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Original Article

Indications and Outcome of Cesarean Delivery in Primigravidae (Retrospective Study)

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ABSTRACT

Background: Approximately 20 million deliveries globally involve cesarean sections (CS), the most common abdominal surgery performed annually on humans. This study aimed to decrease rate of primary CS to decrease morbidity and mortality. **Methods:** This retrospective study was conducted at Faculty of Medicine, Zagazig University based on secondary data retrieved from the record information of the registry of Zagazig Maternity University Hospital from 2019 to 2023 during the period from January 2024 to June 2024.

Results: The most frequent cause of cesarean section among primigravidae mothers was fetal distress among 1159 cases (35%) of mothers. Breech was the second indication for CS in 463 cases (14%), followed by Cephalopelvic disproportion in 397 cases (12%). The other indications included Obstructed labor in 331 cases (10%), Failed progress in 298 cases (9%), Failed induction in 265 cases (8%), Antepartum eclampsia in 165 cases (5%), IUGR in 32 cases (4%), Abruptio placenta in 33 cases (1%), Precious pregnancy in 33 cases (1%), and Transverse lie in 33 cases (1%). The most cesarean cases were done under Spinal anesthesia in (90.2%) among primigravidae women. The most frequent complication seen among primigravidae among pregnant women who gave a birth by cesarean section was uterine atony & PPH and Respiratory tract infection was in 232 cases (7%) of mothers, Extension of uterine incision, UTI and Wound gap in 66 cases (2%).

Conclusion: Cesarean section is high in the primigravidae. Although the operation is safe now days, it is still carries a risk during anesthesia, operative procedure and podtoperative. Moreover, there is a great risk of major complications in the next pregnancies.

Keywords: Cesarean section, Risk factors, Primigravidae.

INTRODUCTION

From roughly 5% in wealthy countries in the early 1970s to over 50% in some parts of the world in the late 1990s, the rate of cesarean sections (CS) has dramatically increased in both developed and developing nations in recent decades **[1].**

Because primary cesarean deliveries raise the likelihood of a repeat cesarean delivery, they are a crucial target to research in order to reduce their frequency. When a nulliparous woman has dystocia with probable cephalopelvic disproportion, a cesarean section is the most common method of delivery **[2].**About 50% of all cesarean sections performed on nulliparous women and most repeat cesarean sections performed during labor are directly related to dystocia, the most often reported cause for first cesarean sections **[3].**

Over the years, the indications for CS surgery have broadened to include delivery for a number of more subtle threats to the mother or fetus, while the original goal was to save the life of the woman with obstructed labor. Its improved safety is a factor in its rising usage **[4].**

Due to concerns about episiotomies, protracted and agonizing labor, pelvic floor injuries, and the ensuing incontinence linked to vaginal birth, a

growing number of women have requested delivery via elective cesarean section in recent years without a legitimate "medical indication." This occurrence, known as "cesarean delivery on maternal request (CDMR)," has sparked discussion around the world because multiple studies have suggested that it could be a contributing factor to the increase in cesarean sections (CS)**[5]**.This study aimed to decrease rate of primary CS to decrease morbidity and mortality.

METHODS

In order to evaluate the maternal and fetal outcomes after cesarean section in primigravidae deliveries, this retrospective study was carried out at Zagazig University's Faculty of Medicine using secondary data that was obtained from the registry of Zagazig Maternity University Hospital's records from 2019 to 2023 during the period of January 2024 to June 2024. The study received approval from the medical faculty's Institutional Ethics Zagazig University (ZU- IRB# 11401), the study complies with the World Medical Association's 1975 Helsinki Declaration, which establishes ethical standards for studies involving human participants.

The study's secondary data came from the records of 23642 deliveries between 2019 and 2023, of which 9813 were made by CS. Of these, 3310 were primigravidae women between the ages of 20 and 40. All moms who gave birth via cesarean section at the relevant institution during the study period made up the study population. The study contained information gathered from Zagazig Maternity University Hospital's archived files for five years, from 2019 to 2023, for those who satisfied the eligibility requirements.

The retrospective guideline

There were two sections to the retrospective guideline that served as a data gathering tool. Age distribution, indications for CS in primigravidae (fetal distress, breech, cephalopelvic disproportion (CPD), obstructed labor, failed progress, failed induction, antepartum eclampsia (APE), IUGR, abruptio placenta, patient request, transverse lie, cord prolapse, and placenta previa) and demographic and obstetric information were covered in the first section. Information pertaining to results following CS made up the second section. Fetal outcomes include low birth weight, hyperbilirubinemia, respiratory distress, birth asphyxia, and neonatal sepsis; maternal outcomes include uterine atony and PPH, respiratory tract infection, extension of uterine incision, UTI, wound gap, bladder injury, paralytic ileus, DIC, wound infection, and maternal death in the hospital. Both positive and negative results were used to gauge it.

