

Roux-en-Y gastric bypass on a sibling pair with MC4R mutation: response to a second operation after weight regain following sleeve gastrectomy several years previously

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Mutations in the melanocortin-4 receptor (MC4R) represent the commonest of rare monogenic forms of obesity in humans. Efficacy of bariatric surgery is not well-established. Here we report seven-year weight and glycaemic outcomes in a sibling pair with obesity and diabetes due to this mutation (MC4R $-/-$, missense mutation T162I) who underwent laparoscopic sleeve gastrectomy (LSG) before a genetic diagnosis was made. Response was not satisfactory and both had a second operation (Roux-en-Y gastric bypass-RYGB) several years later.

SA, a 12-year old Emirati male patient with diabetes (weight 143 kg; BMI 52 kg/m² - >99th percentile, HbA1c 8.1%) underwent LSG and lost 18 kg in 6 months. His glycaemic control improved (HbA1c 6.1%, off metformin); however, he started to regain his lost weight, reaching a weight of 177 kg (BMI 60 kg/m²) by 6 years post-surgery. RYGB was performed at 18 years of age. He lost 15kg (BMI 55 kg/m²) in 1 year. He currently has an HbA1C of 5.6 % off metformin, and is on vitamin D, iron, and multivitamins.

AA, is the older (age 14 years) sister of SA. She was also obese (Weight 150 kg; BMI 60 kg/m² - >99th percentile) and had diabetes with poor control (HbA1c 9.7%). She underwent LSG and lost 22 kg (BMI 53 kg/m²) in six months. Her weight was consistently lower postoperatively with slight fluctuations near 130 kg, but her HbA1C varied widely. She had RYGB at age 20 years and lost 9 kg (BMI 47 kg/m²) by three months post-RYGB; she maintained her weight loss up to 2 years later. Glycaemic control improved (HbA1c 7.4%); she is currently on sitagliptin, metformin and empagliflozin with vitamin D, B, and multivitamin supplementation.

These results suggest that MC4R may be of differential importance in short and long term response to bariatric surgery. More evidence is needed to establish the efficacy of different types of bariatric surgery in monogenic obesity.

Key words

Obesity, bariatric surgery, melanocortin-4 receptor deficiency