Intraoperative Liposomal Bupivacaine Is Not Associated With Reduced Opioid Use Following Total Hip Arthroplasty

Muaaz Wajahath, Jad Jack Lawand, Abdullah Ghali, Alireza Mirahmadi, Umar Ghilzai, Khaled J Saleh

INTRODUCTION: Liposomal bupivacaine (Exparel) is increasingly used as part of multimodal pain control protocols in total hip arthroplasty (THA). While some studies suggest opioid-sparing benefits in other orthopedic procedures, comparative effectiveness data in THA remain limited. This study evaluates postoperative analgesic utilization in Exparel recipients compared to regional nerve block and no-intervention controls within a matched cohort.

METHODS: We retrospectively identified 8,034 patients undergoing primary THA with Exparel and 8,034 propensity score-matched controls. Matching included age, sex, race, comorbidities (including diabetes, heart failure, CKD, COPD), and BMI. A third comparator group included patients receiving regional nerve blocks. Prescription claims for opioids, NSAIDs, and gabapentin were assessed at 14, 30, and 90 days postoperatively. Outcomes were reported as relative risks (RR) with 95% confidence intervals (CI) and compared across Exparel, regional block, and control cohorts.

RESULTS: Cohorts were well-matched across all baseline variables. At 14 days, opioid refill rates were similar between Exparel (7.7%) and control (7.5%) groups (RR: 1.03 [0.94–1.13]), as well as Exparel and block (RR: 1.05 [0.96–1.15]). By 30 and 90 days, opioid utilization continued to increase in all groups. At 90 days, Exparel patients had a slightly higher opioid use (17.9%) compared to controls (16.9%) (RR: 1.06 [1.00–1.12]), but this did not meet the threshold for clinical significance. NSAID use was consistently higher in Exparel recipients compared to controls across all timepoints (14-day RR: 1.45 [0.98–2.13]; 90-day RR: 1.76 [1.42–2.18]). Gabapentin usage also trended higher in the Exparel group, reaching statistical significance at 30 days (2.8% vs 2.4%, RR: 1.21 [1.00–1.45]) but not at other intervals. No consistent advantage was observed for Exparel compared to regional blocks.

DISCUSSION AND CONCLUSION: Intraoperative administration of Exparel in primary THA was not associated with reduced opioid utilization at any postoperative timepoint. Exparel use correlated with modestly increased NSAID and gabapentin prescriptions, suggesting a potential shift in analgesic modality rather than a net reduction in analgesic burden. These findings do not support routine use of Exparel in THA for opioid-sparing purposes.

Table 1: Demographic Characteristics of Patients Undergoing Total Hip Arthroplasty With and Without Exparel

Variable	Pre-Match Exparel (n = 8,034)	Pre-Match Control (n = 372,434)	Pre-Match P	Post-Match Exparel (n = 8,034)	Post-Match Control (n = 8,034)	Post-Match P
Age (mean ± SD)	65.4 ± 10.9	64.8 ± 10.9	<0.001	65.4 ± 10.9	65.2 ± 10.7	0.361
Male	2,781 (34.6 %)	145,205 (39.0 %)	<0.001	2,781 (34.6 %)	2,783 (34.6 %)	0.964
Female	4,135 (51.4 %)	191,774 (51.5 %)	0.866	4,135 (51.4 %)	4,134 (51.4 %)	0.986
White	5,849 (72.7 %)	270,540 (72.7 %)	0.942	5,849 (72.7 %)	5,849 (72.7 %)	0.992
Black	461 (5.7 %)	36,190 (9.7 %)	<0.001	461 (5.7 %)	463 (5.7 %)	0.927
Hispanic/Latino	297 (3.9 %)	13,148 (3.5 %)	0.015	297 (3.9 %)	295 (3.9 %)	0.904
Asian	67 (0.8 %)	11,490 (3.1 %)	<0.001	67 (0.8 %)	67 (0.8 %)	0.962
Unknown Race	1,290 (16.0 %)	44,308 (11.9 %)	<0.001	1,290 (16.0 %)	1,289 (16.0 %)	0.978
Hypertension	3,788 (47.1 %)	165,412 (43.9 %)	<0.001	3,788 (47.1 %)	3,785 (47.1 %)	0.953
Diabetes Mellitus	994 (12.4 %)	45,055 (12.1 %)	0.499	994 (12.4 %)	993 (12.4 %)	0.964
Heart Failure	269 (3.3 %)	12,967 (3.5 %)	0.332	269 (3.3 %)	268 (3.3 %)	0.975
Chronic Kidney Disease	462 (5.8 %)	20,893 (5.6 %)	0.529	462 (5.8 %)	462 (5.8 %)	0.992
COPD	327 (4.1 %)	15,088 (4.1 %)	0.874	327 (4.1 %)	326 (4.1 %)	0.964
Liver Disease	245 (3.0 %)	10,938 (2.9 %)	0.715	245 (3.0 %)	243 (3.0 %)	0.916
Venous Thromboembolism	129 (1.6 %)	6,927 (1.9 %)	0.062	129 (1.6 %)	129 (1.6 %)	1
Nicotine Dependence	276 (3.4 %)	13,042 (3.5 %)	0.683	276 (3.4 %)	276 (3.4 %)	1

