MAK HILL Publications Research Journal of Medical Sciences

Research Article
doi: 10.59218/makrjms.2024.5.128.132

OPEN ACCESS

Key Words
Cesarean section, obstetric labour, pregnancy complications, induced labour and pregnancy outcomes

Corresponding Author
Megha Roy,
Department of Gynaecology and Obstetrics, Bankura Sammilani Medical College and Hospital, Bankura Sammilani Medical College Rd, kenduadihi, Bankura, West Bengal 722102, India
megharoy90@gmail.com

Author Designation
[1,2]Senior Resident
[3]Associate Professor

Received: 26 November 2023
Accepted: 31 December 2023
Published: 10 January 2024

Citation: Megha Roy, Swagata Chattaraj and Debjani Deb, 2024. A Comparative Study at Bankura Sammilani Medical College on the Fetomaternal Outcome of First Stage Versus Second Stage Caesarean Deliveries. Res. J. Med. Sci., 18: 128-132, doi: 10.59218/makrjms.2024.5.128.132

A Comparative Study at Bankura Sammilani Medical College on the Fetomaternal Outcome of First Stage Versus Second Stage Caesarean Deliveries

[1]Megha Roy, [2]Swagata Chattaraj and [3]Debjani Deb
[1-3]Department of Gynaecology and Obstetrics, Bankura Sammilani Medical College and Hospital, Bankura Sammilani Medical College Rd, kenduadihi, Bankura, West Bengal 722102, India

ABSTRACT
The most common abdominal surgery done on women worldwide is a Caesarean section. There are reports of varying caesarean section rates both within and between nations. Over the past few decades, there has been a significant global increase in the use of cesarean sections (CS). Recent estimates place the average global rate of CS at 18.6% the US has a rate of over 30%, while the UK has a rate of 25%. CS in the second stage of labour has also increased in prevalence from 0.9 in 1993 up to 1.8% in 2008 in the UK. To compare the maternal and neonatal outcomes of second stage caesarean delivery at Bankura Sammilani Medical College and Hospital, Bankura, to those of first stage caesarean delivery. It was an Observational Study design and Prospective cohort study this study was conducted One and half year from (November 2017-April 2019) at Department of Obstetrics and Gynaecology, Bankura Sammilani Medical College, Bankura, West Bengal. The average age of the patients was 22.4 years old, with the majority falling within the 20-29 age bracket (73.5%). Thirteen percent of the patients were 37 weeks along in their pregnancies. With an average duration of 13.09(1.84) hrs the majority of patients had endured the active phase of labor for fewer than 13 hours (56%). Operative vaginal deliveries have decreased while caesarean deliveries in second stage labor, which can be challenging with an impacted fetal head, have increased. The current investigation indicated that second-stage cesarean procedures increased feto-maternal problems slightly.

INTRODUCTION

The most common abdominal surgery done on women worldwide is a Caesarean section. There are reports of varying caesarean section rates both within and between nations[1-3]. Over the past few decades, there has been a significant global increase in the use of cesarean sections (CS)[4]. Recent estimates place the average global rate of CS at 18.6% the US has a rate of over 30%, while the UK has a rate of 25%[4]. CS in the second stage of labour has also increased in prevalence from 0.9 in 1993 up to 1.8% in 2008 in the UKIn medical colleges and teaching hospitals in India, the overall rate of caesarean deliveries is 24.4%[5]. The rates of cesarean sections in public, nonprofit, and private hospitals were 20%, 38-47%, respectively, in a population-based cross-sectional study.

The amount of time that passes between the cervix's complete dilation and the fetus's expulsion is known as the second stage of labor. The length of the second stage of labor has been the subject of much discussion in recent years. In the past, the second labor stage could last no longer than 2 hrs[6]. Some authors have recently increased the second stage's duration to three hours because most nulliparous women who received regional anesthesia gave birth within three hours of the second stage of labor, as opposed to two hours for those who did not receive regional anesthesia. More significantly, it has been demonstrated that prolonging the second stage of labor can raise the proportion of vaginal births without having a negative impact on neonatal morbidity.

It seems that over the past thirty years, c/s has supplanted assisted vaginal delivery techniques like forceps and vacuum extraction, which were previously employed to stop descent during the second stage of labor. According to reports, one-fourth of primary caesarean sections are more complicated than those done in the first stage of labor and are done during the second stage of labor[7].

