate overall patient satisfaction regarding postoperative pain control.
- Create a database on pain trends for future research and quality-improvement initiatives within the field of Otolaryngology including preoperative expectant pain education.

Policy Change

- During the course of the study, TJUH implemented a university-wide opioid prescription policy change.
- Any prescription for greater than 10 doses was immediately flagged, and the prescribing physician was prompted to confirm the opioid dose.

Methods

- Prospective, survey study
- Inclusion criteria:
 - Patients, ages 18 and over, undergoing transoral robotic surgery (TORS), sialendoscopy, parathyroidectomy/ thyroidectomy/thyroid lobectomy, or parotidectomy from July-December 2018
- Exclusion criteria:
 - Chronic pain syndromes, known opioid use disorder, or failure to follow-up
- Post-operative Pain Questionnaire (POPQ) and Anonymous Patient Satisfaction Survey (APSS)** are given to every post-operative patient at discharge and again at their first follow-up visit.
 - Pain is measured with visual analog scale (VAS) ranging from no pain to worst pain at days zero (day of procedure), one, three, and date of follow-up.
 - Number of prescribed narcotics and over-the-counter (OTC) medication used on specified days.
 - Patient satisfaction with overall care was recorded using the APSS form.
- The attending physician survey was completed prior to the start of the study to assess attending physicians' views of the national opioid crisis and opioid-prescribing habits within TJUH.
- The resident physician survey was completed to identify the rationale by which otolaryngology residents prescribed narcotics for pain relief in their postoperative patients.

Results

ENT Attending Surveys:

- 92% of attendings surveyed believe:
 - Overprescription of opioids in post-op patients is a nationwide issue
 - Evidence-based recommendations are necessary
 - That they would be willing to follow these recommendations
- 46% believe our institution faces a problem with opioid overprescription
- 77% believe that their prescribing methods are appropriate and their patients *do not* have an excess number of unused pills

Post-operative Patient Questionnaire (POPQ):

- 107 patients completed the POPQ: Sialendoscopy (22), TORS (23), Thyroid Lobectomy and Total Thyroidectomy (34), Parotidectomy (28)
- Pain Assessment with VAS Scores (**Figure 2**)
 - All procedures, except for Parotidectomy, reported a VAS increase between POD0 and POD1
 - TORS patients reported the highest VAS scores at all timepoints
- Opioid Consumption and Morphine Milligram Equivalents (MME) (**Figure 3**)
 - Average MME prescribed per procedure: Sialendoscopy (102.9±91.7), TORS (373±242), Thyroid Lobectomy and Total Thyroidectomy (103.5±54.5), Parotidectomy (130.6±89.8)
 - All procedures reported highest MME consumption on POD1
 - MME consumption was highest at follow-up for Thyroid Procedures (5.2±11.8)
- Over the Counter (OTC) Medication Use
 - Over 50% of patients reported use of OTC medication in the postoperative period
 - Parotidectomy patients were most likely to consume OTC medication (23/28 patients)
 - Patients consumed OTC medications for the following reasons:
 - To avoid taking opioid medication - 23%
 - Opioids did not relieve pain alone - 3%
- Average total MME prescribed before policy change: 220.5±235.6 vs average MME prescribed after policy change: 117.1±150.3 (p<0.05).

Anonymous Patient Satisfaction Survey (APSS):

- Patient satisfaction with overall care was not significantly different before versus after the university-wide policy change (4.73/5 vs 4.53/5, p=0.7398).
- Patient satisfaction with pain management was not significantly different before versus after policy change (4.69/5 vs 4.64/5, p=0.3865).

Analysis:

- For each procedure, the total # of pills were recorded and pain level was recorded over time which were analyzed by t-test. Multivariate analysis was used to account for confounding factors (age, gender, race).