Table 2: Analgesia Utilization Within 14 Days Following Total Hip Arthroplasty by Analgesic Modality

Outcome	Exparel n (%)	Block n (%)	Control n (%)	Mean Rx Exp	Mean Rx Block	Mean Rx Ctrl	RR Exp vs Ctrl	RR Block vs Ctrl	RR Exp vs Block
Opioid	621 (7.7 %)	583 (7.3 %)	597 (7.5 %)	1.59 ± 1.22	1.55 ± 1.31	1.71 ± 1.65	1.028 (0.935–1.131)	0.978 (0.943–1.014)	1.052 (0.961–1.151)
NSAID	55 (0.7 %)	68 (0.9 %)	39 (0.5 %)	1.13 ± 0.51	1.17 ± 0.62	1.26 ± 0.77	1.447 (0.968–2.18)	1.789 (1.222–2.619)	0.809 (0.577–1.133)
Gabapentin	133 (1.7 %)	124 (1.6 %)	112 (1.4 %)	1.37 ± 0.96	1.29 ± 0.85	1.52 ± 1.34	1.170 (0.918–1.467)	1.130 (1.052–1.214)	1.035 (0.838–1.291)

Table 3: Analgesia Utilization Within 30 Days Following Total Hip Arthroplasty by Analgesic Modality

Outcome	Exparel n (%)	Block n (%)	Control n (%)	Mean Rx Exp	Mean Rx Block	Mean Rx Ctrl	RR Exp vs Ctrl	RR Block vs Ctrl	RR Exp vs Block
Opioid	862 (10.9 %)	851 (10.7 %)	837 (10.3 %)	1.76 ± 1.40	1.82 ± 1.45	1.93 ± 2.00	1.060 (0.975–1.150)	1.037 (1.006–1.070)	1.023 (0.938–1.115)
NSAID	99 (1.2 %)	114 (1.4 %)	56 (0.7 %)	1.17 ± 0.63	1.28 ± 0.78	1.30 ± 0.91	1.707 (1.220–2.389)	1.958 (1.419–2.705)	0.872 (0.644–1.180)
Gabapentin	230 (2.8 %)	222 (2.8 %)	191 (2.4 %)	1.41 ± 0.94	1.44 ± 1.32	1.55 ± 1.84	1.207 (1.004–1.490)	1.158 (1.089–1.231)	1.042 (0.867–1.223)

Table 4: Analgesia Utilization Within 90 Days Following Total Hip Arthroplasty by Analgesic Modality

Outcome	Exparel n (%)	Block n (%)	Control n (%)	Mean Rx Exp	Mean Rx Block	Mean Rx Ctrl	RR Exp vs Ctrl	RR Block vs Ctrl	RR Exp vs Block
Opioid	1447 (17.9 %)	1414 (17.5 %)	1368 (16.9 %)	2.34 ± 2.20	2.35 ± 2.21	2.51 ± 8.39	1.060 (1.000–1.124)	1.034 (1.017–1.052)	1.025 (0.970–1.082)
NSAID	232 (2.9 %)	234 (2.9 %)	132 (1.6 %)	1.52 ± 1.09	1.49 ± 1.08	1.55 ± 1.32	1.758 (1.420–2.176)	1.776 (1.438–2.193)	0.990 (0.829–1.183)
Gabapentin	443 (5.5 %)	426 (5.3 %)	395 (4.9 %)	1.85 ± 1.56	1.84 ± 1.92	2.16 ± 3.91	1.117 (0.998–1.250)	1.089 (1.047–1.133)	1.026 (0.920–1.145)