Successful Extubation After Esophagectomy: Do Non-Opioids Make The Cut?

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Introduction

Enhanced recovery after surgery (ERAS) protocols have become increasingly more common. Early extubation after esophagectomy is the standard of care to minimize postoperative pulmonary complications. The significance of various pain adjuncts within ERAS pathways and their role in early extubation remains unclear.

AIM Identify analgesics associated with immediate extubation after esophagectomy

Methods

- Retrospective chart review of 42 trans-hiatal esophagectomies between January 2019 and January 2022 at a single institution.
- All patients received a preoperative transversus abdominis plane (TAP) block ± additional blocks.
- Those extubated within the operating room (OR) were considered to have immediately extubated.
- Intraoperative analgesic use was compared based on extubation timing.
- The average POD 0 pain score and modes of intraoperative analgesia were compared amongst the immediate extubation cohort patients.

Results

- 35 (83.3%) patients were immediately extubated.
- Those immediately extubated were more likely to have received methocarbamol (37.1%, p=0.052) and acetaminophen (31.4%, p=0.084) intraoperatively (Table 1).
- No studied pain adjunct was an independent predictor of immediate extubation on regression analysis.
- On Pearson correlation, methocarbamol had a moderate negative correlation with intraoperative opioid use (r_s= -0.33, p= 0.034), as did acetaminophen (r_s= -0.30, p= 0.051).

Table 1. Comparison of Intraoperative Pain Adjuncts by Extubation Timing

Pain Adjuncts			Extubation Timing: Delayed (n=7)	Immediate (n=35) PACU Pain Score (0-10): Score 0-1 (n=22)	Score 2-3 (n=11)	Score 4-5 (n=2)
Regional Anesthetic Block	TAP	No.	2	5	3	1
	TAP+		5	17	8	1
Magnesium, mg	No. (%)		4 (57.1%)	20 (90.9%)	8 (72.7%)	1 (50%)
	Median		3500	3000	2000	2000
	IRQ		2500	2000	750	
Methocarbamol, mg	No. (%)		0	8 (36.4%)	4 (36.4%)	1 (50%)
	Median			450	1000	500
	IQR			200	300	
Acetaminophen, mg	No. (%)		0	8 (36.4%)	2 (18.2%)	1 (50%)
	Median			1000	1000	1000
	IQR			0	0	
Ketamine, mg	No. (%)		4 (57.1%)	9 (40.9%)	10 (90.9%)	0
	Median		50	50	50	
	IQR		0	0	0	
Morphine Equivalents, mg	No.		7	22	11	2
	Median		75	75	60	68
	IQR		48	45	45	15

- TAP block with quadratus lumborum block (TAP+) resulted in a 10% reduction in median POD 0 pain scores over TAP block alone (p=0.058).
- All 8 (22.9%) patients who received TAP+, methocarbamol, and acetaminophen underwent immediate extubation with 75% reporting an average POD 0 pain score of 0.

Conclusion

There appears to be a synergistic effect between TAP+ block, methocarbamol, and acetaminophen use on both the rate of successful immediate extubation and postoperative pain control after esophagectomy. No benefit with Ketamine use was identified. A larger study population will be necessary to determine if pre-specified combinations of these adjuncts results in improved immediate post-esophagectomy extubation rates.

These findings support the use of TAP+ blocks, methocarbamol, and acetaminophen in ERAS pathways for esophagectomy.

