

# Anaesthetic Management Of A Morbidly Obese Patient Posted For Liposuction

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## Citation

K Singh, S Oak, R Patel, L Dewoolkar. *Anaesthetic Management Of A Morbidly Obese Patient Posted For Liposuction*. The Internet Journal of Anesthesiology. 2006 Volume 14 Number 2.

## Abstract

Liposuction is a cosmetic procedure in which the protuberant areas of the body containing the undesirable fat deposits are injected with normal saline containing lidocaine and epinephrine for pain control and hemostasis, and the waterlogged cells are suctioned out via cannula through a small incision<sup>1,2</sup>. Anaesthetic challenges associated with managing such a case include difficult airway and complications specific to liposuction. We report successful anaesthesia management of a morbidly obese patient posted for liposuction.

## CASE REPORT

A 42 year old morbidly obese female, total body weight 106 kg, with a height of 5 feet 2 inches, presented with complaint of difficulty in walking, with friction between the thighs due to excessive fat accumulated on medial aspect of both the thighs, and was posted for fat removal by liposuction. She was otherwise asymptomatic, no history of sleep apnea or any other cardio-respiratory complaint and no previous surgical or medical history, thus ASA status being Grade I. Cardiovascular and respiratory examination were within normal limits. Airway examination revealed MPC IV and all the neck measurements indicated quite an anterior larynx. With excessive breast mass, difficulty in laryngoscopy was also anticipated. After consulting with the surgeons, general anaesthesia was planned for this patient as the surgeons wanted painting and draping of the patient in standing position, and after that patient has to lie supine on operation table, and can't be given sitting or lateral position. We kept all equipments of difficult intubation like fiberoptic bronchoscope ready. After securing 18 G i.v. line on left hand, and attaching monitors i.e. pulse oxymeter, cardio scope and noninvasive blood pressure monitor patient was induced with Inj. propofol 2 mg/kg i.v. We were able to mask ventilate the patient adequately, so intermediate acting muscle relaxant vecuronium 0.1 mg/kg i.v. was given. On direct laryngoscopy with stubby handle and McCoy blade, Cormack Lehane view IV was found but we were able to intubate the patient with help of gum elastic bougie with 7.0 No. ETT. Proper tube placement was confirmed with ETCO<sub>2</sub> and bilateral auscultation of chest being equal and

clear. Analgesia and sedation were supplemented with Inj. Fentanyl 2 mcg/kg i.v. and Inj. Midazolam 0.03 mg/kg i.v. Anaesthesia was maintained with O<sub>2</sub>:N<sub>2</sub>O :: 50:50, Isoflurane 0.5-1%, Inj. Fentanyl 2 mcg/kg/hr i.v. and Inj. Vecuronium 0.1 mg/kg/hr i.v. Central line of 12 X 14 G was placed in right arm after induction and CVP was around 6-8 cm H<sub>2</sub>O. Patient was ventilated with Penlon ventilator with tidal volume of 650 cc at 12 breaths per min with peak airway pressure of 25 cm H<sub>2</sub>O. ETCO<sub>2</sub>, initial reading being 32-34 mm Hg, was constantly monitored to diagnose any fat embolism. Intraoperative course was uneventful. As wetting fluid 2.5 litres of normal saline with maximum lignocaine 25 mg/kg and epinephrine 0.03 mg/kg was used. Approximately 2400 ml of fat was removed and estimated blood loss was 700 ml. Total 2 liters of crystalloids were infused i.v. and urine output was 120 ml/hr. Post operative extubation was uneventful. After 72 hrs of uneventful course patient was discharged from the ward. Follow up after 10 days revealed quite improvement with no friction observed by the patient during walking.

## DISCUSSION

Liposuction surgery is a procedure that can help sculpt the body by removing unwanted fat from specific areas, including the abdomen, hips, buttocks, and thighs<sup>1,2</sup>. Utiyama et al<sup>3</sup> recently reviewed retrospectively 288 surgeries performed in 266 patients during a 6-year period using the tumescent technique. The liposuctioned locations were the abdomen, trochanteric region, flank, submentonian region, inner thigh region, axillae, inner knee region, back,

and arm.

