

ANAESTHESIA CHALLENGES DURING MANAGEMENT OF EMERGENCY CESAREAN SECTION IN A POST-PNEUMONECTOMY PRIMIGRAVIDA WITH PLACENTA PREVIA



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ABSTRACT

Pulmonary disease is a known risk factor for perioperative respiratory complications. So anesthesiologists are expected to experience these postpneumonectomy patients coming for elective or emergency surgeries. But there is little data to anesthesia management for cesarean delivery of postpneumonectomy parturient. On reviewing the literature, there is only one reported case of the trial of vaginal delivery followed by cesarean section done under epidural anesthesia, a 41 years-old parturient having preoperative respiratory failure and pneumonia in the antenatal period which was managed on continuous positive airway pressure (CPAP)

simultaneously. Our case presented a 24 years-old primigravida of 34 weeks gestation with placenta previa and complaints of two days per vaginal bleeding was posted for the emergency cesarean section. She had past history of left lung lobectomy 10 years back, video bronchoscopy 3 years back and history of admission for treatment of an episode of pneumonia at 32 weeks of present gestation. Emergency cesarean section was managed successfully under spinal anesthesia. This case report highlights that spinal anesthesia may remain a good option in anesthesia management for cesarean section in a primigravida with postpneumonectomy.

Keywords: *post-pneumonectomy, emergency cesarean section, spinal anesthesia.*

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INTRODUCTION

Pulmonary disease is a known risk factor for perioperative respiratory complications. There is an increase in a number of cases of pneumonectomy in patients having pulmonary Kochs. Also, there is an increased incidence of survival of postpneumonectomy patients, 5-year survival rate >75% for benign disease and >40% for malignant disease.¹ So anesthesiologists are expected to experience these increasing number of postpneumonectomy patients coming for elective or emergency surgeries. But in the literature search, there is little data to anesthesia management for cesarean delivery of such patients.

The parturient having considerable anatomical and physiological changes of respiratory system due to lobectomy and pregnancy, there are several problems associated with anesthesia management for cesarean section. The goals in management are thorough preoperative assessment, proper fluid balance, vigilant monitoring for early detection and prompt treatment of respiratory or cardiac failure and postoperative analgesia.

placenta previa. She was posted for the emergency cesarean section.

In childhood, she was diagnosed with sputum acid-fast bacilli (AFB) positive pulmonary Koch's and was treated with anti-tuberculosis drug AKT under medical supervision. She was operated for left lung lobectomy 10 years back. Video bronchoscopy was done 3 years back for complaints of a cough with expectoration non-responding to the treatment, which showed stump dehiscence. Also, she was admitted for treatment of an episode of pneumonia at 32 weeks of gestation in present pregnancy.

On general examination she was afebrile, thinly built, weight 45kg and height 155cm, BMI 18.75kg/m², HR 98beat/min-regular, BP 110/70mmHg, RR 18times/min. On auscultation air entry was absent in left middle and lower zone, no adventitious sounds. SpO₂ on air was 95%. Another systemic examination was within normal limits. Her hemoglobin level was 12.6g/dL platelet count, serum electrolytes, liver function tests, renal function tests, and blood gas analysis were within normal limits.

Electrocardiogram was normal. Chest x-ray showed hyper-translucency in the left mid-zone and lower zone. Previous high-resolution computed tomography (HRCT) chest revealed loss on the left side with mediastinal shift and associated scarring,

CASE REPORT

A 24 years old primigravida with 34 weeks of gestation was admitted with complaints of per vaginal bleeding for 2 days and was diagnosed with having

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destruction of the left upper lobe, large nodular infiltrates in left lower lobe and scarring of right upper lobe secondary to pulmonary Koch's.

Nothing-by-mouth (NBM) period was inadequate, of only 3 hours. Written informed consent along with the need for ICU care if necessary was taken. Standard monitors were attached. Hemodynamic parameters were within normal limits. SpO₂ was 100% on O₂ supplementation. IV fluid Ringer lactate was started as slow co-loading. Spinal anesthesia was given under aseptic precautions with 25G spinal needle and 2ml of 0.5% bupivacaine was given.

