

Time From Uterine Incision to Fetal Delivery in Caesarean Sections and Neonatal Outcome

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ABSTRACT

Objective: The purpose of this study is to evaluate the factors that influence the period from when the skin incisions are made to delivery and to identify the influence that these surgical intervals have on the immediate neonatal outcome.

Study Design: This will be a prospective cohort study

Place of Study: Doctors Trust Teaching Hospital Sargodha

Duration of Study: December 2020 to April 2022

Materials and Methods: Tachypnea, persistence for at least 12 hours, one of the chest X-ray abnormalities, and elimination of other respiratory or non-respiratory illnesses helped the paediatric team diagnose TTN. Tachypnea produces fast, shallow breathing. These criteria diagnosed TTN. Tachypnea within six hours of delivery, persistence for at least twelve hours, a chest X-ray abnormality, and elimination of other respiratory or non-respiratory illnesses were the criteria.

Result: There was a correlation between the development of TTN and the demographic age (GA), which was statistically significant; however, there was no correlation between the development of TTN and any of the other parameters that were evaluated. There was no evidence to suggest that any of the other risk factors that were investigated were significantly linked with the development of TTN.

Practical Implication: Correlation between the development of TTN and the demographic age (GA), but no correlation between the development of TTN and any of the other parameters that were evaluated

Conclusion: The authors have concluded that there is no association between TTN and the time between the beginning of the surgical procedure and the delivery of the baby when the patient is under spinal anaesthesia. They argue for the importance of research with larger populations to determine the safest time limit for the delivery of foetal tissue and other potential risks associated with the development of TTN.

Keywords: Caesarean section, Decision to delivery interval, Feto-maternal outcome

INTRODUCTION

The caesarean section is by far the most common type of delivery procedure used in obstetrics and therefore virtually invariably how one's kid is brought into the world. There has been an increase in the rate of primary caesarean delivery without a medical or obstetrical indication, to women who had not previously had a caesarean birth, and the majority of these cesareans are being performed on the request of the mother¹. There has also been a rise in the rate of primary caesarean delivery without a medical or obstetrical indication, to women who had not previously had a caesarean birth. This pattern has emerged over the course of time. Because having a first caesarean section makes it more likely that you will need to have caesarean deliveries in subsequent pregnancies (the rate of repeat caesarean section is now almost 91%), it is necessary to address both the practice patterns of physicians and the maternal attitude towards the mode of delivery². This is because having a first caesarean section makes it more likely that you will need to have caesarean deliveries in subsequent pregnancies. There is a correlation between the number of previous caesarean deliveries and an increased chance of developing adhesion illness in subsequent pregnancies. According to the conventional wisdom, repeat caesarean births are often more challenging than the first one due to adhesions that involve the lower regions of the uterus. These adhesions delay entry into the uterine cavity and the delivery of the baby. When performing a main elective caesarean birth on a patient, it is important to have a conversation with them about the risk of having adhesion disease. A repeat caesarean section is associated with an increased risk of morbidly adherent placenta as well as intraoperative complications such as the requirement for blood transfusions, bladder injury, and caesarean hysterectomy, and it also affects the outcome for the neonate. These complications can include the necessity for blood transfusions³. Avoiding having another caesarean section is the best way to stay clear of these issues. A higher BMI is linked to an increased risk of neonatal morbidity as well as a longer period of time between the skin

incision and the delivery of the newborn. This is also associated with a longer period of time between the delivery of the infant and the skin incision. The procedure of giving birth by caesarean section to obese women still has some potential for development.

Delivery of the infant was delayed by 5.6 minutes (52%) with one previous caesarean birth, and 18.1 minutes (169%) during the fourth caesarean birth.⁴ The Apgar score is the best parameter to predict the immediate state of the baby⁵. It is measured on a scale from 0 to 10. The higher the score, the healthier the baby is expected to be. The Apgar score is a numerical indication of how well the babies are doing, and it ranges from 0 to 10 on a scale that runs from 0 to 10. It is straightforward to comprehend, and it functions as a useful reference for maintaining the health of neonates and administering resuscitation 7 procedures.

However, a search of the literature using the terms "caesarean, adhesions, pregnancy, and APGAR" did not turn up any studies that looked at the presence of adhesions after repeat caesarean and its effect on the delivery or the wellbeing of the infant.⁴ Because there is a contradiction between two studies, the purpose of this study is to determine the impact that adhesions have on the perinatal outcome as measured by the 5-minute APGAR score in our population⁶.

