

Comparison of Post-operative Complications among Patients Undergoing Cesarean Section vs Normal Vaginal Delivery

Sah, D. K^{1*}, Purbey, H. N², Jha, R³

¹Dipak Kumar Sah, MBBS, MS (Obstetrics & Gynecology), Assistant Professor, Department of Obstetrics & Gynecology, Janaki Medical College Teaching Hospital, Ramdaiya Bhawadi, Jannakpurdham, Nepal

²Hari Narayan Purbey, MBBS, MDGP, Assistant Professor, Department of General Practice & Emergency Medicine, Janaki Medical College Teaching Hospital, Ramdaiya Bhawadi, Jannakpurdham, Nepal

³Rani Jha, MBBS MD, Associate Professor, Department of Obstetrics & Gynecology, Janaki Medical College Ramdaiya Bhawadi, Jannakpurdham, Nepal

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*Corresponding author: Sah, D. K

Dipak Kumar Sah, MBBS, MS (Obstetrics & Gynecology), Assistant Professor, Department of Obstetrics & Gynecology, Janaki Medical College Teaching Hospital, Ramdaiya Bhawadi, Jannakpurdham, Nepal

Abstract

Introduction: Majority of the deaths during child birth are due to complication after delivery. C-section which is a measure to reduce death rate of the mother and fetus comes with many complications. Proper knowledge should be provided to the child bearing mother to choose the right method of delivery. **Aim of the study:** The aim of this study was to compare the post-operative complications among patients undergoing cesarean section vs normal vaginal delivery. **Methods:** This cross-sectional study was conducted in department of obstetrics & gynaecology, Janaki Medical College Teaching Hospital, Ramdaiya Bhawadi, Jannakpurdham, Nepal, during the period from January 2020 to December 2022. Total 500 women who have given birth through vaginal delivery or cesarean section were included in this study. **Result:** Mean age of the study people in vaginal delivery group and cesarean section was 29.3 years (SD±7.5 years) and 30.9 years (SD±8.5 years) respectively. Maternal mortality was higher in cesarian section. Muscular pain was the commonest maternal complications in both vaginal delivery group and cesarean section group; 35.6% and 44.4% respectively. There was significant difference ($p < 0.05$) between groups in muscular pain, problem in digestion, urinary trac infection, wound infection and SUI and other values were not statistically significant. In vaginal delivery group, 7.6% new born were admitted to NICU and in cesarean section group it was 11.6%. Delivery injury was commonest complication of neonatal in vaginal delivery group and RDS was commonest complication of neonatal in cesarean section group. **Conclusion:** For both maternal and neonatal cases, cesarean section has more complication than vaginal delivery. Muscular pain and headache were present in majority of the study people. Mortality rate in cesarean section is also slightly higher in this study.

Keywords: Comparison, Post-operative Complications, Cesarean Section, and Normal Vaginal Delivery.

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I. INTRODUCTION

The reported cesarean section (C-section) rate ranges from 10 to 25 percent, with notable variations in different regions of the world [1]. Despite reports that minor and major difficulties during birth were more common in C-sections than in vaginal deliveries, the prevalence of C-sections is rising globally [2-4]. The primary reasons for this growth may be attributed to improved anesthesia and surgical safety as well as shifting attitudes among patients and physicians toward C-sections [5]. Over the previous ten years, rates of caesarean sections have significantly increased in a

number of south Asian nations. The rate of caesarean sections increased from 1% in 2000 to 5% in 2011, from 2% in 2000 to 17% in 2011, from 3% in 1992 to 11% in 2006, and from 1% in 2000 to 5% in Nepal, Bangladesh, and India [6]. In order to lower the problems, morbidity, and death among mothers and babies, the contemporary cesarean delivery method was developed [7]. Unfortunately, cesarean sections are no longer only performed when absolutely required and in order to preserve the mother and the infant; rather, certain societies are slowly beginning to view them as luxury [8]. The projected rate of cesarean deliveries is

