ORIGINAL ARTICLE

MODES OF DELIVERY IN SECOND PREGNANCY IN WOMEN WHO HAD ELECTIVE CAESAREAN SECTION FOR BREECH PRESENTATION IN FIRST PREGNANCY

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Background: The optimal management of breech presentation remains a debate among obstetricians worldwide. The Term Breech Trial (2000) highlighted elective caesarean section as a preferable method over vaginal delivery for breech presentations. This study investigates delivery modes in women who had an elective caesarean section for breech presentation in their first pregnancy. Objective was to evaluate delivery outcomes in the second pregnancy of women who had an elective caesarean section for breech presentation in their first pregnancy. **Methods:** A cross-sectional study was conducted at Jinnah International Hospital Abbottabad from October 10, 2018, to April 10, 2019. Data was collected from 321 women who had an elective caesarean section for breech presentation during their first pregnancy. The study used per-abdominal examination and obstetrical ultrasound to assess foetal presentation and recorded the mode of delivery in the second pregnancy. **Results:** Participants' ages ranged from 18 to 49 years, with a mean age of 28.87±4.07 years. The average interval between deliveries was 1.92±0.92 years, labour duration averaged 5.56±2.41 hours, and foetal head engagement averaged 2.92±1.35. Of the participants, 18.7% achieved a vaginal delivery, while 81.3% had a repeat caesarean section. Reasons for repeat caesarean included recurrent breech presentation in 44.9% and foetal distress in 32.4%. **Conclusion:** Approximately 18.7% of women who had an elective caesarean section for breech presentation in their first pregnancy achieved vaginal delivery in their second pregnancy, whereas the majority underwent another elective caesarean section

Keywords: Breech presentation; Caesarean section; Subsequent pregnancy; Modes of delivery

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INTRODUCTION

Breech presentation, where the foetus is positioned with its feet or buttocks nearest to the cervix, is the most common form of malpresentation, occurring in 3–4% of all pregnancies. This presentation increases the risk of adverse outcomes such as dystocia and cord compression.[1] Approximately 19.4% of term breech deliveries result in long-term morbidities that persist into early childhood, regardless of the delivery method.[2–4]

The management of breech presentations remains a contentious issue among obstetricians. The Term Breech Trial (TBT) conducted in 2000 compared elective caesarean section (CS) to vaginal delivery for breech presentations and concluded that elective CS was more effective. This trial established a new global standard, leading to a 39% increase in elective caesarean sections, particularly among first-time mothers.[5–7] This rise in elective CS has implications not only for the initial pregnancy but also for subsequent pregnancies. Uterine injury from the initial caesarean increases the risk of complications in future pregnancies, such as placental abnormalities (praevia, accreta, and abruption) and uterine rupture. The need for additional caesarean sections in future pregnancies also becomes more likely.[8–12]

In resource-limited settings, vaginal breech delivery (VBD) remains an option despite its association with a tenfold increase in perinatal mortality. Stringent criteria for selecting candidates for VBD are recommended.[6] A study found that 29.7% of women with a history of elective caesarean section for breech presentation successfully achieved a vaginal birth in subsequent pregnancies.[3] A meta-analysis by Guise et al. showed that VBAC rates are 54% when a previous caesarean was due to foetal distress, but can rise to 75% in cases of breech presentation.[13]

Caesarean sections, like any surgical procedure, carry risks that can affect maternal and foetal health both in the short and long term. These risks can persist for years, particularly affecting women with limited access to comprehensive obstetric care. This study aims to assess the frequency of different delivery methods in women whose first pregnancy ended in an elective caesarean section due to breech presentation. The findings will provide valuable insights to guide obstetricians and gynaecologists in making informed decisions for similar cases.

MATERIAL AND METHODS

This cross-sectional study was conducted at the Obstetrics and Gynaecology Department of Jinnah International Hospital, Abbottabad, from October 10, 2018, to April 10, 2019. The sample size was determined using the "Sample Size Determination in Health Studies" program developed by the World Health Organization. To compute the required sample size of 321 pregnant women, we applied the formula for estimating population proportions with specified absolute precision. The calculations were based on a 95% confidence level, an anticipated population proportion of 29.7%[3], and an absolute precision of 5%. Persistent sampling with a specific focus was employed to ensure the study's robustness.

The study included women with a history of having undergone an elective caesarean section for breech presentation during their first pregnancy who were currently in their second pregnancy and seeking care at the hospital. Participants were required to be within the reproductive age group of 18–49 years and to be experiencing a singleton second pregnancy with a gestational age between 37 and 41 weeks.

Exclusion Criteria: Women carrying multiple pregnancies were excluded from the study. Additionally, those presenting with clear indications for a caesarean section in their second pregnancy—such as malpresentation, eclampsia, or other similar conditions—were also not eligible for participation.

