

Intrauterine Fetal Traumatic Lung Injury Following Road Traffic Accident to Mother: A Case Report

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Abstract

Direct fetal injury is uncommon, and fetal brain is the most common organ to be involved. The most common cause of fetal injury is due to motor vehicle accident. Though brain damage is the most commonly encountered effect following motor vehicle accident, here we report a case of lung injury in the fetus causing massive pneumothorax and bilateral lower lobe pulmonary contusions in spite of mother having no external injury to her abdomen or the newborn to his chest in the form of contusions or open injury.

Keywords: Intrauterine Fetal Traumatic Lung Injury; Road Traffic Accident to Mother.

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Introduction

Trauma in pregnancy occurs in upto 3% of all pregnancies and is an important cause of adverse fetal and maternal outcomes.^{1,2} Trauma complicates 1 in 12 pregnancies and is the leading non obstetric cause of death among pregnant women.^{3,4,5} Traumatic injuries are unintentional (motor vehicle crash, falls, poisoning and burns) or intentional (assault/intimate partner violence, suicide, homicide and gunshot wounds).^{4,6} Among these, motor vehicle crashes account for >50% of all trauma incurred during pregnancy, with 82% of fetal deaths occurring during those crashes.⁷ The most common cause of fetal loss is placental injury.^{8,9} Direct fetal injury is rare, and head injury is most common in such case.¹⁰ However in our case report we have a rarest of rare and unique incidence of traumatic lung injury to the fetus and the resulting complications due to the same are enumerated in this article after getting consent from the parents.

Case Report

A 25 years old near term pregnant female, residing locally, was 8 months ANC with an LMP on 30/08/2019 and EDD of 06/06/2020, sustained a road traffic accident on 04/05/2020 at 2 pm. She was the pillion, while her husband was driving. The lady has sustained injury over the head. Though her Glasgow coma scale on admission to Intensive Care Unit at Government facility, was 15/15, she progressively deteriorated with a fall of GCS when CT was done which was s/o - Multiple haemorrhagic contusions in the right fronto-temporal region and left parietal lobe. However screening scans of other sites of the mother like abdomen and chest were within normal limits. The baby was also apparently doing well according to the scans. In view of falling GCS, the lady was taken up for emergency LSCS and craniotomy which were done at the same time. A male baby was born on 08/05/2020 at 12:35 am as a late preterm, small for gestational age with a birth weight of 1.5 kg. The



baby cried immediately after birth. The neonate showed no anomalies or external injuries, however the baby was having significant respiratory distress in the form of subcostal retractions, intercostal retractions, nasal flaring and tachypnea of 80 breaths/ min since birth. On auscultation, however there was minimally decreased air entry on right side. The baby was put on oxygen by nasal prongs after which distress reduced and he was maintain saturation of 98% with a HR of 150/min. X ray was done which was inconclusive (Fig. 1), hence radiologist opinion was obtained regarding the same. However, radiologist were not sure and advised USG thorax and CT chest on urgent basis which was also done on emergency basis. Though USG Thorax was within normal limit, CT thorax revealed – a provisional diagnosis of right sided moderate – massive pneumothorax. Distress of the baby worsened after which the baby had to be intubated and put on mechanical ventilation (Fig. 3). Urgent Paediatric surgeon opinion was obtained and Intercostal drainage (ICD) insertion was done for the baby. Though the baby was not actively bleeding from any site, the baby was becoming pale. (Table 1) Initial blood reports revealed a, Complete blood count of Hemoglobin (Hb) – 8.7g/dl, White blood count (WBC) - 5800, Platelet (Plt)- 137000 and C reactive protein (CRP)- Negative. ABG was done which was suggestive of Respiratory acidosis. Urgent blood was given for the baby. Baby was kept nil by mouth, started on iv fluids with ionotropes as BP was in falling trend. Also iv antibiotics, iv calcium gluconate. The baby was repeatedly however becoming pale and had to receive two more blood transfusions. The baby was continued to be on mechanical ventilation on SIMV mode with moderate setting. The Final CT report had come which was s/o – Moderate Right sided Pneumothorax with mediastinal shift and Pulmonary Contusions involving bilateral lower lobes (Fig. 2). Unfortunately even with maximum ventilator, ionotropic, and blood product support, the baby could not be salvaged and died on day 4

of life due to pulmonary haemorrhage (Fig. 3) with Respiratory Failure. The mother also succumbed one day before the baby died.



Fig. 1: Cect thorax s/o moderate right sided pneumothorax with mediastinal shift and pulmonary contusions involving bilateral lower lobes.



Fig. 2: Baby was intubated and mechanically ventilated in view of worsening respiratory distress. Continuous bleed seen through endotracheal tube with increasing pallor alongside ct findings were all indicative of pulmonary haemorrhage.

Table 1: Serial Cbc's Of Baby Done from Day 1 of Life Suggestive of Anaemia.

DATE	Hb(g/dl)	WBC	PLT	CRP	SODIUM (mEq/L)	POTASSIUM (mEq/L)	UREA (mg/dl)	CREATININE (mg/dl)
8/4/2020	8.7	5800	137000	NEGATIVE				
9/4/2020	8.7	5600	137000	NEGATIVE	142	4.8	61	1.8
10/4/2020	8.1	7600	146000	NEGATIVE	144	4.9	55	1.2



Fig. 3: Chest X-ray was found to be inconclusive, hence, a cect thorax was advised based on clinical suspicion.

Discussion

Fetal injury causing brain damage and ultimately the death of foetus, have been reported extensively in the past literatures. However, intrauterine foetal injury causing bilateral lung injury is rare and have not been reported yet. This case described an extensive lung injury in the form of massive pneumothorax with multiple bilateral lower lobe contusions. This followed a major road traffic accident by of an 8 month old antenatal women. Injury to the uterus/ or the placenta may be a predictive factor for a poor fetal outcome mainly because of impairment of fetal circulation.^{11,12}

Prameela Karimi et al, reported an extensive injury in a preterm infant following a relative minor maternal motor vehicle accident.¹³ Another study by Noaki Nishida et al, reported a fetal closed head injury following a road traffic accident.¹⁴ A study by Mohammad Safdari et al, described a similar case of fetal brain injury and concluded that fetal traumatic brain injury can result in severe brain atrophy, intraparenchymal and intraventricular haemorrhage, subdural haematoma and skull fractures leading to neonatal developmental delay, hypotonia, blindness, oropharyngeal dysphagia and seizures.¹⁵

As we had reviewed literature, we found an extensive report on fetal brain injury. However, fetal lung injury has been rarely reported. Hence, presenting this case, where the neonate when

delivered as late preterm, did not require any resuscitative measures and did not sustain any external injury as such, however had respiratory distress since birth. On careful evaluation, it was revealed that the baby had pneumothorax and multiple pulmonary contusions leading to the death of the neonate.

Conclusion

This is hence a case report of a rare incidence where there was an intrauterine fetal lung injury due to motor vehicle accident, resulting in massive pneumothorax and multiple contusions in the lung leading to the death of the neonate ultimately. When the mother has sustained an injury, anticipating other injuries than brain injury is also of utmost importance is what we infer from this case report.

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