

Neonatal Outcome in Preterm Cesarean Section vs Preterm Vaginal Delivery

A AMBREEN* K J SIDDIQI F ATIQ

*Department of Obstetrics & Gynecology & Department of Anaesthesiology, FMH College of Medicine & Dentistry, Lahore
Correspondence to: Dr Afshan Ambreen, Assistant Professor, Email:afshanuppal@yahoo.com

Objective: To compare neonatal outcome in preterm caesarean section vs. preterm vaginal delivery. **Design, duration & place of study:** Retrospective comparative study from January 2006 to December 2006 at Fatima Memorial Hospital, Lahore. **Patients and methods:** All booked and un-booked patients who delivered from January 2006 to December 2006 were included in the study. The decision of spontaneous vaginal delivery or caesarean section made based on obstetric indications. All the data recorded and subsequently analyzed. **Results:** Out of 6570 total deliveries during one year, 673 (10.2%) patients delivered pre-term, 265 by C-Sections and 408 by Spontaneous vaginal deliveries. Preterm deliveries done, at 34-37, 32-34, 28-32 gestational weeks were 47.1%, 28.9% and 23.9% respectively. The commonest indications of pre-term Caesarean Sections were fetal distress (6.7%), intra-uterine growth restriction (27.1%) and severe pre-eclampsia / eclampsia (26.4). Neonatal outcome in terms of baby weight and APGAR scores were not significantly different between the two groups. Neonatal survival was 81.1% who delivered by pre-term Caesarean section compared to 77.9% who delivered by pre-term vaginal deliveries. Sepsis was the main cause of neonatal mortality. **Conclusion:** This study shows that the neonatal outcome of pre-term infants when delivered by Caesarean section shows no significant difference as compared to the preterm infants delivered by vaginal route. Decision of caesarean sections should be based on obstetric indication only.

Key Words: Caesarean section, preterm, Respiratory distress syndrome.

Preterm labour and delivery before 37 wks of gestation, is a major cause of perinatal mortality and morbidity in developed countries and is the single most important complications of pregnancy in the absence of congenital abnormality¹. The incidence of preterm deliveries varies from 5-10% in pregnancies and 70-80% peri-natal deaths occur in preterm infants^{1,2}. Preterm deliveries particularly before 34 weeks of gestation, accounts for 75% of neonatal mortality and half of long term neurological impairment in children including developmental delay^{3,5}. Despite advances in peri-natal medicine in recent decades, problems of preterm delivery continue to frustrate satisfactory reproductive outcome⁵. In the past two decades, there has been a dramatic rise in the rate of caesarean sections. This rise is associated with a concomitant improved peri-natal outcome¹. The problem of preterm deliveries has been magnified in recent years and remain one of the most serious problem faced by obstetricians and other peri-natal health care professionals.

Vaginal delivery pre-disposes preterm infants to intra-ventricular haemorrhage whereas caesarean section might be protective². Recent advances in the neonatal care and long-term survival of growth-retarded infants has led to an increase in the number of preterm caesarean sections. The long term medical and public health implication of handicapped among the preterm survivors has raised more questions than answers. Recently rise in the incidence of cerebral palsy among preterm infants has been consistently reported⁴. The number of blind survivors of preterm delivery has also increased⁴ and so has hearing loss with figures of around 1.52% of preterm infants⁶.

The objective of this study was to assess neonatal outcome in preterm c-section.

Patients and methods

This retrospective comparative study was carried out from January 2006 to December 2006, at Fatima Memorial Hospital, Lahore. All booked and un-booked patients who delivered from January 2006 to December 2006 were included in the study. The decision of spontaneous vaginal delivery or caesarean section was based on obstetric indications. All the data recorded and subsequently analyzed. Initially all patients presenting with pre-term labour pains were tocolysed and given antenatal steroid cover to gain fetal lung maturity. The preoperative anaesthesia assessment was done and prophylactic antibiotic given to all patients. All caesareans were done under general, spinal or epidural anaesthesia.

The gestational age at the time of delivery or C-section was noted in each case. The new borns were followed up till discharge and observed for the following complications; jaundice, sepsis, respiratory distress syndrome and necrotizing enterocolitis.

The information regarding variables of neonatal outcome was entered on SPSS 7.0 and analyzed by applying Chi Square test. A p value of < 0.05 was considered significant.

Results

Out of 6570 total deliveries during one year, 673 (10.2%) patients delivered pre-term, 265 (4.03% of total deliveries and 39.3% of preterm deliveries) by C-Sections and 408 (6.21% of total deliveries and 60.6% of preterm deliveries) by Spontaneous vaginal deliveries (SVD) (Table I). Out of 265 pre-term C-Sections 190 received general anaesthesia, 70 received sub-arachnoid block (spinal) anaesthesia and five received epidural anaesthesia. (Table II). Gestational

age in both C-section and SVDs (Table III). The indications of pre-term Caesarean Section are shown in table. (Table IV). Neonatal outcome in terms of baby weight, APGAR score at one minute and at five minute (Table V). Neonatal survival was 81.1% in cases delivered by pre-term Caesarean section compared to 77.9% in pre-term vaginal deliveries. (Table V). Sepsis was the main cause of neonatal mortality (Table VI).

