

Effect of a Repeat Dose of Dexamethasone in Postoperative Opioid Consumption, Pain, and Functional Recovery in Primary Total Hip Arthroplasty

Jerry Arraut, Christian Thomas Oakley, Mark Ambrose Kurapatti, Kyle William Lawrence, Omid S Barzideh, Ran Schwarzkopf¹, Joshua Craig Rozell

¹NYU Langone Orthopedic Hospital, Hospital For Joint Diseases

INTRODUCTION:

The optimal administration of dexamethasone for postoperative pain management and recovery following primary, elective total hip arthroplasty (THA) remains unclear. This study aimed to evaluate the effect of a second intravenous (IV) dose of dexamethasone on postoperative pain scores, inpatient opioid consumption, and functional recovery after THA.

METHODS:

A retrospective review of 2,256 patients who underwent primary elective THA between May 2020 and October 2021 was conducted. A total of 998 patients who received two perioperative doses (2D) of IV dexamethasone 10 mg were propensity-matched 1:1 to a control group of 1,254 patients who received one perioperative dose (1D) of IV dexamethasone 10 mg. To assess the primary outcome of opiate consumption, nursing documented opiate administration events were converted into morphine milligram equivalents (MMEs) for consecutive 24-hour postoperative intervals. Postoperative pain and functional status were also assessed using the Verbal Rating Scale (VRS) for pain and the Activity Measure for Post-Acute Care (AM-PAC) scores, respectively.

RESULTS:

A total of 1,982 patients were included in the analysis (1D = 991, 2D = 991). Compared to the 1D control group, the 2D group demonstrated a significantly lower VRS pain score at pain scores at 48 to 60 hours (4.16 ± 2.24 vs. 4.62 ± 2.07 ; 9.96% decrease, $p=0.025$) postoperatively. They also demonstrated a lower inpatient opiate consumption at 24-48 hours (7.66 ± 20.1 vs. 11.47 ± 28.7 MMEs; 33.2% decrease, $p=0.003$) and 48-72 hours (6.20 ± 15.4 vs. 12.0 ± 27.3 MMEs; 48.3% decrease, $p=0.001$) postoperatively. AM-PAC scores did not significantly differ between cohorts.

DISCUSSION AND CONCLUSION:

The administration of a second perioperative dexamethasone dose significantly decreased opioid consumption in the immediate postoperative period. Inpatient opioid administration can be significantly reduced while maintaining a comparable functional recovery and superior pain control.

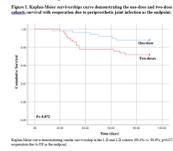


Table 2: Demographic data for propensity score matched cohort

Characteristic	1D (n=991)	2D (n=991)	P-value
Age (mean ± SD)	67.8 (10.2)	67.5 (10.1)	0.85
Female (%)	52.1	51.8	0.92
White (%)	78.5	79.1	0.78
Medicare (%)	85.2	84.9	0.91
Charlson Comorbidity Index (mean ± SD)	2.1 (1.5)	2.1 (1.5)	0.95
ASA Class (n)			
I	120	118	0.88
II	671	673	0.93
III	200	199	0.94
IV	0	0	-

Table 3: Verbal Rating Scale (VRS) pain scores at 24-hour postoperative intervals

Interval	1D (n=991)	2D (n=991)	Percent Change (%)	P-value
0-24 hours	4.5 (2.0)	4.5 (2.0)	0.0	0.98
24-48 hours	4.7 (2.1)	4.2 (2.0)	-10.6	0.003
48-72 hours	4.8 (2.2)	4.2 (2.0)	-12.5	0.001
All 72 hours	4.7 (2.1)	4.3 (2.0)	-8.5	0.001

Table 4: Average opioid administration in morphine milligram equivalents (MME) at 24-hour postoperative intervals

Interval	1D (n=991)	2D (n=991)	Percent Change (%)	P-value
0-24 hours	11.47 (28.7)	11.47 (28.7)	0.0	0.98
24-48 hours	11.47 (28.7)	7.66 (20.1)	-33.2	0.003
48-72 hours	12.0 (27.3)	6.20 (15.4)	-48.3	0.001
All 72 hours	11.47 (28.7)	8.12 (21.4)	-29.2	0.001

Table 5: Patient Clinical Outcome Comparison

Outcome	1D (n=991)	2D (n=991)	P-value
30-day mortality (%)	0.1	0.1	0.95
90-day mortality (%)	0.2	0.2	0.98
30-day readmission (%)	1.2	1.1	0.85
90-day readmission (%)	2.5	2.4	0.92
30-day reoperation (%)	0.5	0.5	0.98
90-day reoperation (%)	1.0	1.0	0.95
30-day hospital charges (mean ± SD)	\$12,500 (5,000)	\$12,400 (5,000)	0.98
90-day hospital charges (mean ± SD)	\$25,000 (10,000)	\$24,800 (10,000)	0.95