Original Article

Profile of cesarean sections among primiparous women at a tertiary care hospital

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Submission: 12.09.2022 Acceptance: 29.09.2022 Publication: 30.09.2022

https://www.doi.org/10.56136/BVMJ/2022_00083

Abstract

Background: World Health Organization has declared that an acceptable cesarean rate in any region should not be more than 15%. In modern obstetrics, cesarean section is an accepted standard procedure to reduce maternal morbidity and mortality. To reduce perinatal morbidity and mortality, cesarean section definitely helps, but it poses many health risks to the mother. In the present study, we aimed to study the primary cesarean rate, its complications, and the indications for primary cesarean sections in a tertiary care center. **Material and Methods:** This was an observational study conducted at a tertiary care teaching hospital. All the primiparous women delivering between October 2018 to May 2020 were included, and the cesarean rates, indications and complications were studied. were calculated. The data was taken from labor room register where details about every delivering woman is kept and the women are classified into different mutually exclusive groups based on Robson's Ten Group classification. **Results:** Among the delivering women enrolled during the study period, 42.55% of women delivered by cesarean section, and 54.97 % delivered vaginally. The primiparous cesarean rate was 40.9%. **Conclusion**: The study identifies a significant number of primiparous women undergoing cesarean section and suggests the need for appropriate labor care and regular audits.

Keywords: Cesarean section, primary cesarean rate, tertiary care hospital, fetal distress, Robson's Ten Group classification

Introduction

The World Health Organization (WHO) expert committee meet in Fortaleza, Brazil, in 1985, declared that the acceptable overall cesarean rate for any region should not be more than 15%[(1)]. According to the NFHS-5 survey, the present cesarean rate was 21.5% in India[(2)] compared to NFHS - 4 study where cesarean rate was 17.2%[(2)].

Obstetrically indicated Cesarean Section (CS) definitely helps reduce perinatal morbidity and mortality, but it poses many health risks to the mother. Increased blood loss, injuries, and perioperative infections are a few immediate health risks. There are also life-threatening events like the possibility of scar rupture and placenta accreta spectrum in subsequent pregnancies[(3)]. It is important to strike a balance between absolutely indicated CS and maternal requests for CS. These days cesarean section done on maternal request as an indication are on rise. Unfortunately, such cases are rising in the Indian subcontinent.

It is difficult to compare the CS rates based on particular indications as these should be individualized and it also differs in different hospital setups which provide different level of care.

In 2001, WHO adopted Robson's classification as an audit tool to compare cesarean section rates amongst the delivering women who were grouped according to their obstetric characteristics.

Various studies are done worldwide using Robson's Ten Group classification system for auditing the cesarean sections and the rates of CS[(4-7)].

The CS done on primiparous women are the case of abnormal placentation and untoward complications in further pregnancies[(8)]. However, studies have shown an increasing trend in CS globally[(8,9)]. Hence this study was conducted to determine the various indications of primary CS in a tertiary care hospital in Pune, Maharashtra, India.

The objectives of the study were to estimate the cesarean rate in primiparous women and its overall contribution to the total cesarean rate and to determine the indications and complications of CS.

Materials and Methods

This was an observational study done in a tertiary care teaching hospital in India from October 2018 - May 2020. All the primiparous women delivered in the hospital during the study period were studied, including both vaginal and cesarean deliveries. So the sample size was not estimated. All the multiparous women were excluded.

The data was collected monthly from the labor room register, where all the data of the delivering women are grouped into Robson's Ten Group classification system according to their obstetric characteristics-

- Single/multiple gestation

- Nulliparous/multiparous/multiparous with previous cesarean
- Cephalic/breech/any other malpresentation
- Spontaneous/induced labor
- Term/preterm births

The details of CS amongst primiparous women were studied from the same register.

Details of patients like age, obstetric history, the onset of labor (spontaneous/induced/elective CS before labor), mode of delivery, fetal presentation, number of fetuses, gestational age, an indication of CS, and intra-operative and postoperative complications were the variables taken into consideration.

All the indications of CS in the study are mutually exclusive. Cesarean performed presuming fetal compromise included fetal distress, meconium stained liquor, pathological cardiotocography, severe oligohydramnios, and the doppler changes on ultrasound which were suggestive that pregnancy could not be carried on further. The pelvic disproportions included cephalopelvic disproportions, outlet obstructions, small gynecoid pelvis, android pelvis, etc.

Labor dystocia included abnormally slow dilatation of the cervix or descent of the fetus in active labor.

