

Investigating Factors Affecting Compliance to Postoperative Follow-up in Rural Patients with Hip Fractures

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INTRODUCTION: In the rural population, extrinsic factors such as distance to a care facility and insurance status are commonly reported barriers to accessing and utilizing postoperative care.^{1,2} Additionally, hip fractures occurring secondary to trauma are associated with mortality and morbidity, making it particularly important for close clinical follow-up to assess post-operative healing and progression of rehabilitation.

This study aims to evaluate what extrinsic and intrinsic factors associated with compliance to postoperative follow up in rural hip fracture patients. While previous studies have sought to assess risk factors related to loss of follow-up in orthopedic trauma patients, no study has investigated how extrinsic risk factors affect follow-up compliance in patients who live in rural census tracts.

METHODS: Approval from institutional IRB board was obtained prior to study initiation. Patients surgically treated for traumatic hip fracture between January 2014 and December 2023 at a Level I Trauma Center serving a large rural population were retrospectively reviewed. Patients were included if their home Zip Code was classified a rural census tract per United States Department of Agriculture Rural-Urban Area Commuting (RUCA) codes. Exclusion criteria included discharge into a long-term care facility and death prior to 1-year follow-up. Factors including demographics, comorbidities, insurance status, fracture type, procedure type and whether the patient had established primary care at the institution were recorded. Patients' home distance to the hospital was calculated using the Haversine formula. A total of 50 patients met inclusion criteria with 27 (54%) females and 23 (46%) males in the cohort.

All patients were scheduled for regular postoperative follow-up visits at 2 weeks, 6 weeks, 3 months, 6 months, and 1 year. Patients' attendance to these follow-up appointments were recorded, as well as any documented postoperative complications. The 3-month follow up visit served as a key functional assessment for all patients including postoperative X-ray series, so it was selected as a primary endpoint for statistical analysis of risk factors. Multivariate logistic regression analysis was conducted to assess the influence of collected risk factors on attendance to follow-up.

RESULTS: Mean age of the cohort was 72.2 (± 14.2) and mean BMI was 25.3 (± 4.5). Most common hip fracture patterns included Femoral Neck (n = 34, 68%), Intertrochanteric (n = 11, 22%), and Subtrochanteric (n = 2, 4%). Most common procedures included Hemiarthroplasty (n = 19, 38%), Total Hip Arthroplasty (n = 9, 18%), and Cephalomedullary nail (n = 12, 24%).

When considering patient adherence to follow-up appointments, 41 (82%) attended 2-week follow-up, 27 (54%) attended 6-week follow-up, 15 (30%) attended 3-month follow-up, 9 (18%) attended 6-month follow-up, and 5 (10%) attended 1-year follow-up. Mean distance to the institution was 125.5 (± 68.5) Km, with 21 (42%) patients being more than 100 Km from the institution. Four patients suffered complications including screw cut out (n = 1), periprosthetic fracture (n = 1), femoral neck collapse with screw backout (n = 1), and wound dehiscence with infection (n = 1); 3 of 4 (75%) complications were detected in the 3-month postoperative interval.

In univariate analysis, neither Insurance Status (OR: 1.34, p-value = 1.00) nor having an established primary care provider (OR: 1.35, p-value = 1.00) had a p-value under 0.5, and were excluded from multivariate analysis. In the multivariate logistic regression using 3-month follow-up as an endpoint, there was a statistically significant correlation between patient discharge to a skilled nursing facility (OR: 14.1, p-value = 0.024), compliance to an appointment prior to 3 months (OR: 10.0, p-value = 0.015), and dyslipidemia (OR: 9.92, p-value: 0.033). There was no statistically significant association between Age (OR: 0.97, p-value = 0.231) or Distance (1.01, p-value = 0.267) on adherence to 3-month follow-up.

DISCUSSION: Factors such as location of discharge, which may have been a surrogate for postoperative condition, dyslipidemia, and previous compliance to a follow-up appointment were associated with a high probability of follow-up compliance in rural patients. However, commonly cited barriers such as distance and insurance status failed to demonstrate statistical significance when controlling for other factors in this cohort. Given the single institution, retrospective nature of this study, future randomized control trials investigating the effects of intrinsic factors such as patient perceptions should be conducted in the rural orthopedic trauma population.

SIGNIFICANCE/CLINICAL RELEVANCE: Extrinsic factors such as distance and insurance status do not sufficiently describe rural patients' non-adherence to postoperative follow-up visits in the setting of orthopedic trauma.

References:

1. Lee C, Ezell K, Dunford B, Nees D, Jacobsen SM, Staggs J, et al. Health Inequities in Orthopaedic Trauma Surgery in the United States: A Scoping Review. *J. Am. Acad. Orthop. Surg.* 2023;31(9):e489-e503. doi:10.5435/JAAOS-D-22-00710.
2. Zelle BA, Buttacavoli FA, Shroff JB and Stirton JB. Loss of Follow-up in Orthopaedic Trauma: Who Is Getting Lost to Follow-up? *J. Orthop. Trauma.* 2015;29(11):510-5. doi:10.1097/BOT.0000000000000346.