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SURGERY FOR OBESITY
AND RELATED DISEASES

Case report

Biliopancreatic diversion with duodenal switch after renal transplantation

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Obesity is recognized a “global epidemic” by the World Health Organization and represents 1 of the leading causes of preventable death [1]. It has been proven to induce or exacerbate morbidities such as type 2 diabetes mellitus (T2 DM), hypertension, cardiovascular disease, dyslipidemia, endothelial dysfunction, obstructive sleep apnea, and many other serious conditions. Obesity is especially dangerous in kidney transplant patients because it is associated with increased risk of mortality, complications, graft loss [2], and significantly worse short-term and long-term graft survival [3]. It follows that effective treatment of obesity in renal transplant patients may improve graft outcome. Bariatric surgery is currently the most effective means of weight loss [4]. However, there is little documentation of bariatric operations in transplant patients in the literature. Most cases describe the effect of those procedures on gastric bypass procedures [5]. The performance of biliopancreatic diversion (BPD) and biliopancreatic diversion with duodenal switch (BPD/DS), both severely malabsorptive operations, is highly controversial because of the technical complexity and concerns about antirejection medication absorption and long-term nutritional outcomes including significant protein malnutrition, anemia and deficiencies of fat-soluble vitamins [6]. We report a case of successful BPD/DS in a super-obese renal transplant patient who had failed 2 previous bariatric procedures.

Case report

In 2007, the then 54-year-old male with super-super-morbid obesity (height 175 cm, weight 220 kg, body mass index [BMI] 71 kg/m²) underwent an LAGB procedure. His clinical history included gout, hyperlipidemia, hypertension, and renal insufficiency due to focal segmental glomerular sclerosis caused by glomerular hyperfiltration and excessive use of diclofenac, a nonsteroidal anti-inflammatory drug. At the 1-year follow-up, the patient had lost 112 kg and achieved a BMI of 35 kg/m². The weight loss induced remission of hyperlipidemia, but he suffered from severe vomiting.

His renal function deteriorated 18 months later, and he required band loosening and hemodialysis. During the following 3 years, the patient’s weight increased to 136 kg, and his BMI rose to 44 kg/m². In 2011, 4 years after the LAGB, he underwent a successful renal transplantation from a living donor, and he was started on a standard immunosuppressive regimen, including a combination of corticosteroids, mycophenolic acid and tacrolimus. As a result, further loosening of the band was required to allow ingestion of these multiple immunosuppressive medications. The band adjustment resulted in a further weight gain of 16 kg, resulting in a weight of 152 kg and a BMI of 49.6 kg/m². The hyperlipidemia reappeared and medication was required (simvastatin 20 mg/d). The patient underwent staged band removal and laparoscopic sleeve gastrectomy (LSG) over the bougie of 42 F and at a distance of 2 cm from the pylorus, but failed to lose more weight. His lowest recorded weight of 145 kg was reached 3 months after the surgery, and by the 13-month follow-up, it was back to

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150 kg. There was no improvement in the existing co-morbidities, and he developed yet another one, hypertriglyceridemia. Notably, there was no technical problem with the LSG and no stomach dilation.

This complicated case was discussed in depth at a multidisciplinary conference that included nephrologists, transplantation specialists, bariatric surgeons, and a nutritionist. Considering his super-super-obesity after failure of 2 restrictive operations, the decision was to perform a BPD/DS rather than a Roux-en-Y gastric bypass because the former is known to be more effective in terms of weight loss. [7]

Thirteen months after the LSG, the patient, now weighing 158 kg, underwent a second-stage BPD/DS. The intestinal limbs lengths were tailored specifically to allow for an absorption of the medications: the “alimentary” and the “common channel” limbs were 290-cm and 80-cm long, respectively. The hospital stay was 3 days, and no perioperative complications were encountered. Today, at 1 year after the BPD/DS, his %EWL is 47% and his weight and BMI decreased to 114 kg and 37 kg/m², respectively.

