

Short and long term effects of bariatric surgery in obesity among individuals with MC4R deficiency: data from a large diabetes centre in the United Arab Emirates

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Introduction

Melanocortin-4-receptor (MC4R) deficiency causes severe early onset obesity and is the most common of the rare monogenic forms. Bariatric surgery (BS) is the most effective intervention for polygenic or idiopathic obesity. The outcomes of BS on obesity in individuals with MC4R deficiency are not established. Here we report the weight loss results, both short and long term, of BS on MC4R-deficient individuals seen at Imperial College London Diabetes Centre (ICLDC), Abu Dhabi, UAE.

Methods

Relevant data (including age, sex, weight, and BMI) on individuals who tested positive in MC4R mutations were retrieved from the electronic medical records. Patients who also had BS were included in the study. BMI before and after BS were evaluated and plotted. Data are presented as median (interquartile range).

Results

Six patients (age at BS 18.5 (12.5-24.5) years; 66.7% females; BMI before BS 50.3 (45.2-58.0) kg/m²) were identified and included in the study; all were Emirati. Genetic testing revealed two MC4R genotypes (5 (83.3%) T162I, 1 (16.7%) I170V) in the cohort. All 6 patients had laparoscopic sleeve gastrectomy (LSG). Two of the patients (P1, male and P2, female) were siblings. The three other patients (all females) were also related (P3 and P5 are sisters; P4 is their niece). Stable weight loss was observed up to at least 6 months for all patients (Figure 1). On the long-term, outcomes for P1 and P2, who also both had second BS (Roux-en-Y gastric bypass), were different (Figure 2).

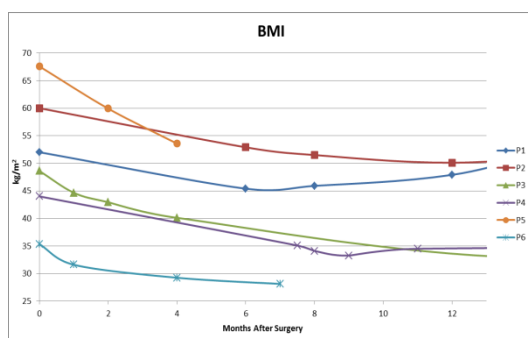


Figure 1. Short-term outcomes: BMI after LSG in 6 individuals with MC4R deficiency.

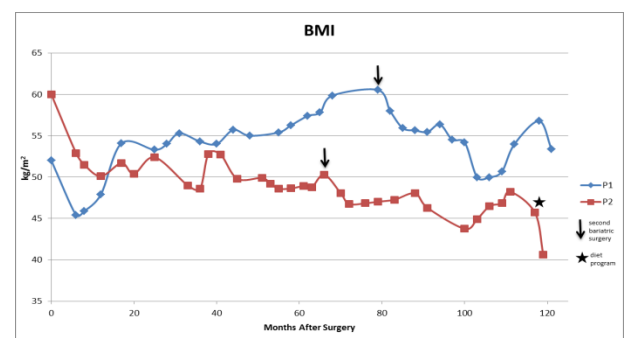


Figure 2. Long-term outcomes: BMI after LSG in siblings with MC4R deficiency.

Conclusions

Short-term response to sleeve gastrectomy appears to be independent of melanocortin-4 receptor status. Longer-term response seems to be more variable, suggesting the importance of other factors. These findings await confirmation in our larger cohort of bariatric surgery patients.