

What's the Deal with Vitamin D?

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A Healthy Immune System is important for Implant Success and Periodontal Health.

Vitamin D is necessary for bone growth and remodeling, and plays a role in the reduction of inflammation, immune function and wound healing. These are all-important processes for promoting periodontal health and implant success.

1 billion people worldwide are estimated to have a vitamin D deficiency

Does Vitamin D deficiency contribute to early implant failure?

- A [retrospective study](#) evaluated the correlation between low serum levels of vitamin D and early implant failure in 885 patients with a total of 1,740 implants. The study showed that the number of failures increased with the worsening of serum vitamin D levels but did not demonstrate a significant relationship.
- [Case reports](#) of two healthy adult males, 48 and 51-years-old, experienced severe pain within 3 – 7 days post implant placement. Neither patient had clinical signs of inflammation or complications during surgery. The implants were removed. Screening revealed low levels of Vitamin D and supplements were prescribed. Subsequent implant placements were successful.
- [Animal studies](#) have reported that vitamin D deficiency may impact the mechanism of osseointegration around implants. Some researchers propose that Vitamin D deficiency is a biological risk factor that needs to be addressed.

Are Vitamin D levels a risk for Periodontal Disease?

A [systematic review](#) found 27 studies (13 cross-sectional, 6 case-controlled, 5 cohort, 2 randomized controlled and 1 case series) that addressed if lower vitamin D levels created a higher risk for PD and if so, will supplements improve the outcomes. The data was inconclusive to provide a clinical recommendation on the relative risk or the impact of Vitamin D intervention.

Select Vitamin D and Oral Health Outcomes

- A cross-sectional analysis of NHANES III showed [20% less BOP](#) in people with the highest Vitamin D levels and better stability or [improvements in CAL](#), especially in people ≥50 years old.
- 5-year [prospective study](#) reported a decrease in tooth loss in older adults who were taking calcium and vitamin D supplements.
- A [cross-sectional study](#) of patients in a periodontal maintenance program found subjects who took calcium and vitamin D supplements had shallower probing depths, reduced gingival bleeding, less inflammation, better CAL and fewer furcation involvements. However, the differences were not significant.

- A [case-controlled study](#) with pregnant women found vitamin D deficiency was associated with periodontal disease.
- A [longitudinal study](#) found vitamin D deficiency at time of periodontal surgery negatively affects treatment outcomes.

Current Vitamin D Research is Insufficient

There is a biological rationale to explore Vitamin D levels as a risk factor for periodontal disease and implant success. The current evidence is insufficient and mostly observational. Extensive research is needed to show that vitamin D level is associated with poor periodontal outcomes or early implant failure and the protocol for supplemental intervention.

For more information about vitamin D see the [NIH Vitamin D Fact Sheet for Health Professionals](#).

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