



## EMERGENCY CESAREAN SECTION IN A PARTURIENT WITH LUNG BULLAE

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**ABSTRACT**

A symptomatic lung bullae in pregnant state had severe respiratory manifestation with altered respiratory physiology. They offer special challenge due to difficult diagnosis and definite treatment during pregnancy. We report case of a 28 years old parturient, primigravida at 40 weeks of gestation who presented as a multiple lung bullae for cesarean section.

**KEYWORDS :** Anesthesia, cesarean section, Bullae, pregnancy, spinal

**Introduction**

In pregnancy, there is altered respiratory physiology present. A rupture of bulla may cause spontaneous pneumothorax in pregnancy and it increases the chances of mortality and morbidity in mother and fetus. In our case patient was 28-year-old woman at 40 weeks of gestation with right upper and middle lobe bullae presented in emergency department with severe breathlessness, cough with expectoration and chest pain.

**Case Report**

A 28-year-old parturient, primigravida at 40 weeks of gestation presented in the emergency department with the complaints of breathlessness, cough with expectoration and chest pain since 2-3 days. She was registered in the antenatal clinic, had history of previous similar complaints in second trimester with significant medical record. She was admitted to hospital for 5 days at 7 month of gestation with chief complaints of breathlessness and chest pain and started on MDI Salmeterol+fluticasone (25/125) and MDI tiotropium. Patient was known case of hypothyroidism on tablet thyronorm 25mcg since 6th months of gestation. Past history of pulmonary tuberculosis at the age of 10 years, had taken treatment for 6 months. A non-smoker and a housewife by occupation. On examination, she had tachycardia HR = 90/min, tachypnea RR = 28-30 /min, BP = 108/80 mm Hg, Spo<sub>2</sub> = 93-94% on RA, and 98-99% on FiO<sub>2</sub> of 0.5 - 0.6 using face mask. On percussion, a hyper resonant note was found on the right upper lobe with rhochi on right upper and middle lobe of lung air on auscultation. Heart sounds were normal. Chest X-ray with abdominal shield was done. Well defined radiolucent shadow noted in right upper and middle lobe. After a collaborative consultation with a radiologist, physician, and obstetrician and based on chest X-ray findings a provisional diagnosis of right lung bulla was made. Patient was planned for an emergency cesarean section. A regional anaesthesia with sub-arachnoid block (SAB) with drug injection bupivacaine 0.5% (H) 1.6 ml given. A sensory level was achieved at T6 level. After desired level of block achieved, propped up position with 30-40 degree and nebulisation of duolin given. The patient remained hemodynamically stable during the surgery with no deterioration of respiratory parameters. A healthy male baby was delivered. Injection Dexamethasone 8mg+injection hydrocortisone 100mg given. A ultrasound guided trans abdominal plane block with injection Bupivacaine 0.125%, 10ml on each side given for postoperative analgesia. Post-delivery a contrast enhanced computed tomography (CECT) thorax was done and diagnosis with 2 bullae over right upper and middle zone of size 22cm is confirmed. She underwent thoracotomy with excision of bullae and was discharged after 1 month of postoperative day.

**Discussion**

A Lung bulla is an air filled space within lung which has developed because of emphysematous destruction of lung parenchyma. It causes permanent enlargement of alveolar space distal to terminal bronchioles. A spontaneous rupture of bulla causes pneumothorax and permanent damage to lungs. In our case, a young parturient diagnosed with right lung upper and middle lobe bullae at her second trimester with breathlessness and chest pain and decreased air entry on the right side of chest. She was managed medically with MDI

Salmeterol+fluticasone and MDI tiotropium, with regular follow up. Patient was presented with chest pain, grade 3-4 breathlessness and cough with expectoration at 40 weeks of pregnancy. A chest x ray was done by using abdominal protective shield suggestive of large bullae in right upper and middle zone of lung.

