<a>Elderly OTA 42A-C Tibial Diaphyseal Fractures Treated with Intramedullary Nails have Similar Healing Outcomes but Worse Ambulatory Capacity Compared to Non-Elderly Fractures

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INTRODUCTION:

Purpose: To compare union rates of diaphyseal tibia fractures in two distinct age groups: patients younger than 65 years old and patients 65 years or older. Secondarily, the purpose was to compare quality measures and functional outcomes.

METHODS:

Methods: A retrospective review of surgically treated tibial shaft fractures from 2014-2024 was conducted at a single academic institution. Inclusion criteria was: age ≥18yo, isolated Orthopedic Trauma Association (OTA) 42A-C tibia diaphyseal fracture, and a minimum of 6-months follow-up. The primary outcome was fracture union, and the Radiographic Union for Tibia (RUST) score was used to calculate healing (≥7). Functional outcome was recorded using the Functional Ambulatory Capacity (FAC) score, a six-point scale where zero represents nonfunctional ambulation and five represents independent ambulation. Patients were divided into groups based on their age at the time of injury: young (Age < 65) and elderly (Age≥ 65). Univariate comparisons between demographics, injury and surgical characteristics and outcomes were performed and multivariate linear regression was used to control for confounders identified from univariate analysis.

RESULTS:

Results: Of 286 patients, 253 (88.5%) were young (38.91yo±12.91) and 33 (11.5%) were elderly (71.15yo ± 6.37). The mean follow-up time was 16.57 ± 14.12 months. There were no differences between the elderly and the young groups in union rates (90.9% vs. 88.1% p=.640) or healed-by times (6.38mo ± 3.19mo vs. 6.13mo ± 2.70mo, p=.647). There were no differences in readmission rates (18.2% vs 8.3%, p=.069) or overall complication rate (21.2% vs. 20.2%, p=.887). When controlling for baseline FAC score, sex, BMI, CCI, fracture pattern, and energy of mechanism, older age was associated with lower 3-month (B=-.460, p=.014), 6-month (B=-.371 p=.019), and 12-month (B=-.317 p=.009) FAC scores.

DISCUSSION AND CONCLUSION:

Conclusion: Elderly patients with tibial diaphyseal fractures (OTA 42A-C) treated with intramedullary nail fixation have similar union rates and healed-by times as their younger counterparts. A patient's 1-year ambulatory capacity is associated with their baseline ambulatory capacity and their age group.