The study was conducted following approval from the AMC's Institutional Ethical Review Committee and authorization from all relevant departments. Patients who met the eligibility criteria and presented at the hospital's gynaecology and obstetrics department in labour were requested to provide written informed consent after receiving detailed information about the procedure. Consecutive sampling was employed. The study assessed the appropriateness of a previous elective caesarean section based on patients' medical histories and records. Data were systematically recorded using a structured *proforma*, which included demographic information, details of previous births, current prenatal factors, foetal head presentation and engagement, and other pertinent details.

Foetal head engagement was measured through palpation during a per-abdominal examination, with the level of engagement determined by counting the number of fifths of the foetal head palpable above the pelvic brim. Confirmation of foetal presentation was achieved through obstetrical ultrasonography. Additionally, the proforma for the second pregnancy documented the mode of delivery, including vaginal delivery (instrumental or spontaneous) and caesarean section (emergency or elective), as well as the indications for caesarean section. All data were independently collected by the trainee.

Data input and analysis were conducted using SPSS-20. Quantitative variables, including height, weight, body mass index (BMI), foetal head engagement, and patient age, were analyzed for their mean and standard deviation. Additionally, the total duration of labour was recorded and analyzed. Categorical variables were expressed quantitatively as percentages and frequencies. These included current foetal presentation, delivery route for the current pregnancy, indications for repeat caesarean section (CS), and whether a trial of labour was attempted. The results were presented using both tables and graphs. To evaluate the influence of age and foetal head engagement on the mode of delivery, the outcome variable was stratified accordingly. Following stratification, a chi-square test was performed at a 5% significance level to assess statistical significance.

RESULTS

The demographic characteristics of the study cohort (n=321) revealed the following means and standard deviations: the mean age was 28.87±4.07 years, with a duration of the previous delivery averaging 1.92±0.92 years. The total duration of labour was 5.56±2.41 hours. Patients had an average weight of 74.20±12.88 kg, a height of 1.56±0.09 meters, and a body mass index (BMI) of 30.54±4.65 kg/m². The engagement of the foetal head was recorded at 2.92±1.35. (Table-1)

Regarding current foetal presentation, the majority of patients (81.3%) presented with a breech position, while 18.7% had a cephalic presentation. In terms of trials given, 30.8% of patients underwent a trial of labour, while 69.2% did not. The mode of delivery for the current pregnancy showed that 81.3% of patients underwent a caesarean section, and 18.7% had a vaginal delivery.

Indications for repeat caesarean section included foetal distress in 38.6% of cases, repeat breech presentation in 47.9%, and other reasons in 13.5%, with *p*-value of 0.780. It should be noted that the total percentage of indications for repeat caesarean section does not add up to 100% due to rounding. (Table-2)

Stratification of the mode of delivery by age revealed that among patients aged 18-35 years, 81.5% underwent a caesarean section compared to 79.2% in the 36–49 years age group, with a *p*-value of 0.780, indicating no significant difference. When stratified by the engagement of the foetal head, those with an engagement of ≤2 experienced 53.6% vaginal deliveries, whereas only 0.5% of those with an engagement of >2 had a vaginal delivery, with a *p*-value of 0.000, indicating a significant association. (Table-3)

Table-1: Characteristics of the participants'=321

Characteristics	Mean±SD
Age(years)	28.872±4.07
Duration of last delivery (years)	1.922±0.92
Total duration of labour (hours)	5.560±2.41
Weight (Kg)	74.199±12.88
Height (m)	1.558±0.09
BMI (Kg/m^2)	30.538±4.65
Engagement of foetal head	2.922±1.35

Table-2: Stratification of mode of delivery for current pregnancy with respect to age.

Age (years)	Mode of delivery for current Pregnancy		*p*-value
	Vaginal	Caesarean section	
18-35	55 (18.5%)	242 (81.5%)	0.780
36-49	5 (20.8%)	19 (79.2%)	
Total	60 (18.7%)	261 (81.3%)	

Table-3: Stratification of mode of delivery for current pregnancy with respect to engagement of foetal head.

Engagement of Foetal Head	Mode of delivery for current Pregnancy		*p*-value
	Vaginal	Caesarean section	
≤2	59(53.6%)	51(46.4%)	0.000
>2	1(0.5%)	210(99.5%)	
Total	60(18.7%)	261(81.3%)	

RESULTS

The global rise in both the total number of caesarean sections and the frequency of repeat procedures is a well-documented trend. It has been observed that many women who undergo repeat caesarean sections often missed their recommended prenatal appointments, largely due to fear of having another caesarean. Consequently, they frequently presented at the hospital during or just after the first stage of labour, often in advanced stages of labour. This situation has led to findings that women who had previously undergone elective caesarean sections exhibited a lower risk of vaginal breech delivery. According to the literature, a planned vaginal delivery after a caesarean section (VBAC) is considered generally safe.[15]

Our study analyzed the mode of delivery based on age and found that 81.5% of women aged 18-35 years underwent a caesarean section, compared to 79.2% in the 36–49 years age group, with a p-value of 0.780, indicating no significant difference. However, when delivery outcomes were stratified by the engagement of the fetal head, there was a notable difference: 53.6% of women with a foetal head engagement of ≤2 had vaginal deliveries, whereas only 0.5% of those with an engagement of >2 achieved a vaginal delivery, with a significant *p*-value of 0.000.

