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CASE REPORT

Surgical management of super-super obesity with grade III esophageal varices and liver cirrhosis: The ultimate challenge

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Abstract

The risk of complications after bariatric surgery is high in morbidly obese patients suffering from liver cirrhosis along with moderate to severe portal hypertension. Esophageal varices are even considered as a contraindication for bariatric surgery by many surgeons. We report the case of a 40-year-old gentleman with a body mass index of 65.3 kg/m^2, with multiple comorbidities including type 2 diabetes mellitus, severe obstructive sleep apnea. On evaluation, he had Child-Pugh A liver cirrhosis with portal hypertension along with grade III esophageal varices and splenomegaly. After adequate optimization, laparoscopic sleeve gastrectomy was performed. The patient is doing well at a follow up of 12 months with an adequate weight loss and resolution of comorbidities. Sleeve gastrectomy can be performed in a morbidly obese Child-Pugh A cirrhotic patient with portal hypertension and esophageal varices with proper counseling regarding more than usual risk for morbidity and mortality.

KEYWORDS

liver decompensation, portal hypertension, sleeve gastrectomy

1 | INTRODUCTION

The prevalence of non-alcoholic fatty liver disease (NAFLD) ranges from 30% to 100% in morbidly obese patients.[1] NAFLD can progress to cirrhosis and eventually decompensated liver failure. Established unexpected cirrhosis can be encountered during elective bariatric procedures in around 1% of cases.[2] There is an increased risk of mortality in cirrhotic patients undergoing bariatric surgery. The comparison between mortality rates post-bariatric surgery in non-cirrhotic, compensated cirrhosis and decompensated cirrhosis was 0.3%, 0.9%, 16.3% respectively.[3] Advanced liver disease and portal hypertension with esophagogastric varices is considered a relative contraindication for bariatric surgery.[4] Few studies have reported on outcomes of bariatric surgery in cirrhotic patients with portal hypertension.[5] We report an unusual case of super-super obesity with portal hypertension with grade III esophageal varices, liver cirrhosis (Child-Pugh A), and splenomegaly. This case report depicts the intraoperative and postoperative challenges faced in managing the patient.

1.1 | Case presentation

A 40-year-old gentleman with super-super obesity with a body mass index (BMI) of 65.3 kg/m^2, presented with

severe respiratory distress and tachypnea. On presentation, he had central cyanosis, blood oxygen saturation 50%-60%, and partial pressure of CO_2 of 70.9 mm Hg. His comorbidities included type 2 diabetes mellitus and obstructive sleep apnea (OSA). He was on non-invasive ventilation on and off for the past 6 years with a history of intubation once for severe respiratory acidosis in 2017. The endoscopy revealed grade III esophageal varices and there was chronic gastritis on antral biopsy. The ultrasound abdomen showed grade III fatty liver with cirrhosis and moderate ascites. The fibro-scan was suggestive of cirrhosis (liver stiffness measurement [LSM] of 73.5 ± 9.8 and controlled attenuation parameter (CAP) of 372 ± 57). The polysomnography study reported severe OSA with apnea-hypopnea index of 24.9. The Child-Pugh score was 6 and there was no history of alcohol intake. The workup for hepatitis was negative.

The patient was started on beta blockers preoperatively to decrease portal-systemic pressure. He was optimized for OSA by regular continuous positive airway pressure (CPAP) during night hours along with aggressive incentive spirometry. He also received a low-calorie liquid diet for 2 weeks and optimization of blood sugar levels was performed. The low-calorie diet helps to reduce the size of the liver which is especially important in super obese patients. Our patient lost 6 kg of weight on the liquid diet.

Sleeve gastrectomy (SG) could treat his morbid obesity along with his multiple comorbidities. It could also result in an improvement/ reversal in the histologic features of NAFLD (2). The patient was counseled for SG with more than usual risk of mortality and morbidity resulting from a more than usual chance of intra- and postoperative hemorrhage and risk of liver decompensation post-surgery which might require liver transplantation in the future.