MATERIALS AND METHODS

A thorough medical history was collected from each patient, an obstetric examination was carried out on each patient, and ultrasound imaging was carried out on each patient so that it could be determined whether or not the patients who were recruited met the inclusion criteria. Both the ways in which anaesthesia was delivered and the processes that were carried out throughout the operation were standardised. The length of time it took for the baby to be born following uterine incision as well as following induction was timed in seconds and recorded. The beginning of the induction delivery interval coincided with the beginning of the administration of anaesthesia, and its conclusion occurred when the umbilical cord was clamped (I-C interval). As the umbilical lead was

clamped, the uterine incision delivery period came to an end. Upon the completion of the uterus incision, the beginning of the uterine incision delivery interval was indicated (U-C interval). There was information provided regarding the infant's gender, weight, and 5-minute Apgar score. The gender of the infant was also taken into account. In addition to that, the Apgar score of the neonate was mentioned in the report.

Inclusion Criteria: All women who will undergo primary or repeat caesarean deliveries including elective and emergency cesarean sections will be included.

Sampling Technique: Non-probability consecutive sampling.

RESULTS

The descriptive statistics of variables are included in their psychometric qualities. The correlation between the variables allowed for the prediction of their relationship. One hundred eighty five patients were chosen to participate in the study as the target sample. This chapter comes after the tables and results of the study, which indicate both major and insignificant findings from the investigation.

Demographic Variables:

Table 1: Table showing the frequency and percentage of age demographics. (N=185)

Age categorization	Frequency	Percentage
20-25 years	36	19.58
26-30 years	134	72.43
31-35 years	15	8.10

The table shows that maximum of the sample 134 participant's fall under the category, 26-30 years.

Table 2: Table showing the frequency and percentage of BMI. (N=185)

BMI	Frequency	Percentage
20-24 kg	69	37.29
25-28 kg	100	54.05
29-32 kg	16	8.64

The table shows that age has no effect on BMI, while age has negative relationship with Apgar score in one minute. While age and BMI has significant positive relationship with delivery time it means with increase of age the delivery time increase, and as BMI increase delivery time increases vice versa. We found that a higher BMI in women who underwent an induction of labour resulted in greater incidence of emergency caesarean sections as well as lower Apgar scores for their kids. This was established through our research. We found that an increase in body mass index was concurrent with a significant rise in the number of caesarean sections performed during childbirth. These findings are congruent with the findings of a number of other, more in-depth pieces of study.

Table 3: Table showing the frequency and percentage of neonatal sex outcome after C-section(N=185)

Neonatal sex outcome	Frequency	Percentage
Girl	104	56
Boy	81	44

The table shows that maximum of the neonatal outcome were girls 104, in numbers.

Table 4: Characteristics of neonates who developed TTN.

Characteristic	TTN (n=16)	No TTN(n=169)	P- value	Significance
I-C duration	701± 189	658± 119	0.267	NS
U-C duration	58±0.02	47 ± 15.7	0.164	NS
Gestational age	37.2 ±0.36	40.02 ±0.74	0.001	S
Neonatal gender:				
Male (n=81)	4 (4.9%)	77 (95.1%)	0.706	NS
Female (n=104)	12 (11.5%)	92 (88.5)		
Apgar score	9 (8-10)	10 (7-10)	0.549	NS

There were one hundred newborns, but only eight were diagnosed with TTN and required extra treatment in the Neonatal Intensive Care Unit. There were one hundred infants in total (NICU). There was a statistically significant correlation between the development of TTN and the demographic age (GA), but there was no correlation between the development of TTN and any of the other characteristics evaluated and described in the article. Nonetheless, a statistically significant correlation existed between the development of TTN and the demographic age (GA). Except for the demographic age (GA), there was no statistically significant association between the development of TTN and any of the other factors investigated (Table 4).

DISCUSSION

TTN has a close relationship with CD because it is the most common cause of infant respiratory distress syndrome. When the caesarean section is scheduled in advance, prior to the onset of labour, their relationship is strengthened. In contrast, spinal anaesthesia has largely replaced general anaesthesia as the method of choice for administering anaesthesia during routine obstetric procedures⁷. The only exception is when general anaesthesia is required for medical reasons. According to the findings of a number of studies, the length of time between the beginning of anaesthesia and the delivery of the baby is believed to be a significant factor in the development of transient ischemic attack (TTN)⁸.

