## Assessing The Predictive Value of Admission Fructosamine Levels in Determining Adverse Clinical Outcomes Following Lower Extremity Trauma: A Multicenter Experience

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## INTRODUCTION:

Hyperglycemia following trauma may be associated with a significant morbidity and mortality. While HbA1C is widely believed to be a reliable measure of long-term glycemic control, it may be misleading in acute trauma patients. Fructosamine is a measure of glycated albumin within 2-3 weeks. It has been shown to be an independent risk factor for post-surgical infections when elevated, and mortality when low as it acts as a negative acute phase reactant. We hypothesize that admission fructosamine is associated with adverse events in orthopaedic trauma patients. METHODS:

This is a prospective cohort study performed at 2 level 1 trauma centers from 2021-2023. Patients who underwent orthopaedic trauma surgery for fractures involving the lower extremity and had a recorded fructosamine level at admission were included. Recorded outcomes included wound complication, readmission, and mortality. RESULTS:

430 patients met inclusion criteria for this pilot series. Of these, 186 patients had a minimum of 6 months of follow-up. 22 patients (12%) had elevated fructosamine, and 164 patients (88%) had normal or low fructosamine levels. All demographic data were matched except for age, in which the average age was higher in the elevated fructosamine group compared to the non-elevated group (51.0 vs 43.6, p=0.002) and race in which there was not equivalent distribution between groups (p=<0.001). In addition, the rates of hypertension, diabetes, and diabetic complications was higher in the elevated fructosamine group (p=<0.001).

No significant difference in hospital readmission, wound dehiscence, superficial infection, malunion, non-union, reoperation, or thromboembolic disease was observed.

However, there was a significantly increased risk of deep infection (22.7% vs 7.3%, p=0.19) in the group with >6month follow-up. When including the patients without 6month follow-up, there was also an increased risk in mortality (5.3%, 0.6%, p=0.047) in patients with elevated fructosamine levels. Upon further analysis the 2 patients in the elevated fructosamine group died within 30 days of surgery, one of them prior to discharge. In the normal to low fructosamine group one mortality was within 30d and the other was >6mo after surgery.

## DISCUSSION AND CONCLUSION:

Pre-operative fructosamine levels can serve as an acceptable predictor of adverse clinical outcomes. This analysis recommends that continued large-scale studies are warranted to assess the prognostic ability of fructosamine in orthopaedic trauma patients.