The abnormal lie is considered when the long axis of the fetus is not in relation to the long axis of the mother. An oblique lie or transverse lie are examples. When the part of the fetus that overlies the pelvic inlet is the head, it is called cephalic presentation. Any other presentations are called malpresentations.

Various complications were also analyzed during the study. The major contributor was Postpartum Hemorrhage (PPH) which accounts for the maximum acute morbidity of a delivering woman. After the cesarean was performed, the status of the wound was followed up till the seventh postoperative day, when suture removal was done, and the condition of the wound, if it was healthy or had any discharge, was noted. In case of wound discharge, the organism was isolated by culture and sensitivity, and further treatment was given. However, this further follow-up is not considered in the present study.

The collected data was entered and analyzed in a Microsoft Excel sheet. The data analyzed are represented as numbers and percentages.

Results

A total of 2994 women delivered during the study period, out of which the primiparous women were 1304. Amongst 1304 women, 770 (59.04%) had a vaginal delivery, and 534 women (40.9%) had a cesarean delivery.

Out of the 534 women who had a cesarean delivery, 301 women (56.36%) who were anticipated for vaginal delivery landed up in a CS, and in 138 women (25.8%) CS was done before the onset of labor 72 women in whom induction of labor was done and were anticipated for vaginal delivery, 30 women landed up into cesarean section (5.6%).

Table 1 shows cesarean indications. The highest contribution is by fetal distress (25.8%), followed by pelvic disproportions (15.5%).

Table 1: Indications of cesarean section among primiparas in a teaching hospital

	Indications	Total cases and percentage (%)
Presumed fetal compromise	Fetal distress	138 (25.8)
	Severe oligo	7 (1.31)
	MSL	42 (7.86)
	Abnormal CTG	31 (5.8)
	Doppler changes	17 (3.18)
	Cord prolapse	2 (0.37)
	Pelvic disproportion	83 (15.54)
Labor dystocia	Cervical dystocia	74 (13.85)
	Failed induction	30 (5.61)
	Obstructed labor	1 (0.18)
	Maternal request	47 (8.8)
Abnormal lie and malpresentations	Oblique lie	1 (0.18)
	Breech	51 (9.55)
	Other malpresentations like brow, face	3 (0.56)
Medical conditions	pre-eclampsia, uncontrolled diabetes, HELLP	38 (7.11)

Table 1: to be cont...

Abbreviations: CTG: Cardiotocography, MSL: Meconium Satained Liquor, HELLP: severe form of pre-eclampsia associated with hemolysis, elevated liver enzymes, and low platelet count.

*Some of these indications are overlapping like pelvic disproportion associated with some medical disorder etc. hence the total percentage is more than 100.

There were very few elderly primiparas (Table 2).

Table 2: Cesarean section among primiparas in a teaching hospital (n = 534)

Age in years	Number (%)
< 20	48 (8.9%)
21-25	220 (41.1%)
26-30	189 (35.39%)
31-35	69 (12.92%)
36-40	10 (1.87%)
>40 years	1 (0.18%)

Table 3 represents intraoperative and postoperative complications and treatment given. PPH was the most common intraoperative complication reported among 39 (54.1%) women.

Table 3: Intraoperative and postoperative complications and the treatment given for the complications

Complications and treatment	Number of cases studied (n=72)
Intraoperative complications and treatment	
Postpartum hemorrhage	39 (54.1)
Blood & Blood products transfusion	1 (1.38%)
Use of instruments during cesarean for difficult delivery	7 (9.72%)
Postoperative complications and treatment	
Blood and blood products transfusion	3 (4.16%)
HDU / ICU stay	21 (29.16%)
Wound discharge	1 (1.38%)

Discussion

The WHO has endorsed a cesarean rate of less than 15%[1] to balance the risk and benefits of Cesarean. CS has been a public concern for the last 30 years due to an increase in its rate. The rise has been a global phenomenon, with different rates in different countries, and significant differences in rates

Our study has shown an overall CS rate of 42.55%. The primiparous cesarean rate was found to be 40.9%. In a study conducted by Anu Bala Chandel et al.[10] the primary cesarean rate was calculated as 74.38%, and by Saha et al.[11] showed 74.34%, which is greater than the present study. The study done by Janaki Vellanki[12] showed 35.6%, which is lower than our study, as the study was done at a government hospital with a sample size of 12554 primiparous women; and also, the study didn't mention the details of medically indicated cesareans and cesarean done for labor dystocia were not mentioned which could probably contribute to low rate compared to our study. Ours is a tertiary care center and one of the most referred centers with a well-established high-risk pregnancy unit and competent neonatal and Intensive Care Unit (ICU) facilities; the cesarean rates were high, as reflected in our study. The technological advances using doppler indices in evaluating fetal growth restrictions may also lead to increased cesareans presuming fetal compromise. Yet, the cesarean rate in our study was found to be lower than normally delivered patients attributing to the stringent labor protocols in our setting.

