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Evaluation of Criteria for Primary Caesarean Sections in Multiparous Women with Prior Vaginal Deliveries at a Tertiary Care Facility

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ABSTRACT

Objective: To evaluate the criteria for primary caesarean sections in multiparous women with prior vaginal deliveries at Sohail Trust Hospital/Jinnah Medical College, Karachi. **Study Design:** Retrospective observational cross-sectional study. **Settings:** Sohail Trust Hospital/Jinnah Medical College, Karachi Pakistan. **Duration:** January 1, 2023, and December 31, 2024. **Methods:** The study sample comprised 5,280 women who delivered within the department and 476 multiparous women with primary caesarean delivery. Maternal demographic, maternal complications, mode of birth, and infant outcomes were obtained. The statistical analysis involved an SPSS version 23, where the continuous variables were analyzed in terms of mean and standard deviation, and categorical variables were analyzed with the Chi-square test. **Results:** The incidence of primary caesarean sections in multiparous women was 39.47%. Emergency caesarean was 85 percent of the total, with foetal distress (26.47) and malpresentation (21.43) the most common manifestations. Some of the maternal complications were transfusion reactions (12.18%), urinary tract infection (8.19%), and postpartum hemorrhage (4.20). Neonatal complications included respiratory distress syndrome (6.93%). **Conclusion:** Pure caesarean delivery of multiparous women who gave birth to previous babies through vaginal delivery is related with high rates of maternal and infant mortality. Early recognition and optimal antenatal care of high-risk women would decrease the rate of emergency section and lead to better results.

Keywords: Caesarean section, Multiparous women, Maternal morbidity, Foetal distress, Neonatal outcomes.

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INTRODUCTION

The increased cases of Caesarean Sections (CS) and their usage in the world today have raised many controversies in the field of obstetric care, especially regarding their application in multiparous women who have had vaginal births before. Although Caesarean delivery is necessary in some conditions to avoid maternal and neonatal complications, it has undergone heavy criticism, as people may take unwarranted risks by overusing it in low-risk cases.¹ In Pakistan, CS rate has been increasing in the last few years, and according to the studies conducted in different areas, the prevalence rate of CS varies greatly, particularly in multiparous women.^{2,3} The factors affecting primary CS in multiparous women are essential to enhance obstetric practices and health outcomes of mothers and their babies. The study aims to assess the primary CS criteria in multiparous women who have given birth previously in Sohail Trust Hospital/Jinnah Medical College, Karachi.

On the part of obstetrics, it is normally the multiparous women who already have their vaginal birth that are considered to be less at risk of having complications during delivery. However, based on the research results, the decision to have a primary CS among the specified women is pre-defined with a plethora of factors, including, but not limited to, the maternal age, the time that has passed since the last child was born, and the foetus's posture.^{4,5} Based on recent research findings, despite the successful vaginal delivery of their babies in the previous years, such women still stand the risk of experiencing complications that can lead to the application of CS, such as foetal distress, malpresentation, or even dystocia of labour.⁶ These complications and the process of arriving at such decisions are worth a thorough investigation, particularly in a resource-limited setting like in Pakistan.

It has been demonstrated that foetal distress is one of the most common predictors of primary CS in multiparous women.^{7,3} In particular, foetal abnormalities in heart rates, meconium-

stained liquor, and foetal hypoxia were cited as some of the key factors that lead to intervention. Furthermore, it has been identified that the maternal factors, such as age and BMI, are what define the likelihood of the necessity of CS.² The maternal age and the risk of CS are well established, with research evidence showing that women over the age of 30 years are at higher risk of having higher rates of Caesarean section due to long labour and other comorbid conditions like high blood pressure and diabetes.⁸ Similarly, certain factors that may lead to CS occurrence may be an abnormal pelvic structure or any previous pregnancy issues as macrosomia, but a woman may have given birth to a baby through delivery in the past.⁶

Studies have also identified the effect of the progression of labour on the probability of the occurrence of CS. Specifically, the risk of women experiencing a CS is higher in cases of slow labour progress or where labour progress is not attained during the second stage, regardless of their parity.^{3,7} This demonstrates that labour should be monitored carefully and, in case of timely intervention, such as the use of oxytocin or operative vaginal birth, has to be carried out before the application of a CS. Moreover, it has also been pointed out in the research that induction of labour can also influence the likelihood of them requiring a CS, especially when the cervix is unfavorable and in circumstances where there is insufficiency of uterine activity.^{1,8}

