ORIGINAL ARTICLE

Neonatal Complications Associated with Caesarean Section done at First Stage of Labour and at Full Cervical Dilatation

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ABSTRACT

Aim: To determine the frequency of fetal complications in caesarean section and to compare neonatal complications associated with caesarean section done at first stage of labour and second stage of labour.

Methods: This descriptive study was carried out in the Department of Obstetrics & Gynaecology Unit-I at Nishtar Hospital Multan from April 2013 to October 2013. Two hundred and sixty two primigravida fulfilling inclusion criteria were enrolled for the study.

Results: APGAR score <7 at 5 minutes was observed in 7 babies in first stage caesarean section and in 16 babies in second stage caesarean section. Meconium aspiration was observed in one baby in first stage and in 11 babies in second stage caesarean section. Babies of 27 patients were admitted in NICU in second stage caesarean section and babies of 8 patients were admitted in NICU in first stage caesarean section. There were 7 neonatal deaths in second stage caesarean section and no neonatal death was recorded in first stage caesarean section.

Conclusion: Caesarean section in the second stage of labour is associated with increased neonatal morbidity as well as neonatal mortality.

Keywords: Caesarean section, neonatal complications, full cervical dilatation

INTRODUCTION

Cesarean section (CS) is the most commonly performed abdominal operation in women all over the world. One-fourth of the primary CSs are reported to be performed in the second stage of the labour and are more complicated compared to the ones performed in the first stage[1]. The second stage of the labour can be defined as the time elapsed from full dilatation of the cervix to expulsion of the fetus. In a prospective cohort study of women in the South West of England, 4% of the total population was transferred to theatre for operative delivery in the second stage of labour and just over half of these women were delivered by caesarean section[2].

The extraction of the impacted head of the fetus from the maternal pelvis constitutes the main difficulty of the CS in the second stage of labour and is associated with increased risks such as hemorrhage, prolonged operation time, and other intraoperative complications[3]. Neonatal mortality and morbidity due to hypoxia and fetal trauma remains to be one of the major issues regarding the CSs performed in the second stages of labour[4]. One study has reported neonatal complications following caesarean section were found in 21.8% patients in emergency caesarean section[5]. In a recent study comparing obstetrical outcome between first and second stage caesarean section, there were 20% vs 0% perinatal deaths in the second stage and first stage respectively. APGAR score <7 at 5 minutes was 22% vs. 0%, meconium aspiration syndrome 16% vs. 4% and NICU admission 48% vs 6% respectively of second stage and first stage caesarean section[6].

The unfavourable neonatal outcomes are probably due to the prolongation of the labour which leads to an inevitable result, hypoxia. Previous studies had also shown adverse outcomes of the neonates when the second stage of the labour is longer than the normal[7]. In a study, 39 patients undergoing cesarean section in the first stage of the labour and 39 in the second stage of the labour and have also concluded that CSs in the second stage of the labour causes more maternal and neonatal morbidity[8]. A multicenter study conducted in 13 university centers also revealed that cesarean deliveries in the second stage of the labour showed marginally increased maternal but not neonatal morbidity[9].

There are controversies regarding the fetal outcome of the CS performed in the second stage of labour, while some previous studies fail to demonstrate an increased fetal complication rate[10]. In contrast to some other studies, the risk of CS in the second stage of labour is not confined to the mother and has adverse prognostic impact on fetal outcome as well[11].

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MATERIAL AND METHODS

This descriptive study was carried out in the Department of Obstetrics & Gynaecology Unit-I at Nishtar Hospital Multan from April 2013 to October 2013. Two hundred and sixty two primigravida fulfilling inclusion criteria were enrolled for the study.

Informed consent was taken by explaining risks/benefits of the procedure to the patients as well as to her relatives. Approval of hospital Ethical Committee was sought. The data was entered into SPSS (version10). Descriptive statistics were used to calculate mean and standard deviations for age and gestational age. Frequencies and percentages were calculated for caesarean section and neonatal complications of caesarean section like APGAR score <7 at 5 min, meconium aspiration, NICU admissions and neonatal death at 1st and 2nd stage of labour. Chi-square test was used to compare neonatal complications between 1st and 2nd stage of labour. p-value < 0.05 was taken as significant. Confounding variables like age and gestational age were controlled by stratification and effect of these were seen on the outcome. Post-stratification chi-square was applied. P-value <0.05 was taken as significant.

RESULTS

Majority of the patients i.e. 56.87% presented at gestation >40 weeks and 43.12% of cases presented at gestation ≤40 weeks. First stage caesarean sections were performed in 68.3% of cases and in 31.7% of cases, caesarean section was performed in the second stage of labour. Other results are shown in the form of tables.

