

Prevalence of Osteoporosis, Low and Normal Bone Density in Women Over 50 with a Distal Radius Fracture, and Their Relationship to Clinical and Radiographic Outcomes

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Background/Purpose: It is estimated that one in four women over 50 years of age has osteoporosis, but how can we predict whom it will affect? Given that distal radial fractures (DRFs) are one of the most common fractures sustained by adult women, the purpose of this analysis was to determine the prevalence and distribution of three bone densities (osteoporosis [OP], normal [NBD], and low [LBD]) in a cohort of women 50 years and older who had sustained a DRF, and to evaluate the role that bone density might play in eventual outcomes--radiographic, clinical, and patients' self-reported. Establishing a clear link between DRF and incidence of OP would allow for the use of DRF as an event that should prompt bone mineral density testing so that patients identified as having OP can be counseled and treated.

Methods: Clinical and radiographic data for 523 women 50 years and older who had sustained a DRF were collected prospectively. All 523 of these women had DXA (dual x-ray absorptiometry) scan bone mineral density tests. Clinical outcomes of grip strength and range of motion (ROM) (dorsiflexion, palmar flexion, supination, and pronation), and Patient-Rated Wrist Evaluation (PRWE) scores were measured at 9, 12, 26, and 52 weeks post fracture. Radial inclination (RI), ulnar variance (UV), and radial tilt (RT) were measured up to 12 weeks post fracture from serial radiographs. Relationships between DXA scan results and clinical and radiographic outcomes were explored for any statistically significant correlation.

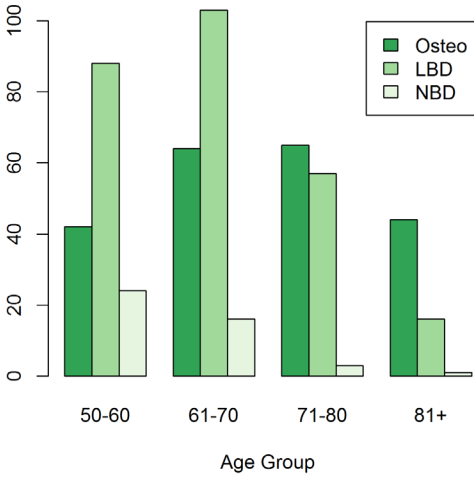
Results: Overall among all patients 41.1% had OP, 50.5% had LBD, and 8.4% had NBD. In the 50-60-year age group the proportion of OP, LBD, and NBD was 27%, 57% and 16%; in the 61-70-year age group 35%, 56%, and 9%; in the 71-80-year age group 52%, 46%, and 2%; and in the 81+ group 72%, 26%, and 2%, respectively. Femoral neck T-scores more closely correlated with the bone mineral density than total hip and spine T-scores. Post closed reduction the degree of correction of RI was significantly less ($P = 0.0007$), and the final RI was lowest ($P = 0.013$) in OP patients. While initial ulnar variance did not differ significantly between bone density groups, the final ulnar positive variance was greatest ($P = 0.01$) in OP. Correction of radial (volar) tilt post reduction was lowest in the OP group ($P = 0.045$), but difference in final tilt did not reach statistical significance. Grip strength measurements of the uninjured limb were significantly less in the OP group compared to the others ($P < 0.00001$) at all measurement time points (initial visit, 9, 12, 26 and 52 weeks). Grip strengths of the injured limb in patients with OP were significantly lower at 9 ($P = 0.019$), 12 ($P < 0.00001$), 26 ($P < 0.00001$), and 52 ($P < 0.00001$) weeks post fracture. Although PRWE scores were not influenced by bone mineral density at 9 and 12 weeks post fracture, scores were significantly higher in patients with osteoporosis at both 6 months ($P = 0.01$) and 12 months ($P = 0.016$) post fracture.

Conclusion: Over 40% of all women 50 years old and older who sustained a DRF in our series had osteoporosis, with the proportion rising as age increased: the rate of OP was 27%

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.

in the 50-60-year-old group, over 50% in the 71-80-year-old group, and almost 75% in those over 80 years old. In those patients with OP restoration of radial inclination (analogous to radial height) and volar tilt by closed reduction was least successful, and the final ulnar variance, as a measure of radial axial shortening, was greatest in OP. Grip strength measurements of both the injured and uninjured limbs in patients with OP were significantly lower at all time points. PRWE scores were significantly higher in patients with osteoporosis at both 6 and 12 months post fracture. Given these findings, a DRF in a woman 50 years or older should be considered a sentinel event. Bone density evaluation is recommended in order to discover those many women with a distal radial fracture who also have OP, so that appropriate OP treatment can be initiated.

BMD Status by Age



Proportional BMD Status

