

Title: Perioperative Vitamin D Levels Correlate with Clinical Outcomes after Ankle Fracture Fixation

Reference: Warner SJ, Garner MR, Nguyen JT, Lorich DG. Perioperative Vitamin D Levels Correlate with Clinical Outcomes after Ankle Fracture Fixation. *Arch Orthop Trauma Surg.* 2016 Mar; 136(3):339-344

Scientific Literature Review

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Podiatric Relevance: Vitamin D plays a critical role in bone metabolism and the impact of hypovitaminosis D has been examined widely throughout orthopaedic surgery. A high incidence of patients with vitamin D deficiency has been reported in orthopaedic trauma patient populations. Prior studies have shown that vitamin D levels correlate to outcomes after hip fracture surgery, so this study was designed to determine if vitamin D levels correlated with outcomes in patients with ankle fractures.

Methods: This is a retrospective review of a prospective database of operatively treated ankle fractures between 2006 and 2012 by a single surgeon at a Level 1 trauma center. Inclusion criteria were all patients that underwent ankle fracture fixation who obtained a serum 25[OH] Vitamin D levels pre-operatively. Primary outcome measure was the Foot and Ankle Outcome Score (FAOS). Secondary outcome measure was ankle ROM determined at the time of final clinical follow up.

Results: Of the 98 operatively treated ankle fractures, there was a total of 36% of patients with Vitamin D deficiency (25[OH]D <20) and 39% with vitamin D insufficiency(25[OH]D <30). Patients with a 25[OH] Vitamin D deficiency had a statistically and clinically significant worse outcome in the domain of symptoms, activity of daily living and quality of life. There was no correlation between 25[OH] deficiency with pain, function in sports postoperative range of motion, articular malreduction or wound complications.

Conclusions: The authors conclude that there was a high rate of patients with traumatic ankle fractures who presented with abnormal vitamin D levels. They demonstrated that deficient vitamin D levels is an independent risk factor, not confounded by other variables that may result in worse outcomes in trauma patients recovering from ankle fracture fixation. Overall, this article helps to emphasize the importance of early diagnosis of a vitamin D deficiency in the trauma population. Over 50% of patients presenting with ankle fractures had abnormal vitamin D levels, which is easily treated with oral supplementation. However, further studies are needed to address whether Vitamin D supplementation will result in overall improved clinical outcomes.