

## MRI-Only Occult Geriatric Hip Fractures: Is Displacement Common with Nonoperative Treatment?

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**Purpose:** Geriatric fractures of the proximal femur are common and typically warrant surgical stabilization to allow patient mobilization and prevent displacement. This treatment algorithm is commonly extended to include hip fractures that are not evident on orthogonal radiographs or CT, but display increased edema within the femoral neck or intertrochanteric regions with MRI. However, it is not known how often these fractures displace when treated nonoperatively. The purpose of our study was to report the rate of displacement requiring secondary surgery in nonoperatively treated occult geriatric hip fractures.

**Methods:** All nonoperatively treated femoral neck or intertrochanteric femur fractures (AO/OTA 31A and 31B) at our institution from 2003 to 2016 were initially identified using an institutional geriatric hip fracture database and closed treatment CPT code search. Patients older than 65 years of age with no fracture on orthogonal radiographs or CT but increased osseous edema on MRI consistent with an occult fracture were included. Patients who died prior to evidence of fracture displacement or radiographic and clinical evidence of healing were excluded. All charts and radiographs were reviewed for demographic data, treatment course, and radiographic or clinical evidence of fracture healing. The primary outcome measure was fracture displacement necessitating surgery.

**Results:** Fourteen patients met the inclusion criteria and three were subsequently excluded due to death. Of the remaining 11 patients, there were six femoral neck fractures and five intertrochanteric fractures. Treatment typically consisted of restricted weight bearing and gradual mobilization. Of the entire cohort, two fractures displaced necessitating surgery (2/11; 18.2%). One of the displacements occurred after the patient's MRI was read as negative, and he had received no weight bearing restrictions. Both of the displaced fractures occurred in the femoral neck cohort (2/6; 33%) compared to none in the intertrochanteric group (0/5; 0%). This difference was not significantly significant ( $p=0.45$ ).

**Conclusion:** Two out of eleven (18%) occult hip fractures displaced necessitating surgery. Both displacements occurred in the femoral neck group. Our study represents the largest investigation detailing the natural history of nonoperatively treated occult geriatric hip fractures. However, no definitive treatment recommendations can be made due to our small cohort size, therefore we recommend that surgeons continue to manage occult hip fractures using their preferred treatment algorithm.