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## Success rate of dental implants in hypothyroid females in relation to vitamin D level

Malath Nabil Jafar\*

Department of oral diagnosis, College of Dentistry, Iraqi University, Iraq

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### ABSTRACT

The current study aims to discover the relationship between vitamin D deficiency and the failure of dental implants for patients with hypothyroidism. In 34 samples of patients were taken during the two years, taking into account gender, age, jaw location, dental implant area, prosthetic type and dental condition. The final results of the study showed the success of 25 samples of patients with hypothyroidism and their suffering from a low level of vitamin D while nine failed samples of patients with hypothyroidism suffered from low vitamin D. The study found that females who were controlled their medical hypothyroidism lack the failure of implants while vitamin D deficiency can overcome the failure of implants in the stages of the mechanism by taking supplements.



### \* Corresponding Author

Name: Malath Nabil Jafar  
Phone: +96 47901742191  
Email: akeel813@gmail.com

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### INTRODUCTION

The last four decades, dental implants used as a replacement for lost the natural teeth, and they were introduced into dentistry (Brånemark *et al.*, 1977; 1985). Dental implants help to improve the quality of life related to oral health through bone preservation, functions, aesthetics, phonetics (Heydecke *et al.*, 2003). The dental implants continue Progress in age (ageing) Which is accompanied by an increase in tooth loss (Meskin and Brown, 1988; Caplan and Weintraub, 1993). Metabolism is affected by thyroid disorders (Henry *et al.*, 1996). Thyroid hormones are important in treating tissue and bone fractures healing. If many studies indicate that any dysfunction of the hormone thyroid hormone causes healing due to changes in healing rates in bone and soft tissue (Burch and Lebovitz,

1982) (Erdogan,1999). Thyroid hormone therapy is used to correct the condition of the thyroid gland and thyroid gland Stimulating hormone (TSH) inhibition. The skeletal variability of the thyroid condition also has a lower mean bone remodelling. Studies suggest changes in bone mineral density in the thyroid gland suggest that alternative therapy by T4 is associated with a significant reduction in bone mineral density in unstable skeletal sites Krolner *et al.*, 1983; Hadji *et al.*, 2000).

Exploring a few clinical reports the effect of thyroid dysfunction on the success rate of dental implants. (Attard and Zarb, 2002) controlled thyroid patients and 29 healthy subjects One hundred and sixty implants were placed in two groups (control group and thyroid group). Three failed attempts in the thyroid group and two in the control group failed, The success of 97% of the transplant was 163.

Statistical analysis showed that patients with hypothyroidism were more complex on soft tissue than controls, and the researchers concluded that the medically controlled thyroid does not appear to be inconsistent with the treatment of dental implants. The thyroid gland is inactive and less active the decrease in recruitment, maturation and bone cell activity reduce bone resorption and formation (Mosekilde *et al.*, 2001) evaluated the effect of rinsing with lithium chloride. Potassium Enzymes in

70 patients (32 with hypothyroidism and 38 with hyperthyroidism) with varying degrees of chronic generalized gingivitis.) Meyer *et al.*, 2014 (A) has not yet established a relationship between bone metabolism, Vitamin D, and early transplant failure in humans. Vitamin D drives bone formation around the rodent implants (Alvim-Pereira *et al.*, 2008; Javed *et al.*, 2016). The results of studies in recent decades suggest that vitamin D is an important immune system that targets innate and adaptive immune response because all immune system cells express VDR (Baeke *et al.*, 2010; Veldman *et al.*, 2003).

The aim of this study was to determine the relationship between dental implants failure and low vitamin D levels in patients with hypothyroidism.

## MATERIALS AND METHODS

A group of patients with hypothyroidism from the Endocrine Center at Al-Kindi Hospital and Dental Implant Clinics in different areas of Baghdad were subjected to full screening before the study. The study included age, gender, blood analysis, vitamin D level and bone characteristics (clinical and radiological) Surgery). Patients' data were collected from their records at each scheduled patient visit. Thyroid and vitamin D levels were checked and all measurements were performed randomly with patient validation before bone level standardized radiographs and distance of focus are taken when placing the struts to create orthopaedic heights to ensure proper seating of the abutment (Cox *et al.*, 1986; Avivi-Arber, 1994). The operation begins with a small incision in the gums to detect the jaw bone and then the implant is placed in the bone. This incision will be closed with sutures after the operation is completed. The implant will take about three months and the stitches will fall after 2-6 days. Gums will heal within one to two weeks. To become solid in bone Jaw. It is possible to place

the implant in one or two stages. If the initial implant stability is good, the process is completed at a stage If the stability of the primary implant is not stable (usually if the jaw bone is soft) The first stage involves laying the implant in the bone and burying it for about three months. After this period, the process takes place in two stages. The implant reveals a small cut in the gums and a cover for the implant. The clinical data were collected in two working papers at the level of vitamin D and the other at the level of the thyroid gland. The data were entered in the Statistical spss Package. The data are analyzed to explain the relationship between the variables and extract the results and compare the success rate and failure to determine the role of the thyroid gland and the effect of vitamin D deficiency. Statistically, using T-test and Chi-Square test after data collection to determine the effect of hypothyroidism and vitamin D deficiency

Later, a tissue test was performed to measure the bone measurement and evaluate its compatibility with the implant measurement the Department of Prosthodontics (C Z).