STATISTICAL ANALYSIS

SPSS 16 was used for analysis after the data was imported into MS-Excel using a verified command. The sociodemographic and obstetric data, indications, and results of cesarean sections were analyzed using frequency and percentage.

RESULTS

Table 1; among females who gave birth by cesarean section; the mean age of study participants was 24.2 ± 5.3 among primigravidae mothers. The BMI mean was 26.5±3.2 among primigravidae mothers. The majority of primigravidae mothers (61%) were illiterate or attended primary school and (39%) attended university or higher schools. Concerning the mothers' residence, 1357 (41%) and 2926 (45%) were from urban and rural areas, respectively.

Regarding antenatal care (ANC) follow-up, (78%) of primigravidae mothers had ANC follow-up for their current pregnancy, while the remaining (22%) of primigravidae women did not have ANC follow-up, respectively. For the majority of mothers, the gestational age at labor was 37–40 weeks: (81%) of primigravidae as shown as table 1.

The majority of mothers, the Apgar score at 5th minute was normal (≥7): (87%) of primigravidae women. Also, the majority of mothers, the birth weight was normal (≥7): (79%) of primigravidae women as shown in table 1.Table 2; showed that the incidence of women who received blood transfusion during cesarean section; (5%) among primigravidae mothers received blood transfusion.

Table 3; showed that the most frequent cause of cesarean section among primigravidae mothers was fetal distress among 1159 cases (35%) of mothers. Breech was the second indication for CS in 463 cases (14%), followed by Cephalopelvic disproportion in 397 cases (12%). The other indications included Obstructed labor in 331 cases (10%), Failed progress in 298 cases (9%), Failed induction in 265 cases (8%), Antepartum eclampsia in 165 cases (5%), IUGR in 32 cases (4%), Abruptio placenta in 33 cases (1%), patient request in 33 cases (1%), and Transverse lie in 33 cases (1%)

Table (4) Showed that most cesarean cases were done under Spinal anesthesia in (90.2%) among primigravidae women.

Table 5; showed that the most Neonatal complication seen among primigravidae pregnant women who gave a birth by cesarean section was

low birth weight in 639 cases (19%) then hyperbilirubinemia in 397 cases (12%) followed by respiratory distress in 199 cases (6%), birth asphyxia in 99 cases (3%) and neonatal sepsis in 99 cases (3%) among primigravidae women.

Table 6; showed that the most frequent complication seen among primigravidae among pregnant women who gave a birth by cesarean section was uterine atony & PPH and respiratory tract infection was in 232 cases (7%) of mothers, extension of uterine incision, UTI and Wound gap in 66 cases (2%).

Table (1): Socio-demographic data in primigravidae mothers who gave birth by cesarean section from 2019 to 2023 in Zagazig University Hospital

	Primigravidae (n=3310)	
Age mean±SD	24.2 ± 5.3	
BMI mean±SD	26.5 ± 3.2	
	Frequency	***%***
Occupation N.%		
Housewife	2152	65
Working	1158	35
Education N.%		
Illiterate/Primary	2019	61
University/Higher	1291	39
Residence N. %		
Rural	1953	59
Urban	1357	41
Obstetric characteristics	***Frequency***	***%***
Antenatal care follow up		
No	728	22
Yes	2582	78
Gestational age at delivery (weeks)		
<37 weeks	463	14
37 – 40 weeks	2681	81
>40 weeks	199	6
Fetal characteristics	***Frequency***	***%***
Apgar score 5th minute		
Very low	232	7
Low (4 – 6)	199	6
Normal (≥7)	2880	87
Birth weight		
Very low (1000-2499 g)	132	4
Low (<2500 g)	497	15
Normal (2500-3499 g)	2615	79
Macrosomia (≥4000 g)	66	2

Table (2): Incidence of blood transfusion among primigravidae mothers who gave a birth by cesarean section from 2019 to 2023 in Zagazig University Hospital

	Primigravidae (n=3310)	
	Frequency	***%***
Blood transfusion		
No	3145	95
Yes	166	5

Table (3): Indications of cesarean section among primigravidae pregnant females from 2019 to 2023 in Zagazig University Hospital

Indications	***Primigravidae (n=3310)***	
	Frequency	***%***
Fetal distress	1159	35
Breech	463	14
Cephalopelvic disproportion	397	12
Obstructed labor	331	10
Failed progress	298	9
Failed induction	265	8
Antepartum eclampsia (APE)	166	5
IUGR	132	4
Abruptio placenta	33	1
Patient request	33	1
Transverse lie	33	1
Cord prolapse	0	0
Placenta Previa	0	0

Table (4): Type of anesthesia among mothers who gave a birth by cesarean section from 2019 to 2023 in Zagazig University Hospital

