

**Does Low Vitamin D Lead to More Fracture Complications?**

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**Purpose:** Our aim was to determine if a low serum 25-hydroxy (OH) vitamin D is associated with a higher complication rate in fracture patients.

**Methods:** A retrospective review was done of all orthopaedic trauma patients over 20 months to identify fracture patients with an initial and repeat 25-OH vitamin D serum level. During this time, the orthopaedic trauma service's protocol was that all patients managed operatively had an initial 25-OH vitamin D level. Unless contraindicated, all patients received daily vitamin D3 and calcium replacement. Those who were found to be deficient or insufficient were also given a weekly high-dose vitamin D2 for 8 weeks. Repeat serum 25-OH vitamin D levels were performed between 2 and 3 months after surgery. The cohorts were separated by initial serum 25-OH vitamin D level. The primary outcomes were fracture and wound healing. Only complications requiring surgical interventions were evaluated. *T* tests, one-way ANOVA (analysis of variance), and Fisher's exact tests were used to determine statistical significance (**Purpose:** To determine if a low serum 25-OH vitamin D is associated with a higher complication rate in fracture patients).

**Methods:** A retrospective review was done of all orthopaedic trauma patients over 20 months to identify fracture patients with an initial and repeat 25-hydroxy (OH) vitamin D serum level. During this time, the orthopaedic trauma service's protocol was that all patients managed operatively had an initial 25-OH vitamin D level. Unless contraindicated, all patients received daily vitamin D3 and calcium replacement. Those that were found to be deficient or insufficient were also given a weekly high dose vitamin D2 for 8 weeks. Repeat serum 25-OH vitamin D levels were performed between 2 and 3 months after surgery. The cohorts were separated by initial serum 25-OH vitamin D level. The primary outcomes were fracture and wound healing. Only complications requiring surgical interventions were evaluated. *T*-tests, one-way ANOVA, and Fisher's Exact tests were used to determine statistical significance ( $P < 0.05$ ).

**Results:** 201 patients were identified who had initial and repeat vitamin D levels. Out of 201 patients, 81 (40.3%) were initially deficient, 88 (43.8%) insufficient, and 32 were normal (15.9%). Therefore 169/201 (84.1%) patients were considered to have a low initial serum 25-OH vitamin D level. 15/201 (7.5%) of patients required orthopaedic procedures for fracture and wound healing complications and 13/15 (87%) had a low initial vitamin D and 8/15 (53.3%) remained low after supplementation. Overall, however, there were no significant differences in serum 25-OH vitamin D levels between those patients that had fracture or wound healing complications (15/201) and those without complications (186/201) when comparing the initial vitamin D level (mean 22.5 ng/mL vs 22.8;  $P = 0.92$ ,

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.

power) and the repeat level (mean 33.3 ng/mL vs 32.9 ng/mL;  $P = 0.91$ , power = 0.8) respectively.

**Conclusion:** Although the prevalence of low vitamin D is high in orthopaedic trauma patients, there does not appear to be a correlation between the initial and/or repeat serum 25-OH vitamin D level and risk of fracture or wound healing complications requiring surgical intervention.