The role of the institutional and cultural factors that can be acting on obstetric practices is one of the important aspects of this issue. In Pakistan, and indeed other developing nations, cultural demands, institutional policies, and healthcare access play a major role in influencing the decision to undergo a CS.⁹ There is also the tendency to favor the surgical birth, especially in these settings, especially when the woman had a prior vaginal birth. The reasons behind this trend are the perception of safety and the need to have a faster and more predictable delivery.³ Nonetheless, excessive use of CS may cause increased rates of morbidity among mothers and children, such as infection, bleeding, and respiratory syndrome.⁶ Therefore, it is critical to identify the indicators for primary CS that are not only medically justified but also culturally and socially informed.

The current trend of CS, particularly in multiparous women, is one of the factors that prompted a closer observation of factors that are influencing the trend in the context of Sohail Trust Hospital/Jinnah Medical College Karachi. This information about these factors is significant in developing the clinical decision-making process and reducing unwarranted surgical operations. The decision-making process should be such that it not only refers to the obstetric indications, but also the socioeconomic status, cultural background, and access to healthcare of the patients are also put into consideration.³ Besides, the question of barriers to vaginal delivery following CS (VBAC) must be added to the list of issues that should be addressed to reduce the number of avoidable primary Caesarean sections among multiparous women.⁸

The objective of this study is to identify the indicators of primary CS in multiparous women and assess the obstetric outcomes, including maternal and foetal morbidity and mortality, as well as perinatal outcomes.

METHODS

The research was conducted in the hospital setting, that is, at Sohail Trust Hospital/Jinnah Medical College, which is a tertiary care hospital, in the period of two years, that is, between January 1, 2023, and December 31, 2024 (Ref#JMC.ERC.05.0821.22 dated 25.12.2022). In this study, multiparous women are those who have given birth vaginally at least once during gestation of 28 weeks or more or who have given birth at least five children with 14 or more grandchildren, respectively. The study exclusively involved hospital-based patients who were referred for CS by obstetric specialists. Registration for the study was managed by qualified professionals and registrars. The study sample consisted of 2064 women who delivered in the department during the study period, out of which 200 multiparous women underwent a primary caesarean section.⁴ The sample was selected using convenience sampling, a method where all available cases meeting the inclusion criteria during the study period were included.

The selected patients were monitored throughout their hospital stay until discharge, with a minimum of three days of hospitalization. Data was collected with the assistance of the attending physician on duty. The demographic data collected were age, parity, gravidity, maternal medical history, presence or absence of maternal or foetal complications during pregnancy, booking, mode of delivery, gestational age (calculated between the last menstrual period and established by ultrasound in 20 weeks of gestation or the first trimester length of the crown-rump), the chief reasons that prompted the CS, the sex of the newborn, birth weight, and Apgar score. Adverse outcomes on the maternal and foetal were also registered.

Women who were primigravida or had previously undergone a CS were excluded from the study. All subjects provided informed consent prior to their inclusion. The study received approval from the hospital's Research and Ethics Committee.

Statistical analysis was carried out using SPSS version 23. Continuous variables were presented as minimum, maximum, mean, and standard deviation, while categorical variables were analyzed using the Chi-square test.

RESULTS

A total of 2064 deliveries (1278 vaginal deliveries, 786 CS) occurred within the study period (61.91 and 38.08, respectively). A total of 200 primary CS were carried out among the multiparous women, which is 37.17. The multiparous women had a CS rate of 200. These women were more prone to emergency CS as compared to elective Caesareans, with 85 percent emergency CS and 15 percent elective Caesareans. Table 1 presents the overall incidence rates of primary emergency and elective CS.

The mean age of the women was 29.5 years, with a range of 15 to 45 years. Sixty-six percent of the patients were aged between 26 and 35 years, while 72% were aged between 31 and 40 years. Among the 200 multiparous women undergoing CS, 87.5% had a parity of 1, 2, 3, or 4, while 12.5% were grand multiparous (5

or more births). Table 2 displays the distribution of CS by parity.