As evidenced by numerous study reports, there has been a recent decline in the use of instrumental delivery. This decline may have been caused by a number of factors, including a lack of training and supervision for junior staff in second stage decision-making, a loss of technique associated with difficult-assisted delivery, and concerns about maternal and neonatal morbidity and related litigation issues. The morbidity of second stage versus first stage caesarean delivery is less well studied in our country, despite the fact that the morbidity of caesarean delivery in the second stage of labor has been compared with instrumental vaginal delivery in various studies. In light of this, the current study has been conducted at a peripheral medical college in eastern India, where there are roughly 23,000 deliveries and 6100 cesarean sections annually. The goal of the study is to assess and evaluate the outcomes for mothers and newborns related to cesarean delivery during the second stage of labor and to compare them with those of women who undergo the procedure during the first stage of labor.

MATERIALS AND METHODS

Study type: Institution based, Observational Study.

design: Prospective cohort study.

Study setting: Department of Obstetrics and Gynaecology, Bankura Sammilani Medical College, Bankura, West Bengal.

Place of study: In-patient Department (IPD) of Obstetrics and Gynaecology, Bankura Sammilani Medical College, Bankura.

Period of study: One and half year (November 2017-April 2019).

Study population: All pregnant women as per inclusion and exclusion criteria, admitted in labour ward and undergoing caesarean delivery in first stage and second stage of labour during the study period.

Inclusion criteria:

- Term pregnancy(37-41week)
- Nulliparous women
- Vertex presentation
- Living fetus

Exclusion criteria:

- Preterm pregnancy
- Presentation other than vertex
- Fetal abnormality
- Maternal disease (Gestational hypertension, Diabetes)
- Pregnancy complication (Intrauterine growth retardation, premature rupture of membrane)

Majority of the patients were in the age group of 20-29 years (73.5%) with the mean age of 22.4 (3.84) years Majority of the patients belonged to the gestational age of 37 weeks (31%). Majority of the patients had experienced active phase of labour for less than 13 hrs (56%) with mean duration of 13.09 (1.84) hrs. Majority of the patients had cervical dilatation of 10 cm (50%) with mean of 7.71 (2.48) cm. Second stage deliveries had experienced higher odds of hospital stay >6 days than first stage deliveries [OR = 5.167 (2.804-9.521).

Table 1: Distribution of study population according to age (n = 200)

Age (in completed years)	Frequency (n)	Percentage
<20	39	19.5
20-29	147	73.5
≥30	14	7.0
Mean (SD) median (IQR)		
Maximum minimum	22.4 (3.84)	
	21 (20-24)	
	19	
	36	

Table 2: Distribution of study population according to gestational age (n = 200)

Gestational age (in completed weeks)	Frequency (n)	Percentage
36	1	0.5
37	62	31.0
38	55	27.5
39	42	21.0
40	28	14.0
41	10	5.0
48	1	0.5
49	1	0.5

Table 3: Distribution of study population according to duration of active phase of labour (n = 200)

Duration of active phase of labour (hrs)	Frequency (n)	Percentage
≤13 (median)	112	56.0
>13	88	44.0
Mean (SD) Median (IQR)		
Maximum Minimum	13.09 (1.84)	
	13 (12-14)	
	8	
	16	

Table 4: Distribution of study population according to degree of cervical dilatation before start of caesarean section (n = 200)

Degree of cervical dilatation (in cm)	Frequency (n)	Percentage
2	2	1.0
3	4	2.0
4	18	9.0
5	30	15.0
6	22	11.0
7	20	10.0
8	4	2.0
10	50	50.0
Mean (SD) median (IQR)		
Maximum minimum	7.71(2.48)	
	9 (5-10)	
	2	
	10	

Table5: Distribution of study population according to stage of surgery and duration of hospital stay (n = 200)

	Hospital stay (days)			
Stage of labour	>6* n (%)	≤ 6 n (%)	Test of significance	OR (95% CI)
Second (100)	62 (62.0)	38 (38.0)	Chi square = 29.457,df = 1,p = 0.000 5.167	(2.804-9.521)
First (100)	24 (24.0)	76 (76.0)		

Table 6: Correlates of fetal complication in second stage caesarean delivery (n=100)