Figure 2. Postoperative VAS Scores for Select Procedures

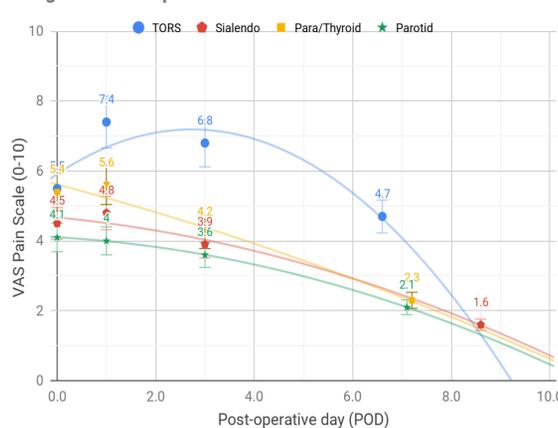
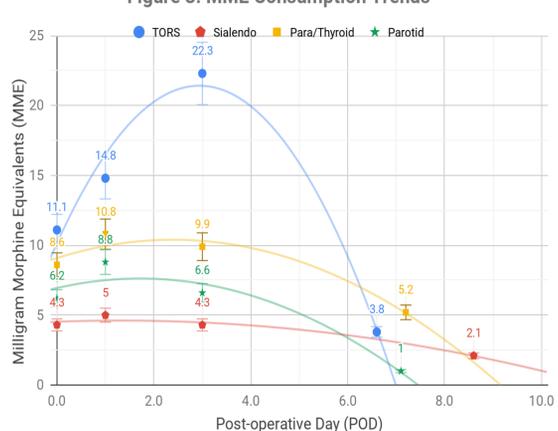


Figure 3. MME Consumption Trends



Discussion

- Opioid use is a significant cause of morbidity and mortality in the US, and the substantial portion of unused prescription opioids represents a diversion pool that physicians may reduce through improved prescribing practices.
- Attempts to quantify and analyze postoperative opioid prescription have included sample sizes ranging from single surgeons, to large surveys of AAOHNS members. To date, prescribing practices have been influenced by factors including surgeon age and location of training.
- In ENT, thyroid procedures have been the most thoroughly studied, but have produced an extensive range encompassing 21-43 pills per procedure.
- Up to 20 percent of ambulatory opioid prescriptions in ENT are for uncontrolled postoperative pain or pain due to operative complications.⁷
- Contrastingly, Militskikh et al found that patients utilizing multimodal analgesia strategies following thyroid and parathyroid procedures did not return to the emergency department for uncontrolled pain over the course of their three year study. The success of this study suggests that by implementing early intervention regarding pain management and providing a joint decision in medication choice, opioids may be avoided altogether.
- Conflicting experiences with pain management across our specialty suggest that the data collected in our study may be used to create guidelines that will adequately treat postoperative pain and provide counseling to patients in the perioperative period.
- At our institution, patients undergoing TORS procedures are prescribed the highest amount of opioids, followed by parotidectomy, thyroid lobectomy and total thyroidectomy, and lastly sialendoscopy.
- The opioid prescription policy change that went into effect on August 27, 2018 was associated with a significant reduction in total opioids prescribed, which is a step towards lessening the diversion pool created by our university.

Conclusions

- Current prescription practices within the Department of Otolaryngology- Head and Neck Surgery at TJUH demonstrate a significant number of unused prescription opioids among the post-operative patient population.
- VAS pain scores peaked between POD0-POD1 and decreased by date of follow-up for sialendoscopy, thyroid lobectomy/thyroidectomy, and parotidectomy procedures.
 - TORS procedures exhibited a slightly delayed peak VAS, as well as the highest average VAS.
- Opioid consumption peaked on POD1 for all procedures.
 - Patients undergoing a TORS procedure reported the highest average opioid consumption.
- Average opioid prescription across all procedures decreased significantly following the TJUH prescription policy change.
- Patient satisfaction with overall care and pain management did not change significantly following the prescription policy change.
- Upon completion, this study will hopefully provide a framework for further research regarding responsible opioid prescription practices within the field of Otolaryngology at TJUH and other institutions.

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