

Invited commentary for laparoscopic sleeve gastrectomy in patients with heart failure and left ventricular assist devices as a bridge to cardiac transplantation

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Commentary

Obesity is a progressive, costly, genetically related, multi-factorial disease of excess fat storage. For many reasons, obesity rates have exponentially risen around the world. Morbid obesity affects every organ system in the body including the heart. The relationship between morbid obesity and heart failure is well established. Obesity causes both structural and functional changes in the heart, which can lead to left ventricular dilation, cardiac muscle hypertrophy, and atrial enlargement [1]. Heart failure has a very poor prognosis, with a mortality rate as high as 50% over 5 years [2]. Cardiac transplantation improves these patients 5 year survival to 80% and 10 year survival to 50% [3]. Patients with severe heart failure may require a left ventricular assist device (LVAD) for circulatory support. It is common for patients to gain weight after placement of the device due to improved quality of life. Weight loss is very difficult in this patient population due to exercise intolerance. The ultimate treatment for patients requiring LVAD support due to heart failure is cardiac transplantation. Most cardiac transplant centers use body mass index (BMI) of over 35 kg/m² as a contraindication to become eligible for transplantation [4].

In our retrospective study, which was conducted through the University of Florida's accredited bariatric center, patients who had severe end-stage heart failure due to non-ischemic cardiomyopathy requiring support with a left ventricular assist device and a BMI greater than 35 kg/m² were referred to our bariatric surgery program. The University of Florida's bariatric program is certified through the metabolic and bariatric surgery accreditation and quality improvement program. Patients were referred to our program from the heart failure service with the goal of weight loss to reduce their BMI and become eligible for heart transplantation. A total of eleven patients who met these criteria completed the pre-operative program and subsequently underwent a laparoscopic sleeve gastrectomy (LSG). At the time of submission of this manuscript, seven (64%) of our patients within the

study reached a body mass index low enough to qualify for cardiac transplantation. Since publication, two more patients have achieved a BMI under 35 and are currently listed. The mean BMI a year following LSG was 33 and the mean percentage of excess weight loss was 60.9%. The mean ejection fraction of these patients improved from 21.4% pre-operatively to 40.6% at 12 months post-operatively. Four of these patients underwent transplantation, while five of these patients are awaiting transplantation on the active list. One of the patients in this cohort died of an infection unrelated to surgery prior to transplant listing and one of the patients has yet to lose enough weight to qualify for listing. One patient, who lost over 100lbs, had significant improvement in ejection fraction from 15% pre-operatively to 65% at a year post-operatively. This patient is undergoing cardiac rehabilitation now with the goal of removing the LVAD.

Conclusion

Our study demonstrates that LSG is a safe surgical weight loss option for patients with morbid obesity and severe heart failure. A team approach utilizing the bariatric surgeons, cardiologists and anesthesiologist is critical for ensuring optimum results. This is an option for patients who require weight loss in order to be listed for cardiac transplantation.

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