The Effect of Intraoperative IV Acetaminophen and Ibuprofen on Postoperative Pain Management and Opioid Use in Pediatric Otolaryngology Surgery Patients

Primary Author: James Maher MD Candidate 2018
Montefiore Hospital (Albert Einstein College of Medicine)

Co-Authors: Anna Srouji, MD Candidate 2018; Brandon Cowan, MD Candidate 2020; Chetra Yean, MD Candidate 2018; Glenn Mann, MD; Singh Nair, MD;

Introduction:

In light of a movement toward enhanced recovery after surgery (ERAS) protocols, postoperative pain management continues to evolve with a particular emphasis on decreasing opioid use due to harmful side effect profiles, especially in certain patient populations. Otolaryngology (ENT) surgeries, such as tonsillectomy and adenoidectomy, are relatively common pediatric surgeries in which intraoperative intravenous (IV) acetaminophen and ibuprofen have been proposed to decrease postoperative pain and subsequent opioid use during anesthesia recovery (referred to as rescue doses of opioids). Since some of these patients are receiving these surgeries to correct obstructive sleep apnea, decreased use of rescue opioids in the postanesthesia recovery room (PACU) becomes an ever more important goal. Therefore, intraoperative IV ibuprofen, IV acetaminophen, or a combination thereof may represent options for optimizing postoperative pain management, while subsequently decreasing opioid administration during recovery in this pediatric population.

Objectives:

The primary aim is to determine if a combination of intraoperative IV acetaminophen and ibuprofen both decrease the administration of rescue opioids for pain management in the PACU and decrease PACU length of stay compared to those receiving one of the two or neither of the medications intraoperatively. Secondary aims include to determine if intraoperative IV ibuprofen and IV acetaminophen, respectively, decrease the administration of rescue opioids compared to a control group not given either agent intraoperatively.

Methods:

This is a retrospective cohort study using Clinical Looking Glass and electronic medical records, EPIC, to identify patients ages 2-13 years old who have undergone ENT surgeries, such as tonsillectomy, adenoidectomy, myringotomy, and any combination thereof in 2016 and 2017. Exclusion criteria consists of those patients with ASA Class 3, incomplete medical records, developmental delays, significant cognitive impairment, and allergies to ibuprofen or acetaminophen. A final total of approximately 1000 patient anesthesia and PACU records will be analyzed in terms of demographical information, length of anesthesia, intraoperative fentanyl administration, intraoperative IV acetaminophen and/or ibuprofen administration, rescue opioid
usage in the PACU, and length of stay in the PACU (or recovery time). The primary endpoint is to examine a difference in rescue opioid administration in both frequency and total opioid dosage (converted to morphine-equivalent units) in the PACU between those receiving intraoperative IV acetaminophen, IV ibuprofen, a combination of both agents, and a control group receiving neither of the two agents.

Results:

With a total of approximately 275 patients analyzed, an interim analysis by a blinded statistician found a significant difference in the amount of rescue opioids administered both in the frequency and total morphine-equivalent dose between the IV ibuprofen, IV acetaminophen, IV acetaminophen and IV ibuprofen combination, and control group using an analysis of variance (p<0.05). However, due to incomplete date compilation, we have not yet determined specifically which group(s) decreased rescue opioid use compared to each other. This final analysis will be completed and presented at the time of the conference. There was no significant difference noted between PACU length of stay (p>0.05).

Conclusion:

Although the analysis is incomplete, the combination of intraoperative IV ibuprofen and IV acetaminophen potentially may reduce rescue opioid use for pain management in the PACU as compared to either agent alone or neither utilized intraoperatively. In addition, IV ibuprofen and IV acetaminophen when given individually may also decrease postoperative opioid administration as compared to patients not given either agent. However, intraoperative IV acetaminophen and ibuprofen (or a combination of the two) likely does not affect the length of PACU stay.