

Obese Patients Who Receive an Opioid-Sparing Enhanced Recovery After Surgery (ERAS) Protocol Are at Increased Risk of Persistent Pain After Breast Surgery

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Even with ERAS, obese patients remain at increased risk of persistent pain after breast surgery

Introduction

- Obese patients are at risk of persistent pain and opioid dependence after surgery.
- We sought to determine whether multimodal analgesia was effective for both obese and non-obese patients.

Methods

- **Study:** Expanded analysis of prospective, controlled cohort study including historical comparison cohort
- **Inclusion** criteria: Lumpectomy and mastectomy without reconstruction in one institution (2015-2016 and 2017-2019)
- **Study arms:** Opioid-sparing ERAS and Non-ERAS
- **Outcomes:**
 - Primary: Postoperative day 1, week 1 pain scores
 - Secondary: Inpatient and discharge opioids (OMEs)

Table 1. Demographics and clinical characteristics

	Non-ERAS (n=134) N (%)	ERAS (n=488) N (%)	p-value
Female	132 (99)	484 (99)	0.614
Median age (range)	57 (12 – 94)	58 (15 – 104)	0.669
Any comorbidity	73 (55)	280 (57)	0.549
Cardiovascular disease	69 (52)	266 (55)	0.520
Diabetes	31 (23)	96 (20)	0.385
Median BMI (range)	28.6 (19 – 49)	29.2 (14 – 58)	0.330
Obesity (BMI ≥ 30)	54 (40)	220 (45)	0.323
Type of surgery			
Lumpectomy (total)	102 (76)	461 (95)	
Wire-localized	61 (46)	181 (37)	
Excisional biopsy	15 (11)	75 (15)	0.001
Re-excision	8 (6)	48 (10)	
Wireless localization	18 (13)	157 (32)	
Mastectomy w/o recon	32 (24)	27 (6)	
Malignancy	80 (59.7)	294 (60.3)	0.909
Lumpectomy	48 (47.1)	267 (57.9)	0.046
Mastectomy	32 (100)	27 (100)	n/a
Axillary management			
None	79 (59.0)	294 (60.3)	
Sentinel node biopsy	38 (28.4)	164 (33.6)	0.032
Axillary dissection	17 (12.7)	30 (6.2)	

Table 2. Proportion of patients with moderate to severe pain

	Postoperative Day 1		p-value (row)
	Non-ERAS (n = 134)	ERAS (n = 488)	
Non-obese (n=348)	29 (36.3)	52 (19.4)	0.002
Obese (n=274)	25 (46.3)	48 (21.8)	< 0.001
p-value (column)	0.322	0.589	
	Postoperative Week 1		p-value (row)
	Non-ERAS (n = 134)	ERAS (n = 420)	
Non-obese (n=348)	14 (20.6)	25 (11.1)	0.042
Obese (n=274)	16 (33.3)	36 (18.6)	0.026
p-value (column)	0.184	0.042	

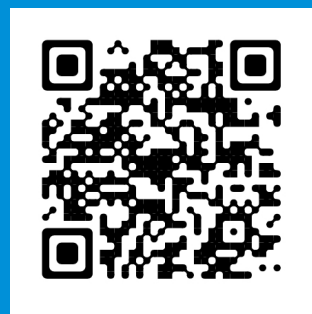
Data is expressed as n (%)

* Moderate to severe pain: 4-10 of a 10-point scale

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References

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- Kennedy GT, Hill CM, Huang Y, So A, Fosnot J, Wu L, Farrar JT, Tchou J. Enhanced recovery after surgery (ERAS) protocol reduces perioperative narcotic requirement and length of stay in patients undergoing mastectomy with implant-based reconstruction. *Am J Surg.* 2019 Oct 12. pii: S0002-9610(19)31154-7.



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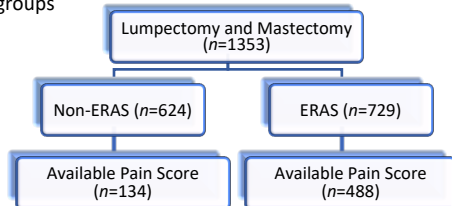
Figure 1. ERAS Protocol

Non-Pharmacologic	Pharmacologic Interventions
Enhanced preop counseling Clears >= 2 hours preop Euvolemia, normotermia Early IV fluid cessation	Preop PO: 975 mg acetaminophen + 300 mg gabapentin Intraop 20cc liposomal bupivacaine + 0.25/0.5% bupivacaine Intraop 15 mg IV ketorolac Postop 600 mg ibuprofen + 650 mg acetaminophen q8H

Results

- Regardless of BMI, patients who received ERAS had less moderate to severe pain [(obese: 46.3% vs. 21.8%, p<0.001); (non-obese: 36.3% vs. 19.4%, p=0.002)].
- Obese patients had more persistent pain one week after surgery compared to non-obese patients (18.6% vs. 11.1%, p=0.042).

Figure 2. Study groups



Conclusion

- Widespread uptake of opioid-sparing ERAS protocols has the potential to significantly impact the opioid crisis.
- ERAS significantly improves postoperative pain control for all patients, however, it appears that obese patients are still at relatively greater risk for persistent pain after surgery.