Table I: Total No. of deliveries; 6570, Pre-term Deliveries; 673(10.2%)

Mode of pre-term delivery	=n	%age
C-Sections	265	39.3
Spontaneous Vaginal Deliveries	408	60.6

Table II: Anaesthesia (n= 265)

Types of anaesthesia	=n	%age
General	190	71.69
Spinal	70	26.41
Epidural	5	1.88

Table III: Patient's gestational age

Period in weeks	Gestational age	Preterm C-section	Preterm SVD
28-32	161 (23.9%)	62 (38.5)	99 (61.5)
32-34	195 (28.9%)	110 (56.4)	85 (43.5)
34-37	317 (47.1%)	198 (62.5)	119 (37.5)

Table III: Fetal outcome

Variables	Preterm C-section	Preterm SVD
Weight of babies (gms)		
1000-1500	58 (21.8%)	96 (23.5)
1500-2000	105 (39.6%)	110 (26.9)
2000-2500	102 (38.4%)	202 (49.5)
Apgar score (1 minute)		
< 5/10	83 (31%)	89 (21.8%)
> 5/10	182 (69%)	319 (78.2%)
APGAR score (5 minute)		
< 8/10	60 (22.6%)	68 (16.66)
> 8/10	205 (77.3%)	340 (83.30)
Neonatal Survival		
Alive	215 (81.1%)	318 (77.9%)
Expired	50 (18.8%)	90 (22.0%)

Table IV: Indications of preterm C-section

Indications	=n	%age
IUGR	72	27.1
Pre-eclampsia	70	26.4
Placenta praevia	24	9.0
Placental abruption	16	6.0
Previous 2 or more C- Section in Labour	32	12.0
Fetal Distress	18	6.7
Breech presentation	10	3.7
Preterm rupture of membranes	10	3.7
Twin pregnancy	05	1.8
Transverse lie	04	1.5
Cord prolapse	04	1.5

Table IV: Fatal neonatal complications

Complications	Preterm C Section	Preterm SVD
Sepsis	18(36%)	29 (32.2%)
Neonatal jaundice	12 (24%)	23 (25.5)
Respiratory distress syndrome	15(30%)	25 (27.7)
Necrotizing enterocolitis	5(10%)	13 (14.4)

Discussion

Despite remarkable improvements in safety, c-section does increase the risk of maternal mortality, post-natal emotional morbidity¹⁰ and complicates the management of subsequent pregnancies¹¹.

Pre-term delivery of women is a major perinatal problem being associated with increased neonatal morbidity and mortality. Recent advances in the prevention of pre-term labour deliveries has been disappointing⁴.

The optimum mode of delivery of women in pre-term labor or those with complicated pregnancies where fetal compromise is known to exist is controversial. Labor is acknowledged as a mechanism that compromises fetal blood gas exchange. Moreover there is increased risk of asphyxia in a pre-term fetus as compared to a term fetus⁹.

The rate of pre-term caesarean section was 39.3% in our study compared to 48% in a study conducted by Hagan et al¹⁴. It has been suggested that caesarean section and antenatal administration of cortico steroids can reduce the incidence of intra-ventricular haemorrhage (IVH) in very low birth weight infants^{8,12,13,15}.

Regarding the indications of pre-term caesarean sections in my study, the most common was IUGR (27%), pre-eclampsia (26%) and Antepartum Haemorrhage (15%) come next in order. In the study conducted by Cheng et al, pre-eclampsia was responsible for 21% of pre-term caesarean sections^{16,17,21}. By increasing the caesarean section rate for twins there was a parallel decrease in the perinatal mortality rate for twins¹⁸. Different studies have now shown that risk of neonatal death for breech pre-term fetuses born vaginally is significantly high than those born by caesarean section¹⁹.

The neonatal mortality rate in our study was 27% whereas in a study conducted by Pinion & Mowat²⁰ it was 13%. The major cause of neonatal mortality was septicemia and of neonatal morbidity was necrotizing enterocolitis²². Sepsis was main cause of neonatal mortality in our study.

Regarding maternal morbidity 25% patients had postoperative pyrexia and 15% had wound infection. These figures are comparable with those of Kelleher and Cordozo²³. In our study, there was no case of maternal mortality. However when compared with vaginal delivery, maternal postoperative morbidity associated with caesarean section continues to be much higher.

In our study all the pre-term caesarean sections were performed by a transverse lower segment incision²⁴. The risk of rupture of a classical scar is 2-6% while for a lower segment transverse scar is 0.2 - 0.7%.

Conclusion

The results of our study were unequivocal regarding the neonatal outcome of pre-term infants when delivered by Caesarean section compared to the preterm infants delivered by vaginal route. Still more studies and trials of

sufficient size are required to determine the best approach to the birth of a pre-term fetus. Therefore, it can be concluded that pre-term Caesarean section can be adopted as a mode of delivery only when a definitive indication is present. So each case of preterm delivery should be individually assessed and the mode of delivery should be decided accordingly.

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