Creatine- And HMB-Enriched Protein Supplementation For Hip Fracture Recovery In Elderly Patients: A Randomized Controlled Trial

Mohammad Poursalehian, S M Javad Mortazavi

INTRODUCTION:

Hip fractures in elderly patients are associated with high morbidity, mortality, and impaired functional recovery. Nutritional support may enhance postoperative outcomes. This study aimed to evaluate the effects of creatine- and hydroxymethylbutyrate (HMB)-enriched protein supplementation on mobility recovery, nutritional markers, mortality, and postoperative complications in elderly patients following proximal femoral fractures. Our hypothesis was that Creatine- and HMB-enriched protein supplementation improves early functional recovery and reduces mortality in elderly patients undergoing surgery for proximal femoral fractures.

METHODS: In this prospective, randomized, double-blind, placebo-controlled clinical trial conducted at two academic hospitals, 80 geriatric patients with proximal femoral fractures were randomized to receive either creatine-HMB-whey protein supplementation or placebo (maltodextrin) for one month postoperatively. Primary outcome was mobility recovery, assessed using Parker's Mobility Score (PMS). Secondary outcomes included serum nutritional markers (albumin, hemoglobin, lymphocyte count, total protein), mortality rates, and postoperative complications, evaluated at baseline, 1 month, and 6 months postoperatively. Statistical comparisons were conducted using appropriate parametric and non-parametric tests.

RESULTS: Sixty patients (mean age 79.5 ± 7.2 years; 70% female) completed the study. At 1 month, the intervention group showed significantly better mobility recovery (PMS: 4.83 ± 0.85 vs. 2.65 ± 0.63; $p < 0.001$), although no difference persisted at 6 months ($p = 0.859$). Albumin normalization improved significantly in the intervention group (from 57% to 100%; $p = 0.044$) compared to controls. Other nutritional markers showed no significant intergroup differences. Mortality was significantly reduced in the intervention group (hazard ratio 4.5; 95% CI: 1.12–18.26; $p = 0.034$). No significant differences in postoperative complications were observed ($p = 0.20$).

DISCUSSION AND CONCLUSION:

Creatine- and HMB-enriched supplementation significantly improves early postoperative mobility and corrects hypoalbuminemia in elderly patients with hip fractures. Supplementation also reduces mortality, though it does not significantly affect complication rates.