

Original article:

Study of respiratory morbidity in term neonates following elective caesarean section

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Abstract

Background: Cesarean sections continue to increase day by day in both developed and developing countries. The chances of respiratory morbidity are more in babies born by C-section compared to normal deliveries due to absence of squeezing of lung during delivery and also absence of changes in maternal-fetal hormonal milieu. Recently, it has been shown that the incidence of respiratory morbidity is lower in infants with a gestational age of at least 39(+0) weeks at elective caesarean section compared to infants with a gestational age less than 39(+0) weeks. The aim of this study was to determine respiratory morbidity and to correlate weeks of gestation and respiratory morbidity in term neonates following elective C- section.

Methodology: It was a hospital based retrospective study. The records of babies born by elective C-section were reviewed data entered in predesigned and validated proforma and analyzed on the basis of statistical ground. Case sheets were reviewed to obtain data regarding the demographic details like maternal age and parity. Neonatal outcome analyzed included birth weight, sex of the baby, APGAR score at 1 and 5 minutes, NICU admission (admission more than 3 days), neonatal respiratory morbidity like transient tachypnea of newborn, respiratory distress syndrome and persistent pulmonary hypertension and serious respiratory morbidity (oxygen therapy for more than two days, nasal continuous positive airway pressure, or need for mechanical ventilation).

Results: A total 160 babies were included in the study. 13 babies had developed respiratory morbidity requiring NICU admission. 16.9% of babies born in 37th week, 11.9% of 38th week, 9.2 % of 39th week and 3.98 % of babies born >40 weeks had developed respiratory illness. Type of morbidity varied from tachypnea (91.2%), grunt (81%), needing CPAP (8.9%), needing mechanical ventilation (6.89%).

Conclusions: This study simply suggests that respiratory morbidity increases in elective C-sections and as gestation progresses the respiratory morbidity decreases.

Introduction:

Respiratory morbidity is an important complication of elective caesarean section. The presence of labour preceding caesarean section reduces the risk of neonatal respiratory morbidity. Recently, it has been shown that the incidence of respiratory morbidity is lower in infants with a gestational age of at least 39(+0) weeks at elective caesarean section compared to infants with a gestational age less than 39(+0) weeks. Delivery by elective caesarean section was shown to increase the risk of respiratory morbidity in all studies eligible for inclusion.¹ The magnitude of this relative risk seemed to depend on gestational age even in deliveries after 37 completed weeks of gestation.² The aim of this study is to determine respiratory morbidity and to correlate weeks of gestation and respiratory morbidity in term neonates following elective C- section.

Methodology:

This was a hospital based observational study with retrospective collection of data conducted for last six months. All babies born by elective C-section in last 6 months were included in our study by random sample methods. C-section was considered if elective without complications like rupture of membranes, sepsis, PIH, multiple gestation and major congenital anomalies and completed 37 weeks of gestation.

In patient, medical records of all mother- infant pair admitted in hospital following elective C-section were reviewed.

Gestational age calculated using last menstrual history.

If menstrual history not known first trimester scan taken into consideration.

The collected data included gestational age, indication for LSCS, gender, symptoms of respiratory morbidity, duration of hospital stay.

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Results:

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Discussion:

In our present study , A total 160 babies were included in the study. 13 babies had developed respiratory morbidity requiring NICU admission. 16.9% of babies born in 37th week, 11.9% of 38th week, 9.2 % of 39thweek and 3.98 % of babies born >40weeks had developed respiratory illness. Type of morbidity varied from tachypnea (91.2%), grunt (81%), needing CPAP (8.9%), needing mechanical ventilation (6.89%).

Our results support the notion that the risk of overall and serious respiratory morbidity is increased in newborns delivered by elective caesarean section. Our results also suggest that a significant reduction in neonatal respiratory morbidity may occur if elective caesarean section is postponed to 39 weeks' gestation. Carrying out elective caesarean sections at greater gestational ages may, however, result in higher rates of intrapartum caesarean sections because some women would go into spontaneous labour (in our population 25% of spontaneous intended vaginal deliveries started before 39 weeks' gestation). Compared with elective caesarean sections, intrapartum caesarean sections may carry an increased risk of complications such as uterine rupture in women with previous caesarean section, infections, or even maternal mortality.³ In contrast the influence of labour or rupture of membranes before caesarean section may be beneficial to newborns.^{4,5}

Only observational studies have attempted to evaluate the risks and benefits of elective caesarean section for pregnant women and newborns.⁶ More evidence based information on the effect of timing and caesarean section in labour could be obtained from randomised controlled trials, which would have to have large populations.

Previous studies showed that ECS was associated with an increased risk of respiratory morbidity in neonates⁶, especially from preterms babies, where the main cause is surfactant deficiency. This morbidity results from relative absence of hormonal and physiological changes associated with labour which are necessary lung function in neonates, and which do partially occur in newborns delivered as preterms.^{7,8} The changes that occur in the fetal lungs in preparation for delivery include an increase in the small pulmonary blood vessels (up to 40 times) in the third trimester, changes in the epithelial sodium channels with increased ability to clear foetal lung fluid at term, and decrease of chloride channels which lead to decrease of fluid secretion. The gestational age at the time of ECS may thus be a critical determinant of the risk for this respiratory morbidity in neonates⁹, which occurs usually after 48 h of birth. It is an essential to interpret the correct diagnosis of patient with the help of clinical examination and investigations. Computer information based decision support systems can play an important role in accurate diagnosis and cost effective treatment.¹⁰

Conclusion

In conclusion, the risk of respiratory morbidity after elective C-section is related to gestational age in term neonates. If elective C-section performed after 39 weeks of gestation respiratory morbidity lower than if performed between 37-39 weeks these results indicate that waiting until 39 weeks of gestation before performing elective C-section is of benefit to newborn.

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