

Abdominoplasty in Hemodialysis Patients Before Transplant

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Abstract

Morbid obesity in patients with chronic kidney disease is a contraindication for inclusion on the kidney transplant wait list. Despite intentional weight loss, the persistence of the abdominal adipose panniculus poses postoperative risks, such as infection of the surgical site and seromas. We describe 2 cases of patients on hemodialysis who had a body mass index greater than 35 kg/m² who underwent abdominoplasty before transplant without perioperative complications. One patient received a living-related kidney transplant (donor was the brother) without complications.

Key words: *Dialysis, Kidney transplant, Lipectomy, Obesity*

Introduction

Obesity has become an issue in patients with advanced chronic kidney disease (CKD), including dialysis patients with a body mass index of between 30 and 45 kg/m². During evaluation for kidney transplant, many of these patients are contraindicated due to obesity.¹

Obesity is a risk factor for morbidity and mortality among surgical patients.² Chronic kidney disease generates greater technical difficulties for kidney transplant and increases the risk of complications, such as surgical wound infection (4% to 40% increase), and may delay healing, which may be favored by the immunosuppressive treatment received by kidney transplant patients.^{1,3} Obesity has

also been associated with an increased risk of hypertension, diabetes, pulmonary disease, and cardiovascular disease and shorter survival.⁴

Some factors related to weight gain and with the increase of the abdominal panniculus are more frequent among CKD patients; these factors include greater laxity of connective tissue, physical deconditioning, frailty, and the number of previous pregnancies, which affect body morphology.⁵ In addition, adipose tissue in the lower abdomen, where the graft is housed, can affect healing after transplant.⁴

In patients who manage to lose weight, the adipose panniculus located in the lower abdomen persists, becoming a barrier that prevents adequate surgical access during kidney transplant.⁶ Abdominal adipose tissue increases humidity, and the abdominal folds increase the probability of bacterial or fungal colonization (*Candida* species), which in turn increases the risk of wound infection, dermatitis, and lymphedema. These early infections have been associated with an increased risk of graft loss and reduced survival.¹ Moreover, the adipose panniculus can increase the tension on the surgical wound, causing dehiscence. In addition, because transplant surgery generates trauma to the subcutaneous adipose tissue, there is an increased risk of fat necrosis and therefore a greater risk of infection.⁶ Here, we report 2 cases of hemodialysis patients with central obesity who underwent abdominoplasty before kidney transplant.

Case Report

Case 1

A 52-year-old woman with hypertension, dyslipidemia, and obesity presented with CKD secondary to immunoglobulin A nephropathy; she had been on hemodialysis for 4 years. Physical examination noted pear-shaped obesity, massive abdominal adipose

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panniculus, classified as Iglesias grade 2, and body mass index (BMI) of 35 kg/m². She had total cholesterol level of 189 mg/dL, high-density lipoprotein cholesterol level of 42 mg/dL, triglyceride level of 213 mg/dL, and glycemia measurement of 125 mg/dL. Although she was suitable for kidney transplant, she was contraindicated due to high BMI and abdominal lipodystrophy and because of the increased risk of local and systemic complications in the postoperative period. A medical meeting was held with plastic and transplant surgeons, who decided to carry out an abdominoplasty prior to transplant.

The patient received antibiotic prophylaxis with cefazolin, and there were no complications during the procedure. Blood loss was approximately 300 mL. The patient remained hospitalized for 3 days, with mechanical antiembolic prophylaxis with compression stockings. Heparin-free hemodialysis was performed the day before the procedure, and a new session was performed 24 hours after surgery. Drainages were removed after 10 days. She did not present with any bruising, collections, or dehiscence of the surgical wound.

During follow-up, her BMI dropped to 30 kg/m²; 3 months later, she received a transplant from a living related donor (brother) without complications. Her immunosuppression regimen included tacrolimus, mycophenolic acid, and prednisolone. She had satisfactory clinical progress during the first year posttransplant, with an estimated glomerular filtration rate of 70.6 mL/min/1.73 m² per the Chronic Kidney Disease Epidemiology Collaboration equation, without infections or cardiovascular events.

Case 2

A 53-year-old woman with hypertension, on hemodialysis for 20 years, presented with CKD of unknown cause. The initial pretransplant evaluation showed a BMI of 37 kg/m² and massive abdominal panniculus adiposus, classified as Iglesias grade 1. Laboratory tests showed the following values: glycemia of 128 mg/dL, lipid profile with total cholesterol of 195 mg/dL, low-density lipoprotein cholesterol level of 126 mg/dL, high-density lipoprotein cholesterol level of 37 mg/dL, and triglycerides of 159 mg/dL. Nonpharmacologic measures were introduced (diet and exercise), which resulted in BMI decrease to 31 kg/m². However,

massive abdominal adipose panniculus persisted, and transplant and plastic surgeons decided to perform an abdominoplasty before kidney transplant.

