

Opium Free Anesthesia: A Gender Reassignment Case Report

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Abstract

Opioid free anesthesia (OFA) is gaining popularity as an anesthetic technique to enhance surgical recovery and reduce opioid consumption within the postoperative period. For many decades and continuing today, opioids are administered throughout the perioperative period. Opioid use has dramatically risen and opioid overdose has earned the leading cause of unintentional death in the United States.¹ Opioids contain many unfavorable side effects such as potential for abuse or misuse, nausea, vomiting, constipation, ileus, pruritus, altered mental status, urinary retention, respiratory complications, and increased length of hospital stay.^{1,2} Anesthesia professionals play a role in patient's exposure to opioids, as many patients' first exposure to opioids may be during the perioperative period.¹ An OFA technique was selected for this gender reassignment case to ensure a shorter surgical recovery while avoiding the undesirable side effects of opioids. OFA is a multimodal anesthesia technique including hypnotics, NMDA antagonists, local anesthetics, anti-inflammatory drugs, and alpha-2 agonists.⁴



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Purpose

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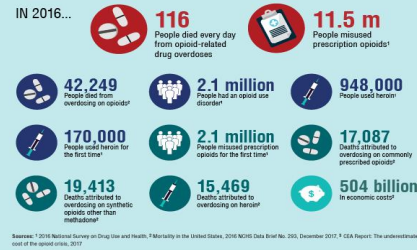
Abstract

- Opioid free anesthesia (OFA) is gaining popularity as an anesthetic technique to enhance surgical recovery and reduce opioid consumption within the postoperative period.
- OFA is a multimodal anesthesia technique including hypnotics, NMDA antagonists, local anesthetics, anti-inflammatory drugs, and alpha-2 agonists.¹
- Opioid use has dramatically risen and opioid overdose has earned the leading cause of unintentional death in the United States.¹
- Opioids contain many unfavorable side effects such as potential for abuse or misuse, nausea, vomiting, constipation, ileus, pruritus, altered mental status, urinary retention, respiratory complications, and increased length of hospital stay.^{1,2}
- Anesthesia professionals play a role in patient's exposure to opioids, as many patients' first exposure to opioids may be during the perioperative period.¹
- While gender dysphoria (GD) by itself may not trigger substance abuse, the stress-related diagnosis can be.

Case Summary

- A 40-year-old, 63.5 kg, 167.6cm male presented for an orchiectomy, penectomy, and vaginoplasty for gender dysmorphia.
- Past medical history: Attention Deficit Hyperactivity Disorder (ADHD) and former smoker for one pack year. Surgical history included a laparoscopic cholecystectomy without any anesthesia complications reported.
- No known drug allergies. The patient's medications were dextropropofol, ondansetron, and dextroamphetamine. Laboratory results were unremarkable.
- Celecoxib 400 mg, gabapentin 400 mg, acetaminophen 975 mg were administered orally, and a scopolamine 1 mg patch was applied topically to the patient in the pre-operative holding area.
- Pre-induction vital signs: pulse 73, blood pressure 109/76 mm Hg, oxygen saturation (SpO2) 99%, respirations 16, and temperature 36.6°C.
- Oxygen was administered with a facemask at 15 L/min for 5 minutes and until expired oxygen concentrations were greater than 85%.
- The patient was induced with lidocaine 60 mg and propofol 200 mg intravenously. A laryngeal mask airway (LMA) #4 was applied and placement verified with visible chest rise, bilateral breath sounds, and sustained end-tidal CO2 with capnography. The patient was able to spontaneously breathe throughout the procedure.
- Decadron 8 mg and cefazolin 1 g were administered intravenously prior to the surgical incision.
- A total of 2 g magnesium, 20 mcg dexmedetomidine, and 50 mg of lidocaine were infused intravenously throughout the procedure.
- Anesthesia was initiated with sevoflurane 1.0% end-tidal concentration and titrated between 0.5 to 0.8 minimum alveolar concentration (MAC) as tolerated in a mixture of medical air 1 L/min and oxygen 1 L/min.
- Ketorolac 30 mg was administered intravenously at time of surgical wound closure.
- The patient maintained spontaneous respirations between 8-16 breaths per minute with adequate tidal volumes. The LMA was removed and the patient maintained a patent airway. Oxygen was delivered via facemask at 10 L/min for 5 minutes prior to transferring the patient to the post-anesthesia care unit (PACU).
- Vital signs following the procedure were pulse 67, blood pressure 102/65 mm Hg, respirations 14, SpO2 98%, and temperature 36.4°C. Total PACU time was 30 minutes.
- The patient was admitted for overnight observation and evaluation. A same day follow-up evaluation revealed stable vital signs, no postoperative nausea or vomiting, and a pain score of one.
- A post-operative day one evaluation revealed the patient received a one-time dose of fentanyl 25 mcg intravenously in the PACU and one tablet by mouth of oxycodone-acetaminophen 5-325 mg over night during observation.
- The patient was discharged with no opioid prescriptions.

