

Anaesthetic Management of a Super Obese Patient for Emergency Lower Limb Fasciotomy

Supriya Kulkarni, Shilpa Gurav, Uma Gothivarekar

Department of Anaesthesiology, Maharashtra Institute of Medical Education and Research, Pune, Maharashtra, India

ABSTRACT

Obesity leads to several hazardous changes in cardiovascular, respiratory, endocrine, hepatic, and renal system functions. It also causes anthropometric changes in airway as well as the whole of the areas of interest of regional anesthetic techniques. Collectively it leads to difficulties in the perioperative anesthetic management of obese patients. Emergency lower limb debridement and fasciotomy was planned for a 41-year-old male patient weighing 130 kg, 158 cm height, and a body mass index of 52 kg/m². The patient had a history of hypertension, diabetes mellitus, hypothyroidism, and anemia. He had short neck, MPC Grade III mouth opening. Tachycardia of 120 beats/min and blood pressure of 140/80 mm Hg. Case conducted under spinal anesthesia with a 25G spinal needle, 6 mg of 0.5% bupivacaine. With adequate preloading, continuous oxygenation, use of small quantity of local anesthetic drug and appropriate positioning case was conducted without any hemodynamic changes.

Key words: Emergency fasciotomy, spinal anesthesia, super obesity

INTRODUCTION

Prevalence of morbid obesity is gradually increasing worldwide.^[1] Optimal method of anesthetizing these patients is still debatable. Management of super obese (body mass index [BMI] more than 50 kg/m²) and super obese patients (BMI more than 60 kg/m²) is based on extrapolation of findings obtained from morbidly obese patients.^[2]

The aim of this case report is to discuss the perioperative management of a patient categorized as super obese who underwent an emergency fasciotomy

and debridement of the lower limb venous ulcer with cellulitis.


CASE REPORT

A 41-year-old male patient with 158 cm height, 130 kg weight BMI of 52 kg/m² was posted for emergency fasciotomy and debridement of lower limb venous ulcer with cellulitis.

On pre-operative evaluation, the patient gave a history of hypertension since 3 years, diabetes mellitus since 2 years, and hypothyroidism since 2 years on regular treatment.

He presented with a gradually enlarging ulcer on left lower limb on the mid-calf region with huge swelling on the extremity. In view of impending septicemia, the patient was posted for an emergency fasciotomy with debridement.

On examination, the patient had tachycardia of 120 beats/min with a blood pressure of 140/90 mm of Hg, mouth opening of MPC Grade III due to submucous

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Address for correspondence:

Dr. Supriya Kulkarni, Department of Anaesthesiology, Maharashtra Institute of Medical Education and Research, Pune - 410 507, Maharashtra, India. E-mail: rawatesupriya@gmail.com

fibrosis, short thick neck, neck circumference of 45 cm, neck extension of 400, and thyromental distance of 6 cm.

Investigations showed a hemoglobin of 8.6 g%. Raised total leukocyte count of 15000/cmm. Fasting blood sugar levels of 190 mg% thyroid stimulating hormone 11 IU 3 months back.

A large bore (18 G) intracath secured, 800 ml of ringer lactate preloaded, reserved 1 pint of packed cell volume. Difficult airway cart prepared. Inj. atropine and all other emergency drugs like vasopressors kept ready. Inj. Ondansetron 4 mg and Inj. Pantoprazole 40 mg given.

Large NIBP cuff, SPO2 and ECG monitor attached.

Oxygen supplementation started at the rate of 2 lit/min with nasal prongs.

Spinal anaesthesia is given in sitting position, in L4-L5 interspace with 25 G spinal needle (Figure 1). 6 mg of 0.5% bupivacaine given slowly after aspirating free clear adequate flow of cerebrospinal fluid (CSF). The patient made supine with two pillows below his shoulder and table in head high position. Block height remained restricted up to T12 level O2 supplementation continued throughout the operative period of 1 h. The procedure was uneventful with stable vital parameters. Patient monitored in the post-anesthesia care unit for next 1 h and then shifted to intensive care unit for further monitoring.

