



POSTOPERATIVE CHALLENGES IN THE MANAGEMENT OF A PRIMIGRAVIDA WITH KYPHOSCOLIOSIS AND SECONDARY RESTRICTIVE LUNG DISEASE FOR EMERGENCY CAESAREAN SECTION

Dr Mangal Swathi V

Senior Assistant Professor, Department of Anaesthesiology, Institute of social obstetrics & Govt Kasturba Gandhi Hospital for women and children, Triplicane, Chennai- 5.

Dr Basker N

Professor & HOD, Department of Anaesthesiology, Institute of social obstetrics & Govt Kasturba Gandhi Hospital for women and children, Triplicane, Chennai- 5.

ABSTRACT

A short statured primigravida, known case of kyphoscoliosis with secondary restrictive lung disease admitted with lower respiratory infection and breathing difficulty was taken up for emergency caesarean section under general anaesthesia. Meticulous preoperative anaesthetic Preparation was done anticipating difficult airway. Intraoperative course was uneventful. On second postoperative day, patient underwent tracheostomy anticipating endotracheal tube blockade. Patient ran through a stormy postoperative period with acute tracheostomy tube blockade. Subsequently, her tracheostomy tube was changed from Portex to Shiley's and she was nursed vigilantly under continuous monitoring in HDU. She was physically and psycho socially rehabilitated in all aspects including speech therapy and improvement of her nutritional status. Gradually she was planned for tracheostomy tube closure with serial videolaryngoscopy guidance by coordinated efforts of ENT team. Post tracheostomy closure, she was well trained to breathe through anatomical air passages. Upon successful rehabilitation with multidisciplinary efforts of Obstetric, Anaesthesia & ENT team, She was discharged after 2 months of hospital stay.

KEYWORDS : Kyphoscoliosis, Restrictive Lung Disease, Emergency Caesarean, Tracheostomy

INTRODUCTION:

Kyphoscoliosis is forward and lateral bending of the spine. It usually develops due to tuberculosis in developing countries. It commonly affects the dorsal and lumbar spine. Only few cases of anaesthetic management of severe kyphoscoliotic patients with pregnancy are reported^[1]. The physiological changes in pregnancy can worsen the respiratory function in a scoliosis patient with restrictive lung disorder. The maternal mortality and morbidity correlates well with the degree of functional impairment^[2].

Here we present a tremendously challenging yet successfully managed primigravida with kyphoscoliosis having restrictive lung disorder who underwent emergency caesarean section under general anaesthesia.

Case Report:

A short statured primigravida in her late 20's with height of 132 cm weighing 38 kg with gestational age of 34 weeks + 1 day, a known case of kyphoscoliosis with secondary restrictive lung disease and seizure disorder presented to the casualty with cough and sputum production along with difficulty in breathing on and off since 1 week. Breathing difficulty was aggravated on exertion and relieved by rest. Examination revealed severe spine deformity with kyphosis and scoliosis.

Systemic examination revealed bilateral crepitations on auscultation. Other systems being normal. Blood pressure was 120/70 mmhg. Pulse rate was 108/min, SpO2 recorded was 90% at room air and 98% with Non rebreathing oxygen mask 10 litres.

Patient was admitted in HDU and managed by multidisciplinary team. ECG taken revealed sinus tachycardia with heart rate of 110/min. Chest X-ray was done bedside which revealed bilateral opacities. Cardiology opinion was obtained. Echocardiogram was normal with normal LVSF and ejection fraction of 62% with no pulmonary hypertension. Chest physician opinion was also obtained.

