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Introduction

Left Ventricular Assist Devices (LVADs) can serve as a bridge-to-therapy in patients with heart failure who may be eligible for heart transplant. LVADs may also serve as destination therapy in patients with heart failure who are not eligible for a heart transplant¹. Morbid obesity can increase a patient's risk for perioperative complications and is often considered a relative contraindication for heart transplantation^{1, 2}. Here we present a patient with heart failure who underwent bariatric surgery with the intent for weight optimization prior to LVAD insertion.

Our patient is a 26-year-old male with combined systolic/diastolic heart failure (EF 15%) and morbid obesity (weight 159.3 kg, BMI 50.4 kg/m²) due to Alström Syndrome. Alström Syndrome is a rare genetic syndrome which includes childhood-onset obesity and dilated cardiomyopathy³. The patient was maintained on a milrinone infusion at 0.25 mcg/kg/min, amiodarone for multiple episodes of ventricular tachycardia, and furosemide to optimize volume status. He was presented to the Transplant/LVAD committee, which recommended laparoscopic bariatric surgery prior to LVAD insertion after weight optimization.

Figure 1.
ME Four Chamber

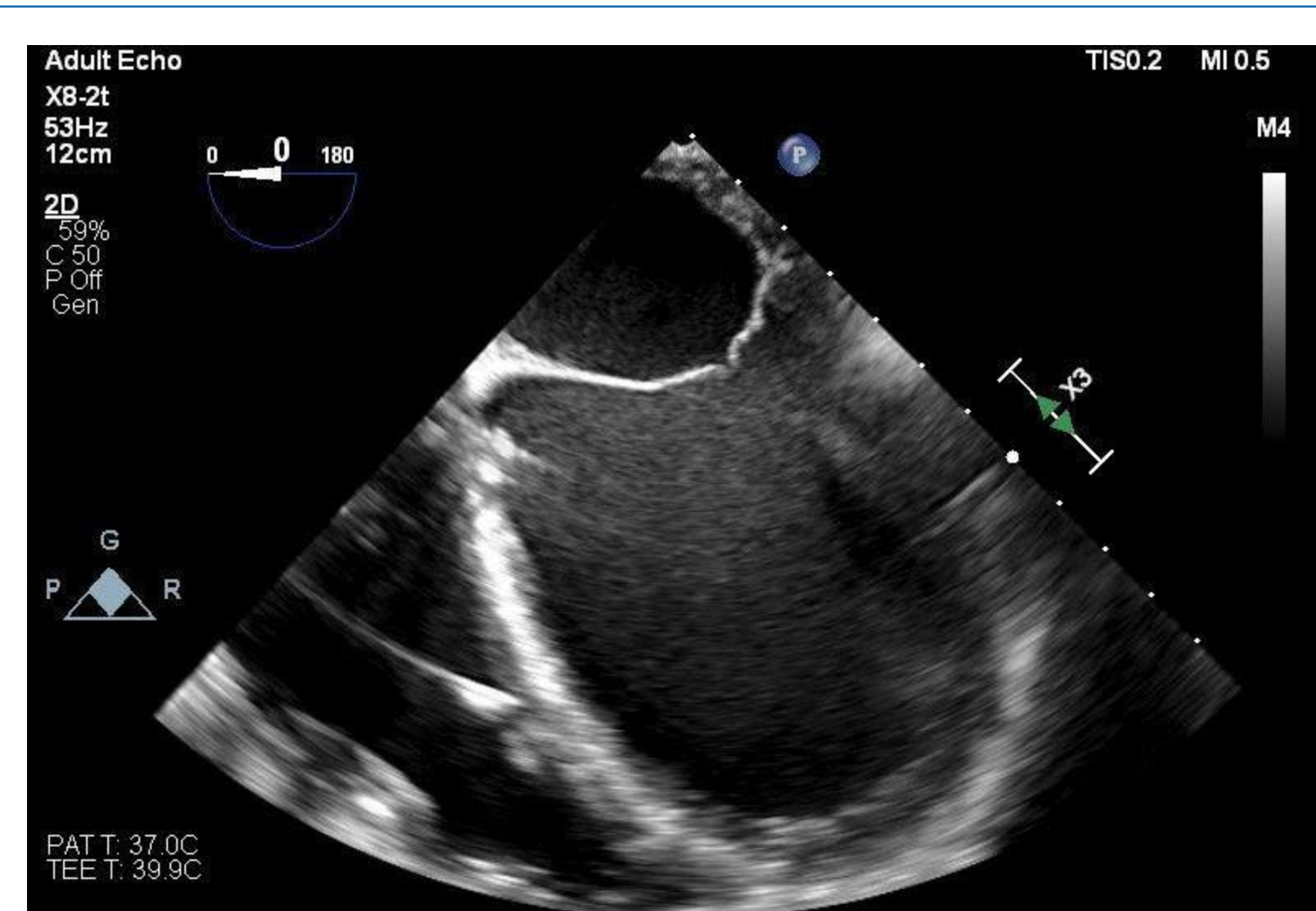


Figure 2.
ME AV LAX

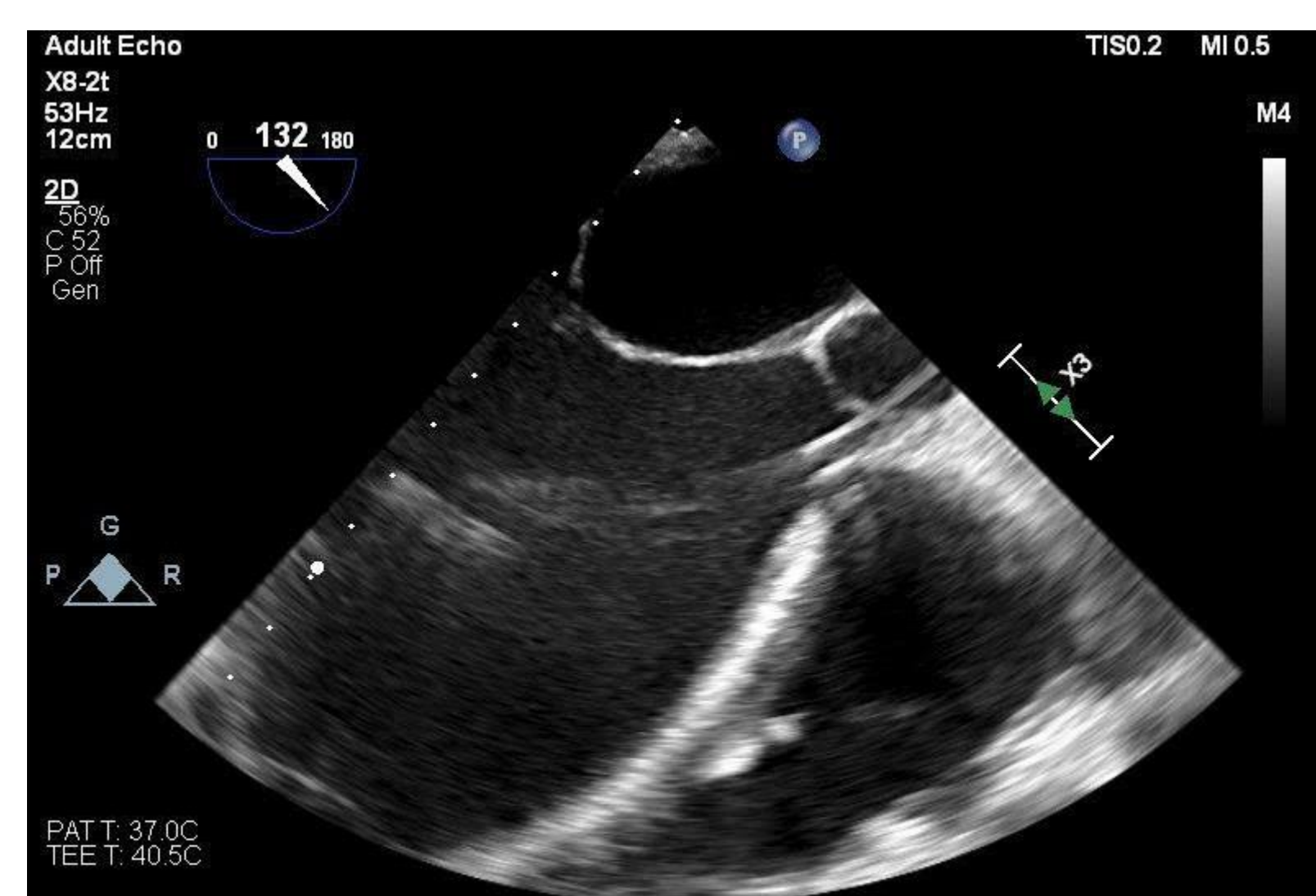


Figure 3.
ME Bicaval

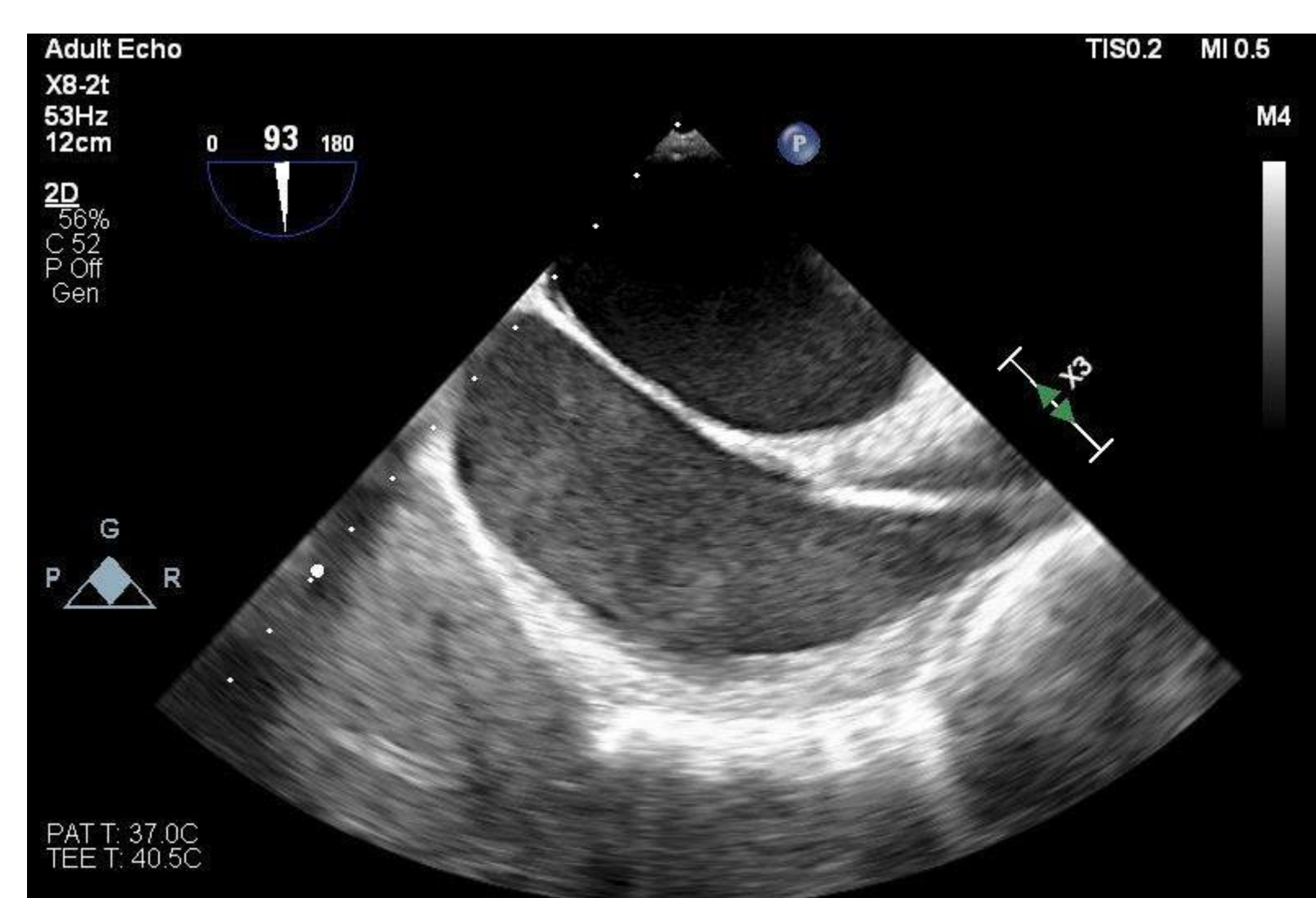
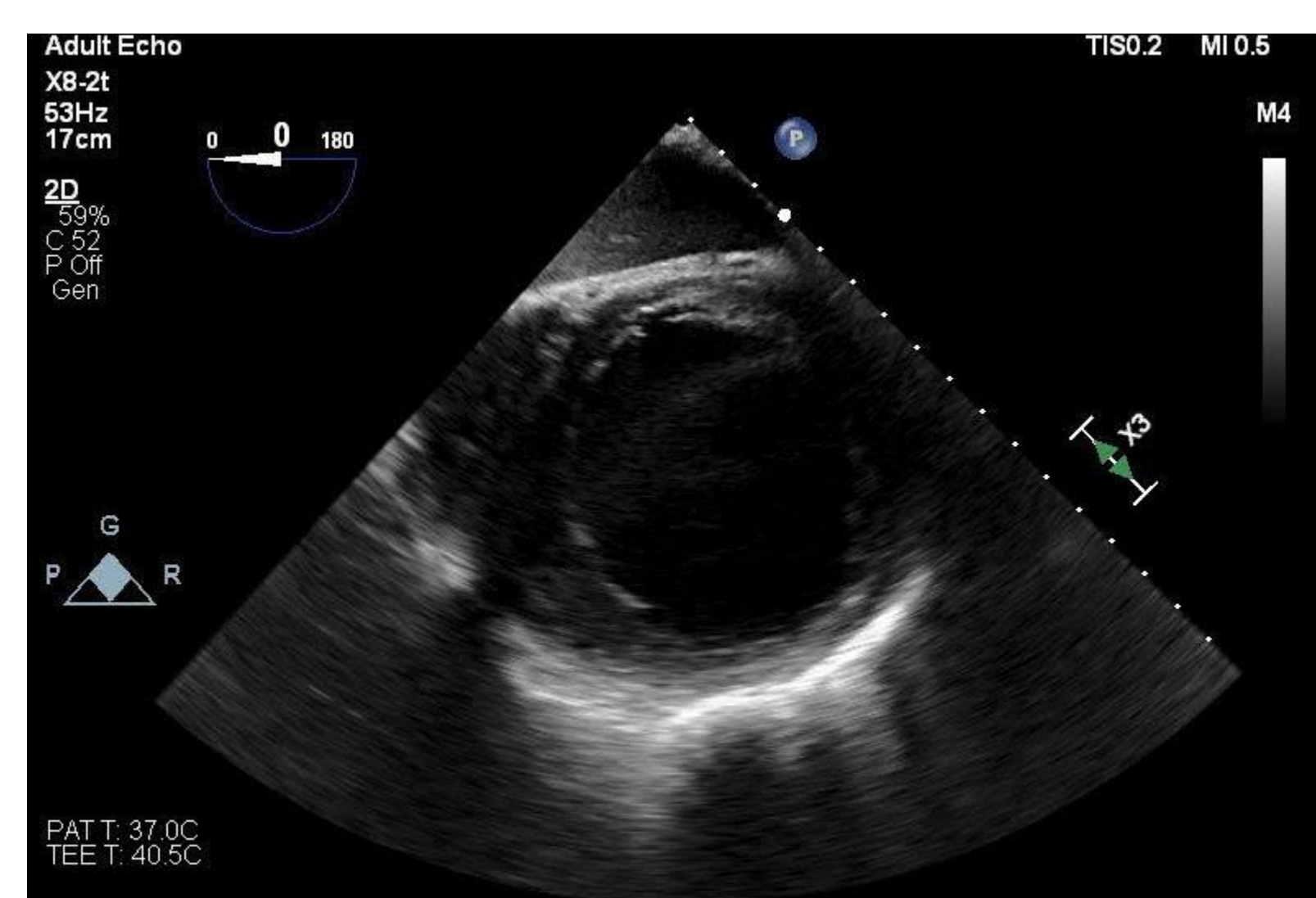