Indications	***Primigravidae (n=3310)***
Spinal anesthesia	2985 (90.2%)
General anesthesia	325 (9.8%)

Table (5): Neonatal complications seen among primigravidae pregnant women who gave a birth by cesarean section from 2019 to 2023 in Zagazig University Hospital

	Primgravida (n=3310)	
	Frequency	***%***
None	1887	57
Low birth weight	629	19
Hyperbilirubinemia	397	12
Respiratory distress	199	6
Birth asphyxia	99	3
Neonatal sepsis	99	3

Table (6): Maternal complications seen among primigravidae among pregnant women who gave a birth by cesarean section from 2019 to 2023 in Zagazig University Hospital

	Primigravidae (n=3310)	
	Frequency	***%***
No	2383	72
Uterine atony and PPH	232	7
Respiratory tract infection	232	7
Extension of uterine incision	66	2
UTI	66	2
Wound gap	66	2
Bladder injury	33	1
Paralytic ileus	33	1
Septicemia	33	1
DIC	33	1
Wound infection	99	3
Maternal death	33	1

PPH : postpartum hemorrhage,**UTI :**Urinary tract infection ,**DIC**: Disseminated intravascular coagulation

DISCUSSION

In terms of prenatal care (ANC) follow-up, the current study revealed that 78% of primigravidae moms had ANC follow-up for their current pregnancy, whereas 22% of primigravidae women did not. Eighty-one percent of primigravidae had a gestational age of 37–40 weeks at childbirth. **Berhanu et al. [6]** they discovered that, out of the 255 primigravidae moms who underwent caesarian sections, 148 cases (58.1%) had ANC follow-up for their current pregnancy, whereas the remainder 107 (41.9%) did not. 37–40 weeks was the gestational age at labor for most moms (47.1%).**Abdelrady et al. [7]** discovered that in a research of 1305 files of women who gave birth by caesarean section, 286 instances (57.3%) of primigravidae had a gestational age at labor of 37–39 weeks, and 213 cases (42.7%) had a gestational age of > 39 weeks.

Regarding the occurrence of women who had blood transfusions after cesarean sections, the current study revealed that 5% of primigravidae moms received blood transfusions.

Comparable to the investigation of **Bharti, [8]**, who discovered that 7 instances (6.8%) out of 103 cesarean section cases needed blood transfusions. While, **Datta et al. [9]** discovered that 2.5% of the primigravidae mothers needed blood transfusions as a result of excessive loss. This disparity can be significant due to a lack of primary healthcare, a lack of information, and the inadequate training and expertise of medical personnel.

According to the current study, 87% of primigravidae women had an Apgar score at the fifth minute that was normal (≥7). Additionally, the majority of moms (79%) of primigravidae had normal birth weights (≥7). Along the same line **Chukwu et al. [10]** demonstrated that the majority of cesarean section cases resulted in a viable fetus with an apgar score of 8/10 in the first few minutes of life, indicating that the purpose of the procedure was to save the mother's and the fetus' lives. **Manzour et al. [11]** discovered that a study with 1305 Sixty-six percent of them were of normal weight, and ninety-six percent had normal 5-minute APGAR scores. While **Dhakal [12]** discovered that severe asphyxia (0–3) was present in 0.8% and 0.7% of newborns with APGAR scores at 1 minute and 5 minutes, respectively. The birth weights of newborns with low birth weights (1.5–2.5) and extremely low birth weights (<1.5) were 5.3% and 0.6%, respectively.

Berhanu et al. [6] discovered that 108 (58%), of the study participants, had at least one antenatal checkup, while the remaining 107 (42%), did not receive any follow-up care during their pregnancy.**Berhanu et al. [6]** discovered that 97 (37.93%) had a normal fetal weight of between 2500 and 3999 grams. 42 (16.3%) and 116 (40.77%) have low birth weights, which are macorsomic (>4000 grams).

The present investigation fetal distress was the most common reason for cesarean sections among primigravidae mothers, accounting for 1159 cases (35%) of all cases. Cephalopelvic disproportion was the second indication for CS in 397 instances (12%), and breech in 463 cases (14%).

Similarly **Malapure et al. [13]** revealed that in 41% of cases, fetal distress which included thick meconium-stained liquor and the unsettling non-stress test (NST) was the most frequent reason for LSCS. In 10% of instances, severe oligohydramnios was the reason for LSCS. Breech (6%), prolonged premature rupture of membrane (PROM) (6%), preterm premature rupture of membrane (PPROM) (2%), deep transverse arrest (4%), malpresentation (1%), cephalopelvic disproportion (6%), abnormal doppler (2%), second stage arrest of cervical dilation (1%), cord presentation (1%), non-progress of labor (1%), severe intrauterine growth restriction (IUGR) (2%), persistent right occipito-posterior (1%), eclampsia (1%), arrest of descent (1%), placenta previa (1%), and hand prolapse (1%) were among the other indications.