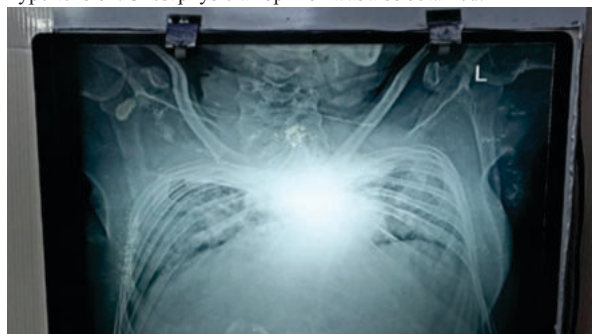


Image 1-Preoperative Chest Xray:

In view of restrictive lung disease, patient was started on low molecular weight heparin. Patient was managed with backrest and supplemental oxygen. Patient was simultaneously started on antibiotics, decongestive measures and nebulisation with mucolytics for 2 days.

In view of maternal general condition along with obstetric factor of cephalopelvic disproportion due to short stature, patient was planned for emergency caesarean section under general anaesthesia (also due to ongoing anticoagulant therapy) with blood products in reserve.

Anaesthetic Challenges:

Positioning of patient was tremendously difficult for general anaesthesia due to the spine deformity. Patient was supported on the back with 2 to 3 layers of folded sheets in order to optimize the head and neck position for laryngoscopy and intubation. Airway was secured with 6 size endotracheal tube and proceeded for Caesarean section. Intraoperative period was uneventful with standard intraoperative monitors. Patient was not extubated and was ventilated in the postoperative period in view of restrictive lung disease superimposed with lower respiratory infection.

In the HDU, patient was sedated, paralyzed and ventilated on pressure control mode. Repeated suctioning of oral cavity was done. Patient was administered higher antibiotics, nebulised simultaneously to clear the superimposed respiratory infection. Series of chest X-ray were done for the follow up of lung condition. Central venous access was secured in right femoral vein for sampling under USG guidance.

On the first postoperative day patient was weaned from pressure control mode to SIMV + PSV mode. Patient tolerated SIMV mode very well for the next 2 days but continued to have copious secretions in the airway despite all measures taken for clearance of secretions.

Anticipating endotracheal tube blockade and also considering the need to establish a firm secure airway in the environment of secretions, patient was planned for elective tracheostomy on the second postoperative day. Size 6 portex tracheostomy tube was inserted by the team of ENT surgeons.

Postoperative Period:

Posttracheostomy in HDU, patient was ventilated on intermittent SIMV + PSV mode and spontaneous CPAP mode. On day 1 of post tracheostomy patient went in for sudden desaturation upto 60% in the morning at 7 am in HDU. Patient was immediately Ambu ventilated with 100% O2. Even though the patient was ventilated with 100% O2, there was not quite adequate chest rise visibly and breath sounds were much reduced. Acute tracheostomy tube blockade was immediately suspected and tracheostomy tube was suctioned with saline and sodium bicarbonate. Thick mucous plugs were removed and patency

of the portex tracheostomy tube was reestablished. Upon removal of thicker mucous plugs and debris, oxygen saturation slowly started rising and came upto 99%. ENT team was immediately called upon and Portex tracheostomy tube was changed to Shileys tube on the same day to facilitate easy maintenance and cleaning of the tracheostomy tube.

With Shiley's tracheostomy tube patient was continued to be ventilated on intermittent SIMV + PSV mode and CPAP mode. Midnight around 3 am there was a massive power failure in the HDU. The generator backup was also failing intermittently. But due to the coordinated persistent efforts of the entire ICU team led by the anaesthesiologist, patient was successfully ventilated with Ambu 100% O₂ and Bain circuit until the resumption of power in the morning 8 am.

Patient was continued to be ventilated with intermittent spontaneous CPAP and SIMV + PSV mode. Patient was nebulised and suctioned regularly. Mucolytics were administered parenterally (IV N acetyl cysteine). Over the next few days patient was fully switched over to spontaneous CPAP mode with intermittent t piece

Patient was stepped down to level 2 ICU on as the patient had good response and tolerance to t piece trials. Patient was nursed in level 2 ICU for one day. Unexpectedly on the early morning of the next day, patient sustained an episode of generalized tonic clonic seizure and desaturated upto 30%. Immediate alert of ICU team revived the patient as she was connected to the ventilator with 100% O₂, anti epileptics were administered immediately, airway (tracheostomy tube) was thoroughly suctioned and patient was shifted to level 1 ICU without any delay. As she was ventilated promptly with 100% O₂, her oxygenation improved consistently upto 99%. Other vital parameters being within normal limits.

