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Study of Maternal and Fetal Outcome in Second Stage Caesarean Section

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Abstract
Caesarean section done at second stage of labour has increased and additional associated risks for both the mother and fetus due to its nature of being an emergency situation. It's a prospective observational study of one year period between, 64 patients were included in this study. The two most common intra operative findings were major blood loss and unintended uterine extensions accounting for almost 30% of cases. Obstetric hysterectomy was performed for 1 patient. About a fifth of patients required postpartum blood transfusion due to increased blood loss. In neonatal outcomes, about 1/3 of babies required NICU admission, with 12 babies requiring immediate intubation post-delivery. Caesarean sections during the second stage are increasing in prevalence and our results suggest that women undergoing caesarean section in the second stage of labour had increased maternal and fetal morbidity and required special care.

INTRODUCTION

Caesarean section is thought as a simple alternative to difficult vaginal birth. Medical colleges and teaching hospitals in India has an overall caesarean deliveries rate of 24.4%[1].

Caesarean delivery rates are on the rise and reached 27% of all deliveries in Europe and 32% in North America in 2015 while according to World Health Organization (WHO) caesarean deliveries accounts for 10-15% of all deliveries[2].

For many women, caesarean section is either unplanned or not even considered, and it's disappointing and traumatic for the women when caesarean section is done after a very long and difficulty second stage of labour (i.e., at full dilatation of cervix). The recent trend is to go for caesarean section in the second stage without considering operative vaginal delivery. Incidence of second stage caesarean section has risen from 0.9% to 2.2%[3].

Caesarean section done at second stage of labour has increased and additional associated risks for both the mother and fetus due to its nature of being an emergency situation.

A second stage caesarean section is technically difficult and is associated with increased trauma to the lower uterine segment and adjacent structures, also has increased PPH, obstetric haemorrhage, bladder injury, extended uterine tear which may lead to broad ligament haematoma, infection and longer hospital stay. Second stage caesarean sections are associated with increased chances of preterm deliveries during subsequent pregnancies[4].

Neonatal morbidities such as NICU admissions, hypoxemia, respiratory distress, neonatal seizures, prolonged NICU stay is higher in second stage caesarean sections. This may be due to fetal hypoxia caused by strong uterine contraction, deeply impacted fetal head and longer duration of second stage labour. One of the obstetric challenges in the modern delivery room is second stage caesarean section[5]. Delivery of the impacted fetal head in the second stage is technically challenging, and is a major contributing factor for the increased maternal and fetal complications.

There is increased prevalence of second stage caesarean sections and it's a major concern in modern obstetrics. Recent decline in the use of instrumental delivery associated with concerns relating to maternal and neonatal morbidity, fear of litigious issues have contributed to this trend.

The number of second stage caesarean sections encountered in developing countries is higher due to neglected obstetric care, poor utilization of available health services, traditional beliefs and practices like preference of home delivery by traditional birth attendants, poor transport facilities, late referrals from primary health centres.

Inspite of the rise in caesarean sections over the last two decades, little has been paid to the rise of emergency caesarean section in the second stage of labour[6].

Women delivered by caesarean section in the second stage of labour, will have less chance for vaginal birth after caesarean section (VBAC) in subsequent pregnancy, as they request elective section to avoid the same tragedy.

Second stage caesarean section with deep impacted head require skilful handing is an organized manner to avoid serious maternal and neonatal complications.

Decision making surrounding caesarean section in the second stage of labour is one of the greatest challenges in current obstetric practice.

MATERIALS AND METHODS

Source of Data: The proposed study was a hospital-based study centered in tertiary care hospital, and the patients who fulfil the inclusion and exclusion criteria were included in the study.

Study Subjects:

Inclusion Criteria: All patients undergoing second stage caesarean section.

Exclusion Criteria: Previous LSCS for TOLAC undergoing second stage caesarean section.

Methods of Collection of Data:

Study Design: Prospective observational study.

Sample Size: 64.

Sampling Procedure: Convenience sampling.

Study Instrument: None.

Data Collection: Data was collected from the hospital records of the subjects included in the study after obtaining written informed consent.

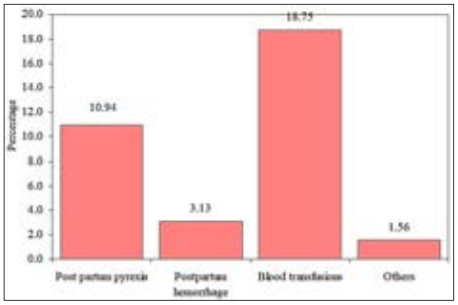

Fig 1: Maternal complications

Table 1: Duration of Catetherization

Duration of catheterization (hrs)	No of patients	% of patients
18-24hrs	38	59.38
25-4hrs	22	34.38
>=49hrs	4	6.25
Total	64	100.00
mean±SD		
	34.59±15.15	

