



# Effect of Bypass and Sleeve Surgery on the Level of Vitamin D3, Vitamin A, CU, Zn, Ferritin, and Iron in Obese Patients (12 Months Follow-Up)

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## ABSTRACT

**Introduction:** Obesity is one of the most worrying global health problems. It is defined as abnormal or excessive body fat accumulation, which may lead to health disorders. Bariatric surgery is currently an option for obesity treatment, which generally results in weight loss, control of obesity-related diseases, and reduction in mortality. Important places for the absorption of vitamins and minerals, such as the duodenum and proximal jejunum, may be removed after bariatric surgery. Considering that the nutritional status and the level of biochemical factors in patients undergoing surgery affect the complications and the success of surgery, this study was designed to compare the level of biochemical factors in patients who underwent bariatric surgery.

**Methods and Materials:** In this retrospective cohort study, 685 patients underwent obesity-related surgery, which included sleeve gastrectomy (SG) and Roux-en-Y Gastric Bypass (RYGB). Vitamin D3 (Vit D3), Vit A, Cu, Zn, Vit B12, and ferritin were measured before the operation and 12 months after the operation.

**Results:** The level of Vit D3 decreased in RYGB group to  $21.34 \pm 14.94$ , compared to SG group, which had a level of  $14.16 \pm 7.70$  ( $p = 0.156$ ). Additionally, the Vit B12 level decreased in the RYGB group to  $237.57 \pm 18.25$ , while the SG group also had a level of  $237.57 \pm 18.25$  ( $p = 0.660$ ). The amount of Zn decreased by  $24.85 \pm 6.44$  and  $18.53 \pm 2.88$  ( $p = 0.155$ ), and that of Cu reduced by  $38.17 \pm 12.83$  and  $225.50 \pm 20.12$  ( $p = 0.443$ ) in the RYGB and SG groups, respectively. Also, the level of Vit A decreased by  $21.07 \pm 0.8$  and  $7.69 \pm 1.00$  ( $p = 0.811$ ), and the level of Hb decreased by  $1.51 \pm 0.65$  and  $0.93 \pm 0.65$  ( $p = 0.000$ ) groups in the RYGB and SG groups, respectively. Ferritin and iron levels reduced by  $83.78 \pm 6.22$  and  $44.44 \pm 29.85$  ( $p = 1.483$ ) and by  $\pm 11.00$  and  $21.21 \pm 6.00$  ( $p = 0.428$ ) in the RYGB and SG groups, respectively.

**Conclusion and Discussion:** According to the findings of this study, bariatric surgery reduces the level of Vit D3, Vit A, Cu, Zn, Vit B12, ferritin, and iron insignificantly, but the decrease in hemoglobin level was significant.

### Citation:

Asakereh M, Aalipour M, Hagheghat N, Gholami R, Saeedi F, Shamakh P. Effect of Bypass and Sleeve Surgery on the Level of Vitamin D3, Vitamin A, CU, Zn, Ferritin, and Iron in Obese Patients (12 Months Follow-Up). *Iranian biomedical journal. Supplementary* (12-2024): 313.

**Keywords:** Bariatric surgery, Minerals, Obesity, Vitamins