1.2 | Surgical technique

The patient was classified as American Society of Anesthesiologists class IV. The patient's peritoneal cavity was accessed from the palmer's area. There was significant hemorrhage from the portosystemic shunt vessels at the epigastric port site used to place the Nathanson's liver retractor which was adequately controlled. A liver biopsy was not taken and the liver was visibly cirrhotic (Figure 1). The lesser sac was entered from the gastrocolic ligament and greater omentum was detached from the greater curvature of the stomach using Liga Sure. As the left crus was approached, a large bundle of varices coming off from the distal splenic vein was encountered and hemorrhage was controlled by the use

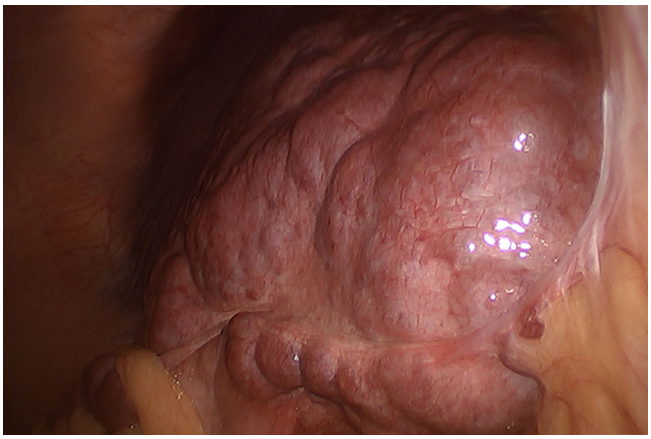

FIGURE 1 Intraoperative image of cirrhotic liver

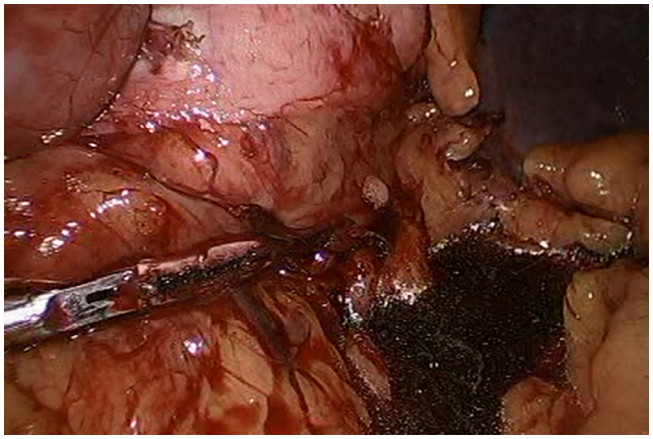

FIGURE 2 Dilated perigastric vessels and hemorrhage

of Liga Sure and pressure by gauze packing (Figure 2). The gastric sleeve procedure was completed using a 36 Fr bougie and linear stapling starting from 5-6 cm from pylorus till cardio-esophageal junction after complete mobilization of the stomach. The staple line was oozing more than usual due to raised portal pressure. Oversewing of the staple line was performed from the cardio-esophageal junction till pylorus for adequate hemostasis. Hemorrhage from the epigastric port site portosystemic shunt vessels, varices near the gastric fundus, and an iatrogenic liver trauma were adequately controlled. The estimated blood loss was 200-250 mL. Sub-hepatic and peri-staple line drains were placed. The operating time was 110 minutes. An edited video has been included in the supplementary material (Video S1).

1.3 | Postoperative course

The patient received postoperatively one unit of packed red cell transfusion. Only mechanical prophylaxis for

deep venous thrombosis was given because of hemorrhagic drain output. The patient had liver decompensation on the second postoperative day which was conservatively managed. There was a subsequent improvement in his liver parameters. The length of hospital stay was prolonged to 20 days because of postoperative respiratory complications including hypercarbia and onset of bilateral lower lobe atelectasis.

The patient is doing well at follow up of 18 months post-surgery. His postoperative endoscopy reported low-grade esophageal varices (Grade 1), which was an improvement from his pre-operative endoscopy report of high grade (Grade 3) esophageal varices. Even the fibroscan parameters showed a significant improvement compared to the pre-operative values. The LSM decreased from 73.5 ± 9.8 kPa to 25.1 ± 5.0 kPa and CAP decreased from 372 ± 57 dB/m to 323 ± 25 dB/m postoperatively. He had a weight loss of 45 kg along with the resolution of diabetes mellitus at 6 months of follow up. There were no symptoms of OSA and the patient is off CPAP.