Variables	Fetal complication Yes*	No n (%)	Test of significance	OR (CI)
Age (year)			Chi-square = 1.469, df = 1, p = 0.226	0.545 (0.203-1.465)
≤21(median)	9 (15.8)	48 (84.2)		
>21	11 (25.6)	32 (74.4)		
Gestation			Chi-square = 1.442, df = 1, p = 0.230	1.833 (0.676-4.969)
(week)	12 (25.0)	36 (75.0)		
≥38 (median) <38	8 (15.4)	44 (84.6)		
Active phase of labour duration (hrs)			Chi-square = 1.190, df = 1, p = 0.275	0.519 (0.158-1.709)
>14(median)	4 (13.3)	26 (86.7)		
≤14	16 (22.9)	54 (77.1)		
Oxytocin			Chi-square = 0.159, df = 1, p = 0.690	1.288 (0.371-4.481)
No	4 (23.5)	13 (76.5)		
Yes	16 (19.3)	67 (80.7)		
Time between incision to delivery of baby (min)			Chi-square = 0.010, df = 1, p = 0.920	1.051 (0.395-2.801)
>8(median)	10 (20.4)	39 (79.6)		
≤8	10 (19.6)	41 (80.4)		
OT duration (min)			Chi-(min) square = 0.178, df = 1, p = 0.673	0.796 (0.275-2.300)
>50 (median)	6 (17.6)	28 (82.4)		
≤50	14 (21.2)	52 (78.8)		

There was no statistically significant relationship between maternal complication and age of mother, gestational age, duration of active phase of labour, oxytocin induction, time between incision to delivery of baby and total operative time in second stage deliveries (p>0.05).

DISCUSSIONS AND RESULTS

The most common abdominal surgery done on women worldwide is a Caesarean section. There are reports of varying caesarean section rates both within and between nations[1-3]. Based on current estimates, the number of caesarean sections performed worldwide has increased by nearly 150% in the last 25 years. The rate is currently 18.6%, up from 20% in a tertiary hospital in Istanbul, Turkey, 25% in the United Kingdom (UK) and over 30% in the United States (US)[8]. Although the World Health Organization (WHO) recommended that the community's average rate of Caesarean sections be 15%, a recent study found that 62% of the more than 60 medium and high-income countries had a rate of caesarean sections that was higher than 15%, pending evidence that a higher level benefited the mothers or their offspring[9].

Despite efforts to limit operative abdominal deliveries, the rate of caesarean deliveries keeps rising. This is concerning because, in comparison to vaginal delivery, cesarean sections are linked to a higher risk of negative outcomes for the mother and the fetus[10]. CS can be carried out either prior to labor or both during the initial and second phases of labor. In the UK, rates of caesarean deliveries during the second stage of labor have increased in tandem with a decline in operative vaginal deliveries, with prevalence ranging from 1.8% in 2008 to 0.9 in 1993[11].

It seems that over the past thirty years, c/s has supplanted assisted vaginal delivery techniques like forceps and vacuum extraction, which were previously employed to stop descent during the second stage of labor. According to certain studies, the private sector, particularly in South Asia, may play a role in the high rates of caesarean sections, and the prevalence may be higher among individuals with higher educational attainment[12]. This concerning trend in the use of instrumental delivery may have been influenced by a number of factors, including concerns about maternal and neonatal morbidity and the related legal issues, a lack of training and supervision for junior staff in second stage decision-making and a loss of technique associated with difficult-assisted delivery.

The amount of time that passes between the cervix's complete dilation and the fetus's expulsion is known as the second stage of labor. A technically challenging caesarean section at full dilatation of the cervix with an impacted fetal head from the mother pelvis may result in increased trauma to the lower uterine segment and surrounding structures, a longer length of time for the procedure and other intraoperative complications in addition to a higher risk of infection and hemorrhage. One of the main concerns with caesarean sections performed in the second stage of labor is still newborn mortality and morbidity from hypoxia and fetal trauma[13]. The current study had been framed with this background with following objectives:

- To determine whether a caesarean delivery is indicated in the first and second stages of labor
- To ascertain whether there is any maternal, fetal, or neonatal morbidity or mortality linked to second stage caesarean delivery
- To compare the outcomes of second stage and first stage caesarean deliveries for mothers, fetuses and newborns
- To determine the correlates of the unfavourable feto-maternal outcome, if any, in case of second stage of caesarean delivery

For a duration of one and a half years, an institution-based prospective cohort study was carried out in the obstetrics and gynecology in-patient department (IPD) of Bankura Sammilani Medical College, Bankura. The study population consisted of all primigravida pregnant women who were carrying a term pregnancy, had a viable fetus in vertex presentation, were admitted to the labor ward, and had caesarean delivery in both the first and second stages of labor during the study period. The data had been gathered using a pre-made checklist.

