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Research Article

Maternal and Perinatal Outcomes among Women Who Underwent Second Stage versus First-Stage Caesarean Delivery

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ABSTRACT

Background: The complexity of Second-stage caesarean is due to its deep engagement of the fetal head. 2nd stage cesarean section is also associated with increased maternal and neonatal complications.
To see how caesarean sections done in the second vs first phases of labor affect maternal and perinatal outcomes.
Methods: It was a one-year observational research that took place in our hospital. This study enlisted the participation of 300 women. For various reasons, 100 women received second-stage caesarean sections, whereas 200 women got first-stage caesarean sections.
Results: Women who had a caesarean birth in the second stage of labour had a higher risk of maternal morbidity, according to our findings. Fetal injury during birth (5.5 percent vs. 2.0 percent), FSB (4.5 percent vs. 2.25 percent), admission to the neonatal intensive care unit (18.0 percent vs. 12.5%), neonatal sepsis (3.5 percent vs. 1.5 percent), and early neonatal mortality (3.5 percent vs. 1.5 percent) were all higher (2.0 percent vs. 2.25 percent).
Conclusion: The most common complications associated with 2nd stage caesarean delivery were intraoperative bleeding, adhesion, bladder damage, caesarian hysterectomy, perinatal hypoxia, FSB, birth trauma, NICU hospitalisation, and poor Apgar score.

The foetus, placenta, and membranes are delivered through an incision in the abdominal and uterine walls during a Caesarean section. Primary caesarean section is the initial surgery conducted; repeat caesarean section is the second procedure performed [1]. Traditionally, there are two sorts of caesarean sections: elective and emergency. During the first or second stage of labour, an emergency caesarean section might be done. A second-stage caesarean section is an emergency caesarean section done when the uterine cervix is completely dilated, or 10 cm dilated. One of the most difficult aspects of modern obstetric practise is making decisions about CS in the 2nd stage of labour. Cesarean section rates have consistently increased over the last two decades, possibly due to a disproportionate increase in 2nd-stage caesarean operations due to a decrease in the use of instrumental births [2].

Cesarean section with an impacted foetal head at full cervical dilatation can be technically challenging, and it's linked to more damage to the lower uterine segment and nearby tissues, as well as greater bleeding and infection [3]. “Cesarean deliveries in the second stage of labour

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have been linked to longer surgery times, greater postoperative fever [4], maternal intraoperative trauma [5], and composite maternal morbidity [6] as compared to caesarean births in the first stage of labour".

The purpose of this study is "to examine maternal and perinatal morbidity following caesarean sections done in the second and first phases of labour".

Methods

It was a hospital-based observational cross-sectional study. This study enlisted the participation of 300 women. For various reasons, 100 women received second stage caesarean sections, whereas 200 women got first stage caesarean sections. Maternal variables were recorded, including maternal age, BMI, and gestational age. The length of the active phase of labour, the need for a caesarean section, the kind of anaesthetic used, the time from skin incision to delivery, and the overall operation time were also recorded.

The duration of hospital stay, wound infection, estimated and excessive blood loss (1, 000 ml), requirement for blood transfusion, and puerperal infection were the maternal morbidity outcome factors. Intra-operative problems such as a uterine incision extension, bladder damage, or the need for a hysterectomy were also reported. Neonatal outcome markers were birth weight (g), newborn Apgar score at 5 minutes, rates of foetal damage and septicemia, neonatal intensive care unit transfer necessity, and neonatal mortality.

The information was imported into SPSS version 22 and evaluated as needed. The qualitative data were reported in frequency and percentages. The chi-square test was used to explore relationships and produce important summary statistics. The significance of the relationships under investigation was determined at a significance level of 0.05.

Results

The results of this study are shown in (Table 1 and 2). The average total operation time were significantly greater in the second-stage group than in the first-stage group.

"The women who underwent caesarean delivery in the second stage of labor had greater risk of maternal morbidity. The rate of bleeding>1000 ml (16.0% vs. 7.5%), extension of the uterine incision (20.5% vs. 6.25%), bladder injury (4.0% vs. 1.25%) and Injury to bowel (1.5% vs. 0.25%), were significantly lower in the first-stage group than in the second-stage group. Two (1.0%) patients underwent a caesarean hysterectomy in the second-stage group, whereas only one patient (0.025%) in the first-stage group underwent caesarean hysterectomy; this difference was significant different (p value 0.02). The rate of fetal injury during delivery (5.5% vs. 2.0%), FSB (4.5% vs. 2.25%), admission to the neonatal intensive care unit (18.0% vs. 12.5%), neonatal sepsis (3.5% vs. 1.5%) and early neo-natal death (2.0% vs. 1.75%)".

