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ERAS: Improving Surgical Experience in Traumatic Hip Fracture Surgery

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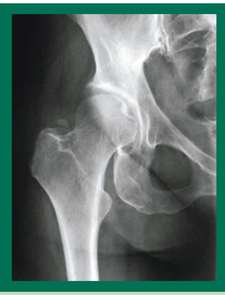

ERAS: Improving Surgical Experience in Traumatic Hip Fracture Surgery

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Background

- Hip fractures are associated with significant morbidity and mortality, loss of independence and financial burden.[1]
- Enhanced Recovery After Surgery (ERAS) pathways are utilized to improve postoperative outcomes for treatment of hip fracture without increasing rates of complication or mortality.[2]

Purpose and Aims

Purpose: To improve perioperative care for traumatic hip fracture patients by utilizing ERAS pathway.

Aim I. Create an ERAS Orthopedic Pathway (ERAS-OP) for traumatic hip fracture.

Aim II a. Evaluate the consistency of implementation of the post-operative Phase of ERAS-OP.
Aim II b. Evaluate post-operative ERAS-OP outcomes: length of stay (LOS), cost of care & opioid administration.

Methodology

- This quality improvement project takes place at an urban Midwest trauma II center.
- 128 hip fracture patients met the eligibility criteria (66 ERAS, 62 control).
- Data were collected on patients treated for traumatic hip fracture with post-operative ERAS-OP (ERAS: June–September 2021), compared to a retrospective cohort of controls managed without ERAS-OP (Control June-September 2020).

Aim I: ***Utilizing Evidence Based Practices to Create ERAS Orthopedic Pathway***

- A review of the literature revealed evidence based practices specific to hip fracture along with basic ERAS components.

Basic ERAS Components	Hip Fracture Specific Components
• Pre-operative education • Oral multimodal analgesia • Fluid optimization • Early mobilization • Early oral intake • Scheduled alternatives to opioids, nausea and vomiting control and supported discharge. • Pre-operative fasting and carbohydrate treatment • Prevention of Post-Operative Nausea and Vomiting	• Time to surgery • Regional anesthesia • Delirium Prevention • Early advanced care planning

Aim II a: ***Consistency of Implementation: Post-Operative Protocols***

- Time to Nutrition: Full Liquid, Soft or Solid Diet type and diet or snack percentage consumed (> 0%) documented within 13 hours of exiting the OR.
- Time to Ambulation: Documented therapeutic ambulation within 7 hours (13 hours total joints) of leaving the OR.
- Sustained Ambulation Pass: Documented therapeutic ambulation 3 times within 24 hours of leaving the OR.
- Scheduled Alternative to Opioids (ALTO): Verified order of non-opioid medication with scheduled frequency (not prn) for administration on inpatient units.

Aim II b: ***Post-Operative Outcomes***

- To compare outcomes pre and post implementation, metrics data (as defined below) were collected from June 2020 through September 2020 (control) and from June 2021 through September 2021 (ERAS).

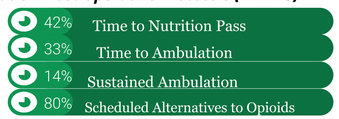
- Length of Stay: Length of stay from out of operating room event time to discharge.
- Morphine Milligram Equivalent (MME) administered: MME administered for all oral and IV pushes from out-of-PACU until discharge.
- Total Cost: Costs accrued during the patient's entire length of stay.

Results

Aim I: ***Utilizing Evidence Based Practices to Create ERAS Orthopedic Pathway***

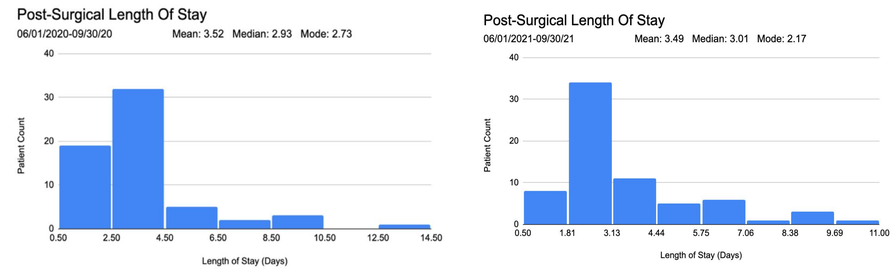
- The ERAS-OP was approved by the ERAS systems coordinator at the specified trauma II hospital (to see ERAS-OP scan QR)
- Only the post-operative ERAS-OP interventions were in effect as of 6/1/2021.
- The remainder of ERAS-OP will be implemented by 5/1/2022.

