

## Case Report

# Perioperative Care of Mega Obese (BMI >70) Patients Undergoing Bariatric Surgery

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## Case Report

A 32 year old gentleman, an IT professional presented with significantly poor quality of life due to morbid obesity and its associated comorbidities. His weight was 241 kg and BMI 74 .He was classified as mega obese which is the highest grade of obesity as per classification [1]. He had rapidly gained 91kg over a few years due to limited mobility of Covid lockdown and later work from home along with poor dietary habits.

## Preoperative Assessment

On presentation he was comprehensively assessed by a multidisciplinary team consisting of an endocrinologist, pulmonologist, cardiologist, physiatrist, anaesthetist, dietician, psychologist and gastrointestinal surgeons. An interdisciplinary meeting was convened which also included the bio medical engineering department, operating room technicians and nurses to assess possible challenges in the perioperative period. He was admitted 4 weeks prior to surgery for evaluation. In addition to routine preoperative tests for ASA 3 patients he underwent a coronary angiogram, sleep study and hormonal evaluation. He was diagnosed to have Type 2 diabetes mellitus, non-alcoholic steatohepatitis and hypogonadotropic hypogonadism. Cardiology evaluation was normal. Pulmonary evaluation revealed obstructive sleep apnoea and obesity – hypoventilation syndrome.

## Abstract

The prevalence of obesity in the world has recently soared due to changes in life style habits. This report describes the perioperative management of a patient with one of the highest Body mass index ever reported from Asia who underwent bariatric surgery. The patient, a 32 year gentleman with a Body Mass Index 74 had Mega Obesity according to standard classification. This article discusses the management of perioperative challenges faced in mega obese patients.

**Keywords:** Bariatric Surgery; Perioperative Care; Mega Obesity; Super-Super Obesity

After preoperative counselling for the patient and family and explaining the risks and benefits associated with surgery in such mega obese patients he was planned for bariatric surgery in the form of a Laparoscopic Sleeve Gastrectomy (LSG).

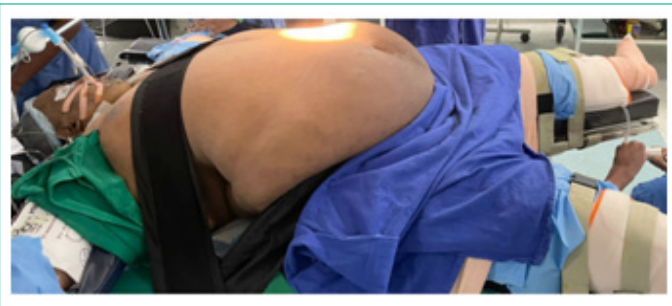
## Perioperative Setup and Care

As mentioned, he was admitted 4 weeks prior to the surgery. A personalised tailored approach to the patient was adopted. This included preoperative graded cardio respiratory conditioning, individualised dietary regimes, and deep vein thrombosis prophylaxis besides incentive spirometry. He was shifted daily to the physiotherapy and rehabilitation department for exercises to improve physiological reserve. Overnight non invasive ventilation was initiated 4 weeks prior to surgery [2]. He had significant improvement in exercise capacity, improved sleep cycles, as well as weight reduction (down to 229Kg) by the end of 4 weeks. A mock drill was conducted to ascertain ability to assume supine ramp position for intubation, manoeuvrability on the extra weight bearing patient shifter as well the as the movement of the extra-large bariatric bed through OT doors and corridors. A safety briefing including proper positioning, appropriate equipment, anaesthetic approach, specific surgical procedure and plan for postoperative care, including airway respiratory support, ultimate recovery location (ICU) were rehearsed with the entire operating room personnel and the

patient. Load bearing capacity of hospital furniture planned for use was reviewed including the toilet seats and ICU beds. Individual drug dosages were titrated according to their pharmacokinetic and pharmacodynamic properties especially its fat deposition by the clinical pharmacist. Advice from two pioneers in bariatric surgery in the world too was sought in planning.

