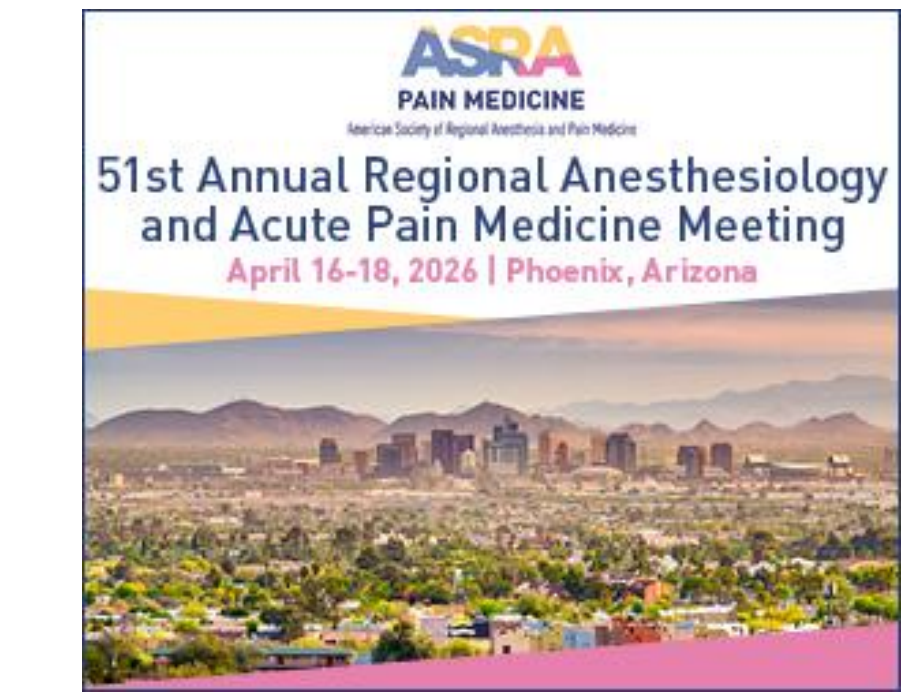




Perioperative Use of Intravenous Buprenorphine for Acute Pain – a Case Series

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Background

- Intravenous buprenorphine has been FDA-approved for acute pain since 1981
- Buprenorphine has been shown to be a highly effective analgesic
- Buprenorphine use in the perioperative period is rare, with less than 20% of clinicians prescribing any formulation of buprenorphine in the past year
- While single-dose intraoperative methadone has been studied and even recommended, data on similar use of buprenorphine are lacking
- We present our institutional experience implementing intravenous buprenorphine in the perioperative setting

Methods

- Retrospective, single-center case series
- Tertiary care university-affiliated Veterans Affairs hospital
- Cohort included all patients who underwent surgical procedures and received IV buprenorphine between Nov 1, 2024 - Dec 31, 2025
- Data were collected from the electronic medical record, reviewed, and presented as descriptive statistics