DISCUSSION

Obesity is one of the greatest pandemics of the 21st century.^[1]

Obesity is defined as a body weight more than 10% of ideal body weight. As mentioned in following table obesity is further classified according to BMI. It is categorized as a disease because it is a physiologic dysfunction of the human organism with environmental, genetic, and metabolic etiologies.^[3]

Most of these patients carry significant medical history of hypertension, diabetes mellitus, obstructive sleep apnea, and so on. Perioperatively they are at increased risk of coronary artery disease, cardiac arrhythmias, pulmonary embolism, and cerebrovascular disease.^[3]

Choice of the path of anesthesia was quite likely regional in this super obese patient. Providing general anesthesia would have been challenging in this case as his airway assessment was suggestive of difficult mask ventilation and difficult intubation.^[4] This patient also had an inadequately controlled hypothyroid

Levels of risk associated with increasing BMI

Classification	BMI (kg/m ²)	Risk of develop health problem
Underweight	<18.5	Increased
Normal weight	18.5–24.9	Least
Overweight	25.0–29.9	Increased
Obese		
Class 1	30.0 – 34.9	High
Class 2	35.0 – 39.9	Very high
Class 3	40.0 – 49.9	Extremely high
Super obese	≥ 50	Exceedingly high

Courtesy: Reference 1. BMI: Body mass index



Figure 1: Spinal anaesthesia to super obese patient

status which leads to delayed recovery from general anesthesia. These super obese patients display altered pharmacokinetics which leads to post-operative respiratory depression due to use of opioids intraoperatively.^[5]

Considering all these factors, spinal anaesthesia was the technique of choice. However, this is also a technically challenging procedure in obese patients.^[5,6] Anatomy of the back is obscure; landmarks are not identified easily. Use of ultrasonographic guidance and fluoroscopic techniques are suggested by latest studies.^[7,8] CSF volume is reduced in these patients due to increased intra-abdominal pressure and increased epidural fat. Both these factors lead to high, inadvertent ascent of subarachnoid block.^[6] Local anesthetic drug volume matters a lot for safe conduction of case.

Spinal anaesthesia was given in sitting position. L4-L5 interspace was chosen for lumbar puncture as it is the space with least overlying fat. 25G spinal needle, 0.5% bupivacaine 6 mg given. After making patient supine, table maintained in head high position, with 2 pillows below shoulder. This positioning helped to restrict subarachnoid block height to T12 level.

Due to adequate preloading and controlled spinal anaesthesia level, hemodynamics remained stable throughout the procedure.

In conclusion, with thorough pre-operative assessment, adequate anesthetic preparation and intraoperative monitoring an emergency, life-saving surgical procedure of a super obese patient with multiple high-risk factors were conducted in a safe and uneventful manner.

REFERENCES

1. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends on obesity among US adults, 1999-2000. *JAMA* 2002;288:1723-7.
2. Sinha AC, Eckmann DM. *Miller's Textbook of Anaesthesia*. 8th ed. New York: Elsevier Churchill Livingstone; 2015. p. 2201-3.
3. Domi R, Laho H. Anaesthetic challenges in obese patients. *Br J Anaesth* 2012;26:758-65.
4. Kristensen MS. Airway management and morbid obesity. *Eur J Anaesthesiol* 2010;27:923-7.
5. Hocking G, Wildsmith JA. Intrathecal drug spread. *Br J Anaesth* 2004;93:568-78.
6. Neilsen KG, Guller U, Steele SM, Greengrass RA, Pietrobon R. Influence of obesity on surgical regional anaesthesia in the ambulatory setting: An analysis of 9038 blocks. *Anaesthesiology* 2005;102:181-7.
7. Eidelman A, Shulman MS, Novac GM. Fluoroscopic imaging for technically difficult spinal anaesthesia. *J Clin Anaesth* 2005;17:69-71.
8. Prasad GA, Perlas A, Jinn K, Ramlogan R, Brull R, Chan V, *et al.* Ultrasound assisted spinal anaesthesia in morbidly obese patients. *Anaesthesiology* 2008;109:339.

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