generally universally thought to be as low as 13 percent, and according to records from the World Health Organization, it is advised to be as low as 15 percent [9]. The general consensus among people is that cesarean births are less unpleasant, riskier, and healthier than vaginal births [10]. In actuality, more than half of women elect to have C-sections [11]. Individuals' opinions and attitudes have a big impact on the distribution method they choose. These opinions are supported by a variety of information sources, all of which have varying degrees of accuracy and dependability [12]. Numerous research have discussed various criteria for choosing vaginal delivery. One of the most significant determinants in the Black (2005) study conducted in the UK was the person's propensity for vaginal delivery, which is influenced by a number of factors including interest in having a vaginal delivery, prior positive experiences, lack of concern for the safety of mother and child, quicker recovery following delivery, and fear of anesthesia [13]. Cesarean section problems can affect the mother and the fetus. The anaesthesia-related problems, bleeding, gastrointestinal and urinary tract injuries, thromboembolism, and wound infection are among the caesarean section complications that affect mothers [14]. Fetal problems can result in breathing issues, clavicular fractures, cephalhematomas, brachial plexopathies, skull fractures, facial nerve palsies, and skin lacerations [15, 16]. Regarding outcomes and complications, it should be noted that C-sections are more frequently followed by complicating conditions such as a history of prior C-sections, fetal distress, abnormal forces of labor, abnormality in fetal heart rate or rhythm, malposition/malpresentation, umbilical cord complications, eclampsia, preeclampsia, anemia, problems with the amniotic cavity, and advanced maternal age [17]. This study was conducted to compare the post-operative complications among patients undergoing cesarean section vs normal vaginal delivery.

II. OBJECTIVES

To compare the post-operative complications among patients undergoing cesarean section vs normal vaginal delivery.

III. METHODOLOGY & MATERIALS

This cross-sectional study was conducted in department of obstetrics & gynaecology, Janaki Medical College Teaching Hospital, Ramdaiya Bhawadi, Janakpur, Nepal, during the period from January 2020 to December 2022. Total 500 women who have given birth through vaginal delivery or cesarean section were included in this study. There were two study group, vaginal delivery and cesarean section, both groups containing 250 women. Consent of the patients and guardians were taken before collecting data. After

collection of data, all data were checked and cleaned. After cleaning, the data were entered into computer and statistical analysis of the results being obtained by using windows-based computer software devised with Statistical Packages for Social Sciences version 22. After compilation, data were presented in the form of tables, figures and charts, as necessary. Numerical variables were expressed as mean and standard deviation, whereas categorical variables were count with percentage. Quantitative data among groups were analyzed by ANOVA test followed by exploration of significant difference between all possible paired group means by Bonferroni test. P value of less than 0.05 was considered statistically significant.