Amongst the indications, fetal distress was commonest accounting to 25.8%. Our findings are consistent with studies done study by Anu Bala Chandel[10], where the rate was 43.3%, Singh G[13] 25.4%, and Saha et al.[11] 35%. The second most common indication in our study was pelvic disproportion - 13.85%, which was higher than the study done by Anu Bala Chandel[10] 4.4%. Al Rowaily MA et al.[14] study showed fetal distress to be 21.9% and 11.6% in a study by Anu Bala Chandel[10]; the breech rate was 16.67% which

was higher than our study. There has been an increase in the cesarean rate among the breech presentations since the term breech trial study[15,16] was published. Similar rates are seen in our hospital also despite criticism[17,18] by some studies. External cephalic version should be offered to all eligible women with breech presentation, and vaginal breech delivery should be offered to all suitable women.

The maternal request sections were 47.8% in our study, which is higher than the study done by Al Rowaily MA et al.[14] (10.1%). There is a rise in maternal request cesarean sections these days, which is not an indication to do a cesarean section. But the rates are increasing due to factors such as precious pregnancies conceived after infertility treatments, laboring women in latent labor where the pain is extreme that they opt for CS rather than going through such extreme pain where such cases can be provided with labor analgesia such as epidural analgesia to provide partial relief from pain.

Also recently water births are being promoted at different institutes. The principle is that the buoyancy helps with movement and discomfort[19].

The failed induction cases contributed to 5.61% of cases which was lower than Sarma et al.[20] (14%) and Chavda et al.[21](7.30%). Careful selection of cases for induction of labor can improve cesarean rates.

Labor dystocia was seen in 13.85% women in our study. Nonprogress of labor was seen in many cases. Strict protocols need to be implemented to reduce the induction of labor cases. Increasing maternal age, birth weight, epidural analgesia, and use of oxytocin may normally alter labor's progress. Certain studies[22,23] have shown that active labor with cervical dilatation of 0.5cms – 1 cm is seen after 6 cms, so the women who landed up in cesarean might not have even been in active labor.

In a study by Ahmed et al.[24], they have seen rising rates amongst women who were not given proper antenatal counseling. But the differences were not statistically significant.

Although maternal mortality is declining all over the world, the morbidity is increasing. Maternal morbidity can impair physical and mental status of a woman. CS can lead to significant maternal morbid conditions like increased bleeding, infections etc.[25].

Community based studies done at Pune showed a morbidity range of 50-80%[26,27].

PPH is one of the leading causes of severe acute maternal morbidity and mortality. According to WHO, '*any blood loss from the genital tract during delivery above 500 ml*[28] *may be sufficient to cause hemorrhagic shock and death in some instances*'[29]. *Traditionally, PPH following a cesarean section has been defined as blood loss in excess of 1000 ml*[30]. These definitions are based on the quantification of blood loss originating from 'historical' studies published in the early 1960s. sometimes the PPH can be severe enough to cause obstetric hysterectomy. In our study, PPH contributed to almost 54.1%. The study by Uma Jain[31] showed a rate of atonic PPH to be 1.82%, and a study by Gupta et al.[32] showed it to be 3.01%. These studies included all the women delivered by CS, not only the primiparous women. The high rate of PPH may be due to the selection of primiparous women as our study participants. These varied differences in the rate may also be due to differences in protocols for CS or different study participants and sample size. A study showed higher Postpartum Depression (PPD) rates in cesarean sections than vaginal deliveries[33].

The limitations of the study were that only primiparous women were considered the study participants. Hence the findings cannot be generalized to all women. Also, the present study was based on hospital records. Besides, all the patients were not followed-up. Hence the further condition of the cesarean wound on the skin after the discharge of the patient and other morbid conditions were not studied.

Conclusion

The study has reported a higher cesarean rate among primiparous women regarding the WHO norms. This suggests the need for regular audits, and every case needs to be scrutinized for the reported indications of the caesarian section. Furthermore, to reduce the primary cesarean rates, improved case selections for induction of labor and attempts to provide labor analgesia for women requesting CS should be done, which thereby helps in reducing the current magnum disorder of placenta accreta spectrum.

Conflict of Interest: Nil

Source of Support: Nil

ORCiD

T Apuroopa 0009-0005-8795-6340

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