Sensory block was achieved up to the T6 segment. O₂ supplementation 5L/min was given throughout the operation via venti mask. Baby weighing 2100g was delivered successfully with an APGAR score of 7 at 1 min and 10 after 5 min. Injection of oxytocin 20 IU was given as a slow infusion. Injection of Midazolam 1mg IV was given as anxiolytic. Surgery duration was 75 minutes. Intra-operative stable hemodynamics and SpO₂ was 100%. Intra-operative blood loss was 550ml and urine output of 200 ml. The total 800ml intravenous fluid was given. The patient was shifted to the ward after 24 hours of observation in HDU.

DISCUSSION

Oxygenation and ventilation changes due to left-sided lobectomy, gestational alterations in physiology of respiratory system and presence of placenta previa causing per vaginal bleeding in this parturient are important challenges determining the outcome after emergency cesarean delivery.

Changes in respiratory system during pregnancy are:

1. Anatomical: Upper airway- mucosal edema, increased tissue friability, increase the risk of bleeding, increased risk of difficult ventilation and difficult intubation due to weight gain and enlarged breasts.
2. Physiological: Minute ventilation increases by 30-50% which is achieved by an increase in tidal volume by 40-45% and an increase in respiratory rate by 5-15%. Functional Residual Capacity is decreased by 20%, alveolar ventilation increases by 70%, and the O₂ requirement is increased by 20%, PaCO₂ decrease 10mmHg, PaO₂ increase 10mmHg, and O₂ dissociation curve shifted to the right

Pneumonectomy is associated with:

1. Anatomical changes: Deviation of heart and mediastinum towards the resected lung side

by counterclockwise rotation after left pneumonectomy and by translocation after right pneumonectomy. There is compensatory hyperinflation/ herniation across midline in remaining lung. Change in shape of thoracic cage imparts thoracic scoliosis. Ipsilateral hemidiaphragm is elevated.

2. Physiological changes: increase in pulmonary arterial pressure and pulmonary vascular resistance, a significant decrease in FVC/FEV1 and a number of potential complications that involve the respiratory system, cardiovascular system, and the pleural space which is an added burden.

In the literature search, the reported postpneumonectomy cases are managed under epidural or general anesthesia with successful outcomes. There is only one reported an elective case of the trial of vaginal delivery followed by cesarean section done under epidural anesthesia.² She was 41 years old postpneumonectomy case with 34 weeks gestation, had severely restricted lung function from tuberculosis-related destroyed lung, left pneumonectomy 16 years back, bronchiectasis on the remnant lung and superimposed pneumonia, having a respiratory failure which was managed on CPAP throughout the antenatal and postnatal period. Maternal and fetal outcomes were successful and were discharged after 77 days with oxygen supplementation.

In the present case, spinal anesthesia was chosen. Epidural anesthesia was not given to avoid problems of inadequacy or failure of block leading to use of general anesthesia. She was NBM only for 3 hours. Preloading was avoided. Ringer lactate was given as co-loading to avoid the consequences of fluid overload. After spinal anesthesia precipitous fall in blood pressure can occur which can increase morbidity from excessive fluid overload. But this case had stable hemodynamics. Injection of tramadol 40mg IV was given for postoperative analgesia.

General anesthesia could impair the matching of ventilation-perfusion in the postpneumonectomy parturient. General anesthesia has disadvantages due to polypharmacy, laryngoscopy, intubation, undesirable effects on mother and fetus, the risk of aspiration as NBM for 3 hours only, the risk of postoperative nausea and vomiting. Complications due to intubation and mechanical ventilation in this case of previous pneumonectomy having stump dehiscence were avoided.

Cases are reported of management of cesarean section under epidural anesthesia in parturients having respiratory failures due to other causes like COPD/ARDS/cystic fibrosis.³⁻⁵

Rajendra *et al*,⁶ reported 33 years old male operated for emergency modified radical mastoidectomy for right chronic suppurative otitis media (CSOM) under general anesthesia successfully 23 years after left lobectomy. Also, postpneumectomy cases are reported for other surgeries like laparoscopic adrenalectomy, Toupet fundoplication with anterior gastropexy for repair of gastric volvulus, laparoscopic cholecystectomy.⁷⁻⁹ under general anesthesia and laparoscopic cholecystectomy under regional anesthesia.¹⁰

Precaution should be taken to prevent aspiration in a patient having a single lung. This patient did not give any history suggestive of regurgitation. Our patient was NBM for 3 hours only and premedications injection of ondansetron 4mg IV, injection of ranitidine 50mg IV were given.