Figure 4.
TG SAX



Methods

In discussion with cardiology, an Impella CP® was inserted via the right femoral artery the prior day to help the patient better tolerate abdominal insufflation during laparoscopic surgery. The patient arrived in the OR with central venous access and pulmonary artery catheter in place. A brachial arterial line was inserted prior to induction. The patient was induced with etomidate and succinylcholine and was intubated via video laryngoscopy. A cardiothoracic surgeon prepped the chest and cannulated the femoral vessels should the need for cardiopulmonary bypass arise, and he remained on standby in the OR with a perfusionist. A TEE probe was inserted and abdominal insufflation was initiated slowly and in a stepwise fashion. The patient required the addition of epinephrine and vasopressin infusions, but otherwise tolerated the procedure well. He remained intubated and was transferred to the surgical ICU post-operatively.

Results

In the ICU the patient's pressor requirements were weaned to off and he was extubated approximately 3 hours post-operatively. A bariatric diet was started on post-operative day 1 and he

was transferred to the medical step-down unit on post-operative day 5. On post-operative day 13 the patient was discharged to home, remained on a milrinone infusion, and was closely followed by cardiology for heart failure management and weight optimization. Over the subsequent two and a half months the patient's weight decreased by 48.7 kg (108 lbs) and BMI decreased to 34.99 kg/m².

Discussion

Weight loss in morbidly obese patients may reduce complications during and following cardiac surgery. Bariatric surgery prior to LVAD placement or heart transplant should be considered to potentially improve outcomes. This can safely be performed with a multidisciplinary approach and with the precautions listed here.

References

1. Guglin M, Zucker MJ, Borlaug BA, et al. Evaluation for Heart Transplantation and LVAD Implantation: JACC Council Perspectives. *J Am Coll Cardiol*. 2020 Mar 31;75(12):1471-1487. doi: 10.1016/j.jacc.2020.01.034. PMID: 32216916.
2. Doyle SL, Lysaght J and Reynolds JV (2010), Obesity and post-operative complications in patients undergoing non-bariatric surgery. *Obesity Reviews*, 11: 875-886. <https://doi.org/10.1111/j.1467-789X.2009.00700.x>
3. Geberhiwot T, Baig S, Obringer C, et al. Relative Adipose Tissue Failure in Alström Syndrome Drives Obesity-Induced Insulin Resistance. *Diabetes*. 2021;70(2):364-376. doi:10.2337/db20-0647