Table 2: Method of Extraction

Method of extraction	No of patients	% of patients
Modified patwardhan technique	40	62.5%
	2	3.13%
Patwardhan technique	12	18.75%
Push technique	10	15.63%
Total	64	100.00

Table 3: Duration of Stay

Duration of stay	No of patients	% of patients
1-5days	38	59.38
6-10days	22	34.38
>=11days	4	6.25
	64	100.00
Mean±SD	6.09±2.01	

Table 4: Birth Weight of Baby

Birth weight(kgs)	No of patients	% of patients
2.0-2.9kg	19	29.69
3.0-3.9kg	42	65.63
>=4.0kgs	3	4.49
Total	64	100.00
Mean±SD	3.15±0.42	

Table 5: APGAR at 1 Min, 5 Min, Comparison

APGAR at lmin	No of patients	% of patients
<=5	4	6.25
>5	60	93.75
Total	64	100.00
Mean±SD	7.53±1.14	
APGAR at 5min	**No of patients**	**% of patients**
<=7	4	6.25
>7	60	93.75
Total	64	100.00
Mean±SD	8.52+1.22	

APGAR	Mean	SD	Mean Diff.	SD Diff.	t-value	p-valuae
1 mint	7.53	1.14				
5 mint	8.25	1.22	-0.98	0.13	-63.0000	0.0001*

*p<0.05

Table 6: Neonatal Outcomes

	No of patients	% of patients
Septicemia	7	10.94
Respiratory distress	2	3.13
Intubation required	12	18.75
Neonatal seizures	1	1.56
No complications	49	76.56

RESULTS AND DISCUSSIONS

About a fifth of patients required postpartum blood transfusion due to increased blood loss.

About 10.9% of patients had post-partum pyrexia.

Average duration of catetherization was about 34.6hrs with standard deviation of 15.15 hrs.

Push technique was used in 15.63% whereas Patwardhan technique was used for 10 patients (18.75%).

Prolonged duration of hospital stay with average duration of 6.1 days was observed in this study.

Most of babies born were of average weight, weighing between 3-3.9kgs, with average weight of 3.15kg.

About 1/3 of babies required NICU admission, with 12 babies requiring immediate intubation post-delivery.

2 babies had respiratory distress post-delivery requiring NICU admission, 7 babies were screened positive for septecemia.

Only baby had neonatal seizures.

Delivery of deeply engaged head is challenge to obstetrician, this can be done by various methods as Vertex method, push method, Patwardhan's Method, Modified Patwardhan method or reverse breech

extraction (pull method). In study group deeply engaged head delivered by Patwardhan method were 18.75%, Cephalic extraction without push were 62.5%, by push method 15.63% and by Modified Patwardhan method 3.13%.

Compared with study done by Goswami *et al*. shows deeply engaged head delivered by Patwardhan method were 50%, vertex method were 36% and by push method 6%[7].

Compared with other studies, in study by Lurie *et al*. Fetal head was pushed for disengagement significantly more frequently during second stage (36.8%)[8], whereas Malik *et al.* states that in their study the most-common method used was the Patwardhan technique (61.2%). Post operative haemoglobin drop in this study was 1.73gm%, lesser than in study Lurie et al drop (2.3 gm%)[8]. In this study, the mean length of stay in the hospital after delivery was higher in second stage caesarean section i.e. Avg 6.1 day, similar to study by Seal *et al.* (6.4 days)[9] and less than study by Jacob *et al* (6.9 days).

Allen[10] found second stage caesareans were associated with more intra operative trauma and perinatal asphyxia. 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. The mean APGAR Score at 1 minute was 7 while the mean APGAR Score at 5 min was[8]. This is similar to the studies of Das[11], Sinha[12].

NICU admissions and neonatal deaths were significantly high due to birth asphyxia in study group. There were 21 cases required NICU admission for birth asphyxia, respiratory distress, septecemia etc of about 24%.

The NICU admission rate was 15% in the study by Allen[10], whereas Bashir *et al*. 2018 had admission to the neonatal intensive care unit rate of 18.0%. There was 1 neonatal mortality in our study. The most common fetal complication was respiratory distress, seen in 18% cases which is comparable to a study by Jayaram J *et al.* (20.75%)[13]. This might be due to intra-operative fetal hypoxia caused by strong uterine contraction, which deeply impacted fetal head and longer duration of the second stage of labor. The incidence of neonatal septicemia was 11%, which is similar to the study by Hemant[14].

With increasing caesarean section rate, those caesarean sections which are being performed in the second stage are also increasing with increased incidence of maternal and fetal complications. Early decision making and skilful operative techniques are required to reduce the morbidity.

CONCLUSION

In conclusion, our results suggest that women undergoing caesarean section in the second stage of labour had increased maternal and fetal morbidity and required special care.

Therefore, selection of birthing method should be made very carefully in the secondary caesarean delivery group during the second stage of labour.

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