

Optimizing Skeletal Health in Bariatric Surgery Patients

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Description

Severe obesity can be effectively treated with bariatric surgery. In addition to the numerous positive impacts on obesity-related comorbidities and mortality, there is ample evidence of bone loss, including a rise in bone turnover and a decrease in bone mineral density. Numerous mechanisms could be responsible for bone loss: malnutrition; alterations in adipocytes, gut hormones, sex steroids, and bone marrow fat; mechanical unloading of the bone; loss of muscle. Following bariatric surgery, vitamin D and calcium homeostasis are disturbed. Because vitamin D might be poorly absorbed, regular supplementation with customized doses is advised. Changes in gastrointestinal acidity, hormonal fluctuations, inactive trans cellular calcium transport in the bypassed small bowel, and insufficient or insufficient vitamin D all affect the body's ability to absorb calcium. Although there is little evidence to back them, professional guidelines include suggestions for supplements and skeletal health monitoring.

Vitamin D deficiency

Since Bariatric Surgery (BS) relieves obesity-related comorbidities and encourages long-term weight loss, it is the most effective treatment for severe obesity. Yet, the weight loss encouraged by BS may raise the chance of adverse outcomes related to bone metabolism, such as alterations in bone mineral content and density. Patients with obesity typically have greater BMD and BMC values than patients with a healthy body weight. Conversely, bone metabolic abnormalities that are observed during the postoperative phase of bone resorption may also be associated with the subsequent development of secondary hyperparathyroidism and vitamin D deficiency, which are common postoperative reports. Trough 4 post-BS have seen an increase in research on the relationship between bone health and its determinants, including blood 25-hydroxy-vitamin D concentrations, vitamin D intake, body mass index (BMI), and body composition. As far as we are aware, not many research have looked into this connection in long-term BS.

Furthermore, to the best of our knowledge, no research has been done to examine how different UVB radiation levels affect the health of the bones in this population. Typically, altitude and season data are used in research to indirectly evaluate sun exposure. It is known, nevertheless, that due to changes in lifestyle, the prevalence of vitamin D deficiency has remained relatively high even in tropical nations with high annual solar radiation levels. Therefore, the current study's objective was to assess bone health in people following ≥ 5 years of Roux-en-Y gastric bypass surgery, as well as potential contributing variables to abnormalities of bone metabolism, including individual UVB exposure.

Pelvis spinal reconstruction

Osteoporosis is a common presenting condition in the majority of female patients with Adult Spinal Deformities (ASDs), necessitating a lengthy fusion level for ASD repair. Even with the advancements in surgery, postoperative complications including Proximal Junctional Failure (PJF) and Proximal Junctional Kyphosis (PJK) still occur often (20%–40%). A radiological alteration known as PJK appears around the neighboring segment following prolonged fusion. A fracture of the level above, or the Upper Instrumented Vertebra (UIV), is one mechanism. On the other hand, PJF is linked to pain, revision surgery, higher risk of brain damage, and Mechanical Failure (MF). The risk factors for PJF are widely established, but those for PJK are debatable. Revision rates for vary from 13% to 55%. Numerous risk factors have been found, such as an almost two-fold increase in risk when osteoporosis is present. A possible risk factor for PJK and PJF has been identified as low Bone Mineral Density (BMD), which is commonly measured with dual-energy x-ray absorptiometry (DXA). Preoperative DXA scans are not performed for every patient, and bone deterioration may make lumbar spine DXA scans imprecise. Hounsfield units (HUs) based on Computed Tomography (CT) and Vertebral Bone Quality (VBQ) based on Magnetic Resonance Imaging (MRI) are two recent alternatives to DXA.