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Case Report

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Severe morbid obese patient undergoing laparoscopic sleeve gastrectomy and abdominoplasty

Summary

Obesity is a chronic disease characterized by an increase of body fat with increased morbidity, disability and mortality and impairs quality of life Surgery is the most effective treatment for morbid obesity in terms of long-term weight loss that improves comorbidities and quality of life. A 50 year old woman weighing 250 kg with a height of 160cm (BMI 97, 66) was presented to the bariatric surgery department. The last two years she was unable to move because of her obesity and cruciate ligament rupture on the right knee and lipodystrophy of the abdominal wall. She was evaluated for laparoscopic sleeve gastrectomy and abdominoplasty. The patient underwent a successful sleeve gastrectomy and apronectomy. Three years after the operation the patient weight is 110 kg and is able to walk with orthopedic brace.

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Introduction

The WHO has already declared obesity a global epidemic that constitutes one of the biggest current health problems.[1] In the European region, obesity also presents an unprecedented and underestimated public health challenge.[2]

Obesity is a chronic disease characterized by an increase of body fat. In clinical practice, the body fatness is assessed by the body mass index (BMI). BMI is calculated as measured body weight (kg) divided by measured height squared (m^2). In adults obesity is defined by a BMI ≥30 kg/m^2 and overweight by a BMI between 25 and 29.9 kg/m^2

The cause of obesity is complex and multi-factorial.[3,4] Obesity causes a significantly increased morbidity, disability and mortality and impairs quality of life.[5–11] Surgery is the most effective treatment for morbid obesity in terms of long-term weight loss,[12–14] improves comorbidities and quality of life,[15] and in the long term decreases overall mortality.[16,17] Surgery should be considered for patients in age groups from 18–60 years with a BMI ≥40.0 or with BMI between 35.0 and 39.9 kg/m^2 and co-morbidities in whom surgically induced weight loss is expected to improve the disorder (such as type 2 diabetes and other metabolic disorders, cardiorespiratory disease, severe joint disease and obesity-related severe psychological problems).[18] A laparoscopic technique should be considered as the first treatment choice in bariatric surgery.[19]

Case study and surgical procedure

A 50 year old woman weighing 250kg with a height of 160cm (BMI 97,66). The last two years she was unable to move because of her obesity and cruciate ligament rupture on the right knee and lipodystrophy of the abdominal wall. She was evaluated for laparoscopic sleeve gastrectomy and abdominoplasty. Preoperative evaluation revealed that she was sleeping in a half-sitting position (she wasn't able to lie on her back), had limited effort capacity because of her generalized adiposity. She had a history of rheumatoid arthritis, arterial hypertension, asthma, iron deficiency, polyallergia (to Penicillin, Doxycycline, Septrin, Ampicillin, Aspirin, Librax) and depression. Her medication included Atrovent, Pulmicort, Xanax, Losartan, Amlodipine, Hydrochlorothiazide, Vastarel, Alopurinol, Quinoric, and Cortisone. Laboratory tests recommended by the ABS, chest x-Ray, ECG, Echocardiogram, arterial blood gas analysis were within normal range. Pulmonary function tests: FVC 48%, FEV153%, FEV1/FCV120%, Conclusion - moderate to severe restriction. Her airway was graded as Mallampati class III, thyromental distance was 6cm and sternomental distance was 9 cm. She was accepted for anesthesia under ASA class 3.

Atrovent, Pulmicort nebulizers, Lorazepam, Omeprazole and Metoclopramide were given as premedication. After 3 min preoxygenation with 100% oxygen, anesthesia was induced with Midazolam, Fentanyl, Propofol, Rocuronium (titrating doses by LBW or TBW). Endotracheal intubation was performed using video laryngoscope (Cormack and Lehane Scale Grade III) with 8.5 cuffed endotracheal tube Anesthesia was maintained using infusions of Propofol Remifentanyl, Rocuronium and mixture of oxygen , air and Sevoflurane (the doses varied at the different stages of surgery). The patient's lungs were ventilated with a 45/55 oxygen/air mixture using Pressure-controlled ventilation with a 1:1 inspiratory/expiratory ratio, Peak inspiratory pressure (Pinsp) adjusted to maintain the expiratory tidal volume at 10 ml kg^{-1} IBW, and a respiratory rate adjusted to maintain the $PaCO_2$ at 5 kPa, using Positive End Expiratory Pressure (PEEP) 6-8cm H_2O.

The effects of intraoperative intermittent positive pressure ventilation (IPPV) regimens on physiological variables are reported in bariatric patients.[24–28] Currently, the translation of these data into effects on postoperative pulmonary complications and outcomes is lacking for the bariatric population. A using of positive end expiratory pressure (PEEP) and recruitment improved intraoperative oxygenation and pulmonary mechanics. In a wider surgical population, adoption of the other elements of lung protective ventilation (LPV) was associated with significant reduction in postoperative complications.[29]

Patient positioning affects pulmonary function perioperative.[30] The "beach chair" and "leg flexion position" have been demonstrated to be superior to straight, supine position regardless of Trendelenburg angle. These pulmonary effects are most marked in the absence of

the intraoperative pneumoperitoneum.[31] However, they may have negative influence on surgical access with consequent need of increased insufflation pressures.[32]

ECG, Blood Pressure SpO_2 $ETCO_2$, PAP (Peak Airway Pressure) arterial blood gas, CVP, and Urine output were continuously monitored during the surgery. Abdominoplasty was performed and then pneumoperitoneum was created, the intraabdominal pressure was about 14mmHg for 2½ hours without having any extreme hemodynamic alteration. Low-pressure carboperitoneum minimizes adverse haemodynamic effects[21] but may not ensure optimal surgical conditions, especially in the presence of inadequate NMB.[22,23] Deep NMB promotes a low-pressure (<1.6 kPa) peritoneum while providing adequate surgical access and visualization[22,23].It minimizes cardiac dysfunction associated with high IAP and reduces postoperative pain intensity, incidence of shoulder pain, and analgesic consumption, compared with moderate NMB.[20,22,23]

The surgery was uneventful and it lasted about 5 ½ hours. At the end of the operation Morfine and Paracetamol was given for analgesia. The patient was transferred intubated to the ICU for further observation At the ICU 10cmH2O PEEP in ASV (Adopted Supportive Ventilation) was applied and Fentanyl infusion for analgesia was started. The patient was extubated at the 6 postoperative hour. After extubation a respiratory physiotherapy with a hand respirometer was applied. The postoperative period was uneventful and the patient left the hospital at the 5 postoperative day. Three years after the operation the patient weight is 110kg and is able to walk with orthopedic brace (Figure 1) (Figure 2).

Figure 1 Before Apronectomy and Sleevegastrectomy.

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Figure 2 After Apronectomy and Sleevegastrectomy.

Conclusion

The number of obese patients has more than doubled in the last 10 years unfortunately. Obesity has been identified as a significant risk factor for respiratory and infectious complications in general surgery and for anesthesia related mortality. Furthermore the Anesthetists and the Surgeons frequently have to deal with the technical difficulties regarding morbid obese patients. Preoperative and a multidisciplinary team approach is very important for the success of the intervention and the safety of the severe morbid obese patient during laparoscopic surgery.

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