THE OPIOID EPIDEMIC BY THE NUMBERS



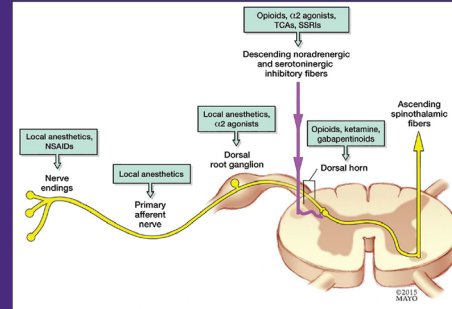
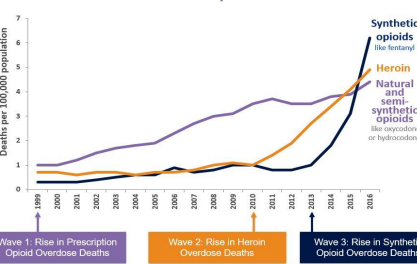
Summary

- Every day in the United States, there are more than 115 people who die from opioid overdose.⁸
- The Centers for Disease Control and Prevention estimated the economic burden of prescription opioid misuse in the United States to be \$78.5 billion a year.⁸
- Anesthesia professionals play an important role in the opioid epidemic by participating in ongoing education on multimodal pain management such as implementing OFA techniques.
- Barriers to applying OFA techniques such as the lack of sufficient guidelines, unfamiliarity with the medications used for OFA, resistance to change, cost of OFA, and limited data or the need for more evidence-based practice.⁷
- Benefits of an OFA technique include minimizing respiratory depression, increasing hemodynamic stability intraoperatively, reducing postoperative opioid consumption, reducing length of hospital stay, and reducing the risk of opioid-related side effects.⁷
- OFA technique was selected for this gender reassignment case report in a patient with risk factors for opioid misuse, abuse, and side effects due to the possibility of the patient experiencing poor social support, psychological minority stress, vulnerability, and societal discrimination.³
- Research emerges daily on OFA techniques and it is the anesthesia professionals' responsibility to remain current on innovative and alternative strategies to provide the safest care to our patients.

Gender Dysphoria

- GD is defined as causing distress due to incongruity between one's experienced or expressed gender and one's assigned gender and/or primary or secondary sex characteristics.³
- Byrne et al discussed the importance of assessing this patient population for suicidal ideation, due to increased risk factors for suicidality.³ According to Byrne et al, up to 47% of transgender adults have considered or attempted suicide.³
- While GD may not be a trigger for substance abuse alone, the stress-related diagnoses can be a trigger.
- Minority stress, vulnerability, societal discrimination, identify stigmatization, and issues with access to health care can all contribute to a variety of addictive and risky behaviors.³

3 Waves of the Rise in Opioid Overdose Deaths



Discussion

- Koepfel et al found the incidence of chronic opioid use after surgery was roughly 6% and this did not differ between major and minor surgical procedures in a retrospective study of over 36,000 opioid-naïve patients undergoing elective surgery in the USA between 2013 and 2014.²
- OFA technique: Boysen, Pappas, and Evans⁵ suggest continuous infusions of lidocaine and dexmedetomidine with a supplement of low dose volatile anesthetic agent and intermittent dosing of acetaminophen, ketamine, ibuprofen, and ketorolac.⁵
- In this case report, 400 mg celecoxib, 400 mg gabapentin, and 975 mg acetaminophen were administered preoperatively.
- Celecoxib selectively inhibits COX-2 to prevent and decrease inflammation.⁷ The recommended dosage of celecoxib is 200 to 400 mg one hour prior to surgery.⁷ Gabapentin binds to voltage-gated calcium channels and inhibits the release of excitatory neurotransmitters.⁵
- Gabapentin is used for chronic neuropathic pain, however, gabapentin has been found to reduce acute pain and reduce opioid consumption.⁵ Graff and Grosh stated a normal dose of gabapentin is 300 to 1200 mg three times a day.⁵ However, there has been an analgesic ceiling effect reported at 600 mg.⁷
- Acetaminophen in dosages of 400 and 800 mg were shown to have an analgesic and opioid-sparing effect in postoperative patients.⁵
- Anesthetic maintenance was maintained with magnesium, lidocaine, and dexmedetomidine infusions.
- Magnesium acts as a non-competitive antagonist of the NMDA glutamate receptor that prevents depolarization and transmission of pain signals.⁷
- Magnesium is typically given by a loading dose of 30-50 mg/kg followed by a maintenance dose of 6-20 mg/kg/hr until the end of surgery.⁷
- Lidocaine blocks the sodium channels, however, the mechanism behind pain control is yet to be entirely understood.⁵ Nevertheless, lidocaine is capable of producing analgesic, anti-inflammatory, and anti-hyperalgesic properties.⁶ A lidocaine infusion of 0.03 mg/kg/min is recommended following induction and for procedures of less than two hours of duration, a bolus dose of lidocaine can be considered.⁶
- Dexmedetomidine is an alpha-2 agonist that contains analgesic, sedative, and hypnotic properties.⁶ Dexmedetomidine is highly selective and specific for the alpha receptor and reduces potassium efflux and calcium influx, causing hyperpolarization to reduce noradrenaline release.⁵ Direct alpha-2 receptor stimulation also impedes nociceptive neuronal firing, making dexmedetomidine a useful option for perioperative pain control.⁵ Dexmedetomidine is recommended to be infused at 0.5 mcg/kg/hr as an intravenous infusion following induction and for procedures of less than two hours duration, a bolus dose can be considered.⁶
- At the end of the case, ketorolac 30 mg was administered.
- Ketorolac is a nonsteroidal anti-inflammatory drug (NSAID) that inhibits prostaglandin synthesis through the COX-1 and COX-2 mechanism of action.⁶ For adult patients, a 15-30 mg intravenous dose of ketorolac has been shown to be safe and effective.⁵

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