# Prognosis of Periprosthetic Fractures Post Hip Fracture: Unveiling Protective Role of Anti-Osteoporotic Medication

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INTRODUCTION: Periprosthetic fractures (PPF) near prior hip fracture fixation implants present formidable challenges due to intricate fracture patterns, implant presence, and compromised patient bone quality. Limited research exists on PPF prognosis in osteoporotic hip fracture patients. While anti-osteoporotic medication (AOM) effectively reduces secondary hip fracture risks, its impact on PPFs remains unexplored. Our study aims to address these gaps by assessing the influence of initiating AOM post-hip fracture on PPF occurrence and investigating PPF prognosis in a nationwide cohort of hip fracture patients.

## METHODS:

This nationwide cohort study employs Taiwan's National Health Insurance Research Database (NHIRD) from January 1, 2016, to December 31, 2018, identifying 48,082 hospitalized hip fracture patients with concomitant procedures. Collected demographics include age, gender, comorbidities, and co-medications. AOM use within one year post-hip fracture was examined. Primary outcome: periprosthetic fracture risk post-incident hip fracture. Secondary outcomes: subsequent osteoporotic fractures and PPF patient mortality. Fine and Gray's sub-distribution hazard function explored risk factors and AOM effects on PPF.

### **RESULTS:**

Among 48,082 patients with incident hip fractures, 30,182 (62.7%) were female, mean age 77.9  $\pm$  10.7 years. Over five years, 443 (0.92%) developed PPF, with failure probability ranging from 0.58% (first year) to 1.25% (five-year follow-up). AOM users had lower cumulative PPF incidence at five years (0.53% vs. 1.08%). AOM post-hip fracture reduced PPF risk by 50% (HR=0.5, p<0.0001). Among 443 PPF patients, 22 (4.97%) had subsequent osteoporotic fractures, and 72 (16.25%) died within one year.

### DISCUSSION AND CONCLUSION:

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Time since incidence Hip (years)

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