Single-Shot Liposomal Bupivacaine Interscalene Nerve Block Provides Equivalent Pain Relief Compared to Continuous Catheter Interscalene Nerve Block for Arthroscopic Rotator Cuff Repair

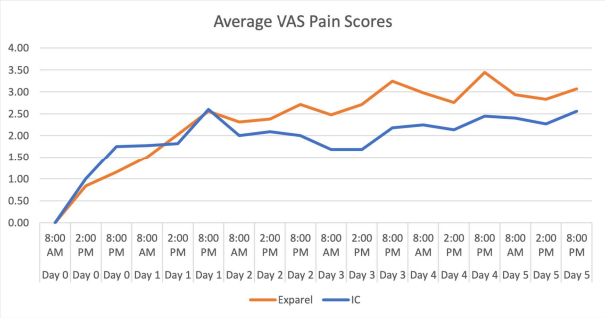
Nathan D. Orvets[1], Anita G Rao[2], Matthew Daniel Budge[1]
[1]Kaiser Permanente Northwest, [2]NWP Ortho

INTRODUCTION: Regional anesthesia techniques have been shown to improve pain relief and decrease opioid consumption for arthroscopic shoulder surgery. Liposomal Bupivacaine has been recently approved for use in interscalene nerve blocks and has the potential to provide long-acting pain control without the associated complications and cost of an indwelling catheter. The purpose of this study is to compare early post-operative pain control, patient satisfaction, narcotic consumption, and cost in patients undergoing elective arthroscopic rotator cuff repair with the use of a single shot interscalene block with liposomal bupivacaine (SSLB) or a continuous catheter interscalene nerve block with standard bupivacaine (CCIB).

METHODS: Patients undergoing outpatient arthroscopic rotator cuff repair (ARCR) at a single ambulatory surgery center were randomized to receive either SSLB or CCIB. Inclusion criteria included patients undergoing ARCR with any associated procedure and agreement to participate in the study. Exclusion criteria included: preoperative narcotic use within 30 days of surgery, non-English speaking, and patient preference not to be randomized. Patients were given a pain log to record VAS pain scores, duration of the block, narcotic consumption, and any complications for the first 5 days after surgery. All patients were contacted by phone to collect data for the study. Narcotic consumption was standardized using morphine milligram equivalents (MME). Secondary outcomes included block related complications, patient satisfaction, anesthesia provider time to administer the block, and cost of materials. Continuous variables were assessed with a Student's t-test while categorical variables were assessed with a chi-square test. Significance was set at a p-value of <0.05. All patients received non-steroidal anti-inflammatory medications. Dexamethasone was not used.

RESULTS: 90 patients met inclusion criteria and consented to randomization (45 SSLB, 45 CCIB). There were no significant differences in the preoperative characteristics or ancillary procedures between the groups (Table 1). There was no statistical difference in VAS pain scores (Figure 1), opioid consumption (60 MME for SSLB, 48 MME for CCIB), complications, or patient satisfaction between the groups. 89% of patients in the SSLB group and 96% of patients in the CCIB group would have the same block again. Patients in the CCIB group reported that the block lasted an average of 92 hours after surgery compared to 48 hours for the SSLB group which was statistically significant ($p < .00001$). The SSLB took an average of 3.4 minutes compared to 8.4 minutes for the CCIB blocks ($p < .00001$). The SSLB costs $112 less in materials and medications in our system.

DISCUSSION AND CONCLUSION: Both SSLB and CCIB provided similar pain relief, opiate use, and satisfaction in patients undergoing ARCR. CCIB had a longer duration of pain control compared to SSLB, however the SSLB was faster to perform and more cost effective.



	SSLB	CCIB	P-Value
Number of Randomized Patients	45	45	
Male (#)	58% (26)	62% (28)	.6672
Age Range (yrs)	37-79	38-75	
Average Age (yrs)	59.8	59.3	.8534
.Right (#)	29 (64%)	26 (58%)	.5157
Time for Block Procedure	3.4 min	8.4 min	<.00001
Complications (% Yes)	4.4% (2)	13.3% (6)	.1388
Total Narcotic Usage Avg [MME]	60.1	47.8	.3733
Time Block Stopped Avg [hrs from surgery]	47.9	91.9	<.00001
Patient Satisfaction	8.3	9.0	.0336
Would Patient Have Block Again (% Yes)	89% (40)	96% (43)	.2380
ASA Score (%)			
___1	0	7% (3)	
___2	69% (31)	67% (30)	
___3	31% (14)	27% (12)	