The use of **perioperative intravenous methadone** for major surgery is **safe** and may **improve postoperative analgesia**

Methadone use in the perioperative setting for acute pain management: a multicentre audit of clinical practice

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Introduction

The use of intravenous methadone has become popular in the perioperative context due to its multi-modal analgesic properties and ability to reduce postoperative opioid consumption and pain scores [1]. However, potential adverse effects must be considered, namely respiratory depression and arrhythmia [2]. Furthermore, systematic reviews report heterogeneous dosing, ranging from 0.1-0.3mg/kg [3]. As the perioperative use of methadone increases in our health network, we conducted an audit of perioperative methadone administration to document adverse events and dosing, laying groundwork for a network-specific clinical methadone guideline.

Methods

- Ethics approval was obtained through the Eastern Health Office of Research and Ethics (QA24-124-111982).
- All S8 registers from operating suites at Maroondah and Angliss Hospital were screened for the dispensation of intravenous methadone to identify patients.
- The audit period was from 19/09/2018-06/01/2025.

Results

Demographics

In total, 75 patients received intraoperative methadone, of whom 53% were female, with a median age of 51.5 years (Interquartile range (IQR) 21.63), 42% and 33% were ASA II and III respectively. Most surgeries (52%) were Orthopaedic. Emergency surgeries made up 36%. The mean anaesthetic duration was 227 mins (±118 mins), reflective of methadone being used in longer duration cases where at least moderate post-operative pain was expected. The mean time spent in recovery was 84.03 mins (±46.98).

Dosing

The mean methadone dose was 12.0 mg or 0.15mg/kg. Postoperative oMEDD (oral morphine equivalent daily dose) was lowest at 12 hours. About half the patients (53%) had a PCA (patient controlled analgesia) prescribed with a mean duration of 26 hours. In 21% of patients, a regional or neuraxial block was done concurrently with methadone administration.

Pain Scores

A score of 4 on the VAS (Visual Analogue Scale) generally corresponds to “moderate pain.” The lowest proportion of VAS≥4 was 19% in the 6-12 hour period (compared to the highest being 29% in the 12-24 and 48-72 hour period). Notably, the median pain score on the VAS was 0 (IQR 3), and highest was 2 (IQR 4) at 12-24 hours.

Case 1 – Mr A was a 41 year-old patient who had high pain scores in recovery and throughout their postoperative care, with VAS scores as high as 10 with documentation of “Extreme pain.” Of note, this patient had pre-existing opioid use, and had undergone extensive knee surgery.

Adverse Events

There were no cases of reduced respiratory rate (RR<8), two cases of SpO2<90%, two cases of bradycardia (HR<50), five cases of SBP<90mmHg, and no cases of acute changes in conscious state.

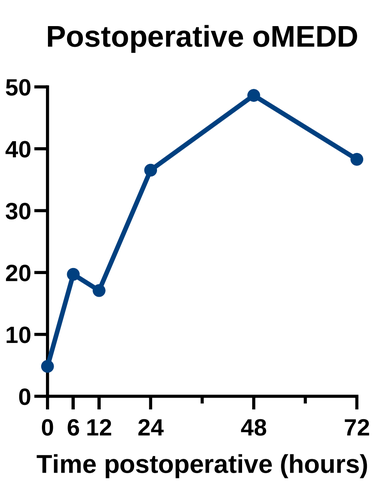
The mean QTc interval on 12-lead ECG preoperatively was 435.07msec (±30.77) and postoperatively was 445.04msec (±26.75) (p=0.199, 95% CI [-25.35, 5.41]). After review of medical records, it was established that none of these events were attributable to methadone administration.

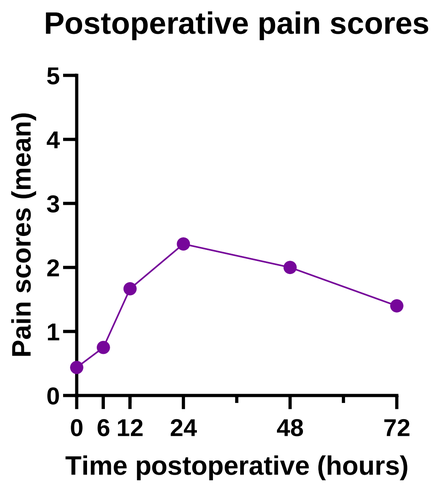
Case 2 – Mr B was a 43 year-old patient who underwent surgical fixation of a humerus fracture. They had a Medical Emergency Team (MET) call in recovery due to persistent hypoxia, which was managed with high flow nasal oxygen. Intraoperatively they received 0.1mg/kg of methadone. They had a history of obstructive sleep apnoea and chronic obstructive pulmonary disease, which were the likely contributors to the hypoxia.

Case 3 – Mr C was a 32 year-old patient who underwent surgical fixation of a distal radius fracture. They had a MET call in recovery due to hypoxia. This was a young patient with no significant comorbidities, opioid-naïve, and received 0.15mg/kg of methadone intraoperatively.

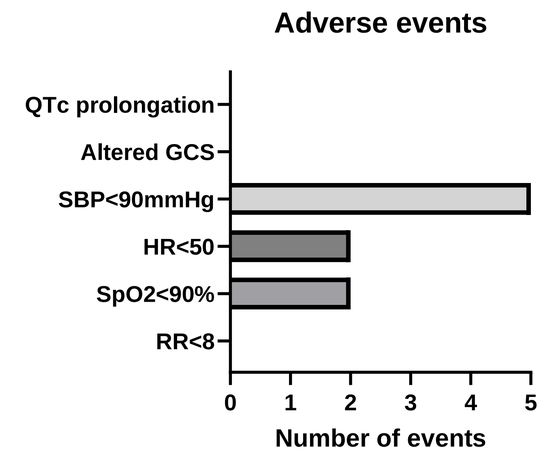
Figures

Supplementary data and figures/tables can be accessed by the QR code at the bottom of the poster





Pain scores	VAS ≥ 4	VAS < 4
In recovery	83 (25.7%)	240 (74.3%)
0-6hrs	82 (25.6%)	238 (74.4%)
6-12hrs	40 (19.8%)	162 (80.2%)
12-24hrs	70 (29.7%)	166 (70.3%)
24-48hrs	55 (26.7%)	151 (73.3%)
48-72hrs	56 (28.6%)	140 (71.4%)



Conclusions

There were fewer VAS≥4 in the 0-12 hours compared to 12-24 hours and beyond, suggesting best pain relief occurred in this time frame. This was consistent with methadone’s prolonged effect in the 12-24 hour window.

Although dosing was on the low end of that used in literature, 71% still had VAS < 4 well beyond 12 hours post-administration reflecting good analgesia even with this dose. However, higher doses of methadone may be required to see more substantial improvement in pain scores in the 12-24 hour postoperative period.

The use of perioperative methadone was not associated with adverse effects in this sample, but further studies are required to confirm this, as well as to help formulate network-specific guidelines for the use of intravenous methadone for post-operative analgesia.

Acknowledgments:
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References:
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