Inclusion criteria

- Attending vaginal delivery or cesarean section

Exclusion criteria

- Patients who did not give consent
- Patients transferred to another hospital

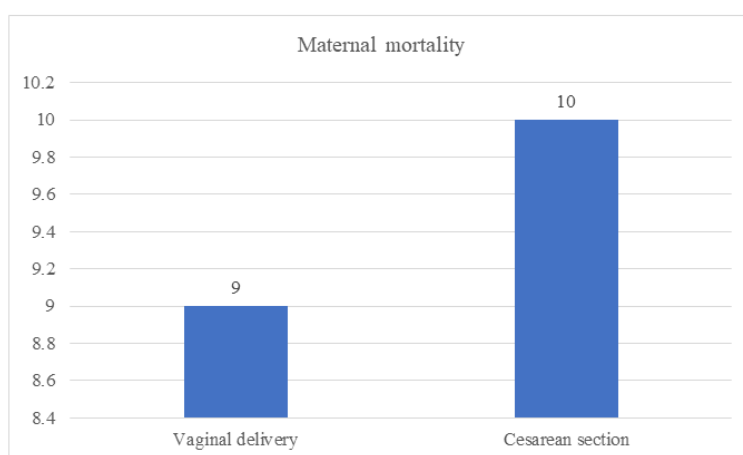
IV. RESULT

In this study, 500 patients were included, where 250 women have given birth through vaginal method and 250 women have given birth through cesarean section. Table-I shows the general characteristics and laboratory findings of the study participants. Mean age of the study people in vaginal delivery group and cesarean section was 29.3 years (SD±7.5 years) and 30.9 years (SD±8.5 years) respectively. There was significant difference ($p < 0.05$) between groups in age, gravidity, total hospital length of stay and previous C-section and other variables were statistically insignificant. Maternal is shown in Figure-1. Maternal mortality was higher in cesarian section. In vaginal delivery group, maternal mortality was 3.6% where in cesarean section group, maternal mortality was 4%. Maternal post-operative complications of the study people were shown in table-II. Muscular pain was the commonest maternal complications in both vaginal delivery group and cesarean section group; 35.6% and 44.4% respectively. Followed by headache, sexual dysfunction, problem in digestion etc. There was significant difference ($p < 0.05$) between groups in muscular pain, problem in digestion, urinary tract infection, wound infection and SUI and other values were not statistically significant. Table-III contains neonatal post-operative complications. In vaginal delivery group, 7.6% new born were admitted to NICU and in cesarean section group it was 11.6%. Delivery injury was commonest complication of neonatal in vaginal delivery group and RDS was commonest complication of neonatal in cesarean section group. Except TTN, there was statistically insignificant ($p > 0.05$) difference between two groups.

Table-I: General characteristics and laboratory findings of the study participants. (n=500)

Characteristics	Vaginal delivery (n=250)	Cesarean section (n=250)	P-value
	Mean±SD	Mean±SD	
Age (Years)	29.3±7.5	30.9±8.5	0.0261 ^S
Gravida	4.0 ±1.4	3.0 ±2.1	< 0.0001 ^S
Parity	3.5±2.9	3.2±2.9	0.2480 ^{NS}
Systolic blood pressure (mm Hg)	125.8±33.0	123.6±24.5	0.3978 ^{NS}
Diastolic blood pressure (mm Hg)	78.4±19.8	79.1±16.9	0.6709 ^{NS}
Pulse rate (dk)	92.7±15.1	92.8±14.2	0.9392 ^{NS}
Body temperature (°C)	36.4±0.7	36.4±0.5	1.000 ^{NS}
Total hospital length of stay (in days)	3.1±3.4	4.5±3.4	< 0.0001 ^S
Previous C-sections	0	1.5±0.5	< 0.0001 ^S

S=Significant
NS=Not significant

**Figure 1: Maternal mortality, (n=500)****Table-II: Maternal post-operative complications of the study people, (n=500)**

Maternal complications	Vaginal delivery (n=250)		Cesarean section (n=250)		P-value
	n	%	n	%	
Muscular pain	89	35.6	111	44.4	0.0448 ^S
Headache	86	34.4	98	39.2	0.2663 ^{NS}
Sexual dysfunction	57	22.8	71	28.4	0.1518 ^{NS}
Problem in digestion	33	13.2	72	28.8	< 0.0001 ^S
Urinary tract infection	6	2.4	33	13.2	< 0.0001 ^S
Wound infection	9	3.6	28	11.2	0.0012 ^S
Excessive bleeding	19	7.6	20	8	0.8677 ^{NS}
SUI	30	12	10	4	0.0010 ^S

S=Significant
NS=Not significant

Table-III: Neonatal post-operative complications. (n=500)

Neonatal complications	Vaginal delivery (n=250)		Cesarean section (n=250)		P-value
	n	%	n	%	
Admission in NICU	19	7.6	29	11.6	0.1294 ^{NS}
RDS	16	6.4	19	7.6	0.5994 ^{NS}
TTN	3	1.2	13	5.2	0.0111 ^S
Apgar score<7	1	0.4	4	1.6	0.1780 ^{NS}
Meconium aspiration syndrome	9	3.6	13	5.2	0.3836 ^{NS}
Delivery injury	21	8.4	7	2.8	0.0065 ^{NS}

