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The Impact of Frailty on Enhanced Recovery Pathway Compliance and Postoperative Outcomes After Infrainguinal Arterial Bypass

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Introduction

· Enhanced Recovery Protocols (ERPs) are evidence-based multimodal pathways that integrate preoperative, intraoperative and postoperative strategies to optimize surgical outcomes. [1]

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- Farly experience with ERPs in infra-inquinal bypass surgery (IB) suggests potential benefits including fewer adverse events, shorter LOS, and faster return to baseline function, [2-4]
- · Nonetheless, critics of ERP the feasibility and effectiveness of ERP in highly frail natients remain uncertain due to concerns about limited adherence and reduced clinical benefit

GOAL: To evaluate the impact of frailty on ERP compliance and to determine whether ERP implementation is associated with improved postoperative outcomes in frail patients undergoing IB.

Methods

· Retrospective cohort study of patients undergoing IB at Northwestern Memorial Hospital (Jan 2021-Dec 2024), where ERP for had been implemented in Jan 2022



3. ERP compliance and IB outcomes

Patient Characteristics

A total of 257 patients were identified with a frailty group distribution as illustrated in Figure 1.

. The F1 patients were younger (F1 p50=65.0 years vs. F2 and F3 p50=71.6 years) · E1 subjects were more likely to

undergo IB for aneurysmal disease (F1=14.3% vs F3=1.3%) · E3 and E2 patients were more likely to present with tissue loss (F1=31.0%: F2=47.9%: F3=62.0%) · ERP patients were more likely be former smokers, to have elective surgery, and to have surgery for Frailty Group intermittent claudication Figure 1: Percent patient distribution across frailty groups.

High Frailty was Associated with Worse Outcomes After IB

Higher frailty was associated to longer LOS, increased reintervention, readmission and mortality rates (Figure 2)



Frailty Was Not Associated With ERP Compliance

- Of the 257 patients 190 presented after FRP implementation
- The overall ERP compliance was 57.9% and there was no compliance difference between Frailty groups (Figure 3).
- · ERP compliance was associated to timing and indication of intervention



Figure 3: ERP compliance across fraity groups (A) and by intervention timing and indication (B)

ERP Patients Had Shorter LOS and Lower 30-day Reintervention Rates

- · Across all fraity groups, patients who underwent ERP had a significantly lower postoperative LOS (Figure 4A) when compared with patients in the same frailty group those who did not.
- · F3 patients who underwept ERP had a lower reintervention rate than those who did not. (Figure 4B)
- · F1 and F2 patients who underwept FRP had a lower rate of reintervention, however this difference was not significant.



Figure 4: Postcoerative length of stay (A) and 30-day reintervention rates (B) of ERP and non-ERP patients stratified by frailty group.

ERP Did Not Significantly Impact on 30-day Readmission or 30-day Mortality Rates

- · Among F1 patients, those who underwent FRP had a lower, though not statistically significant, 30-day readmission rate compared to non-ERP patients, (Figure 5A)
- . In contrast, F2 and F3 patients who underwent ERP exhibited nonsignificantly higher 30-day readmission rates. (Figure 5A)
- · Across all frailty groups, patients who underwent ERP had lower, though non-significant, 30-day mortality rates (Figure 4B) when compared with patients in the same frailty group those who did not



Figure 5: 30-day readmission rates (A) and 30-day mortality rates (B) of ERP and non-ERP patients stratified by frailty groups

Conclusion

- · Although high frailty was associated with worse surgical outcomes after IB it was not a barrier to FRP implementation. In contrast, non-elective interventions and acute limb ischemia were associated with lower FRP
- · Our findings suggest that ERP may affect patients differently across frailty levels. Although ERP effectively reduced postoperative LOS across all groups, this benefit may be offset by increased readmission rates among highly frail patients.
- · Further investigation in larger patient cohorts is warranted to clarify the relationship between ERP and frailty.

References

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