







## Abstract

# Early Changes in Observed Eating Behaviours and Suboptimal Weight Loss in Gastric Bypass Patients: Preliminary Findings <sup>†</sup>

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Bariatric surgery is the most effective long-term treatment for severe obesity [1], however despite excellent results being obtained at the group level, the response and durability of weight loss after surgery is heterogeneous and a proportion of patients may experience suboptimal weight loss (SWL) [2]. The mechanisms underlying SWL are poorly understood but may be linked to eating behaviours [2].

The aim of this work was to identify if early changes in energy intake (EI) and eating behaviours at 1-year are associated with long-term weight outcomes 5-years post-surgery. Twenty-two patients, after gastric bypass (gender: 18 F, 82.0%,  $46.2 \pm 1.6$  kg/m<sup>2</sup>,  $46.1 \pm 2.6$  years), attended residential research appointments pre-surgery (−1 month) and at 12- and 60-months post-surgery. At each time point, EI (MJ) and eating behaviours (dietary energy density, eating speed, and number, size and duration of eating occasions) were determined over a 24-h period using the covert weighing of food and validated via closed circuit television. Body composition was measured using dual-energy X-ray absorptiometry and the percentage of total weight loss (%TWL) used to distinguish between patients who had suboptimal (<15% TWL) and patients with optimal weight loss (15–25%, or, >25% TWL) at 5 years post-surgery.

Briefly, 5 patients experienced SWL ( $-9.2 \pm 1.8\%$ ), while 7 patients experienced 15–25% TWL ( $-21.9 \pm 1.4\%$ ), and 10 patients experienced >25% TWL ( $-35.0 \pm 1.8\%$ ). There were no differences in EI or dietary energy density between the three groups at baseline, or percentage changes at 1-year post-surgery (ANOVA;  $p > 0.54$  and  $p > 0.48$ , respectively). Those experiencing SWL did not change their eating speed post-surgery, whilst those with optimal weight loss (>25%) reduced their eating speed ( $+7.2 \pm 0.53$ ,  $+133.8 \pm 0.53\%$ ,  $-18.9 \pm 21.2\%$ , for SWL [ $<15\%$ ], 15–25% and >25% TWL;  $p = 0.01$ ). Those with optimal weight loss also decreased their EI per eating occasion at 1 year ( $-53.2 \pm 2.8\%$ ,  $+88.9 \pm 105.0\%$ ,  $-57.8 \pm 6.9\%$ , for SWL [ $<15\%$ ], 15–25% and >25% for TWL;  $p = 0.01$ ). These findings indicate that targeting interventions to the stratum of patients

with such eating behaviours could enhance weight loss. Further work is required to verify findings and identify other modifiable eating behaviours in those most at risk of SWL.

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