A Comment on ‘Changes in Bone Mineral Density in Women Following 1-year Gastric Bypass Surgery’ Published by Casagrande DS et al.

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Sirs,

In a recent issue of *Obesity Surgery*, a study on longitudinal changes in bone mineral density (BMD) after gastric bypass surgery [1] was published. The authors presented several laboratory data and BMD measurements at the spine and proximal femur at baseline and follow-up. Generally, both laboratory variables and BMD results have changed significantly. However, we have comments concerning methodology of BMD measurements and the way of their presentation.

Firstly, in a description of densitometry, the authors did not provide a precision expressed as coefficient of variation (CV%). This information is especially important in a longitudinal observation. In each densitometry unit, serial measurements should be performed and CV% should be established. Moreover, in a prospective study, it is necessary to calculate the value of the least significant change (LSC) using a common formula: $RMS_CV \times 2 \times 1.41$. The use of

LSC allows to establish whether the BMD change in an individual subject exceed the value of LSC.

The authors presented changes in BMD only as mean expressed in percent. Such way of presentation does not express real bone changes in a satisfactory manner. One may expect that due to precision error BMD change not in each patient will exceed the value of LSC. In our recent study, we performed measurements in 29 women after laparoscopic sleeve gastrectomy, and after 6 months, BMD have decreased for femoral neck, total hip and spine by 1.24, 6.99 and 5.18 %, respectively [2]. We also performed an analysis of changes in individual patients using LSC, and such way allows to establish that change in BMD was not present in all patients. For spine, BMD decreased only in 38 % of all women, and in three of them BMD even increased. In regard to femoral neck BMD, real decrease was noted in 72 %, and for total hip BMD, a decrease exceeding the value of LSC was observed in 82 % of all subjects studied. For hip densitometric measurements, an increase was not noted but in some women a decrease was not present.

Our analysis confirms that we should not expect the presence of significant bone changes in all subjects after surgical method of treatment of obesity. We recommend for authors of the commented study to present such data that will help in better understanding of bone changes in subjects after surgical obesity management.

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References

1. Casagrande DS, Repetto G, et al. Changes in bone mineral density in women following 1-year gastric bypass surgery. *Obes Surg*. 2012;22(8):1287–92.
2. Pluskiewicz W, Buzga M, et al. Bone mineral changes in spine and proximal femur in individual obese women after laparoscopic sleeve gastrectomy: a short-term study. *Obes Surg*. 2012;22(7):1068–76.