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COMPARATIVE STUDY OF VAGINAL VS CAESEREAN DELIVERY FOR FETUSES IN BREECH PRESENTATION

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Abstract:

Background: The incidence of breech presentation at term is about 3-4%. Prematurity and associated fetal congenital anomalies have a higher incidence. Planned caesarean deliveries have become routine for breech babies due to the improved neonatal. **Aim:** The aim of this study is to compare the maternal and fetal outcomes of patients with breech presentation who delivered vaginally versus those who delivered by caesarean section. **Materials & methods:** This study was retrospective in nature, encompassing 100 cases where a singleton fetus was admitted to the labor room with a breech position. We studied each case for its demographic profile, parity, gestational age, high risk factors, mode of delivery, indication of caesarean section, and neonatal outcomes. **Results:** Out of 100 cases, 25% delivered vaginally, 55% underwent emergency caesarean sections, and 20% had elective caesarean sections. 54% of women were nulliparous, and 45% were multiparous. The most common reason for emergency caesarean delivery was a 52% refusal for a trial of vaginal delivery, while 47% of elective caesarean deliveries were due to a primigravida with a breech baby. At 5 minutes of birth, 65% of vaginally delivered babies had an APGAR of >7, compared to 87% of babies delivered by emergency caesarean section and 100% of babies delivered after elective caesarean section. Vaginally delivered babies had an average birth weight of 1.8 kg, 2.5 kg in emergency caesarean, and 2.9 kg in elective caesarean. In different groups, there was no maternal mortality or significant maternal morbidity. **Conclusion:** In carefully selected patients, planned vaginal delivery in both preterm and term breech can be conducted after proper patient counseling, strict intrapartum monitoring, and the presence of an obstetrician trained in the art of conducting breech deliveries.

Keywords: Nulliparous women; Breech presentation; Cesarean section; Planned vaginal delivery; Obstetrician hand; Average birth weight.

Introduction

Breech presentation, a condition in 3-4% of term pregnancies, is a topic of debate in obstetrics

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due to potential hazards associated with both vaginal delivery (VD) and cesarean delivery (CD). The Term Breech Trial (TBT) in 2000 concluded that planned cesarean delivery was associated with lower perinatal and neonatal morbidity and mortality compared to VD [1-3]. However, the relative safety of VD versus CD for breech fetuses has been the subject of renewed scrutiny due to advancements in obstetric care and a more comprehensive understanding of breech birth mechanics [4].

Recent research reassed the optimal delivery mode for breech presentations by analyzing maternal and neonatal outcomes linked to both VD and CD [5-9]. Möllmann et al. (2020) [1] emphasized that VD can be a secure option for breech births when patients are selected appropriately, and obstetric care is provided by experienced professionals. Their results show that planned VD can have similar effects on newborns to planned CD if carried out correctly, challenging the long-held belief that surgery is always worse than other options.

Wängberg et al. (2022) [2] conducted additional research on the long-term health outcomes of infants delivered via VD versus CD in breech presentation. They emphasize that the potential long-term impacts, including respiratory issues, immune function alterations, and neurodevelopmental outcomes, may vary depending on the mode of delivery, though short-term neonatal outcomes are a critical factor. Fruscalzo et al. (2022) [3] conducted comparative analyses that have emphasized maternal outcomes, including recuperation time, risks of surgical complications, and future reproductive health.

A scheduled caesarean section was recommended as a means of reducing related perinatal issues in cases of breech presentation, and as a result of the better results for the newborns, this procedure became standard practice. Studies conducted lately published [4-6]], demonstrated that delivering a breech baby vaginally or via C-section had identical effects on perinatal outcomes, mortality, and neurological delay at two years of age [4]. Another research shown that, if certain conditions are satisfied, breech births may be safely delivered in facilities where planned vaginal delivery is a routine practice with careful patient selection [3]. This research was conducted to evaluate the outcomes for mothers and fetuses in patients who presented breech and were delivered vaginally vs those who were delivered via cesarean section. The aim of this comparative study is to provide a thorough examination of the most recent evidence regarding the results of VD versus CD for breech presentation at term, with a focus on the long-term health, neonatal, and maternal perspectives. This research aims to guide practice toward individualized care and inform clinical decision-making by conducting a systematic review of recent literature and analyzing data from diverse populations.

Materials & Methods:

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The current retrospective study was carried out at the GMC, Jammu's Shri Maharaja Gulab Singh Hospital. Research was conducted on 100 patients who were admitted to the labor room between January and April of 2023. The study examined the patients' demographic profile, parity, gestational age, high risk factors, method of birth, indication of caesarean section, and neonatal outcomes.

The objective of the study was to assess and contrast the outcomes of mothers and newborns by vaginal delivery (VD) and cesarean delivery (CD) in cases with breech presentations occurring at term (≥37 weeks of gestation).Patient confidentiality was upheld in accordance with the principles outlined in the Declaration of Helsinki.

Research Sample: All singleton pregnancies with fetuses in breech presentation at term who underwent either vaginal delivery (VD) or scheduled cesarean section (CD) during the study period were included in the study. Exclusion criteria included having multiple pregnancies, fetuses with congenital abnormalities . The hospital's electronic medical records system, which encompasses extensive obstetric and neonatal data, was used to identify eligible patients.

