

## 세포교정영양요법(OCNT)을 이용한 비타민 D 수치 개선 사례

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### A Case of Improvement in Vitamin D Levels Using Ortho-Cellular Nutrition Therapy (OCNT)

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#### ABSTRACT

**Objective:** Vitamin D is a fat-soluble vitamin involved in calcium and phosphate absorption and various biological functions. It plays important roles in musculoskeletal maintenance, immune response regulation, and metabolic function modulation. Adequate intake is particularly important for pregnant women, older adults, and patients with thyroid, chronic kidney, or liver disease. Vitamin D can be obtained through dietary sources such as oily fish and sunlight exposure; however, deficiency has become increasingly common due to reduced sunlight exposure and dietary imbalance. As vitamin D deficiency may increase the risk of musculoskeletal and metabolic disorders, maintaining adequate vitamin D status is important.

**Case Report:** This case involves a woman in her 30s with persistent vitamin D insufficiency following thyroidectomy for thyroid cancer. As the patient was pregnant, correction of this deficiency was essential. Ortho-Cellular Nutrition Therapy (OCNT) was implemented, with naturally derived vitamins D, E, and K and omega fatty acids prescribed. Approximately four months after initiating OCNT, the patient's vitamin D level improved to within the reference range.

**Conclusion:** Although findings from this single-patient case cannot be generalized to all patients with vitamin D insufficiency, it is a noteworthy case suggesting that appropriate OCNT may contribute to improving vitamin D insufficiency and have positive effects on the patient.

**Keywords** Ortho-Cellular Nutrition Therapy (OCNT), Vitamin D, Fat-soluble vitamins, Thyroidectomy

#### Introduction

Vitamin D is a fat-soluble vitamin that enhances the intestinal absorption of calcium and phosphate and is involved in various biological functions in the body. It is abundant in fatty fish, such as cod, salmon, sardines, and mackerel, as well as in certain mushrooms, and can also be obtained through supplementation. Unlike other nutrients, vitamin D can additionally be synthesized in the skin, where 7-dehydrocholesterol is converted into vitamin D upon exposure to ultraviolet B (UVB) radiation. Vitamin D obtained through these pathways is subsequently metabolized in the liver and

kidneys into the active forms, 25-hydroxyvitamin D [25(OH)D] and 1,25-dihydroxyvitamin D [1,25(OH)<sub>2</sub>D].<sup>1</sup>

As described above, vitamin D supplied to the body plays an important role in promoting the intestinal absorption of calcium and phosphate. When vitamin D is insufficient, only approximately 10–15% of ingested calcium and approximately 60% of ingested phosphate are absorbed, whereas sufficient vitamin D increases these absorption rates to approximately 30–40% and 80%, respectively. Through these effects, vitamin D contributes to bone mineralization and the maintenance of bone mineral density. It is also involved in diverse biological functions, including the maintenance of muscle mass and strength, immune responses, cell proliferation and differentiation, and the regulation of blood pressure and glucose metabolism.<sup>2</sup>

Accordingly, vitamin D should be obtained in sufficient amounts through vitamin D-rich foods, such as oily fish, supplementation, or appropriate sunlight exposure. Ensuring a sufficient supply of vitamin D is particularly important for pregnant women, women planning pregnancy, older adults, patients with chronic kidney or liver disease, and individuals with thyroid dysfunction. However, vitamin D deficiency is

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becoming increasingly prevalent in modern society due to various factors, including reduced sunlight exposure associated with season, region of residence, and individual activity patterns, as well as dietary imbalance and underlying diseases. A survey of Korean adults showed that approximately three-quarters of the population had inadequate vitamin D status, with differences observed according to age group, sex, and other factors.<sup>3,4</sup>

Vitamin D status is evaluated by measuring serum 25-hydroxyvitamin D [25(OH)D] concentrations. A concentration of 30–100 ng/mL is regarded as sufficient, whereas concentrations below 30 ng/mL and below 20 ng/mL are classified as insufficiency and deficiency, respectively. When vitamin D insufficiency or deficiency is present, decreased calcium absorption may increase the risk of musculoskeletal disorders, including osteomalacia and rickets, as well as various metabolic disorders, such as thyroid dysfunction and elevated blood glucose levels. Accordingly, oral vitamin D supplementation is recommended as the primary approach. In cases requiring rapid correction or involving particular circumstances, such as underlying diseases, high-dose vitamin D administration by injection or other routes may also be considered during the initial phase of treatment.<sup>5</sup>

This case involves a patient who was diagnosed with vitamin D insufficiency based on blood test results and had been taking prescribed vitamin D supplementation. Despite continued supplementation, the patient's vitamin D level did not improve. Accordingly, Ortho-Cellular Nutrition Therapy (OCNT) was implemented, following which a significant improvement in the patient's vitamin D level was observed. This case is therefore reported with the patient's consent.

## Case Study

### 1. Subject

This study included one patient diagnosed with vitamin D insufficiency.

