



# Letter to the Editor Concerning: Fractures in Adults After Weight Loss from Bariatric Surgery and Weight Management Programs for Obesity: Systematic Review and Meta-analysis

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Little is known about changes in bone mineral density (BMD) following weight loss after RYGB and the role of serum vitamin D and its supplementation on bone metabolism. The Roux-en-Y gastric bypass (RYGB)-induced weight loss and biochemical, hormonal and body composition changes are associated with higher bone remodelling [1].

We read with interest the study of Ablett et al. “Fractures in Adults After Weight Loss from Bariatric Surgery and Weight Management Programs for Obesity: Systematic Review and Meta-analysis” [2]. The authors have concluded that bariatric surgery appears to increase the risk of any fracture. We disagree with the enthusiasm of the authors.

In the same time, we do not agree with Ablett et al. We agree that the risk of fracture seems to be weight-loss dependent and many article shows a correlation with age, with the level of systemic inflammation and with nutritional state [3].

Postoperative bone loss and increased fracture risk associated with RYGB have been attributed to vitamin D/calcium malabsorption and resultant secondary hyperparathyroidism (HPT) [4]. Vitamin D deficiency is prevalent among this population. In particular, the elderly, females, those with larger waist circumference and body fat percentage were significantly associated with lower serum 25(OH)D level. It is unknown if these changes in bone mineral density (BMD) are due to modifiable factors (vitamin D level, activity level, hormone status, etc.). Bariatric surgery induces early and dramatic increases in biochemical markers of bone turnover.

It is essential to take into account the disease of obesity which is different before and after the ages of 40 and the eating behaviour which may explain some failures after RYGB. In

addition, RYGB has been associated with negative effects on the bone. Whether this association is affected by pre-surgical type 2 diabetes (T2D) and surgically induced diabetes remission is unknown.

Obese individuals (operated or not), due to different adiposity-induced effects, are also at risk of fracture for certain sites. The skeletal effects of bariatric surgery are presumably multifactorial, and mechanisms may involve nutritional factors, mechanical unloading, hormonal factors and changes in body composition and bone marrow fat. The knowledge of these factors may lead us to develop an adequate therapeutic intervention.

## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflict of interest.

**Statement of Informed Consent** Informed consent was obtained from all individual participants included in the study.

**Statement of Human and Animal Rights** Informed consent was obtained from all individual participants included in the study.

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