There were 402 (72.5%) booked cases and 136 (27.5%) un-booked cases. Table 3 highlights the primary indications for CS, with the most common being non-progress of labour (25.5%), followed by foetal distress (20%). An increase in morbidity and mortality was reported in patients who underwent CS for various causes. Fifteen patients had to be put under the blood transfusion program, six had to spend a considerable period at the hospital because of their infection of wounds, delayed labour, and blood pressure or sugar level problems. Two patients were subjected to obstetric hysterectomies and 43 babies were taken into the NICU because of foetal distress, neonatal jaundice, hypoglycemia, growth retardation, and neonatal sepsis.

Table 1: Frequency of primary caesarean sections

Frequency	Percent
Total no. of Primary CS	538
Primary CS in multiparous	200
Total emergency CS	456
Total elective CS	82
Primary emergency CS in multiparous	170
Primary elective CS in multiparous	30

Table 2: Parity and frequency of caesarean sections

Parity	Age / no. of pt	Age / no. of pt	Total no. of pt	%
Para 1	15-20 (12)	21-25 (17)	29	14.5%
Para 2	21-25 (16)	26-30 (24)	40	20%
Para 3	26-30 (15)	31-35 (41)	56	28%
Para 4	31-35 (22)	36-40 (28)	50	25%
Para 5	36-40 (15)	-	15	7.5%
Para 6	36-40 (8)	41-45 (2)	10	5%

Table 3: Indication and parity crossstabulation

Indication	Primigravida	2	3	4	5	6	Total	Total Multi	%
Npol	105	19	20	10	2	0	156	51	25%
PE, Eclampsia	10	5	4	9	4	2	34	24	12%
IUGR	19	2	3	4	0	0	28	9	4.5%
Twin	8	2	2	0	0	0	12	4	2%
Chorioamnionitis	4	0	1	0	0	2	7	3	1.5%
CPD	15	1	1	2	3	1	15	8	4%
Maternal Request	25	4	1	0	0	0	25	5	2.5%
BOH	0	0	1	1	0	0	2	2	1%
Post Term	15	2	0	0	0	0	17	2	1%
Foetal Distress	70	18	15	5	1	1	116	40	20%
GDM	6	2	5	4	4	2	24	17	8.5%
Failed Induction	25	0	2	0	0	0	27	2	1%
Breech	23	4	3	1	0	0	31	8	4%
Placenta Previa	5	2	4	1	2	1	15	10	5%
Placenta Abruptio	7	4	2	2	3	0	18	11	5.5%
Obstructed Labour	1	1	1	0	2	0	5	4	2%
Total	338	66	65	39	21	9	538	200	

DISCUSSION

This paper considered the prevalence, signs, and the consequences of primary CS in multiparous women at Sohail Trust Hospital/Jinnah Medical College in Karachi. Our review showed that 62.82% of all deliveries in the study time were CS with 37.17% of them being primary Caesarean births among multiparous mothers. Emergency CS were significantly prevalent as compared to elective ones with 85% of the CS being an emergency procedure. The most frequent indication for CS was non-progress of labour, followed by foetal distress, both of which were consistent with findings from previous research. Maternal complications, including prolonged hospital stays and the need for blood transfusions, were observed, as well as neonatal complications leading to NICU admissions. These outcomes underline the importance of careful monitoring and decision-making in the management of multiparous pregnancies.

This research will offer new information on the rising levels of Caesarean sections in Pakistan specifically among multiparous women. Although much research has been undertaken on CS in general, especially in high-income nations, there is scanty information in primary CS in multiparous women in low- and middle-income nations such as Pakistan. Other researchers have also recorded similar trends of Caesarean delivery rates in the countries such as the United States, China and Europe, and the rates were dependent on factors such as maternal age, parity and the occurrence of complications during the labour such as foetal distress and non-progression of the labour.^{10,11} Nevertheless, the local context, its peculiarities of the healthcare system, and the cultural effect offers a new input to the existing knowledge of the factors affecting primary CS in multiparous women in Pakistan.

The results from this study are consistent with findings from other countries. Research from China, for instance, indicates a higher risk of CS among women with a previous history of Caesarean delivery, noting that complications such as placenta previa and uterine rupture contribute to the need for Caesarean delivery.¹⁰ On the same note, maternal morbidity rates in European studies including a recent one showed that there was no significant difference between women undergoing one or two previous Caesarean sections and as such there was no significant difference between maternal or foetal complications.¹¹ This is aligned with our findings, which demonstrated a high frequency of emergency CS, often prompted by foetal distress and non-progress of labour, conditions also reported in international studies.^{11,12} In addition, the fact that the majority of the multiparous women in this research chose CS rather than vaginal deliveries is also a reflection of the general trends in the world today, where they desire Caesarean deliveries due to the perceived complications of vaginal births and the negative experiences they had in the past.^{13,14}