Pregnancy offers a state of changes in respiratory physiological parameters. Expanding uterus creates a reduction in FRC by 20% through cephalad pushing of the diaphragm resulting in reduced oxygen reserve. In addition, there is an increased oxygen demand by up to 20% of prepregnant values during term gestation, which in labor can go up to 40-75% of the prelabor values. [3] Even slight impairment of ventilation is poorly tolerated during pregnancy and labor, can be detrimental to both mother and fetus. [2] Thus, any pulmonary pathology in pregnancy needs to be managed carefully and treated with prompt effect for a better fetal and maternal outcome. [4] Increase in intrathoracic pressure in pregnancy and labor can increase the likelihood of multiple bullae. Our patient presented as severe breathlessness and chest pain. Radiological diagnosis of lung bullae that was confirmed on CECT thorax, post-delivery. Our patient had lung bullae. There was no finding of pneumothorax on CT scan explaining no improvement in clinical and radiological condition of the patient after ICD insertion. Elective cesarean section near term is the safest approach to avoid worsening of symptoms. However, our patient was at term and an emergency C-section was planned, low dose subarachnoid block (SAB) was the anesthesia technique of choice. Regional anesthesia offers advantages of minimal respiratory mechanics disturbances, avoidance of risk of bullae rupture and complications like bronchopleural fistula, early detection of hypoxia, pulmonary embolism or worsening of respiratory symptoms as the mentation of the patient is intact and a better fetal outcome. General anesthesia has drawbacks of risk of rupture of the lung bullae from the use of nitrous oxide and administration of positive pressure ventilation, impairment of ventilation by increased dead space due to lung bullae causing ventilation-perfusion mismatch.

All the appropriate measures should be taken to avoid high level of subarachnoid block. A higher level of block results in blockade of muscles of respiration with a reduction in inspiratory capacity and expiratory reserve volume, deterioration of symptoms and even rupture of underlying bullae have been reported. Postoperative pain can cause worsening of respiratory parameters and thus needs to be managed appropriately. A ultrasonographic transabdominal plane block with injection bupivacaine 0.125% 10ml on each side helped us mitigate postoperative pain with no effect on respiratory mechanics, and other systemic analgesics. It provides effective postoperative analgesia without risk of sedation. Therefore, a spinal anesthesia appears to be a safe and effective plan of anesthesia in parturient with lung bullae in emergency LSCS

Rupture of bullae can occur which leads to pneumothorax is common in subsequent pregnancies posing risks to the mother as well to the fetus. Thus, a corrective surgical procedure (VATS) is recommended after delivery to avoid recurrence in subsequent pregnancies. Intrapartum, second trimester is the optimal time for

surgical correction.[2] Avoidance of surgical intervention during the third trimester is helpful in preventing preterm labor and possible preterm delivery.[2]

Radiological investigation is a necessary part of management for definitive diagnosis in such cases, but due to the risk of radiological exposure to the fetus it is not preferred. However, it should not be withheld if it is categorically necessary for better maternal outcome. The accepted safe cumulative dose of ionizing radiation during pregnancy is 5 rad or 50 mGy. One mSv (millisievert) is the dose produced by exposure of one mGy (milligray) of radiation. Effective radiation exposure from chest X-ray and CT chest is 0.1 mSv and 5–7 mSv, respectively. This implies that in spite of limitation of radiation exposure during pregnancy, chest X-ray and CT chest can be used with abdominal shield for diagnosis depending on the need of the hour. Our patient was at term presented with emergency C-section, thus in best interest of both mother and fetus CT chest was planned post-delivery.

Our patient had an upper and middle lobe lung bullae. Further, closer look at the X-rays lead to a provisional diagnosis of lung bullae which was confirmed later. This implies that an extra vigilant observation of patient's clinical condition, investigations and a divergent thinking can help reaching to more definitive diagnosis with avoidance of unnecessary interventions and delaying the definite management. Subaracnoid block(SAB) appears to be safer anesthesia of choice than general anesthesia with avoidance of higher level of blockade in absence of any fetal compromise and associated maternal comorbidities.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.



#### REFERENCES

1. Raoof S, Bondalapati P, Vidyula R. Cystic lung diseases algorithmic approach. *Chest* 2016;150:945-65.
2. Winter JTV, Nichols FC. Management of spontaneous pneumothorax during pregnancy: Case report and review of the literature. *Mayo Clin Proc* 1996;71:249-52.
3. Flood P, DR Mark. *Miller's Anesthesia*, 8th ed. Philadelphia, PA 19103-2899: Elsevier; 2015. p.2331-32.
4. Donahue DM, Wright CD, Viale G, Mathisen DJ. Resection of pulmonary blebs pleurodesis for spontaneous pneumothorax. *Chest* 1993;104:1767-9.
5. Mac Duff A, Arnold A, Harvey J. Management of spontaneous pneumothorax: British Thoracic Society pleural disease guideline 2010. *Thorax* 2010;65(Suppl 2):ii18-31.
6. Harten JM, Brown AG, Davidson IT. Postpartum pneumothorax: Two case reports and discussion. *Int J Obstet Anesth* 2000;9:286-9.
7. Madan K, Singh N, Jain V, Aggarwal AN. Spontaneous pneumothorax following caesarean section under spinal anaesthesia. *BMJ Case Rep* 2013;2013. doi: 10.1136/bcr-2012-008507.