CONCLUSION

In second stage labor, there has been a decline in the rates of operative vaginal deliveries and an increase in caesarean deliveries, which can be technically challenging when there is an impacted fetal head. According to the current study, there was a slight increase in feto-maternal complications following second stage cesarean sections. Events like prolonged hospital stays, requirement of blood transfusion, intraoperative complications, uterine/hypogastric artery ligation were significantly higher in second stage deliveries, neonatal complications like poor ($\leq$3) Apgar score at 5 minutes, occurrence of neonatal seizure and longer NICU stay (>24 hrs) were reported to be slightly higher in second than first stage caesarean sections.

In order to lessen the burden of feto-maternal complications later on, every attempt should be made to reduce the rate of second stage cesarean sections.

There is no difference in the neonatal outcome when using the Patwardhan method, despite the limited evidence from observational studies suggesting that it is associated with a lower risk of uterine extension and blood loss. Early decision making and prompt action is the need of the hour to address this issue. In every caesarean case neonatologist should be present to take care of the baby immediately, which can reduce morbidity to a great extent. Improvement of infrastructure, logistics, adequate as well as experienced obstetrician should be there to manage any kind of complication in second stage deliveries, if occur any.

REFERENCES

1. Dumont, A., L. de Bernis, M.H. Bouvier-olle and G. Bréart, 2001. Caesarean section rate for maternal indication in sub-saharan Africa: A systematic review. Lancet., 358: 1328-1333.
2. Betrán, A.P., J. Ye, A.B. Moller, J. Zhang, A.M. Gülmezoglu and M.R. Torloni, 2016. The increasing trend in caesarean section rates: Global, regional and national estimates: 1990-2014. Plos. one., Vol. 11. 10.1371/journal.pone.0148343
3. Vitner, D., I. Bleicher, E. Levy, R. Sloma and E. Kadour-Peero., 2018. Differences in outcomes between cesarean section in the second versus the first stages of labor. J. Maternal-Fetal Neonatal Med., 32: 2539-2542.
4. Kambo, I., N. Bedi, B.S. Dhillon and N.C. Saxena, 2002. A critical appraisal of cesarean section rates at teaching hospitals in India. Int. J. Gynecol. Obstet., 79: 151-158.
5. Kilpatrick, S.,J.R. and K. Laros, 1989. Characteristics of normal labour. Obstet. Gynecol., 74: 85-87.
6. Seal, S., G. Kamilya, J. Mukherji, S. Bhattacharyya, A. De and A. Hazra, 2010. Outcome in second- versus first-stage cesarean delivery in a teaching institution In eastern India. Am. J. Perinatolo., 27: 507-512.
7. Feinstein, U., E. Sheiner, A. Levy, M. Hallak and M. Mazor, 2002. Risk factors for arrest of descent during the second stage of labor. Int. J. Gynecol. Obstet., 77: 7-14.
8. Blanch, G., T. Lavender, S. Walkinshaw and Z. Alfirevic, 1998. Dysfunctional labour: A randomised trial. BJOG: An Int. J. Obstet. Gynaecology., 105: 117-120.
9. Modanlou, H., S.Y. Yeh, E.H. Hon and A. Forsythe, 1973. Fetal and neonatal biochemistry and apgar scores. Am. J. Obstet. Gynecol., 117: 942-951.
10. Myerscough, P.R., 2000. Cesarean Section Sterilization and Hysterectomy. In Munrokerr's Operative Obstetrics 10th Ed., Balliere, London., Pages: 326.
11. Cunnigham., 2005. Cesarean Delivery and Peripartum Hysterectomy. 22Ed., Williams Obstetrices, USA, Pages: 598.
12. Gei, A.F., 2012. Prevention of the first cesarean delivery: The role of operative vaginal delivery. Seminars. Perinatology., 36: 365-373.