Resting metabolic rate and weight loss after bariatric surgery

Academic authors: **Rodrigo Cezar Miléo**

Academic advisors: **Roberto de Cleva, Marco Aurélio Santo, Filippe Camarotto, Alexandre Vieira Gadducci, Lilian Cardia, Júlia Maria D'Andréa Greve**

Background. There is an increased interest in understanding how variation in Body Composition (BC) and Energy Expenditure (EE) are related to successful weight loss after surgery, since had been suggested that low resting metabolic rate (RMR) could be associated with poor weight loss.

Objectives. Determine the relation between the changes in BC, RMR and weight loss after bariatric surgery.

Setting. University tertiary care hospital, Brazil.

Methods. A cohort of 45 patients submitted to bariatric surgery was prospectively studied. BC was evaluated by bioelectrical impedance analysis and RMR by indirect calorimetry before and 6 months after surgery. RMR value was adjusted per kilogram of body weight (RMR/Kg). The patients were divided in 4 groups, based on patterns of change in the RMR/kg after surgery. The RMR/kg could decrease (Group 1), keep stable (Group 2), had small increase (Group 3) or important increase (Group 4).

Results. A statistically significant relation between Fat-Free Mass (FFM) and RMR for both pre ($p<0.01$) and postoperative periods ($p<0.01$). Excess weight Loss (EWL) had a significantly correlation with post RMR/kg ($p<0.01$) and didn't show correlation to pre RMR/kg ($p=0,68$). The pattern of change in RMR/kg was strongly correlated with weight Loss. Considering an EWL>50% a successful weight loss: in Group 1 none patients achieved success, in Group 2 - 61% patients, in Group 3 - 80% and all the patients of Group 4 had a successful weight loss.

Conclusions. We demonstrate a clearly correlation between the postoperative RMR and weight loss and more important, that the increase in RMR/kg after surgery is a major factor related to a satisfactory EWL after surgery.

Keywords: Bariatric surgery; Weight loss; Resting metabolic rate.