In our prospective study, we recorded the I-D and U-D intervals, as well as other variables such as gestational age, newborn weight and gender, and 5-minute Apgar score in relation to the incidence of TTN. This was performed alongside other data. This was done in conjunction with other factors, such as the gender and weight of the newborn. Among the one hundred women who gave birth while under the effect of spinal anaesthesia, eight incidences of TTN were found.

The GA was the only component that indicated a significant relationship with TTN's development. Other evaluated characteristics and parameters, including operative time, were not significantly associated with the study's outcome^{9,10}.

Several researchers have documented a significant inverse relationship between the development of TTN and GA, which is consistent with our findings. Our findings demonstrate this significant association between TTN and GA development. Our findings provide the evidence supporting this unfavourable association¹¹.

Regarding the period between the induction of anaesthesia, the uterine incision, and the delivery of the foetus, there are no solid standards that describe the proper range or explain how this may affect the neonatal respiratory prognosis. This is due to the fact that no research have been undertaken to examine this correlation. Our findings are comparable with those of previous study on this topic, which concluded that there is no significant relationship between the duration of the operational time till delivery and the outcomes of the neonatal respiratory system in neonates. Yet, these investigations have numerous limitations¹².

The number of participants who participated in the study conducted by Andersen et al. was limited, and the researchers focused on those who had had general anaesthesia. While conducting an extensive study, Maayan Metzger and her colleagues chose to focus on elective caesarean sections, which may have led to skewed results. In contrast, Spain et al. analysed only caesarean procedures performed during labour, which could have two negative consequences on their findings. The first explanation is that the process of labour itself may have a protective effect on the foetus, despite the foetus being exposed to the different changes that occur throughout labour, and it may also assist the infant in breathing following delivery. Despite the fact that the foetus is exposed to the many changes that occur throughout labour, this is the case. The second concern is that the fact that the patient is already in labour may prompt the surgeon to take more immediate action, which will inevitably increase the time

required to deliver the baby in the operating room. So, the researchers came to the conclusion that spinal anaesthesia may not be fully safe in terms of the baby's prognosis, provided that the variable of time was not considered. According to the findings of Gunaydin et al., reducing the amount of time that elapses between treatments is beneficial¹³. Delaying the induction of spinal anaesthesia until after the birth of the newborn may be a crucial step in reducing the incidence of transposition of the major arteries (TTN).

Our investigation did not discover any statistically significant gender differences in regard to the incidence of TTN. Despite the fact that the gender of the newborn boy has been listed as one of the risk factors for the development of TTN, we did not observe any such variations in our study. It is possible that this is related to the small size of our sample population.

Low Apgar ratings were not connected with the I-C or U-C intervals, nor were they related to the development of TTN, according to the secondary outcomes analysis. Regardless of whether the I-C or U-C intervals were monitored, this was the case. This is similar with the findings of studies that indicated the length of the surgical operation had no effect on the newborn's Apgar score. Low Apgar scores, which were believed to be a risk factor for the development of TTN, have been investigated by other researchers. These researchers discovered a correlation between these scores and an increased risk of TTN¹⁴. According to the results of our study, the I-C and U-C intervals lengthened in a manner that was proportional to the total number of CS that occurred before them. In other words, the length of these pauses rose according to the number of CS preceding them. This is due to the increased risk of adhesions and surgical complications associated with a greater number of previous CS treatments. Several researchers have conducted the necessary research and determined that their findings support this position.

We feel that the strengths of our study include the prospective aspect of the research and the standardisation of the anaesthetic procedure used on all individuals¹⁵. These two sections of the study were conducted by the same group of researchers. However, the very small number of participants in our sample poses a significant barrier to the credibility of our research findings.

CONCLUSION

We have concluded that there is no association between TTN and the time between the beginning of the surgical procedure and the delivery of the baby when the patient is under spinal anaesthesia. This is the theory we've arrived at. We argue for the importance of undertaking research with bigger populations in order to determine the safest time limit for the delivery of foetal tissue and other

potential risks associated with the development of TTN. This proposal is based on our belief that it is essential to do research with larger populations.

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