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Impact of a Preoperative Peripheral Nerve Block in an Enhanced Recovery After Surgery Protocol Versus Direct Injection of Liposomal Bupivacaine for Mastectomy with Immediate Breast Reconstruction

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PURPOSE

- An Enhanced Recovery After Surgery (ERAS) protocol using a preoperative peripheral pectoralis nerve block under ultrasound guidance (PECS) has been shown to decrease opioid pain medication requirements.
- Prior to our ERAS protocol for mastectomy patients, plastic surgeons injected liposomal bupivacaine intraoperatively under direct visualization (DI).
- We compared morphine milligram equivalents (MMEs) and operative factors between PECS blocks and DI .

METHODS

- We conducted a retrospective review of patients undergoing mastectomy with immediate prosthetic breast reconstruction from April 2016 to May 2019.
- Patients who underwent PECS block were compared to patients who underwent DI by the plastic surgeon.
- Patient-reported visual analog scale (VAS) pain scores, postoperative narcotic usage in morphine milligram equivalents (MMEs), total time in the operating room, and length of hospital stay were compared.
- Wilcoxon rank-sum tests and multivariable linear regression analysis was used to compare outcomes between groups.

RESULTS

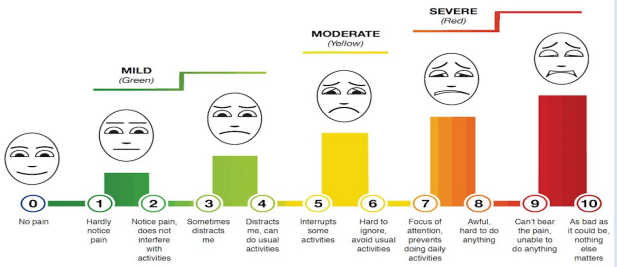
Table 1. Comparison of Postoperative Outcomes

	PECS (n =108)	DI (n=154)	p value
Maximum Pain Score, [Mean ± SD]			
Postoperative Day 0	6.6 ± 2.2	5.8 ± 2.3	**0.01**
Postoperative Day 1	5.0 ± 2.1	5.3 ± 2.2	0.14
Postoperative Day 2	5.60 ± 2.3	6.1 ± 1.5	0.43
Postoperative narcotic use, MMEs [Median (Q1-Q3)]	7.9 (2.5-22.5)	26.4 (15.0-50.6)	**<0.01**
Operating Room Time, min [Mean ± SD]			
Unilateral	207 ± 50	182 ± 35	**0.04**
Bilateral	236 ± 44	221 ± 40	**0.02**
Length of stay, hours [Mean ± SD]	31 ± 9	38 ± 13	**<0.01**

Table 2. Morphine Milligram Equivalents

Opioid	Morphine Conversion Factor
Hydrocodone (mg)	1
Hydromorphone (mg)	4
Morphine (mg)	1
Oxycodone (mg)	1
Tramadol (mg)	0.1

Figure 1. Pain Scale



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RESULTS

- 108 PECS patients and 154 DI patients were studied.
- The DI group reported lower pain scores on the day of surgery (p=0.01), but pain scores were no different between DI and PECS groups on postoperative days one and two.
- The PECS block group was associated with a longer operative time (p<0.01) regardless if the operation was uni- or bilateral mastectomy by an average of 23 minutes.
- Postoperative narcotic usage was significantly less in the PECS block group (p<0.01) by 18.5 MMEs (Table 1).
- Mean length of hospital stay for PECS block patients was significantly less than the DI group by about 7 hours (p<0.01).
- On multivariable analysis adjusting for patient age, body mass index, and laterality of surgery, pain scores on the day of surgery, postoperative narcotic use, and length of stay differences remained statistically significant (all p<0.01)

CONCLUSIONS

- Patient reported pain scores were no different between PECS blocks and DI, but MMEs and LOS were significantly less in the PECS blocks group.
- These data demonstrate the advantages of an ERAS protocol using a peripheral nerve block prior to making an incision despite the longer operative time .