## RESULTS

The group consisted of 34 samples from the Endocrine Center at Al Kindi Hospital and implanted dental implants in different areas of Baghdad within two years for patients with hypothyroidism at different ages to detect the relationship between vitamin D level and implants failure after a complete examination to confirm the patient's health from other medical symptoms. Nine samples failed and twenty-five successful samples succeeded. Table 1 summarizes the analysis of implant success at the level and vitamin D level. Each 34 in the group was suffering from hypothyroidism and vitamin D deficiency, but 9 implants of total 34 failed, equivalent to 3% failure. Two in each group were diagnosed as an early failure (in the second stage of

**Table 1: Prosthodontic Outcome at the Patient Level**

Treatment	Loaded implants (%)	Failed Implants (%)	No. of Patients
Maintained	25 (88.4)	9 (11.6)	43(100)
Modified	1 (100)	-----	1(100)

As determined using the Fisher exact test,  $p = 1.00$

**Table 2: Outcome Analyses at the Implant level**

Variable	Hypothyroid Group (%) success	Control Group (%)	P-Value outcome
Implant Loaded	25(88.4)	25(87.04)	0.100
Lost implants	6(11.5)	3 (21.96)	
Soft tissue complications after stage 1 surgery			
No complications	25(95.1)	24(91.4)	0.18
Complications	11(22.5)	10(8.6)	
Soft tissue complications at recall			
No complications	25(95.1)	26(97.5)	0.682
Complications	4(4.9)	5(2.5)	

'As set using the Fisher exact test; +As set using the chi-square test

surgery); the only remaining delayed delay occurred in the thyroid gland. All early implants were present in the inferior anterior jaw. Late one occurred in the upper jaw. The result did not affect orthodontic treatment. Table 2 presents the result of dental prostheses, and failed implants have in no way affected the outcome of dental prostheses. Internal and subsequent accuracy between bone measurements on the dental implant was estimated using an intraclass correlation coefficient. This coefficient is based on the analysis of quantitative data obtained from remote and distant marginal bone level measurements. All of the nine implants in D groups of thyroid and vitamins failed. Three were in the thyroid group and six in the vitamin D group. Four of these failures were recorded as an early defeat and occurred in the front of the lower jaw.

## DISCUSSION

The expected clinical trial published with dental implants should be limited and applicable only to a few commercially available farming systems. The standard of success of using records can be said to be significantly affected by the implementation of a special cultivation system. Furthermore, the criteria used and the estimated parameters are not published in detail. Public health is further undermined by the lack of a convincing scientific index of the effect of systemic diseases. However, emerging information provides some information on the effect of different metabolic and behavioural factors. The aim of this study was to investigate whether the major thyroid glands and the level of vitamin D, both of which are evident in the effect of bone physiology, can affect the result of Osseointegration, which is necessarily a restriction of wound healing to mediate operation. The implant system applied in this research is the system with long-lasting results. It has also been developed in the case of standardized standard used internationally and blood analysis was unquestionable. However, in the first patient, the implants were set up after 3 months of autologous bone augmentation with systemic antibiotic therapy while antibiotics were given through the third successful trial after several months of bone regeneration. Treatment with absent antibiotics and vaccination should be considered as factors that can be thought of in early transplantation in patients who are still sitting (Allen and Stein, 2010; Esposito, 2013). So far, vitamin D which has examined the previous transplant status has not become standard in our clinic. However, in patients with early failure in implantation, the vitamin D test begins. For example, there was no statistical difference in age in the first stage and to match the condition of menopause. This is an important observation because the literature on the effect of thyroid disorders on the bone indicates a

diversity among patients before and after menopause, with more bone loss in women after menopause. Both the history of the medical condition and the use of treatment were also strictly defined. Whenever possible, patients' health conditions were also identified. The types of treatment taken in this research were not identified, and no attempt was made to collect them. Thus, the effect of certain classes of treatment on outcome measures was not specified. This was a hypothetical specification describing a more beloved fabric than expected or generally coincidental. This can be due to the different medium of tissue healing in different subjects. However, this difference may also be an explanation of the response status of the visual lips shown in animal models with a thyroid disorder and a clinical study (Harvey *et al.*, 1991). The effect of transplant failure on the outcome of dental prostheses was not significant. None of the patients who missed the implant wanted a change in the planned artificial design. One patient had been treated with a fixed, complete tissue therapy with a screw break. However, this ulcer resulted in a wrong mechanical, biochemical design from the artificial end and required processing to increase weight. No further strain was observed, and the patient was fully satisfied with the treatment plan for change. In dental implants, vitamin D was almost exclusively examined as an active agent for bone implantation and implant stability (Javed *et al.*, 2016). Vitamin D explains several effects on osteoporosis: the word *chek* gene expression for osteocalcin, osteopontin, calbindin, and 24-hydroxylase increases the structure of extracellular template protein by bone structures and stimulates osteoporosis activity (Bryce *et al.*, 2014); Wan *et al.*, 2016). However, apart from the formation of osteoporosis, vitamin D affects innate and adaptive immune response in the field of osteoimmunology and can, therefore, lead to early healing of the implant (Cantorna *et al.*, 2016; Hansen, 2009).

Reducing the additional vitamin D may damage the critical balance between the immune system and osteoporosis through implant therapy due to the direct or indirect change of the osteoclast function. For example, removal of mononucleotides through eukaryotic cells can be discouraged because vitamin D controls the migration of tumour cells (Kikuta *et al.*, 2013).

## CONCLUSION

Studies have done various centres to confirm a potential relationship between vitamin D deficiency and early failure in dental implants. Female who took thyroid therapy were more likely to fail implants than other females. Female with hypothyroidism are susceptible to complications in soft tissue in the first stage after first surgery. Failure to

implant does not prevent patients from getting a transplant again planned.

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