Evaluating Enhanced Recovery After Surgery (ERAS) for Total Knee Arthroplasty (TKA)

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Aims of the Project

To compare the difference in outcomes between patients who received a total knee replacement prior to and after ERAS implementation at a midwestern community hospital.

Background

- ERAS was created in 1997 for colorectal surgery
- Positive outcomes led to expanded adoption
- The midwestern community hospital implemented their own ERAS protocol for TKAs in 2019
- Literature review demonstrates

Decreased

- ❑ PONV rates (3% vs 14.8%, p=0.001)
- ❑ Opioid in MME (10.5 mg vs. 57.4 mg, p=0.0001)
- ❑ LOS (SMD = -0.85, 95% CI= -1.24 to -0.45, p<0.01)
- ❑ Post-op pain score at 12 & 24 hours

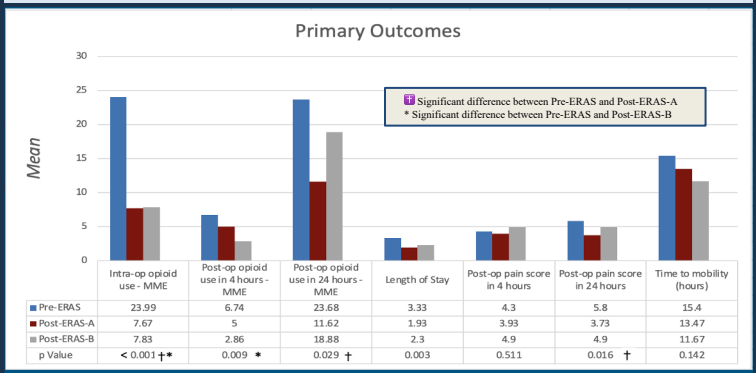
Increased

- ❑ Increased cost savings ($650 to $16,447)

Design and Methodology

- Retrospective data collection
  - Pre- and post-ERAS groups after TKA
  - 662 subjects; random sample of 90 collected
    - ❑ Pre-ERAS (n=30)
    - ❑ Post-ERAS-A (n=30)
    - ❑ Post-ERAS-B (n=30)
- Data manually extracted from EMR
- Statistical analysis using ANOVA, Chi-Square for independence, and Kruskal Wallis tests

Results



Secondary Outcomes

	Intra-op vasopressor use *n (%)*	Intra-op anti-emetic use *n (%)*	Post-op vasopressor use (Within 6 hours of surgery end time) *n (%)*	Post-op antiemetic use *n (%)*	✪PCA use n (%)	Estimated Blood Loss (mL) *mean (±SD)*	Blood transfusion *n (%)*	Surgical Site Infection (SSI) *n (%)*	Catheter Acquired Urinary Tract Infection (CAUTI) *n (%)*	Rapid Response Called *n (%)*
Pre-ERAS (n=30)	76.7	73.3	0	7 (23.3)	10 (33.3	93.83 (±58.69)	0	1 (3.3)	1 (3.3)	1 (3.3)
Post-ERAS-A (n=30)	46.7	100	0	3 (10)	0 (0)	87.50 (±39.80)	0	0	0	1 (3.3)
Post-ERAS-B (n=30)	73.3	86.7	0	4 (13.3)	0 (0)	176.67 (±143.68)	0	0	0	1 (3.3)
p Value	0.028	0.002	N/A	0.343	---	<0.001 *°	N/A	0.33	0.33	1.0

Note: * Significant difference between Pre-ERAS and Post-ERAS-B; ° Significant difference between Post-ERAS-A and Post-ERAS-B; ✪ Statistical analysis was not done for PCA use, since it was not part of the ERAS protocol. N/A: not applicable.

Findings

Decreased

- ❑ Intraoperative opioid use for both Post-ERAS groups
- ❑ Postoperative opioid use in 4 hours for Post-ERAS-B
- ❑ Postoperative opioid use in 24 hours for Post-ERAS-A
- ❑ Postoperative pain scores in 24 hours for Post-ERAS-A
- ❑ Length of stay for both Post-ERAS groups

Limitations

- Limited dexmedetomidine sample size
- Inconsistent adherence to ERAS protocols
- Pre-ERAS fluid restriction vs. no Post-ERAS restriction
- Intraoperative factors causing deviation from protocol

Discussion

Implementation of ERAS can improve TKA patient outcomes: decreased LOS, decreased intra-op opioid use. There was no significant difference in outcomes between dexmedetomidine and ketamine. Future DNP students can further study the benefits ERAS has on the TKA patients at this midwestern community hospital, along with the impacts of utilizing dexmedetomidine.

Translation Into Practice

The evidence suggests positive benefits from implementation of ERAS for TKAs. The researchers aim for further stakeholder buy-in following the dissemination of these results. With standardized care, there will be less variability in care, and a greater possibility of seeing these better outcomes that have been associated with ERAS.

References

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