

Segmental Epidural Anesthesia in an Obese Patient Undergoing Percutaneous Nephrolithotomy in Prone Position

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Abstract

The increasing incidence of obesity is a crisis in health care where these patients are increasingly being anesthetized for nonbariatric surgery. Anesthetizing an obese patient is a challenge and more so if surgery is to be done in prone position. We would like to present a patient, a 59-year-old male with body mass index of 45 (weight: 145 kg; height: 178 cm; abdominal girth: 135 cm) with a history of diabetes mellitus, hypertension, and chronic obstructive pulmonary disease since 10 years posted for a left-sided percutaneous nephrolithotomy. Successfully managed under epidural anesthesia and operated in the prone position.

Key words: Epidural anesthesia, obese, percutaneous nephrolithotripsy, prone

INTRODUCTION

The use of regional anesthetic techniques for obese patients is increasing in popularity as it offers distinct advantages over general anesthesia. A regional anesthetic allows minimal airway manipulation, avoidance of anesthetic drugs with cardiopulmonary depression, diminished blood loss, minimum blood pressure and heart rate changes, reduced postoperative nausea and vomiting, as well as greater pain relief reducing perioperative opioid requirements. In addition, patient satisfaction is significantly greater.

Obesity is a chronic, multisystem pro-inflammatory disorder associated with myriad of comorbidities. Prevalence of obesity varies according to age, sex, socioeconomic status, and region. Obesity is more common in adults than in children and in females than in males. Although it is much more common in the west, its prevalence is gradually increasing in developing countries also. Obesity is on the rise in India. As per the National Family Health Survey 2007 statistics, the overall prevalence of obesity was 6.8% and overweight was 33.5%. The highest prevalence of obesity (7.8%) and overweight (36.9%) was found among subjects aged 35–44 years in both the sexes. In 2005, WHO estimated, in India, there were 22% overweight men and 21% overweight women above the age of 30 years. This number was projected to rise to 31% in men and 29% in women by 2015. The rate of premature deaths in patients

weighing 140–160% of their ideal body weight are double than that of similar normal weight individuals.

The increasing incidence of obesity is a crisis in health care where these patients are increasingly being anesthetized for nonbariatric surgery. Data available for nonbariatric procedures are scarce. High prevalence of a difficult airway, higher risks of aspiration, pulmonary embolus, and associated concomitant diseases add to the anesthetic risk. The incidence of obstructive sleep apnoea (OSA) and reduced tissue oxygenation is high in morbidly obese patients. High degree of suspicion of OSA should be maintained in all obese individuals. Obese patients are sensitive to the respiratory depressant effect of opioid drugs, and more likely to require postoperative ventilatory support to avoid hypoxia. It has been recommended that opioids be avoided in these patients.

Anesthetizing an obese patient is a challenge^[1] and more so if surgery is to be done in the prone position.^[2]

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CASE REPORT

We would like to present a patient, a 59-year-old male with body mass index of 45 (weight: 145 kg; height: 178 cm; abdominal girth: 135 cm) with a history of diabetes mellitus, hypertension, and chronic obstructive pulmonary disease since 10 years posted for a left-sided percutaneous nephrolithotomy.

His airway evaluation revealed the following: The presence of long, thick beard, short thick neck, neck circumference 55 cm; mouth opening three finger-breadths; Mallampati classification Grade 2 and limited neck movements. Breath holding time 20 s and room air SpO₂ 96%. He had New York Heart Association Grade 2 dyspnea. His pulmonary function test showed moderate obstructive and restrictive disease, partially reversible with bronchodilators. Arterial blood gas analysis showed pH 7.43, PaCO₂ of 50 mmHg, PaO₂ 68 mmHg, and SaO₂ 93%. Ultrasonography (USG) reports showed a staghorn calculus on the left side.

The patient was anesthetized at low thoracic level (T11–T12) with 16-gauge regular length epidural needle and catheter without ultrasound. All arrangements to handle a difficult airway, USG machine to deal with a difficult epidural and extra-long epidural needle set were kept ready. After an initial 8 ml bolus of 2% xylocaine with adrenaline, the patient was maintained in sitting position to attain a lower level for cystoscopy. Lithotomy position was given after confirming sensory level. The cystoscopy took around 40 min. By then the patient had regained some motor power.

The patient now had to be positioned prone [Figure 1]. Data are available which show that percutaneous nephrolithotripsy (PCNL) can also be done in the supine position.^[3,4] This would have been ideal in our case, but our surgeon was comfortable in doing it in the prone position only.

Since the patient had regained partial motor power, he could reposition himself comfortably in the prone position with minimal help of the occupational therapy personnel.

For the PCNL, we used 0.5% bupivacaine. After giving a bolus of 7 ml, we tilted the table to the left so as to get maximal effect on the operative side and also a segmental thoracic blockade. The patient had upper sensory level till T7. He still had motor power in the lower limbs which indicated a successful segmental blockade. The patient was comfortable as he could adjust himself when required. Since segmental blockade would also involve intercostal nerves at those levels which could lead to hypoventilation, we monitored the intraoperative period with the help of end-tidal carbon dioxide along with delivering oxygen by nasal prongs. The Ramsay Sedation Score was 2–3 throughout the procedure. The patient had stable vitals throughout with no major fluctuations. He maintained a patent airway with a SpO₂ of 97–98% on oxygen with nasal prongs. The procedure lasted for 1½ h, and there were no major events intraoperatively. Intraoperative dexmedetomidine 0.3 mcg/kg



Figure 1: Patient positioned prone

was infused intravenously over 20 min after the patient was turned prone.

At the end of surgery, the patient was fully conscious, oriented, and hemodynamically stable and again self-positioned himself from prone to supine position.

DISCUSSION

Regional anesthesia was useful as it decreased our need for drugs which would alter the hemodynamics and also avoided the need for airway manipulation of a potentially difficult one. Furthermore, positioning an obese patient under general anesthesia in the prone position is a difficult task which was eased to a great extent. Postoperative respiratory complications were avoided.

Data which mention anesthetic management of an obese patient in the prone position under epidural anesthesia is scarce though obese patients have been operated in the supine or lateral position for similar surgeries under regional anesthesia.^[5,6]

Segmental regional anesthesia in the experienced hands could be used for obese patients undergoing surgeries in the prone position.

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Conflicts of interest

There are no conflicts of interest.

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