2 | DISCUSSION

Bariatric surgery can be safely performed in cirrhotic patients without portal hypertension.[6] However, the incidence of complications is higher in patients having liver cirrhosis along with moderate to severe portal hypertension undergoing bariatric surgery.[4] There are some concerns regarding bariatric surgery in patients with cirrhosis. The risk of complications and liver decompensation is higher. This is usually the result of bariatric surgery leading to a state of nutrition depletion. Continued nutritional imbalance for prolonged periods after surgery can result in a higher chance of liver decompensation especially in patients with cirrhosis. However, it has been seen that bariatric surgery results in improvement or resolution of non-alcoholic steatohepatitis (NASH).[7] As already discussed, the mortality rate following bariatric surgery is higher in patients with cirrhosis as compared to patients without cirrhosis.[3] Various scores have been used to assess the risk of liver fibrosis in patients with NASH. These include the aspartate aminotransferase / alanine aminotransferase ratio, fibrosis (FIB)-4, BARD score and NAFLD score. Parameters such as age, BMI, serum albumin, platelet count, glucose tolerance are utilized in these scores.

The perioperative management in such patients is of utmost importance to decrease the postoperative complications. The patient should be well optimized with CPAP if required and intensive spirometery. Beta blockers should be used to decrease the portal pressures especially in cases of varices. The size of the liver should be decreased with the use of low-calorie diet. Alcohol intake should be strictly stopped. Patients with Childs A cirrhosis have a 10% chance of hepatic decompensation in the postoperative period and the patient should be counseled regarding the same. Bariatric surgery is usually contraindicated in Childs class B and C cirrhosis. A metanalysis of patients with cirrhosis has shown that banding results in a better control of esophageal variceal bleeding as compared to beta blockers.[8] The patient reported here was well optimized with medical therapy and did not require banding. Nonetheless, banding could have further decreased the blood loss from the porto-systemic shunts intraoperatively.Pestana et al reported their experience in 14 patients with Child's A cirrhosis with or without portal hypertension.[5] Out of these, 11 patients underwent SG and three underwent Roux-en-Y gastric bypass. All patients with portal hypertension underwent SG. There were no perioperative complications or mortality in this study. One SG patient (who had undergone the previous shunt for portal hypertension) had encephalopathy at 2 years post-surgery.

Super-super obesity with liver cirrhosis and esophageal varices is a clinical challenge. Patients with known cirrhosis preoperatively should be meticulously evaluated. The prognosis of liver disease should be assessed by Child-Pugh class score preoperatively. The signs of severe portal hypertension, such as esophageal varices, large dilated peri-gastric veins, ascites, and splenomegaly, should be evaluated before planning any bariatric procedure. During the surgery also maintenance of adequate hemostasis is a challenge in such patients. The use of staple line oversewing has not shown any benefit over no oversewing in the bleed rates in a metanalysis.[9] However, most of the patients in that review were non-cirrhotic, thus we still chose to oversew the staple line to minimize the bleeding.

Our patient was a young male, with super obesity with uncontrolled type 2 diabetes mellitus and severe OSA having a poor quality of life. SG was the procedure planned for the patient as it would allow future endoscopic intervention if the gastric varices developed and also maintain access to the biliary tree. The risk of liver decompensation was minimal with SG. The weight loss could prevent further increase in the portal pressure and possibly lead to an improvement in liver histology.[2,6] Furthermore, the weight loss following SG would make the patient a much more suitable candidate for liver transplantation if required in the future.

The benefits of bariatric surgery, including substantial weight loss and improvement in comorbidities, appear to outweigh the risks even in the high-risk group.[10] SG

appears to be the safest bariatric procedure in morbidly obese patients with cirrhosis with mild to moderate portal hypertension.[5] However, there are still concerns regarding the long-term safety and efficacy of bariatric surgery in cirrhotic patients.

Authorship declaration

All authors are in agreement with the content of the manuscript.

Conflicts of interests

The authors declare they have no conflict of interest to declare.

Contribution details (marked as applicable)

	Contributor 1	Contributor 2	Contributor 3	Contributor 4	Contributor 5	Contributor 6
Concept						✓
Design	✓	✓	✓	✓	✓	✓
Intellectual content	✓	✓	✓	✓	✓	✓
Literature search	✓	✓	✓	✓	✓	
Manuscript preparation and review	✓	✓	✓	✓	✓	✓
Manuscript editing	✓	✓	✓			

Patient anonymity and informed consent

Patient anonymity has been maintained in the manuscript. A written informed consent was taken prior to publication of this case report.

Ethical statement

An ethics committee's approval was not necessary for the case report.

Data availability statement

This is a case report. Most of the details are provided in the manuscript itself. We are willing to provide any other detail if required.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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