S=Significant
NS=Not significant

V. DISCUSSION

This current study was carried out to compare the post-operative complications among patients undergoing cesarean section vs normal vaginal delivery. In this study, 500 patients were included, where 250 women have given birth through vaginal method and 250 women have given birth through cesarean section. Mean age of the study people in vaginal delivery group and cesarean section was 29.3 years ($SD\pm 7.5$ years) and 30.9 years ($SD\pm 8.5$ years) respectively. Age, gravidity, total hospital length of stay and previous C-section were statistically significant ($p<0.05$) and other variables were statistically insignificant. Similar results were found in the study of Agacayak E *et al.*, [18] where among 330 study people, mean age in postoperative group (C-sections) was 32.3 years ($SD\pm 7.5$ years) whereas in the postpartum group (vaginal deliveries) mean age was 33.9 years ($SD\pm 8.5$ years). There was no statistically significant difference between the groups. Maternal mortality was higher in cesarean section. In vaginal delivery group, maternal mortality was 3.6% where in cesarean section group, maternal mortality was 4%. In a large study of Kamilya G *et al.*, [19] on 43,842 deliveries, C-section was compared to vaginal delivery and found to be associated with a 3.01-fold increase in the maternal mortality risk. In another study of Gonzales G. F *et al.*, [20], maternal mortality was found to be 5.5 times higher in the C-section group compared to the vaginal delivery group. Muscular pain was the commonest maternal complications in both vaginal delivery group and cesarean section group; 35.6% and 44.4% respectively. Followed by headache, sexual dysfunction, problem in digestion etc. Muscular pain, problem in digestion, urinary tract infection, wound infection and SUI were statistically significant ($p<0.05$) and other values were not statistically significant. The study of Rafiei M *et al.*, [21] found similar findings where the average frequency of maternal complications as muscular pain, headache, lack of sexual satisfaction after delivery, digestive problems, fever and infection in women who had undergone cesarean section is higher than that of the women who had normal vaginal delivery. Abnormal bleeding and stress urinary incontinence is also higher in the cesarean group. In addition, muscular pain (45.1%) and headache (41%) are the most frequent complications of cesarean section for the mothers. In vaginal delivery group, 7.6% new born were admitted to NICU and in cesarean section group it was 11.6%. Delivery injury was commonest complication of neonatal in vaginal delivery group and RDS was commonest complication of neonatal in cesarean section group. Except TTN, there was statistically insignificant ($p>0.05$) difference between two groups. In the study of Rafiei M *et al.*, [21], the Neonatal Intensive Care Unit (NICU: 12.45%) and Respiratory Distress Syndrome (RDS: 7.75%) the most common cesarean newborn complications. Cesarean births also had a greater incidence of NICU Admission, RDS, TTN, and below-7-Apgar scores than

regular vaginal births. Contrarily, vaginal birth has a higher rate of neonatal labor injuries than cesarean delivery. One of the primary causes of illness and death in neonates is respiratory issues [22]. Before week 39, caesarean births are twice as risky, especially for moms who did not feel labor pain [23, 24]. Therefore, specialists advise that for the benefit of the infants' health, cesareans should never be conducted without obstetrical grounds and should only be carried out in an emergency or after the commencement of labor pain [25].

Limitations of the study

In our study, there was small sample size and absence of control for comparison. Study population was selected from one center, so may not represent wider population. The study was conducted at a short period of time.

VII. CONCLUSION AND RECOMMENDATIONS

For both maternal and neonatal cases, cesarean section has more complication than vaginal delivery. Muscular pain and headache were present in majority of the study people. For neonatal, NICU rate was higher in cesarean section. Mortality rate in cesarean section is also slightly higher in this study. Without any indication of cesarean section, vaginal delivery is appropriate. More awareness and knowledge should be spread about choosing the mode of delivery.

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