- 1) Name: Ahn OO (30 years old / Female)
- 2) Diagnosis: Vitamin D insufficiency
- 3) Date of onset: August 2021
- 4) Treatment period: October 2025 to the present
- 5) Chief complaint: Low vitamin D level
- 6) Medical history: Thyroid cancer (diagnosed in June 2021, with thyroidectomy performed in August of the same year)
- 7) Social history: None
- 8) Family history: Maternal hypertension
- 9) Present illness and current medications: Dicamax D Tablet or Bonky Tablet

### 2. Methods

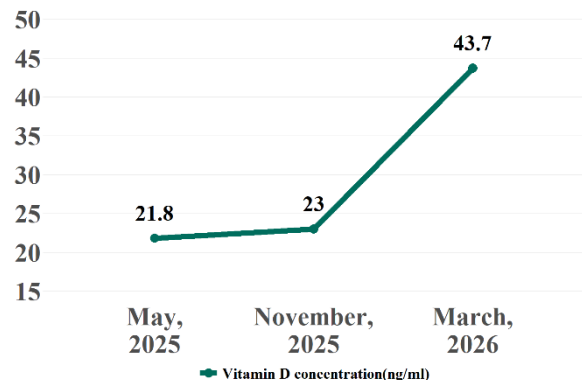
The following OCNT regimen was prescribed.

- Diverol F capsule (001, once daily, 1 capsule per dose)
- Eufaplex Alpha capsule (001, once daily, 1 capsule per dose)

## Results

The patient in this case consistently exhibited vitamin D levels below 30 ng/mL, including a level of 23.0 ng/mL recorded in November 2025, when OCNT was initiated. However, at the follow-up examination conducted approximately four months after OCNT initiation in March 2026, the patient's vitamin D

level increased to 43.7 ng/mL, reaching the reference range. Changes in vitamin D levels before and after OCNT are shown in detail in Fig. 1.



**Fig. 1. Changes in the patient's vitamin D concentration during OCNT.** Comparison of the vitamin D concentrations at OCNT initiation in November 2025 and four months later in March 2026 showed a significant improvement in the patient's vitamin D concentration.

## Discussion

The patient was a woman in her 30s who was diagnosed with thyroid cancer in June 2021 and underwent thyroidectomy in August of the same year. Until the initiation of OCNT, she had been repeatedly diagnosed with vitamin D insufficiency and had received treatment with prescribed oral and injectable vitamin D preparations. Nevertheless, her vitamin D levels did not improve. Subsequently, the patient became pregnant, making the restoration of adequate vitamin D levels essential.

Total thyroidectomy performed for conditions such as thyroid cancer may be a risk factor for reduced vitamin D stores in the body. As vitamin D is associated with calcium absorption, hypocalcemia may also occur concomitantly.<sup>6</sup> In pregnant women, vitamin D is closely associated with the development of gestational diabetes and insulin metabolism and plays an important role in fetal growth and skeletal development. Vitamin D deficiency may result in various adverse outcomes, including increased risks of gestational diabetes and bacterial vaginosis, preterm birth and miscarriage, reduced fetal weight and head circumference, and delayed neurodevelopment.<sup>7</sup> Therefore, vitamin D supplementation was considered particularly important for this patient, and an OCNT regimen focused on correcting vitamin D insufficiency was prescribed.

Diverol F prescribed to the patient contains vitamins D, E, and K. The vitamin D in Diverol F is naturally derived vitamin D<sub>3</sub>, which is the form of vitamin D produced in the skin upon exposure to ultraviolet B radiation. Compared with vitamin D<sub>2</sub>, vitamin D<sub>3</sub> has been shown to produce a greater increase in the serum concentration of 25-hydroxyvitamin D [25(OH)D], the marker used to evaluate vitamin D status. In addition, vitamin D<sub>3</sub> has a shorter plasma half-life and a higher affinity for vitamin D-binding protein, suggesting that it is relatively more effective than vitamin D<sub>2</sub> in maintaining serum 25(OH)D concentrations.<sup>8</sup>

Vitamin E, which is also included in the formulation, is known to support the stability and function of vitamin D, while vitamin K contributes to the physiological actions of vitamin D

in the body. More specifically, vitamin E has been identified as a protective factor that may inhibit the oxidative degradation of vitamin D. In addition, both nutrients are known to contribute to improved physiological function through their involvement in the suppression of inflammatory responses and oxidative stress.<sup>9,10</sup> Vitamin K is involved in the activation of osteocalcin, which is produced in response to vitamin D and participates in calcium binding to bone and the mineralization process. Therefore, these nutrients may be beneficial for enhancing the effective utilization of vitamin D in pregnant women and supporting healthy skeletal development.<sup>11</sup>

Vitamins D, E, and K are fat-soluble vitamins, and concomitant intake of lipids can facilitate their digestion and absorption. These vitamins are absorbed along with lipids in the small intestine. Vitamins D and K are subsequently activated in the liver, while vitamin E is transported by lipoproteins to the tissues where it is needed.<sup>12</sup> Accordingly, Eufaplex Alpha was prescribed to support the overall absorption of fat-soluble vitamins.

Following the OCNT regimen described above, the patient showed improvement in long-standing vitamin D insufficiency. This case is considered meaningful because the concurrent administration of naturally derived vitamins D, E, and K may contribute to improved vitamin D levels in patients with vitamin D insufficiency. However, because this report is based on a single patient, its findings cannot be generalized to all patients with vitamin D insufficiency, and further case studies are warranted. Nevertheless, this case is reported with the patient's consent because it may serve as a clinically meaningful example of improvement in the patient's symptoms and overall condition through vitamin D supplementation based on an appropriate OCNT regimen.

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