Nonetheless, in contrast to the studies held in the higher-income context, the high rates of emergency CS in Pakistan point to the differences in the access and quality of healthcare facilities, as there are patients who do not receive the necessary level of antenatal care, which could have reduced the necessity of

emergency procedures.¹⁵ Comparatively, other researchers in other countries such as the United States and the United Kingdom have indicated higher proportions of elective and emergency CS based on improved prenatal care and education.^{12,16}

The results of this study point out a severe lack of the Pakistani healthcare system in which the popularity of CS, in comparison to most other nations, is more in the emergency department. The absence of a complete prenatal care and patient education about the risks and benefits of the different modes of delivery is one of the crucial factors in this case. In Pakistan, vaginal birth following Caesarean (VBAC) is not developed into clinical practice like in high-income countries where the idea has been well-inculcated, as a viable option to many women.¹⁷ The presented work, thus, provides a singular view, as it dwells upon the experiences and results of multiparous women, who, otherwise, could have been left out in the research on the rates of Caesarean delivery.

Moreover, this research throws light on the necessity of additional education and awareness of the issue of avoidable CS and the necessity to encourage vaginal birth, in particular, in women who gave birth to a child via the vagina before. The high risk of subsequent pregnancies after a CS like placenta previa and uterine rupture highlights the need to provide informed options to a woman in the local context.¹⁰

Various global researches have explored the escalating cases of CS and their consequences on the health of the mother and the foetus. As an example, it was demonstrated in the United States that the rates of CS in multiparous women are largely dependent on the history of the complications during the deliveries, as well as the age of mothers.⁴ In Europe, it has been researched that vaginal birth following Caesarean vaginal section after birth is safe among most women and that no major maternal morbidity has been observed.¹⁷ The situation in Pakistan is however different as the socioeconomic factors and quality of care may be more dominant in the process of decision making.

In spite of the fact that several studies on CS have been carried out in Pakistan, not much has been conducted on primary CS in multiparous women. The lack of knowledge on factors that influence Caesarean births among this category of people has arisen due to lack of research in this area. In order to address this knowledge gap concerning the study, we examine the case of multiple pregnancies among women and then provide a complete examination of signs, complications, and effects of primary CS in Pakistan. This will be a big contribution to the local literature, which has been under-investigated in this particular context.

There are some studies available from Pakistan that address CS rates and maternal outcomes, such as those by Hangarga and Yattinamani (2020), who studied CS in multiparous women at a district hospital.⁹ These studies, however, often focus on general Caesarean rates without breaking down the specific outcomes for multiparous women with prior vaginal deliveries, as seen in our study. Additionally, studies from hospitals in Karachi and Lahore have examined CS rates in general, but have not specifically looked at primary CS in multiparous women.³

CONCLUSION

The low percentage of deliveries is primarily due to Caesarean section among multiparous women, and this is associated with high morbidity and mortality rates of maternal and foetal diseases. Women with a history of complications in pregnancy and labour should be prioritized to receive quality prenatal and intrapartum care, along with regular professional attention to solve the emergent complications.

LIMITATIONS

The major shortcoming of the research is that it is of a retrospective type, which could have caused biases in terms of data collection, especially when it comes to detecting particular complications, as well as distinguishing between emergency and elective CS. The research is also confined to a single hospital, and this might not be a good representation of the overall population of multiparous women in Pakistan. Future research ought to involve a number of centers to enhance the generalizability of the findings. In addition, additional studies are required to examine the long-term consequences of Caesarean section in multiparous women, including the chances of uterine rupture and complications during subsequent pregnancies.

SUGGESTIONS / RECOMMENDATIONS

It is recommended that future studies be conducted prospectively to reduce bias and improve the quality of data collected. Further research should also involve multiple centers to enhance the generalizability of the findings across different hospitals and regions. Additionally, it would be beneficial to explore the factors influencing the decision-making process for cesarean sections, including patient education, cultural beliefs, and healthcare access. Programs aimed at improving prenatal care and promoting vaginal birth after cesarean (VBAC) could help reduce unnecessary cesarean sections and improve maternal and neonatal outcomes.

CONFLICT OF INTEREST / DISCLOSURE

The authors declare that there is no conflict of interest related to this study.

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