Furthermore, **Bharti, [8]** revealed that in 39.81% of cases, fetal distress was the most frequent reason for a cesarean section. Other indications of cesarean section included breech presentation in 9.71% of cases, moderate to severe oligohydramnios in 11.65% of cases, failure of induction and fetoplacental insufficiency in 2.91% of cases, non-progression of labor and eclampsia in 5.83% of cases, and cephalopelvic disproportion in 12.62% of cases, in decreasing order.

According to the current study the majority of cesarean sections were performed under spinal anesthesia in 2985 patients (90.2%) among primigravidae women and under general anesthesia in 325 patients (9.8%).

This is consistent with a study by **Javed et al. [14]** that found that out of 5784 cases that were operated on, 5441 (94.06%) were performed under spinal anesthesia.**Tawfeeq et al. [15]** A study with 813 participants revealed that 54% had previously opted for spinal anesthesia, 22% for general anesthesia, and 24% for neither. The following were cited as justifications for selecting general anesthesia: 15.1% dreaded lower back anesthetic needles, 12.8% feared paralysis, 16.6% feared back pain, 21.6% feared pain during

surgery, and 24.2% feared witnessing the surgical procedures on their body.

According to the current study among pregnant women who gave birth by cesarean section, low birth weight was the most common neonatal complication, occurring in 639 cases (19%) among primigravidae women, followed by hyperbilirubinemia in 397 cases (12%), respiratory distress in 199 cases (6%), birth asphyxia in 99 cases (3%) and neonatal sepsis in 99 cases (3%) among primigravidae women.**Dhakal, [12]** discovered that 11.8 percent of babies had unfavorable outcomes. A total of 0.3% of newborns were born dead or still, 1.3% were admitted to the NICU, and birth asphyxia accounted for the majority of NICU admissions (62.4%). Furthermore, the majority of newborns (94.1%) in the current study did not have asphyxia at the 5-minute mark, while 0.8% of neonates experienced asphyxia at birth. Similarly, 94.1% of neonates were born with normal birth weight, while 5.9% had low birth weight.**Bharti, [8]** revealed that 22.33% of infants needed to be admitted to the NICU. 12.62% of infant admissions were for respiratory distress syndrome, 3.88% were for low birth weight (less than 2 kg), 1.94% were for perinatal asphyxia, 1.94% were for pneumonia, 0.97% were for sepsis, and 0.97% were for hypoglycemia.**Bablad [16]** revealed that just four patients experienced intraoperative complications, including two (1.33%) cases of postpartum hemorrhage (PPH) and two (1.33%) cases of uterine angle extension. The lower risk of intraoperative and postoperative problems was caused by improved surgical competence, good anesthetic procedures, the use of antibiotics both before and after surgery, the availability of blood and blood products, and uterotonic medications.

The current study showed that the most frequent complication seen among primigravidae who gave a birth by cesarean section was uterine atony & PPH and Respiratory tract infection was in 232 cases (7%) of mothers, Extension of uterine incision, UTI and Wound gap in 66 cases (2%).**Onuminya [17]** revealed that, in terms of cesarean delivery complications in primigravida, 30 out of 36 (83.4%) of the primigravida who underwent the procedure experienced no issues; nonetheless, a wound infection rate of 3/36 (8.3%) was noted.**Dhakal, [12]** discovered that, out of 5802 women who had cesarean sections, only 17.1% of respondents had poor outcomes right after the procedure. These included postpartum hemorrhage (0.4%), hospitalization for more than seven days (16.9%), and other complications like maternal death, uterine rupture, and hysterectomy. **Berhanu et al. [6**] in terms of complications, 255 primigravidae moms who underwent caesarian sections demonstrated that the percentages of various issues experienced by mothers and newborns were similar. Consequently, the most frequent maternal consequences are wound infection, wound dehiscent, and maternal death.

Bharti, [8] revealed that out of 103 cases of cesarean sections, 6 experienced atonic postpartum hemorrhage, 7 needed blood transfusions, 4 had postoperative fever, 2 had surgical site infections, 1 had hematomas, 1 had bladder damage, and 2 needed intensive care unit hospitalization. **Datta et al. [9]** discovered that the most frequent cause of morbidity in primigravidae after cesarean sections was wound infection (9%), with a rate of 25.4%. 8.8% of patients complained of spinal headaches. With 5.2% of the cases, postpartum hemorrhage (both intraoperative and postoperative) was the third most frequent cause of morbidity. In 2.5% of the instances, a blood transfusion was necessary because of excessive loss.

CONCLUSION

Cesarean section is high in the primigravidae. Although the operation is safe now days, it is still carries a risk during anesthesia, operative procedure and podtoperative. Moreover, there is a great risk of major complications in the next pregnancies.

Conflict of interest: The authors declare no conflict of interest.

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