

Whether Bisphosphonate Delays Bone Healing After Hip Fracture Fixation in Elderly Patients

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Purpose: Hip fracture has been recognized as the most serious complication of osteoporosis because of its consequence including disability, poor quality of life, increased risk of mortality, and health-care costs. Therefore, bisphosphonates are widely used for osteoporotic patients and their efficacy is reduction of the risk of fragility fracture in clinical trials. Previous animal studies demonstrated that delaying a single dose of zoledronic acid (1 or 2 weeks after fracture) displayed significantly increasing bone strength and fracture repair while a yearly intravenous zoledronic acid in clinical study (The HORIZON-RFT) significantly reduced any new clinical fracture for a secondary prevention of hip fracture. However, current studies lack data demonstrating whether bisphosphonate delays bone healing after hip fracture repair in clinical practice. Therefore, the purpose of our study is to define whether bisphosphonates after proximal femoral nail antirotation (PFNA) fixation for elderly intertrochanteric fracture interrupt the fracture repair.

Methods: After IRB approval, 174 elderly patients with intertrochanteric fractures from low energy trauma underwent PFNA fixation. Demographic data, comorbidity, time to union, functional outcome, and complications were collected. Patients were classified into 2 groups: patients taking bisphosphonates after fracture repair and those who did not receive bisphosphonates. All patients received supplemental vitamin D and calcium. The primary outcome was measured by time to clinical union and radiographic union (weeks) between groups. The secondary outcome measured the functional outcome (Harris Hip Score, HHS) and complications including mortality rate between groups.

Results: There was comparable functional class and comorbidities between those with bisphosphonate and those without bisphosphonate intake. The former group had significantly lower mortality rate than the latter group (6.7% vs 23.5%, $P = 0.004$) while there was no difference in time to clinical union (6.9 weeks vs 6.7 weeks, $P = 0.505$), radiographic union (12.4 weeks vs 12.1 weeks, $P = 0.223$), and functional outcome (HHS) between both groups.

Conclusion: Bisphosphonate is useful for osteoporotic hip fracture, including significantly decreased mortality rate without inhibiting bone healing after fracture fixation in clinical practice.