Retrospective Comparison of Traditional and Enhanced Recovery After Surgery Protocols Among Women Undergoing Mastectomy

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Background

Patients undergoing mastectomy may encounter problems with pain management and postoperative nausea and vomiting, hindering their recovery. We developed an ERAS protocol in an attempt to address these problems. The purpose of this study was to compare pain scores, opioid use, postoperative nausea and vomiting, antiemetic administration and length of hospital stay between postoperative mastectomy patients who received Traditional Recovery After Surgery (TRAS) or the Enhanced Recovery After Surgery (ERAS) protocol.

Methods

We undertook a retrospective chart review of TRAS and ERAS patients undergoing mastectomy without reconstruction. A statistical power analysis determined a necessary sample size of 102. Two groups were evaluated: 51 sequential patients having mastectomy without reconstruction before May 2016, prior to ERAS implementation, and 51 sequential patients having mastectomy without reconstruction after implementation of ERAS protocols.

Results

No significant differences were found between the groups in terms of demographics, pain history, or length of hospital stay.

We found a significant difference between ERAS and TRAS patients:

- Antiemetic use on POD0 (20% vs 41% p=0.018)
- Mean Pain Score on POD0 (1.9 vs 3.2 p ≤ 0.005)
- Oral Morphine Equivalent POD0 (26.7 vs 58.3 p ≤ 0.005)
- Oral Morphine Equivalent POD1 (4.7vs 20.8 p ≤ 0.005)

Conclusions

The incorporation of ERAS measures into the surgical care of patients undergoing mastectomy surgery can positively affect postoperative recovery. Our ERAS protocol in patients undergoing mastectomy without reconstruction demonstrated a significant reduction in reported pain, decreased antiemetic use, and significantly reduced the use of opioids in the immediate postoperative period.

Group Characteristics

TABLE 1	TRAS Group (n = 51)	ERAS Group (n = 51)
Age(years)	63 ± 13	61 ± 15
BMI	32 ± 7	30 ± 6
Chronic Pain Diagnosis		
No	45 (88%)	47 (92%)
Yes	6 (12%)	4 (8%)
Chronic Opioid Use		
No	47 (92%)	48 (94%)
Yes	4 (8%)	3 (6%)
Chronic Substance Abuse Disorder		
No	51 (100%)	50 (98%)
Yes	0 (0%)	1 (2%)
Mastectomy		
Unilateral	21 (41%)	22 (43%)
Bilateral	30 (59%)	29 (57%)
Pain Score on Admission	0.6 ± 1.7	0.5 ± 1.7

Reported as Mean ± Standard Deviation or #(%)

ERAS Protocol

Preoperative Protocol

- ERAS education during Pre-Admission Testing visit
- Acetaminophen 1000mg PO
- Celecoxib 200mg PO
- Pregabalin 75mg PO

Intraoperative Protocol

- General Anesthesia
- TIVA (Propofol)
- PECS Blocks after induction
- Avoid/Minimize Opioids
- Dexamethasone 4-8mg
- Ondansetron 4mg
- Minimize Excess Fluid Administration

Postoperative Nutrition

- Advance as tolerated the day of surgery

Analgesia

- Acetaminophen 1000mg PO Q6hours
- Celecoxib 200mg PO BID
- Carisoprodol or Cyclobenzaprine PO Q8H PRN muscle spasm
- Tramadol 50mg PO Q6H PRN VAS 4-6
- Oxycodone 5-10mg PO Q4H PRN VAS >7
- Hydromorphone 0.3-0.5mg IV Q2H PRN VAS >7

Pre & Post ERAS Mastectomy Group Comparison by Outcome

TABLE 2	TRAS Group (n = 51)	ERAS Group (n = 51)	p
Length of Operation (total minutes)	120 ± 36	128 ± 41	.341
Length of Hospital Stay (total nights)	1.1 ± 0.2	1.0 ± 0	.083
Post-op Antiemetic POD0			
No	30 (59%)	41 (80%)	
Yes	21 (41%)	10 (20%)	.018*
Post-op Antiemetic POD1			
No	44 (86%)	50 (98%)	
Yes	7 (14%)	1 (2%)	.060
Post-op Antiemetic POD2			
No	0/3	n/a	
Yes			
Episodes of Vomiting POD0 (#)	.02 ± .14	0 ± 0	1.000
Episodes of Vomiting POD1 (#)	.02 ± .14	0 ± 0	1.000
Episodes of Vomiting POD2 (#)	0/3 [#]	n/a	
Mean Pain Score POD0	3.2 ± 1.3	1.9 ± 1.8	.000**
Mean Pain Score POD1	2.1 ± 1.7	1.2 ± 1.6	.008
Mean Pain Score POD2	2.1 ± 1.1 [#]	n/a	
Max Pain Score POD0	7.4 ± 1.7	4.7 ± 3.2	.000**
Max Pain Score POD1	4 ± 3	2.8 ± 2.8	.029
Max Pain Score POD2	5 ± 2.6 [#]	n/a	
Oral Morphine Equivalent POD0 (mg/day)	58.3 ± 33.8	26.7 ± 24.1	.000**
Oral Morphine Equivalent POD1 (mg/day)	20.8 ± 19.8	4.7 ± 7.7	.000**
Oral Morphine Equivalent POD2 (mg/day)	10.8 ± 11.3 [#]	n/a	

*p ≤ 0.05, chi-square analysis

**p ≤ 0.005, independent sample t-test with Boneferroni correction

[#]3 pts stayed 2 nights in the TRAS group, 0 in the ERAS group

Mobilization

- Out of bed and walking 3 times/day
- Sitting up in chair for all meals

Beyond Discharge Protocol

- Acetaminophen 1000 mg PO Q6 hours x 48 hours
- Celecoxib 200 mg PO BID x 48 hours
- Carisoprodol or Cyclobenzaprine PO Q8H PRN muscle spasm
- Oxycodone 5-10 mg PO Q4H PRN VAS >7

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