Intraoperative Methadone vs Regional and Local Anesthesia in Periacetabular Osteotomy with Hip Arthroscopy: Postoperative Pain, Opioid Use, and Length of Surgery in Three Cohorts

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INTRODUCTION: Periacetabular osteotomy (PAO) is a complex reconstructive procedure performed to address acetabular dysplasia. Postoperative pain management is challenging due to surgical invasiveness and the need to limit opioid use. Regional and local anesthesia are commonly used but may be short-lived, increasing opioid requirements. However, methadone is a long-acting analgesic that may offset these limitations. This is the first study to evaluate methadone use in PAO with arthroscopy, comparing efficacy and opioid consumption of three different anesthetic regimens: (1) lumbar plexus catheter with a single shot intrathecal hydromorphone (LP+HM) (2) locally administered intraoperative soft tissue periarticular injection with ropivacaine, epinephrine, and ketorolac (arthroplasty block [AP]), and (3) AP with intraoperative methadone (AP+M).

METHODS: We retrospectively reviewed PAO with arthroscopy cases from 2022 to 2025 at a single tertiary center. All cases were performed by the same surgeon and anesthesia team and managed on the same postoperative floor. Patients were categorized into three groups (1) LP+HM, (2) AP, and (3) AP+M. Primary outcomes were 48-hour morphine milligram equivalents (MME) and total inpatient opioid consumption. Length of stay (LoS), operative time, VAS pain scores at 24h and 48h, and antiemetic use were also collected.

RESULTS: Fifty PAO procedures were identified. The mean age was 16.0±2.3 years, 96% were female, and mean BMI was 22.8±4.4 kg/m². No significant differences were seen between groups. The addition of methadone to the arthroplasty block regimen (AP+M) resulted in significantly lower 48-h MME compared to AP alone (55.9 mg vs 83.3 mg, p=0.030), but did not differ significantly from LP+HM (39.0mg, p=0.593). Total inpatient opioid consumption was also significantly reduced in the AP+M (69.3 mg) and LP+HM (66.7 mg) groups compared to AP (110.5 mg, p=0.012). Similarly, 24-hour pain scores were significantly lower in the AP+M (3.6±1.9) and LP+HM (3.7±2.1) groups compared to AP (6.4±1.6, p=0.041). Length of stay was comparable across groups (p=0.39).

DISCUSSION AND CONCLUSION: Intraoperative methadone added to the arthroplasty block provided comparable analgesia and reduced total opioid use compared to arthroplasty block alone. These findings support methadone as an adjunct to periarticular anesthesia for improving pain control and reducing opioid use in hip preservation surgery.