Postpneumectomy cases may require recurrent admissions, in the present case, for treatment of pneumonia at 32 weeks of gestation and for video bronchoscopy under general anesthesia. Our patient had good respiratory reserve clinically and did not have any perioperative episode of hypoxia. Preoperative workups like pulmonary function testing (PFT), incentive spirometry, resting 2D-echo should be done, but it was not possible due to an emergency. Anesthesiologists should be vigilant for detection and prompt treatment for life-threatening complication like a cardiac and respiratory failure.

CONCLUSION

Thorough preoperative evaluation, appropriate investigations, comprehensive understanding of the pathophysiology of the respiratory system due to lobectomy and pregnancy are key to successful anesthetic management. We conclude that an emergency cesarean section can be managed successfully under spinal anesthesia without any perioperative adverse events in a previously pneumonectomized parturient.

REFERENCES

1. Newington DF, Ismail S. Laparoscopic cholecystectomy in a patient with previous pneumonectomy: a case report and discussion of anaesthetic considerations. *Case Rep Anesthesiol*. 2014 Nov 9; 2014: 582078. DOI: [10.1155/2014/582078](https://doi.org/10.1155/2014/582078).
2. Hae Jin Lee, Jin Young Chon, Hyun-Jung Koh, *et al*. Anesthesia for cesarean section in a patient with respiratory failure: A case report. *Korean J Anesthesiol*. 2013 May; 64(5): 460-463. DOI: [10.4097/kjae.2013.64.5.460](https://doi.org/10.4097/kjae.2013.64.5.460)
3. Lee EY, Kong MH, Kim NS, *et al*. Epidural anesthesia for caesarean section in a parturient patient with congestive heart failure and respiratory insufficiency. *Korean J Anesthesiol*. 2007; 53: 656-9. DOI: [10.4097/kjae.2007.53.5.656](https://doi.org/10.4097/kjae.2007.53.5.656)
4. Howell PR, Kent N, Douglas MJ. Anesthesia for the parturient with cystic fibrosis. *Int J Obstet Anesth*. 1993; 2: 152-8. DOI: [10.1016/0959-289X\(93\)90009-7](https://doi.org/10.1016/0959-289X(93)90009-7)
5. Bose D, Yentis SM, Fauvel NJ. Caesarean section in a parturient with respiratory failure caused by cystic fibrosis. *Anaesthesia*. 1997; 52: 578-82. DOI: [10.1111/j.1365-2222.1997.132-az0128.x](https://doi.org/10.1111/j.1365-2222.1997.132-az0128.x)
6. Nikhila Rajendra, Anusha Raj, Ravi Madhusudana, *et al*. Anesthetic management of a patient with previous lobectomy posted for emergency modified radical mastectomy. *International journal of pharmacy and pharmaceutical sciences*. 2016; 8(6): 305-306. Available from: <https://innovareacademics.in/journals/index.php/ijpps/article/viewFile/11525/5143>
7. Abhijit Nair, Venogopal Kulkarni. Laparoscopic adrenalectomy in a postpneumectomy state. *IJA*. 2015; 59(6): 386-7. DOI: [10.4103/0019-5049.158773](https://doi.org/10.4103/0019-5049.158773)
8. HF Batirel, O Uygur-Bayramicly, S Guler, *et al*. Laparoscopic repair of gastric volvulus occurring as a long term complication of left pneumonectomy: Report of a case. *Surgery Today*. 2007; 37(1): 43-45. DOI: [10.1007%2Fs00595-006-3339-x](https://doi.org/10.1007%2Fs00595-006-3339-x)
9. V Malladi, C Palani Velu, KV Jani, *et al*. Laparoscopic cholecystectomy for acute calculus cholelithiasis with previous pneumonectomy: Case report. *Anesthesia On Line*. 2005; 1. Available from: <http://www.priory.com/anaes/chole.htm>
10. Y Gae-Woo, C Soo-Eun, C Jun-Young. Laparoscopic cholecystectomy performed under regional anesthesia in a patient who had undergone pneumonectomy: A case report. *Korean Journal of Anesthesiology*. 2009. 56(3): 330-333. DOI: [10.4097/kjae.2009.56.3.330](https://doi.org/10.4097/kjae.2009.56.3.330)



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