In the HDU patient sustained one more episode of generalized tonic clonic seizures. Continuous vigilant monitoring was done in HDU and the patient regained consciousness from postictal state as the anti epileptics were continued. Neurology opinion was obtained. Her anti epileptic dosage of Levitacetam was adjusted to guard her against any further episode of seizure prophylactically.

Patient was nursed in HDU for 36 days totally under continuous monitoring. Meanwhile patient was also started on crushed solid diet to improve her nutrition status. Patient was simultaneously encouraged and rehabilitated (both physically and psychosocially) and ambulated by the coordinated efforts of the entire ICU team. Secretions cleared up. Patient was comfortable and stepped down to level 2 intensive care under continuous monitoring. Patient was maintaining good oxygenation on tracheostomy tube at room air.

Serial videolaryngoscopy done by our ENT team revealed normal anatomy of larynx and she was successfully trained for speech therapy. She was also trained to breathe through the normal anatomical air passages and a month later, she underwent tracheostomy tube closure in a gradual manner. Upon successful rehabilitation with multidisciplinary team efforts of Obstetric, Anaesthesia & ENT team, She was discharged after 2 months of hospital stay.



IMAGE 2:

DISCUSSION:

There are many merits and demerits for each technique of anaesthesia in managing a gravida with kyphoscoliosis for caesarean section. Generally pregnancy associated physiological changes can worsen the respiratory function in kyphoscoliosis. There is increase in tidal volume and minute ventilation in normal pregnancy with alterations in thoracoabdominal musculature. These adaptations are not possible in kyphoscoliotic patients. Also the enlarging uterus leads

to decrease in functional residual capacity and closing capacity. Thus ineffective ventilation leads to ventilation perfusion mismatch and hypoxemia in these patients^[1]. Severe scoliosis is also associated with altered anatomy of the airway causing difficulty in laryngoscopy and intubation. It is also associated with risk of increase in pulmonary artery pressures during laryngoscopy and intubation. Care should be taken to avoid hypoxia, hypercapnia, acidosis, and anesthetic gases such as nitrous oxide as they increase the pulmonary vascular resistance.^[3]

Although the above constraints are of concern, we have chosen general anaesthesia in this case mainly considering urgency of caesarean section, ongoing anticoagulation and general condition of the mother with dyspnoea causing disability to cooperate for a regional block. Other factors to prefer general anaesthesia in such cases include maternal cardiopulmonary disease and technical difficulty in performing regional block in uncorrected scoliosis due to exacerbation of severity.

Moreover, neuraxial blockade can have complications such as unpredictable block, risk of high spinal anesthesia, and failure rates. The increased intraabdominal pressure and engorged veins in the epidural space cause a decrease in the subarachnoid space. In such cases, the normal dose of the local anesthetic can lead to higher levels of block leading to hypotension. This is more so in cases of severe scoliosis, which can be associated with decreased volumes of cerebrospinal fluid.^[3]

However notwithstanding the choice of general anaesthesia in this particular case, it is quite anticipatory that the postoperative course would be stormy but with persistent coordinated efforts and round the clock critical care facilities, we were able to overcome the shackles and recover her out successfully despite the existing pathology of concern.

CONCLUSION:

Evaluation of maternal cardiopulmonary status is of utmost concern in kyphoscoliosis in deciding the choice of Anaesthetic technique for caesarean section. Whatever be the anaesthetic technique chosen in kyphoscoliotic patients for caesarean section, proper planning is essential for safe anaesthetic management and eternal vigilance is of paramount importance in postoperative period.

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