Research by Coughlan et al. supports the finding that 84% of women who had previously undergone a caesarean section due to a breech presentation were able to successfully deliver vaginally when permitted to labour. However, our findings contrast with this, showing that only 18.7% of women with a prior caesarean section for breech presentation successfully had a vaginal birth. This significant discrepancy may be due to many of these women being referred from other maternity facilities due to scar discomfort or failed trials, with uncomplicated deliveries often underreported.

The rates of VBAC vary significantly between countries. For instance, the United States reported a national VBAC rate of 12.7% in 2002. Even among those who plan for a vaginal birth, the number of women who successfully deliver vaginally remains low. In Brazil, vaginal birth after caesarean section is exceedingly rare, highlighting the medicalization of childbirth. In contrast, the VBAC rate in Holland was reported at 56%.[17]

Data from our study also suggest that the rate of repeat elective caesarean sections for breech presentations is comparable to that for cephalic presentations. Another study reported a 10.2% caesarean section rate associated with breech presentations.[18] The increasing incidence of elective caesarean sections can be attributed to the rising prevalence of breech presentations, which correlates with a higher likelihood of additional caesarean sections. Common indications for repeat elective caesarean sections include a history of breech presentations, cephalopelvic disproportion, or a contracted pelvis.[19]

Ship *et al.* found that first-time mothers who underwent elective caesarean sections for breech presentations were more likely to have a vaginal birth after the procedure. The overall rise in caesarean section rates may be partly attributed to the steady increase in elective operations, as noted by Moini and colleagues. While caesarean sections reduce the incidence of breech presentations and foetal mortality in cephalic cases, they are also associated with an

increased risk of serious complications for both mother and infant, as demonstrated by Villar's research and supported by numerous other studies.[20,21] Baldo has proposed that efforts to reduce excessively high caesarean section rates should be coupled with the promotion of high-quality maternity care. This discussion should include women's involvement in decision-making, the role of healthcare providers, the quality of data, and legal considerations.[22]

CONCLUSION

In conclusion, the global rise in caesarean section rates, particularly repeat procedures, reflects a complex interplay of factors, including fear of complications, missed prenatal appointments, and the increasing incidence of breech presentations. While planned vaginal birth after caesarean (VBAC) is generally considered safe and has shown success in specific populations, significant variability in VBAC rates across countries highlights the influence of medical practices and cultural attitudes toward childbirth. Our study underscores the importance of individualized care, especially regarding foetal head engagement, which significantly impacts delivery outcomes. Moreover, the findings suggest that while caesarean sections can reduce risks associated with breech presentations, they also carry an increased risk of serious complications for both mother and child. Addressing the rising caesarean rates requires a multifaceted approach that emphasizes high-quality maternity care, informed decision-making, and further research to support safe vaginal births after caesarean, particularly in cases involving uterine scars.

Limitations of the study:

There are some limitations of this study. The study was conducted at a single hospital, which may limit the generalizability of the findings. Results from this specific population might not reflect the broader population or other healthcare settings with different practices and resources. With a sample size of 321 participants, the study may lack the statistical power to detect smaller differences or trends, particularly in subgroup analyses, such as comparisons between different age groups or varying degrees of foetal head engagement. The study did not include long-term follow-up of maternal and neonatal outcomes, limiting the ability to assess the impact of delivery mode on subsequent pregnancies or the long-term health of the mother and child. Many participants were referred from other facilities due to complications such as scar discomfort or failed trials of labour, which could have influenced the high rate of repeat caesarean sections and may not accurately represent the outcomes of those who were not referred. Factors such as maternal health conditions, socioeconomic status, and the quality of prenatal care were not controlled for, which could influence the mode of delivery and outcomes.

Suggestions:

Future research should include multiple hospitals or healthcare settings to enhance the generalizability of findings and to capture a broader range of practices and patient demographics. Increasing the sample size in future studies would improve the statistical power and allow for more detailed subgroup analyses, particularly in understanding the impact of various factors on delivery outcomes. Research should consider the impact of cultural attitudes and beliefs on delivery mode preferences, including patient education and counselling to ensure informed decision-making.

AUTHORS' CONTRIBUTION

RA, SK: Conceptualization of the study design, proof reading. KI, ND: Data collection, analysis. TN, SS: Data interpretation.

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