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Low serum vitamin D levels are not associated with pseudoarthrosis and implant loosening in ankle arthrodesis: a retrospective cohort

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Introduction: Hypovitaminosis D is a global problem associated with bone disorders such as osteopenia and osteomalacia. Its influence on bone healing can affect orthopedic procedures, including ankle arthrodesis, used to treat advanced osteoarthrosis. The objective is to analyze the relationship between hypovitaminosis D and outcomes of pseudoarthrosis and implant loosening after ankle arthrodesis.

Method: Retrospective and observational study using data extracted from the TriNetX international platform, including patients of both sexes, aged ≥18 years, undergoing tibiotarsal or tibiotalocalcaneal arthrodesis between 2016 and 2020, with at least one dosage of 25-hydroxyvitamin D in the perioperative period and one year of follow-up. Patients were divided into two groups: vitamin D deficiency (≤20 ng/ml) and no deficiency (>20 ng/ml). Statistical analyses used logistic regression with propensity score matching, as well as chi-square, Student's t, and Log-rank tests.

Results: In total, 306 patients were selected for the study. After pairing, 72 patients were analyzed in each group. There was no statistically significant difference between the groups (adjusted OR = 0.878; 95% CI: 0.333–2.309; p = 0.7912). Similarly, there was no association between vitamin D deficiency and implant synthesis failure/loosening (adjusted OR = 1.017; 95% CI: 0.394–2.623; p = 0.9723).

Conclusion: The results indicate that vitamin D deficiency is not significantly associated with the risk of pseudoarthrosis or implant loosening in the short term. While supplementation may be beneficial, its clinical impact remains to be further investigated.

Keywords: Pseudarthrosis; Vitamin D.

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