Table 1- Shows the nonparametric correlation between the two groups regarding demographic data.

Age in years	2nd Stage		1st Stage		P value
	Count	%	Count	%	
<20	7	7.00%	22	11.00%	
20-30	58	58.50%	110	55.25%	
31-40	25	25.00%	51	25.50%	
>40	10	9.50%	17	08.25%	
Total	100	100.00%	200	100.00%	0.136
BMI (kg/m2)					
<20	10	10.5%	26	14.00%	
20-25	12	12.0%	38	16.75%	
26-30	51	51.0%	93	46.50%	
>30	27	26.5%	46	22.75%	
Total	100	100.0%	200	100.00%	0.17
GA in weeks					
37-39	57	56.5%	101	50.50%	
40-42	36	36.0%	52	26.00%	
>42	7	07.5%	47	23.50%	
Total	100	100.0%	200	100.00%	0.13
Parity					
PG	69	68.5%	99	49.50%	
Multipara	27	27.0%	64	31.75%	
Grandmulti- para	4	04.5%	37	18.75%	
Total	100	100.0%	200	100.00%	0.00*
Status of booking					
Booked	77	77.5%	154	77.00%	
Un booked	23	22.5%	46	23.00%	

Total	100	100.0%	200	100.00%	0.000*
Total operation time (min)					
30-40	12	12.0%	104	52.0%	
41-50	68	68.0%	84	42.0%	
>50	20	20.0%	12	06.0%	
Total	100	100.0%	200	100.0%	0.000*

Table 2- Shows the nonparametric correlation between the two group regarding maternal and fetal outcome.

	2nd Stage		1st Stage		P value
	Count	%	Count	%	
Maternal complications Intra operative					
Bleeding >1000 ml	16	16.0%	15	7.50%	0.00*
Injury to bladder	4	4.0%	2	1.25%	0.02*
Injury to bowel	2	1.5%	1	0.25%	0.01*
Injury to fetus	6	5.5%	4	2.00%	0.00*
Anesthetic	7	7.00%	9	4.50%	0.04*
Complications	20	20.50%	12	6.25%	0.03*
Extending tears hysterectomy	1	1.00%	01	0.25%	0.02*
Maternal complications post-operative					
PPH	13	13.50%	15	7.75%	0.02*
Paralytic ileus	4	3.50%	3	1.5%	0.04*
Infection	10	10%	5	2.5%	0.00*
Pyrexia	10	10%	9	4.25%	0.01*
Wound dehiscence	1	1.00%	00	0.0%	0.04*
Neonatal out come					
Low 5min Apgar score	5	5%	5	2.25%	0.03*
FSB	5	5%	5	2.25%	0.00*
Early neonatal death	2	02.0%	3	1.5%	0.14
Neonatal sepsis	3	03.5%	3	1.5%	0.003*
NICU admission	18	18.0%	25	12.50%	0.00*
Fetal weight					
<2.5Kg	1	1.00%	13	6.50%	
2.5-3.5Kg	57	57.50%	134	67.25%	
>3.5Kg	42	41.50%	53	26.25%	
Total	100	100.00%	200	100.00%	0.01*
Apgar score					
<5	7	07.5%	4	2.00%	
5-9	25	24.5%	50	25.25%	
>9	68	68.0%	146	72.75%	
Total	100	100.0%	200	100.00%	0.02*
Hospital stay (days)					
1-3 days	41	41.0%	143	71.50%	
>3 days	59	59.0%	57	28.50%	
Total	100	100.0%	200	100.00%	0.01*

*Statistically significant at 0.05 level.

Discussion

Caesarean sections during the 2nd stage are becoming more common, and they are linked to significant long-term psychological and physical morbidity in mothers. It has significant issues that need expertise and understanding in order to prevent negative consequences. With continued demands to lower elective CS rates, it is likely to remain a common concern for obstetricians in the foreseeable future.

