

## Laparoscopic Sleeve Gastrectomy in a Morbidly Obese Kidney Recipient for Preserving Graft Function

Abrar A AlAtwan<sup>1\*</sup>, Meshari AlMuhanna<sup>2</sup>, Ali AlJewaied<sup>2</sup>, Talal AlKhadher<sup>2</sup> and Mohannad AlHaddad<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Kuwait University, Jabriya, Kuwait

<sup>2</sup>Department of Surgery, Al Amiri Hospital, Kuwait City, Kuwait

### \*Corresponding author

Abrar A AlAtwan, Faculty of Medicine, Kuwait University, Jabriya, Kuwait,  
E-mail: abraral36wan@hotmail.com/abraral36wan95@gmail.com

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### Abstract

*The obesity epidemic involves the healthy population and transplant recipients equally. In renal transplantation, obesity is not only associated with a number of disorders exerting adverse effects on the transplanted organ, but with poorer graft function and peritransplant complications. Treating obesity in transplant patients can improve graft function and manage comorbidities that are associated with renal failure. As conservative weight loss programs shows disappointing results in these patients, bariatric surgery is the most effective and long term treatment for obesity.*

**Keywords:** Kidney Transplant, Sleeve Gastrectomy, Bariatric Surgery, Case Report

### Background

“The prevalence of obesity worldwide has almost tripled between 1975 and 2016 [1].” The prevalence of obesity in kidney transplant recipients parallels the general population, increasing the risk of peritransplant complications including delayed graft function, prolonged hospitalization, and decreased graft survival [2, 3]. Obesity adversely affects blood pressure, cholesterol, triglycerides and insulin resistance; hence it can induce or exacerbate morbidities, such as type II diabetes mellitus, dyslipidemia and hypertension, which are currently the leading causes of end-stage renal failure [4]. Other than its indirect effect through obesity related diseases, obesity itself is an independent risk factor for renal dysfunction [5].

Bariatric surgery is currently the therapy of choice for patients with severe obesity. Treatment of obesity improves obesity related conditions, consequently preserving or improving graft function [6].

### Case Report

This is a case of a 65-year-old female with morbid obesity (weight 95 kg, height 151, BMI 42 kg/m<sup>2</sup>), known to have type 2 diabetes mellitus, hypertension, dyslipidemia, ischemic heart disease, congestive heart failure, and a past surgical history of hysterectomy. In 2015 she was diagnosed with end stage renal disease (ESRD) requiring her to start continuous ambulatory peritoneal dialysis (CAPD).

By 2017, it was determined that the patient required a renal transplant and underwent a live unrelated renal transplant in Syria on 04/01/2017. She had perioperative acute coronary syndrome and pulmonary edema which was treated successfully during her

hospital admission. The patient also suffered from a wound infection that was treated conservatively. After surgery immunosuppressant, prednisolone, myfortic and prograf were applied. Upon her follow up in Kuwait she has a stable renal graft function (serum creatinine 1.2mg/dl, GFR 57ml/min), but was advised by her nephrologist to reduce her weight in order to prevent graft function deterioration.

The patient however failed to reduce her weight by conservative weight lowering management. In addition she developed a large post-operative incisional hernia that was increasing in size. On May 2018 she was scheduled for an elective laparoscopic sleeve gastrectomy. She underwent the procedure on 09/07/2018 with no complications during or after the surgery. Six months after the surgery, the patient had lost 17kg, which represented 44.7% excessive body weight loss [%EWL], as well as improvement in graft function (serum creatinine 0.93mg/dl, GFR 68 ml/min), and insulin requirements became half the preoperative dose.

### Discussion

Renal transplant is the best and approved therapeutic option for end stage renal disease. Weight gain and obesity postorgan transplantation is a growing health problem that can be due to, immunosuppressive therapies, endocrine changes, and physical inactivity [7-10]. Weight gain is noted in both obese and non-obese kidney transplant recipients. A study conducted by Merion et al. showed that weight gain after one year was 14kg in obese recipients compared with 8.9 kg in non-obese recipients. In addition, kidney recipients often have multiple comorbidities due to, or as a cause of their end stage renal disease. Therefore, other than immune processes regulation, the graft function also requires optimal control of chronic diseases especially obesity and metabolic syndrome, which lead to a number of disorders that exert adverse effects on the transplanted kidney [11].

Obesity is an independent risk factor for developing diabetes, hypertension, and dyslipidemia, which compromise the metabolic syndrome [12]. Results of a study conducted to assess the relationship between metabolic syndrome and CKD, showed that the association increases as the number of components of MetS increased [13]. Apart from its effect through chronic medical conditions, obesity itself is a risk factor for renal dysfunction, causing structural and functional alterations in the kidney designated as Obesity-related glomerulopathy (ORG) [14-17]. Pretransplant and posttransplant obesity has also been associated with increased morbidity and mortality. A retrospective analysis of 51,927 obese renal transplant recipients registered in the United States Renal Data System database, showed that in obese patients wound complications occurred more, they had significantly worse patients and graft survival, and increased risk for delayed graft function [14]. In addition, wound complications and incisional hernias are more common in obese patients, which was the case in our patient [15].

Bariatric surgery is currently the most effective method for weight loss among obese patients [18-20]. It can be done pre or post renal transplant to facilitate weight loss and improve graft outcome. Bariatric surgery positively affects renal function by reducing proteinuria, albuminuria and improving glomerular hyperfiltration in obese patients with impaired renal function [21]. Furthermore, it can significantly improve obesity-related comorbidities, such as type 2 diabetes mellitus and hypertension [22, 23]. With increasing evidence that obesity leads to worst outcomes in transplant patients and because of the failure of conservative treatment options such as diet, exercise programs, and behavior modifications, bariatric surgery was the best option for graft function preservation in our patients.

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