Aim II a ***: Consistency of Implementation: Post-Operative Protocols (n= 128)***

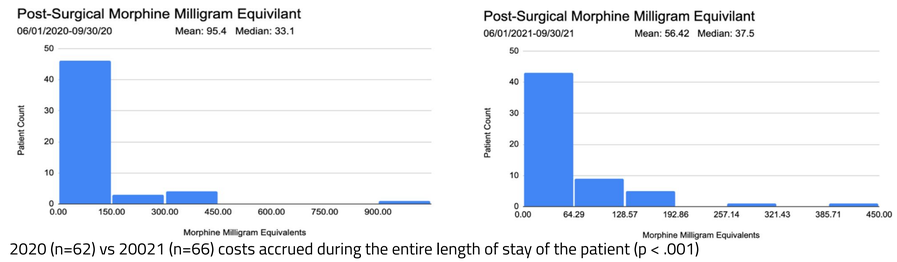


Aim II b: ***Post-Operative Implementation***

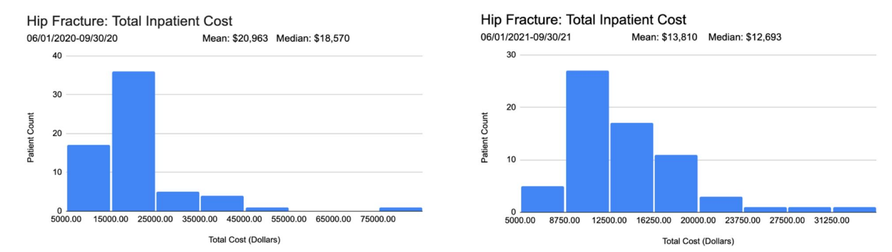
2020 (n=62) vs 2021 (n=66) length of stay from time out of operating room to time of discharge (p=.94)



2020 (n=62) vs 20021 (n=66) morphine milligram equivalents (MME) administered from out-of-PACU until discharge (p=.09)



2020 (n=62) vs 20021 (n=66) costs accrued during the entire length of stay of the patient (p < .001)



Discussion

Aim I

- Two barriers to implementation were identified: NPO time to surgery and regional anesthesia administration.
- Further institutional investigation is warranted to identify the scope of these barriers.

Aim II

This cohort of traumatic hip fracture patients treated with post-operative ERAS-OP demonstrated:

- No significant change to length of stay (p=.94).
  - No reduction in LOS may be due to a shortage of beds available in skilled nursing facilities and rehab facilities, thus prolonging inpatient LOS.
- Inadequate evidence to support decrease of MME (p =.09).
  - Reduction in post-operative MME administration is likely the result of providing scheduled alternative to opioid medications and encouraging early ambulation after surgery.
- Improved outcomes related to:
  - Lower total cost of inpatient care (p < .0001).
    - Reduction in inpatient cost may be the result of the ERAS-OP helping to minimize post-operative complications and costly medication administration.

Conclusions

- This cohort of traumatic hip fracture patients treated with post-operative ERAS-OP demonstrated a decrease in cost of care.
- The findings from this QI project support the benefit of ERAS for use with traumatic hip fractures.
- Further evaluation will be needed once the entire ERAS-OP is implemented in 2022.

Future Considerations

- Further research is needed to better understand:
  - Barriers to NPO guidelines.
  - Implementation of regional anesthesia in the Emergency Department.
  - Barriers to provider, nursing and patient compliance with protocol.

References

1. Kang, Y., Liu, J., Chen, H., Ding, W., Chen, J., Zhao, B., & Yin, X. (2019). Enhanced recovery after surgery (ERAS) in elective intertrochanteric fracture patients result in reduced length of hospital stay (LOS) without compromising functional outcome. *Journal of Orthopedic Surgery and Research, 14*(1), 209-209. https://doi:10.1186/s13018-019-1238-2
2. Schnell, S., Friedman, S. M., Mendelson, D. A., Bingham, K. W., & Kates, S. L. (2010). The 1-year mortality of patients treated in a hip fracture program for elders. *Geriatric Orthopedic Surgery & Rehabilitation, 1*(1), 6-14. https://doi:10.1177/2151458510378105