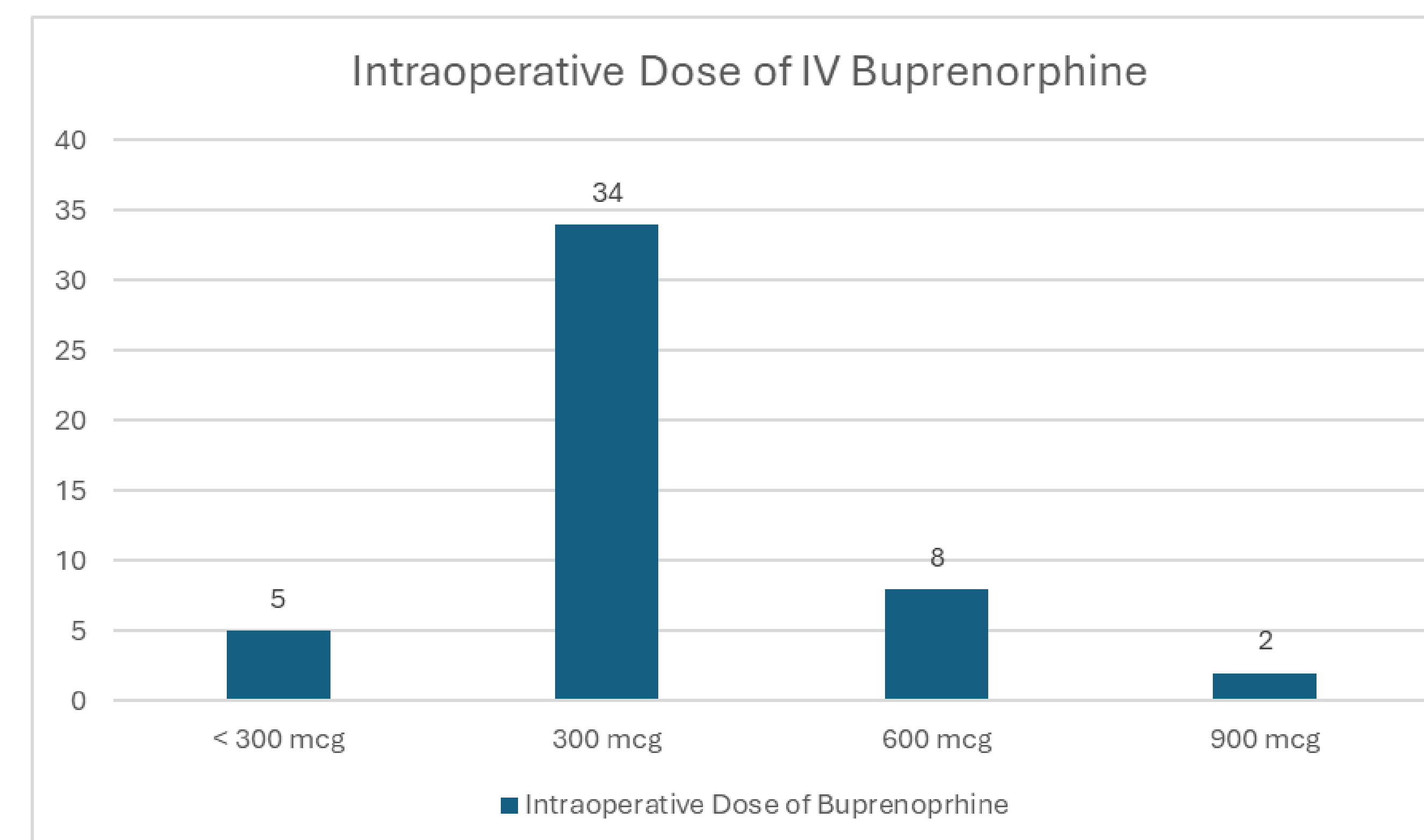
Results

- 49 patients received IV buprenorphine in the observation period
- 59% of the patients were prescribed buprenorphine preoperatively for pain or OUD
- The majority of patients received 300 mcg IV (Figure 1)
- The majority of patients (n=41) received additional intraoperative opioids with fentanyl the most common
- Ketamine was co-administered in 61% of the cases
- Nine patients had planned ICU admissions not related to buprenorphine
- Of the patients who went to the PACU (n=40), 20 (50%) needed no additional analgesia during their PACU stay (Table 1)
- Of the patients who were not on buprenorphine preoperatively, 65% did not need additional PACU pain medications
- The incidence of nausea and vomiting requiring treatment was 12% (n=6)
- There were no adverse respiratory events postoperatively and no unexpected transfers to higher level of care

Table 1. Cases which required no additional analgesia in PACU

Surgery	Intra op dose
Cervical Spine	150 mcg
I & D Foot	300 mcg
ORIF Femur	300 mcg
Cervical Spine	300 mcg
Cervical Spine	300 mcg
THA	300 mcg
Shoulder Arthro	300 mcg
Cervical Spine	300 mcg
Ankle Arthro	300 mcg
Ankle Arthro	300 mcg
THA	300 mcg
Colostomy	300 mcg
TKA	300 mcg
Open Chole	300 mcg
ORIF Ankle	300 mcg
Scalp Excision	300 mcg
Shoulder Arthro	600 mcg
Lumbar Spine	600 mcg
Lumbar Spine	600 mcg
Lumbar Spine	900 mcg

Figure 1. Intraoperative Buprenorphine Dose



Discussion

- IV Buprenorphine is a safe and effective analgesic
- All patients taking buprenorphine preoperatively received it during surgery
- Most patients who received IV buprenorphine did not need additional analgesia in the PACU
- There were no significant episodes of respiratory depression observed
- Further study is needed to identify surgical populations that may most benefit from IV buprenorphine

References

- Hopkins R, MacLean RR, Pittman B, et al. Current state of anesthesiology experience with buprenorphine for pain management: results of a nationwide survey. Reg Anesth Pain Med. 2025.
- Hickey TR, Costa GPA, Oliveira D, et al. Buprenorphine versus full agonist opioids for acute postoperative pain management: a systematic review and meta-analysis of randomized controlled trials. Reg Anesth Pain Med. 2025
- Machado, Felipe C. MD, PhD; Vieira, Joaquim E. PhD; de Orange, Flávia A. PhD; Ashmawi, Hazem A. PhD. Intraoperative Methadone Reduces Pain and Opioid Consumption in Acute Postoperative Pain: A Systematic Review and Meta-analysis. Anesthesia & Analgesia 129(6):p 1723-1732, December 2019