Extended-Release, Dual-Acting Local Anesthetic in Aseptic Revision Total Knee Arthroplasty is Associated with Shorter Time to Physiotherapy Clearance, Shorter Hospitalization and Higher Percentage of Early Discharge

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INTRODUCTION: Optimal pain management following aseptic revision total knee arthroplasty (TKA) is critical to facilitate early postoperative mobilization and clearance of physical therapy (PT) prior to discharge. Periarticular injections (PAI) are often part of multimodal pain regimens in the management of revision TKA. A novel extended-release, dual-acting local anesthetic (ERDALA) has demonstrated superior analgesic efficacy and reduced opioid consumption after primary TKA. The objective of this study is to determine if ERDALA is associated with improved outcomes compared to prior standard of care PAI in revision TKA patients which was either SOC PAI or liposomal bupivicaine.

METHODS:

A retrospective review identified 171 aseptic revision TKA cases from Jan 2021 to May 2023. Descriptive statistics were calculated for demographics and perioperative information. Patients either received ERDALA or SOC PAI. Patients who received general anesthesia were excluded. Demographics, procedure information, opioid consumption, pain scores, PT outcomes, and length of stay were compiled and analyzed.

RESULTS: 88 (51.5%) patients received prior SOC and 83 (48.5%) patients received ERDALA. Demographics and administered nerve blocks are outlined in Table 1. 159 (93%) patients received neuraxial anesthesia and 12 (7%) patients received general anesthesia. ERDALA was significantly associated with decreased LOS (.99 days shorter, p = 0.02) and faster time to PT clearance (20.44 hours shorter, p = 0.01) than those in the SOC PAI cohort. Mean pain scores and postoperative opioid consumption during admission were not significantly different between the ERDALA and SOC PAI groups. The majority (N = 66, 79.5%) of patients who received ERDALA were discharged within 2 days vs. 42 (47.7%) in the SOC PAI cohort. Time of administration for SOC PAI in this patient population is on average about 3.5 minutes while application of ERDALA is less than 1 minute.

DISCUSSION AND CONCLUSION: ERDALA administration resulted in a significant decrease in time to PT clearance and LOS compared to SOC PAI in our cohort of revision TKA patients. There were no significant differences in pain scores or opioid consumption between groups. The quicker application time of ERDALA as well as the reimbursement of the product provide a potentially cheaper product in addition to improved outcomes. Future studies are encouraged to investigate the impact of ERDALA formulations on opioid use, pain scores, PT outcomes, and LOS following revision TKA.

Table 1. Demographics and administered nerve blocks by periarticular injection treatment group in revision TKA

Variable	Total	ERDALA	SOC	p-value
Age	68.2	69.2	67.2	0.12
Female (%)	52.2%	42.1%	56.3%	0.44
BMI ± SD	31.5	31.4	31.5	0.93
ASA Score ± SD	2.4	2.4	2.4	0.26
Nerve block(s)				
Adductor Canal (N, %)	153 (89.5%)	75 (90%)	78 (88.6%)	N/A
IPACK	31 (18.1%)	8 (9.6%)	23 (26.1%)	N/A
PENG	1 (0.6%)	0	1 (1.1%)	N/A
Genicular	2 (1.2%)	2 (2.4%)	0	N/A
Other	**1 (0.6%)**	**0**	**1 (1.1%)**	**N/A**