Women who had a caesarean birth in the second stage of labour had considerably greater maternal and newborn morbidity than women who had a caesarean delivery in the first stage of labour, according to this study.

When compared to caesarean delivery in the first stage of labour, Allen VM and his colleagues discovered that caesarean delivery in the second stage of labour is related with greater maternal morbidity [7].

In addition, Rabiu et al. [8] discovered that “women who had second-stage caesarean deliveries had longer operative times, higher blood loss, more cases of intra-operative trauma, primary postpartum haemorrhage, blood transfusion, relook laparotomy, hysterectomy,

postoperative pyrexia, wound infection, and a longer hospital stay (all p 0.05)".

Our findings are similar to those of Allen VM [7] and Rabiu et al. [8]. Allen et al. [4], in contrast to our findings, found no changes in the incidence of blood transfusions or postpartum haemorrhage.

Previous research had mixed results, especially when it came to the danger of embryonic hypoxia. There was no difference in the risk of foetal asphyxia between Alexander JM [5] and Selo- Ojeme et al. [9].

However, due to foetal head impaction into the maternal pelvis and extended second stage labour, caesarean delivery done during the second stage of labour increases the risk of foetal damage, septicemia, admission to the neonatal critical care unit, and foetal mortality.

This finding is in line with "previous research [1,7], which found that babies born via CS at full dilatation were more likely to be admitted to SCBU due to lower Apgar scores and umbilical artery pH than babies born via successful operative vaginal delivery or 1st C/S (11 percent of 209 deliveries versus 6 percent of 184 deliveries; adjusted OR 2.64, 95 percent CI 1.16–6.02) [10]".

Furthermore, "newborns born by CS at full dilatation are 1.5 times more likely to experience perinatal asphyxia than babies born by CS during the initial stage of labour (11% of 549 births versus 8% of 1074 deliveries; 95 percent CI 1.06–2.14, P 0.05)" [4]. However, this is more than likely due to increased foetal compromise as a result of the surgery, rather than the procedure itself. As a result, it was no surprise when we discovered that our present study aligns with the literature and revealed that 18.0% of newborns were admitted to the nursery, with 5.5% of neonates having a Low 5 minute Apgar score.

Overall, pregnancy outcomes in 2nd stage C/S were notably unfavourable since all women with 2nd stage C/S were late in delivery, necessitating surgical interventions owing to foetal distress, FTP, and extended labour. The greater prevalence of intraoperative and postoperative problems among women with 2nd stage C/S in this research are variables that contribute to poor maternal and baby outcomes.

Asıcıoglu O et al. [11] investigated "the maternal and perinatal complications of caesarean delivery performed in the second stage compared with the first stage of labour at a tertiary hospital in İstanbul. This study was performed from June 2008 to July 2011. Primary maternal outcomes measured included intraoperative surgical complications, surgery duration, need for blood transfusion, endometritis, requirement for hysterectomy, unintended extension and length of hospital stay. Neonatal outcomes included a 5 min Apgar score ≤ 3, admission to a neonatal intensive care unit, fetal injury, septicaemia and neonatal death. In total, 3,817 caesarean deliveries were available for analysis; 3,519 were performed in the first stage, and 298 in the second stage. Caesarean deliveries performed in the second stage were associated with increased intraoperative complications, unintended extensions, need for blood transfusion, higher rates of endometritis and requirement for hysterectomy and were, therefore, associated with longer operation time and hospital stay. Neonatal complications included a significantly low Apgar score at 5 min, increased neonatal death, admission to the neonatal intensive care unit, septicaemia and fetal injury (all $p < 0.05$). Caesarean deliveries performed in the second stage of labour were associated with higher rates of maternal and neonatal complications, particularly in women who had undergone previous caesarean delivery".

Limitation

"Long-term psychological and physical maternal morbidity were not evaluated well. Further studies should be done with proper involvement of long-term psychological and physical maternal morbidity. Another limitation was that the study was used small sample size. Patient selection, sampling, intervention and data collection all done by the same observer".

Conclusion

Our finding demonstrates "positive correlation between increase maternal, fetal morbidity and 2nd stage C/S. Intra operative bleeding, adhesion, bladder injury, caesarian hysterectomy, perinatal asphyxia, FSB, birth trauma, NICU admission, low Apgar score and postoperative bleeding were most morbidity related to 2nd stage cesarean delivery".

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