After induction of general anaesthesia, lung protective ventilation strategies were adopted including recruitment manoeuvres during induction and on starting pneumoperitoneum. Specifically, high precision piston ventilator, TOF (Train of Four) monitoring, desflurane and opioid sparing analgesics were used to ensure smooth and early extubation at the end of surgery. Extra large bariatric cuffs were used for mechanical deep vein thrombosis prophylaxis.

Regarding surgical challenges, two operating tables were strapped together and extra large tables could not accommodate the patient. These tables were moved synchronously during surgery for proper positioning. Specially designed straps were applied to prevent patient slipping off table and leg split position given. (Figure 1). Pneumoperitoneum pressure was kept at 18 mmHg. Extra Long bariatric ports and instruments were used [3,4]. The patient was extubated on table to a non invasive ventilator. Graded intensive physiotherapy and orals was started from day 1. His liver function tests and sugars normalised within a few days. He was restarted on graded cardio respiratory conditioning. He had an uneventful recovery (Clavien- Dindo classification Grade 1) [5]. He has completed one year of follow up with monitoring of nutritional and electrolyte parameters and lost 60 kg.



## Discussion

The prevalence of obesity has increased has soared recently. This may be partly attributed to decreased physical activity secondary to work from home culture. These changes in life style may be in place for a long time [6]. Therefore it is imperative that hospitals become accustomed to dealing with morbidly obese patients in the coming days. This discussion describes the additional perioperative challenges we faced in doing surgery on a mega obese patient (BMI >70).

Preoperative cardio respiratory conditioning of the patient by a multidisciplinary team is of paramount importance in such patients for optimum results. A standardised bariatric surgery work up protocol is useful to minimise errors. Due to transport issues for such patients, prep evaluation is best done in an inpatient setting. Most patients have obstructive hypoventilation syndrome requiring titrated non invasive ventilation preoperatively. Physiotherapy and strict diet for at least 4 weeks preoperatively is important by helping the patient to tolerate surgery better and also reduces the size of the liver, facilitating its retraction. The large friable fatty liver overlying the gastroesophageal junction is a major factor making adequate resection of fundus of stomach difficult. Obesity being a hyper coagulable condi-

tion both mechanical and pharmacological DVT prophylaxis are usually used. A detailed psychology evaluation and consultation will prime the patient and prevent recidivism.

The infrastructure requires wider stronger patient seats, customised dressing gowns and footwear, floor mounted or reinforced toilets, bariatric beds, bariatric DVT and BP cuffs, portable doppler for placement of vascular lines, bariatric surgery OT tables (two OT tables strapped together in this case), patient transfer equipment including OT shifters and wheel chairs. Radiological investigations have limitations in morbid obesity. Obesity will impair the quality of plain radiographs. To overcome the attenuation of the signal by excess subcutaneous adipose tissue lowest frequency probe was used for USG. Both CT and MRI gantry usually have weight limit of 180 kg only. This fact would be important if there is a postoperative complication like leak or pulmonary embolism as radiological investigation wouldn't be possible unless CT/MRI machine with larger weight limit is available. The economic implications of hospitals treating an increasing number of obese patients are extensive as expanded weight capacity equipment typically costs 25%-100% more than standard items.

Bariatric operating instruments, ports, scopes and liver retractors are available on request from manufacturers. Android distribution of fat in peritoneal cavity as a whole limits visualisation of upper abdomen. Therefore any amount of bleed significantly reduces the visibility in such patients. Hence meticulous dissection to have a bloodless surgical field is crucial.

Postoperatively such patients develop a telectasis rapidly. Hence it is important to start non invasive ventilation immediately after extubation. Early mobilisation and starting of graded physiotherapy and progressively increasing nutrition will aid a quicker recovery. Since there are higher chances of morbidity and mortality, protocols should be in place to diagnose and treat complications early especially if there are limitations on radiological and endoscopic facilities.

As demonstrated in this report, with adequate preparation and multidisciplinary care, mega obese patients can be operated with good perioperative outcome. This would be especially relevant in the present era with a rising prevalence of obesity.

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