

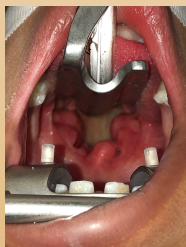
Introduction

Post-operative apnea after tonsillectomy performed in the setting of obstructive sleep apnea (OSA) is a significant issue and has resulted in profound morbidity and mortality. The risk of apneic events is heightened by comorbid obesity and the perioperative administration of opioids¹. We would like to report an opioid-obtaining anesthetic that was administered to an obese, 13-year-old with Down's syndrome and severe OSA.

Our Patient

Our patient is a 13-year-old male with a history of Trisomy 21, a body mass index (BMI) of 38, and OSA. The first tonsillectomy and adenoidectomy (T&A) performed at one year of age resulted in significant residual adenoid and tonsillar tissue resulting in snoring and apneic spells noted by parents. This prompted a repeat sleep study which documented an apnea/hypopnea index (AHI) of 122.3, nadir oxygen saturation of 34%, average oxygen saturation of 76%, and an end-tidal carbon dioxide in excess of 54 mmHg, all suggesting a diagnosis of extreme OSA.

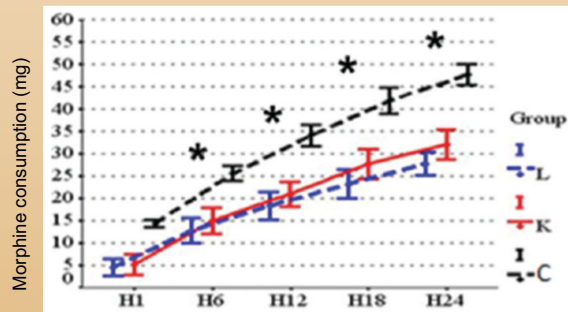
View During Direct Laryngoscopy



Intraoperative Management

- At the time of his second T&A to remove the residual tissue, nasal endoscopy demonstrated near total occlusion of his airway during spontaneous ventilation
- Induction was accomplished with 2 mg/kg propofol, 1 mg/kg of ketamine, and a 2 mg/kg bolus of lidocaine
- He received a 1 mg/kg/hr lidocaine infusion, 0.1 mg/kg dexamethasone, and 1000 mg IV acetaminophen
- Maintenance was accomplished with 50% nitrous oxide in oxygen and 3% end-tidal desflurane
- He was extubated and transferred to the post-anesthesia care unit (PACU) with 0/10 pain on the visual analog scale (VAS) and received no opioids
- Acetaminophen and ibuprofen were given when pain scores were at their most severe of 4/10
- Ketorolac was not administered due to surgeon preference
- Thus, an entirely opioid-free course with adequate analgesia was provided

Literature Review



Postoperative period (hrs) ⁵

Discussion

Our analgesic plan was selected based on the most current evidence based research for opiate-sparing effects in tonsillectomies^{2,3}

Use of ketamine and lidocaine to decrease opioid use have been explored and found to be beneficial in abdominal, prostate, breast surgeries, and spines

It has been suggested there could be a possible lasting analgesic effect of lidocaine and ketamine as seen in patients treated for chronic pain syndromes⁴

In light of the scope and significance of problems associated with perioperative apnea in this population, further study of this regimen should be pursued

Sources

- 1 Cote CJ, Posner KL, Domino KB. Death or neurologic injury after tonsillectomy in children with a focus on obstructive sleep apnea: Houston, we have a problem! *Anesth Analg*. 2014; 118 6: 1276– 1283.
- 2 Elshammaa N, Chidambaran V, Housny W, et al. Ketamine as an adjunct to fentanyl improves postoperative analgesia and hastens discharge in children following tonsillectomy - a prospective, double-blinded, randomized study. *Paediatr Anaesth* 2011; 21: 1009–1014.
- 3 Hack, H. An Audit of the Use of an Opiate Sparing, Multimodal analgesic regime in children with Sleep Disordered Breathing/Obstructive Sleep Apnoea undergoing adenotonsillectomy. *International Journal of Pediatric Otorhinolaryngology* 78, 119–123 (2014).
- 4 Rickard, J. P. & Kish, T. Systemic Intravenous Lidocaine for the Treatment of Complex Regional Pain Syndrome. *American Journal of Therapeutics* 23, 1266–1269 (2016).
- 5 Jendoubi A, Naceur IB, Bouzouita A, Trifa M, Ghedira S, Chebil S, Houissa, M. A comparison between intravenous lidocaine and ketamine on acute and chronic pain after open nephrectomy: A prospective, double-blind, randomized, placebo-controlled study. *Saudi Journal of Anesthesia* 2, 177-184 (2017)