Fig. 1 displays the weight follow-up from the first surgery (the LAGB) until 1 year after the BPD/DS. The BPD/DS induced remission of his hypercholesterolemia and hypertriglyceridemia, and his renal function and immunosuppressive medication are being monitored closely. The tacrolimus dosage was elevated from 2 mg/d to 8 mg/d immediately after the BPD/DS. After monitoring blood levels of the drug and gradually decreasing the dosage accordingly, the patient is currently down to tacrolimus 3 mg/d. There was a significant reduction in serum creatinine and urinary protein excretion. The serum creatinine level decreased from 1.4 mg/dL pre-LSG, to 1.35 mg/dL post-

LSG and before the BPD to 1.22 mg/dL today. The 24-h urinary protein excretion decreased from 321 mg/24 h pre-LSG to 210 mg/24 h post-LSG and before BPD to 140 mg/24 h today.

Discussion

The treatment of morbid obesity is complex, especially in patients with multiple co-morbidities and high surgical risk. We describe a super-obese 59-year-old male with a BMI of 52 kg/m² (the original BMI was 71 kg/m²) who had previously undergone an LAGB, LSG, and a renal transplantation and was successfully managed with a BPD/DS.

BPD/DS is associated with long-term weight loss [8], improvement and remission of co-morbidities [7], and improvement in quality of life [9].

The effect of obesity on graft survival has profound consequences and is prevalent in transplant patients [3,5]. Obesity, T2 DM, and hypertension are the leading causes of end-stage renal disease and are both mediated by obesity [10]. Furthermore, evidence shows obesity to be a risk factor for graft loss, adverse graft events, and mortality [2]. Consequently, bariatric surgeries in these patients can yield dramatic positive changes to their quality of life, which may make the difference between losing the transplanted kidney and returning to the lengthy transplant waiting list and leading a productive and relatively healthy life with a functioning graft.

Weight loss after bariatric surgeries in the super morbidly obese population is significantly lower compared with the less obese [11]. Also, revision bariatric surgeries are known to have a higher rate of complications and more modest

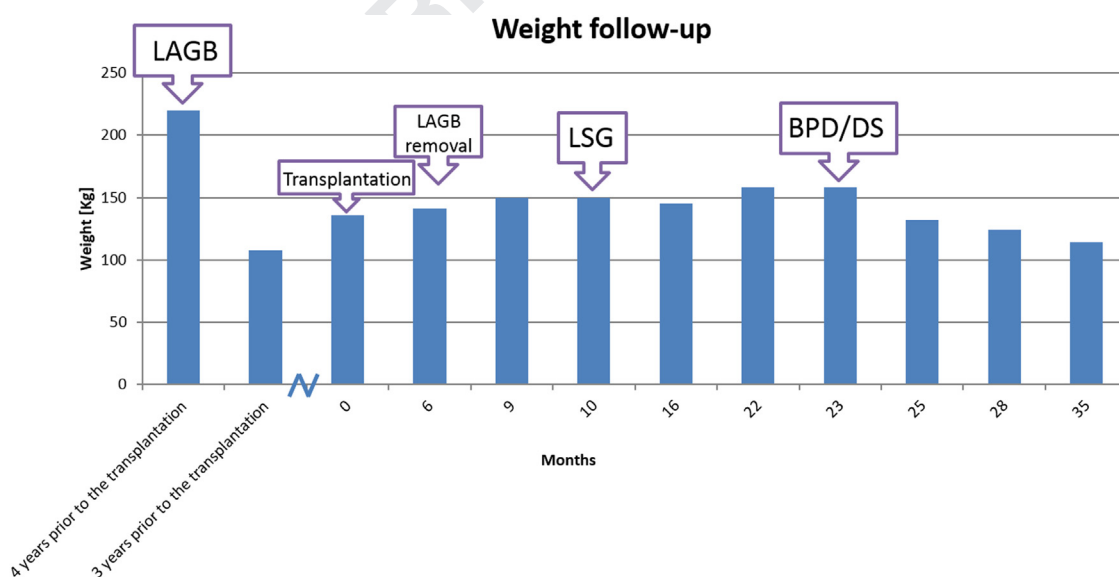


Fig. 1. The patient's weight curve over time. The column with the arrow enclosing LAGB indicates the weight before the first surgery (the LAGB) and the weight at 12 months after the BPD/DS. LAGB = laparoscopic adjustable gastric banding; LSG = laparoscopic sleeve gastrectomy; BPD/DS = biliopancreatic diversion with duodenal switch.

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