Table-1: Age wise distribution of patients (n = 262)

Age (Years)	n	%age
<20	68	26.0
21-30	159	60.7
>30	35	13.3

Table-2: Neonatal complications (n = 262)

Complications	n	%age	%age
APGAR <7at 5min	23	08.8	08.8
Meconium aspiration	12	04.6	04.6
Admission NICU	35	13.3	13.3
Neonatal mortality	07	02.7	02.7

Table-3: Comparison of neonatal complications

Complications	1st stage (n=179)	2nd stage (n=83)	P value
APGAR <7at 5min	7 (3.9%)	16(19.3%)	4.33
Meconium aspiration	1 (0.5%)	11 (13.2%)	4.81
Admission NICU	8 (4.5%)	27 32.5%)	5.26
Neonata l mortality	-	7 (8.4%)	8.20

Table-4: Stratification in respect to neonatal outcome (APGAR <7 at 5 minutes)

Age (years)	APGAR <7 at 5 min	APGAR <7 at 5 min	P value
<20	06	62	0.9989
21-30	14	145	
>30	03	32	
Gestational age			
≤40 weeks	10	103	0.9718
>40 weeks	13	136`	

Table-5: Stratification in respect to neonatal outcome (Meconium aspiration)

Age (years)	APGAR <7 at 5 min	APGAR <7 at 5 min	P value
<20	03	65	0.9422
21-30	07	152	
>30	02	33	
Gestational age			
≤40 weeks	5	108	0.9165
>40 weeks	7	142	

Table-6: Stratification in respect to neonatal outcome (Admission to NICU)

Age (years)	APGAR <7 at 5 min	APGAR <7 at 5 min	P value
<20	09	59	0.9851
21-30	21	138	
>30	05	30	
Gestational age			
≤40 weeks	15	98	0.9720
>40 weeks	20	129	

Table-7: Stratification in respect to neonatal outcome (Neonatal death)

Age (years)	APGAR <7 at 5 min	APGAR <7 at 5 min	P value
<20	2	66	0.9809
21-30	4	155	
>30	1	145	
Gestational age			
≤40 weeks	3	110	0.9882
>40 weeks	4	145	

DISCUSSION

Decision making surrounding cesarean section in the second stage of labour is one of the greatest challenges in current obstetric practice[12]. The rates of cesarean sections have risen steadily in the past two decades and may be associated with a disproportionate rise in second stage of cesarean section due to a decline in the use of instrumental deliveries. Cesarean section at full cervical dilatation with an impacted foetal head can be technically difficult and is associated with increased trauma to the lower uterine segment and adjacent structures, as well as increased haemorrhage and infection. When compared with cesarean deliveries in the first

stage of labour, cesarean deliveries in the second stage have been associated with both maternal and neonatal complications[12].

Increases in the rate of primary caesarean delivery are known to be a consequence of changes in maternal characteristics and obstetric practice, such as increases in maternal age, weight, weight gain during pregnancy, labour induction rates and associated with use of epidural anaesthesia[13], consistent with risk factors identified for caesarean delivery in both the first and second stages of labour[14].

Present study shows that majority of women were in age group 21-30 years i.e., 60.7%. The results of present study are in agreement with the results of another study in which majority of the patients were between 25-29 years[15,16,17,18,19].

In contrast to the result of the present study, in an Italian study, Caesarean Section was 2.09 fold more prevalent among older (more than 35 year) than among younger women[20].

Majority of the patients i.e., 56.87% presented at gestation >40 weeks and 43.12% of cases presented at gestation ≤40 weeks. This observation correlates with a local Cross Sectional Observational study conducted at Chandka Medical College Larkana Sindh Pakistan[21]. In another International study, a total of 1389 women had undergone CS in this 12-month period. Gestational ages of the patients were 38.8±1.2 and 40.2±1.7 in first and the second stages of the labour, respectively, with significantly longer duration of pregnancy in the latter group[22].

In developed countries dystocia remains a major cause of Caesarean section. Dystocia accounted for 7.1% of Caesarean section in USA, 3.6% in Norway and 4% Scotland[23]. Failure to progress in either spontaneous or stimulated labour has become an increasingly popular description of in-effective labour.

A retrospective study was conducted in a Singapore-based tertiary referral centre. The medical records of all the women who underwent emergency Caesarean sections in the second stage of labour were reviewed. Out of 2,501 emergency Caesarean sections performed, 116 were Caesarean sections in the second stage of labour[24].

In another study, a total of 1389 women had undergone CS in this 12-month period. One hundred and seventy-one (12.3%) of the CS were in the second stage of the labour. To estimate maternal and perinatal morbidity associated with caesarean delivery at full cervical dilatation, a population-based cohort study from 1997 to 2002 was used. Compared to caesarean delivery at less than full dilatation, women undergoing caesarean delivery at full dilatation were more likely to have complications of intraoperative trauma (RR 2.6, P < 0.00 1) and infants with perinatal asphyxia (RR 1.5, P < 0.05)[25].

Table is revealing overall neonatal complications in the present study. The most frequent complication observed was admission to neonatal intensive care unit i.e., 13.3%. APGAR < 7 at 5 min was observed in 8.8% of cases and meconium aspiration was a finding in 4.58% of cases. There were 7(2.7%) neonatal deaths in the present study. No complication was observed in 227(86.6%) patients.

APGAR score <7 at 5 minutes was observed in 7 babies in first stage caesarean section and in 16 babies in second stage caesarean section. Meconium aspiration was observed in one baby in first stage and in 11 babies in second stage caesarean section. Babies of 27 patients were admitted in NICU in second stage caesarean section and babies of 8 patients were admitted in NICU in first stage caesarean section. There were 7 neonatal deaths in second stage caesarean section and no neonatal death was recorded in first stage caesarean section.

The results generated by the present study are in line with another study, of the 347 caesarean deliveries available for analysis, 245 (70.6%) were performed in the first stage while 102 (29.4%) were performed in the second stage of labour. Infants born to women who had caesarean section in the second stage of labour, had higher incidence of birth asphyxia, admission to neonatal intensive care unit, sepsis, seizure, need for ventilation and neonatal death (all with p value <0.05)[26].

CONCLUSION

This study suggests that women undergoing caesarean section in the second stage of the labour have increased neonatal morbidity and require special care.

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