

The Effect of Sleeve Gastrectomy on Bone Health and Calcium Metabolism in Obese Adolescents and Young Adults

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Introduction

Adolescent and young adult obesity has long-term effects on metabolic and physical health, making it a rising worldwide health concern. One common type of bariatric surgery that has shown promise in helping people with extreme obesity lose weight significantly and sustainably is sleeve gastrectomy. The procedure's effects on calcium metabolism and bone composition, however, still require further research. Since changes in bone health can raise the risk of fractures and long-term skeletal disorders, it is crucial to comprehend these impacts. The processes, clinical results, and prospective mitigation methods for side effects are highlighted in this essay's systematic assessment of the body of research on the changes in bone structure and calcium metabolism in obese adolescents and young adults having sleeve gastrectomy.

Description

About 75–80% of the stomach is surgically removed during a sleeve gastrectomy, leaving behind a smaller, tube-like structure. Due to the reduction of stomach capacity, this treatment results in severe calorie restriction and early satiety. Insulin resistance brought on by obesity can also impede the process of bone remodeling. Increased mechanical loads and metabolic dysregulation combine to produce a paradoxical situation in obese adolescents and young adults. These people are more prone to fractures because they may have inferior bone quality but higher bone mineral density (BMD). By changing weight-bearing status and interfering with the absorption of nutrients, such as calcium and vitamin D, which are both essential for bone health, sleeve gastrectomy adds even more complications [1].

The long-term effects of bone composition changes after sleeve gastrectomy are also becoming more apparent in clinical studies. Patients who have sleeve gastrectomy have been found to have a higher incidence of fractures than their non-surgical counterparts, and the risk seems to be especially pronounced for non-vertebral fractures, such as those of the wrist and hip. The increased fracture risk in adolescents and young adults is especially concerning because of the potential impact on quality of life and long-term skeletal health. Fractures during this crucial time can hinder physical activity, delay recovery, and raise the chance of subsequent fractures later in life [2].

Conclusion

For adolescents and young adults with severe obesity, sleeve gastrectomy is a successful strategy that has major advantages for weight loss and metabolic health. Its effect on calcium metabolism and bone composition, however, presents a serious problem that needs to be carefully considered.

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The population's observed changes in bone health underscore the necessity of proactive approaches to track and manage these risks.

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