The patient received antibiotic prophylaxis with cefazolin. During the intraoperative period, she developed a 4 × 3 cm eventration, which led to eventration repair plus abdominoplasty. Intraoperative blood loss was approximately 300 mL, and no immediate complications were shown.

The patient remained hospitalized for 5 days, and the drainage was removed after 20 days. Heparin-free hemodialysis was performed the day before the procedure and 24 hours later. She had no hematoma, collections, dehiscence, or infection of the surgical wound. At 4 months, she was evaluated by the transplant team and had adequate wound healing and BMI of 28 kg/m², and her entry onto the wait list was authorized.

Discussion

Obesity is considered a contraindication for kidney transplant when BMI is greater than 35 kg/m².⁷ A massive adipose panniculus becomes a limiting factor for transplant, since it generates a local and systemic inflammatory response, decreases mobility and the probability of losing weight, and predisposes to infections.⁸

Abdominal panniculectomy before transplant improves surgical access and reduces the risk of wound complications after transplant.⁹ This procedure has recently been proposed as an alternative for patients to enter the transplant wait list, a procedure that increases survival in CKD patients, including obese patients.⁶

Previous studies have shown that abdominoplasty before kidney transplant poses a higher risk of complications than shown in individuals without CKD, given the association with increased cardiovascular risk, electrolyte imbalance, and anemia. However, complications are usually less than 38% and are related to wound complications, such as cellulitis and superficial dehiscence. Only 18% are major complications, and these include hematoma, seroma, and reoperation. However, these complications can be managed by the surgical team, and the risk disappears 3 months after the procedure.¹⁰

A recent study by Mundra and associates¹¹ in the United States showed that, in 34779 panniculectomy

procedures performed from 2006 to 2011, 613 patients had stage 5 CKD. Renal patients were older (58.9 vs 49.3 y; $P < .01$) and had more comorbidities such as diabetes, hypertension, congestive heart failure, peripheral arterial disease, obesity, and coagulopathy. In addition, during the postoperative period, patients with CKD had higher mortality rates (3.3% vs 0.2%; $P < .01$), wound complications (10.6% vs 6.2%; $P < .01$), venous thromboembolism (4.9% vs 0.8%; $P < .01$), transfusions (25.3% vs 7.0%; $P < .01$), major nonrenal medical complications (40% vs 8.4%), and longer hospital stay (9.2 vs 3.8 days; $P < .01$) compared with patients without CKD.¹¹

Unlike the previous study, in a study from Troppmann and associates of 22 patients who underwent panniculectomy prior to transplant, only 1 patient presented with a wound complication. This complication was related to a minor superficial hematoma and did not require reoperation.⁶

Evaluations for kidney transplant in CKD patients on dialysis who are obese and have adipose panniculus in the lower abdomen should include assessments from psychology, nutrition, and obesity specialists. If the patient has significant abdominal obesity and does not have any other exclusion factors for transplant, the patient should be evaluated by a plastic surgery with the objective of deciding whether abdominoplasty is recommended for transplant purposes.⁶

Before abdominoplasty is performed, it is important to consider several factors, such as the size, shape, location, and extension of the adipose panniculus, as well as the presence of infra-pannicular skin irritations, macerations, and bacterial and fungal infections.⁶

Iglesias and colleagues presented a classification in Mexico in 2009 that allows clinicians to objectively evaluate which patients are potential candidates for body contouring surgery. This classification evaluates the size and volume of the adipose panniculus (taking as reference fixed anatomic structures), BMI, the presence of comorbidities, the symmetry of the deformities, and the functional state of the patient. Use of the classification (grade 1 to 5) can allow the best option of reconstructive and functional rehabilitation to be determined with the least effects on physical condition; therefore, it is a useful tool during surgical planning.⁸

Here, we presented 2 patients with CKD on dialysis who underwent abdominoplasty due to abdominal lipodystrophy safely and without complications. Both patients had good clinical evolution, which allowed a living-donor kidney transplant in patient 1 and entry on the wait list in patient 2.

Conclusions

Obesity is a relative contraindication for kidney transplant; however, abdominoplasty is a safe procedure that can be performed in patients on dialysis. This intervention reduces the complications of the surgical wound after transplant and optimizes the chance to access the transplant wait list, which is the only kidney replacement strategy that can improve patient survival.

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