Cardiac Recovery After Sleeve Gastrectomy: LVAD Explantation Rather Than Transplantation

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Abstract

Patient is a 35-year-old male with a history of obesity who presented to the ER on 7/13/17 reporting 2 months of worsening shortness of breath and maximal exercise tolerance of <1 block. Echocardiogram showed ejection fraction <15% with global hypokinesis of the left ventricle and severely reduced right ventricular systolic function. The patient's cardiac function progressively declined during his hospital stay, eventually requiring intra-aortic balloon pump placement. The decision was made to place an LVAD on 7/27/17 as a bridge to heart transplant. Patient did well post-operatively and was discharged home on 8/11/17.

Patient was not eligible for heart transplant due to his obesity (247 lbs, BMI 39.9), so he was referred to our Bariatric Clinic. He was only able to lose 12 pounds with diet and lifestyle modifications, so the decision was made to take him to the operating room for laparoscopic sleeve gastrectomy on 10/23/20.

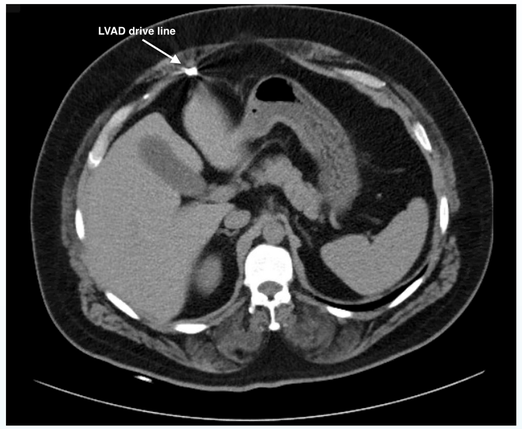
Two weeks post-operatively, an echocardiogram demonstrated an ejection fraction of 20-25%, and ramp study demonstrated EF improvement to 30% as LVAD speed was decreased, both suggesting left ventricular recovery. At his two-month follow up visit, patient was down to 188 lbs (BMI 30.3) from his preoperative weight of 235 lbs (BMI 37.9). He reported feeling energized without any dyspnea or orthopnea. The patient's cardiology team began considering LVAD explantation in 2/2021 when his EF improved to 35%. By 5/2021, his weight was down to 167 lbs (BMI 27.5). Repeat ramp study in 6/2021 redemonstrated an EF of 35% with minimal change in hemodynamics with weaning down the LVAD speed.

It was determined that the patient's intrinsic cardiac activity had recovered enough to be eligible for LVAD explantation. His LVAD was successfully explanted on 7/8/21, and his post-explant EF was 40-45%. Patient has done well since explantation. He no longer requires a heart transplant.

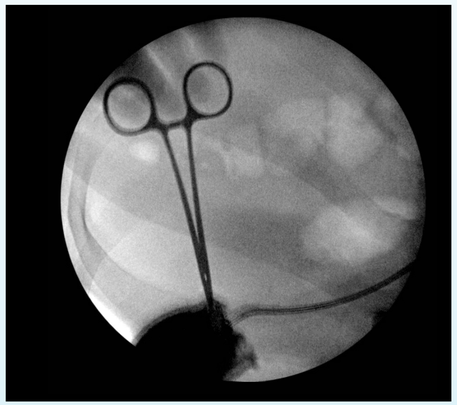
Conflict of Interest Disclosure

The authors have no potential conflicts of interest to disclose.

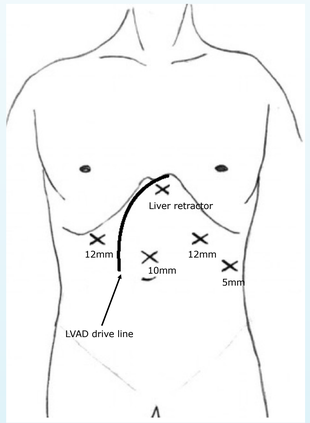
Preoperative CT



Intraoperative Drive Line Mapping



Trocar Placement



Weight Loss and Cardiac Recovery

	Preoperative	2 Months Postop	6 Months Postop
BMI (kg/m^2)	37.9	30.3	27.5
Weight (lbs)	235	188	167
EF (%)	<15%	35%	35%

Discussion

Heart failure demands substantial health care resources. Many patients with advanced heart failure require cardiac transplantation. A significant number of these patients undergo left ventricular assist device (LVAD) placement as a bridge to transplantation. Unfortunately, many patients are ineligible for transplant due to an elevated body mass index (BMI), as BMI >35 kg/m^2 is associated with worse outcomes after cardiac transplantation.[1] This may be partly explained by the fact that obesity is a risk factor for cardiac arrhythmias and sudden cardiac death. Of note, bariatric surgery has been shown to decrease volume of pericardial fat and improve ventricular conduction.[2]

We and others advocate for sleeve gastrectomy as an avenue for weight loss to achieve a BMI which would allow a patient to be listed for transplant.[3-5]

References

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