Large-volume liposuction (> 1500 mL of aspirate) may be associated with a relatively high rate of morbidity and mortality because of hemodynamic complications. Patients are exposed to prolonged procedures, fluid shifts, and infusion of high doses of epinephrine and lidocaine that are added to the wetting solution on account of their analgesic and hemostatic effects. Lidocaine is used more often as the anesthetic agent in the wetting solution. Historically, the recommended dose of lidocaine is less than 7mg/kg<sup>4</sup>. However, this dose does not take into consideration the slow absorption from fat, the persistent vasoconstriction from epinephrine, and the lidocaine removed in the liposuction aspirate, which all contribute to a reduced risk of systemic toxicity from the lidocaine<sup>5,6</sup>. It is generally accepted that a lidocaine dose of up to 35 mg/kg is safe when injected into the subcutaneous fat with solutions containing epinephrine, although doses up to 50 mg/kg have been used<sup>7</sup>. Epinephrine use should be avoided in patients who present with pheochromocytoma, hyperthyroidism, severe hypertension, cardiac disease, or peripheral vascular disease. In addition, cardiac arrhythmias can occur in predisposed individuals or when epinephrine is used with halothane anesthesia. Alterations in the rate and force of contraction or cardiac irritability and hypertension can occur, particularly in hyperthyroid patients<sup>8</sup>. The recommended concentration of epinephrine in tumescent solutions is 0.25 to 1.5 mg/L. The total dosage of epinephrine should be minimized and usually should not exceed 50 µg/kg<sup>9</sup>.

Fluid management is one of the fundamentals of anaesthetic management. Supervising the fluid and electrolyte balance of a patient during a liposuction procedure is comparable to managing an acute burn, a major abdominal operation, or a trauma patient<sup>7</sup>. Because of the increasingly large volumes of infiltrate used in larger-volume liposuction, careful attention must be paid to all fluid infused, whether as part of the infiltrate solution or as intravenous fluids administered during the procedure. It is essential that all remaining fluid be accounted for when assessing total output, including the total volume of aspirate, any additional blood loss from concomitant procedures, and urine output. It is estimated that 50 to 70 percent of the residual fluid volume is left behind when a liposuction procedure is completed<sup>10</sup> and seventy percent of subcutaneous infiltrate is presumed to be intravascular.

Patients with a residual volume of wetting solution greater

than 70 ml/kg are more likely to experience fluid overload and require an extended period of observation and diuretic treatment. Signs and symptoms of fluid over load include increased blood pressure, jugular vein distension, full bounding pulse, cough, shortness of breath, and moist crackles on auscultation of the lungs<sup>11</sup>. A case report states post operative mortality in case of liposuction from fluid overload<sup>12</sup>.

Blood loss estimation requires monitoring the vitals and knowledge of the fact that 25% to 30% of the aspirate can be blood<sup>1,2,13,14</sup>.

We monitored ETCO<sub>2</sub> constantly to diagnose any embolic episode and central line was put to as a measure to deal with this complication as per the standard protocols.

IV fluids were given by titration taking into account the wetting fluid given by the surgeon and CVP was kept at 6-8 cm H<sub>2</sub>O throughout the surgery and post operative period.

Max lignocaine used was 25 mg/kg and epinephrine used was 0.03 mg/kg. Throughout intraoperative and 72 hrs of post operative period no complication attributed to these two drugs was noticed.

Although liposuction is considered a safe procedure, especially after the introduction of the tumescent technique<sup>15,16</sup> various other rare local and systemic complications have been reported, such as pulmonary fat embolism, infection, pituitary apoplexy, deep venous thrombosis and death<sup>2,13,14,17,18</sup>

Anterior ischemic optic neuropathy has been reported as another rare complication of liposuction presenting as loss of vision<sup>19</sup>.

Morbidly obese patients are associated with difficult airway due to excessive fat deposition in oro-pharyngeal cavity, short neck etc. so every equipment to handle this problem should be kept ready<sup>20</sup>.

### ACKNOWLEDGEMENT

Dr. M.E. Yeolekar, Dean, Seth G. S. Medical college & KEM hospital and Dr. Baliyar Singh & Dr. Sanjay Mahendroo, Dept. of plastic surgery, KEM Hospital, Parel, Mumbai-12

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