Data Acquisition: Patient medical records were analyzed to extract data on maternal characteristics (age, parity, body mass index [BMI]), obstetric history, pregnancy problems (such as gestational diabetes and hypertension), and delivery details. Data on deliveries included the type of delivery (planned vaginal delivery or cesarean delivery), the rationale for selecting the birth method, intrapartum complications, and any transition from planned vaginal delivery to emergency cesarean delivery. The collected data for neonates comprised measurements of birth weight, APGAR scores at 1 and 5 minutes, admission to the neonatal intensive care unit (NICU), and outcomes related to newborn morbidity and mortality.

Measures of outcomes: Maternal and neonatal morbidity and mortality were the main outcomes evaluated. The maternal outcomes include the incidence of postpartum hemorrhage, infection (such as endometritis or wound infection), requirement for blood transfusion, duration of hospitalization. Evaluation of neonatal outcomes included birth weight , Apgar ratings, admission to the Neonatal Intensive Care Unit (NICU), birth trauma (such as fractures and brachial plexus injury). Included in the secondary outcomes were the level of satisfaction among mothers with the delivery procedure. Twins and/or a breech fetus are the exclusion criteria. If the fetal distress or the labor's arrest were noticed, an emergency cesarean section was performed. APGAR scores were recorded at one and five minutes after birth.

Statistical analysis:

We used SPSS version 26.0 (IBM Corp., Armonk, NY, USA) to conduct the statistical analysis.

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We presented categorical variables as frequencies and percentages, and summarized continuous variables as means and standard deviations. We used the independent t-test to compare continuous variables between the VD and CD groups, and the chi-square test to compare categorical variables. We implemented multivariate logistic regression analysis to evaluate the independent impact of delivery mode on maternal and neonatal outcomes, accounting for potential confounders such as maternal age, parity, BMI, and obstetric history. Statistical significance was defined as a p-value of less than 0.05.

Results

The average age of patients who delivered vaginally was 24.06±3.54 years, while those who underwent emergency caesarean sections had an average age of 25.68±3.72 years. Patients who underwent elective caesarean sections had an average age of 27.78±4.14 years. Term patients comprised 61% of the 100 patients, while preterm patients comprised 39%. Of the 100 patients, 25% delivered vaginally, 55% underwent emergency caesarean sections, and 20% underwent elective caesarean sections. Of the 100 individuals, 54% were nulliparous and 46% were multiparous. Out of 54 nulliparous patients, 10 (18.7%) were delivered vaginally, 25 (44.4%) underwent emergency caesarean sections, and 19 (36.1%) underwent elective caesarean sections. The vaginal delivery group consisted of 40% (10) nulliparous and 60% (15) multiparas, while the emergency caesarean group consisted of 56.3% (31) nulliparous and 43.7% (24) multiparas. The elective caesarean group consisted of 62% (12) nulliparous and 38% (8) multiparas. This graph shows that the average gestation period was 34.24±4.32 weeks in the vaginal delivery group, where 9 were term and 14 were preterm, whereas in the emergency caesarean group it was 37.41±3.48 weeks where 43 were term and 12 were preterm, and in the elective caesarean group it was 39.48±0.89 weeks where 18 were term and 2 were preterm (Oligo, IUGR).

Figure 1: Mode of delivery related to the parity of the patient.

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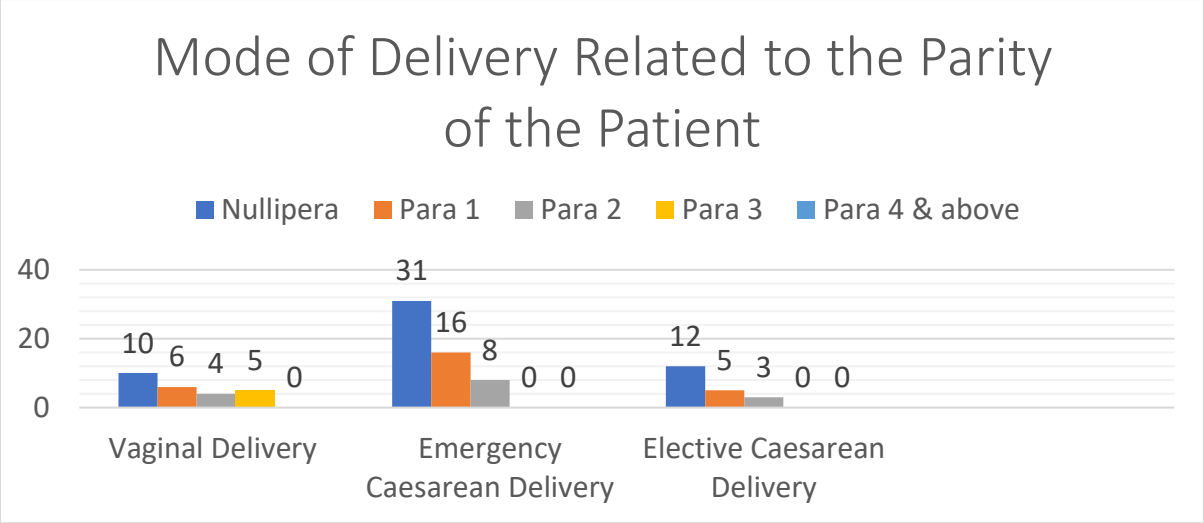
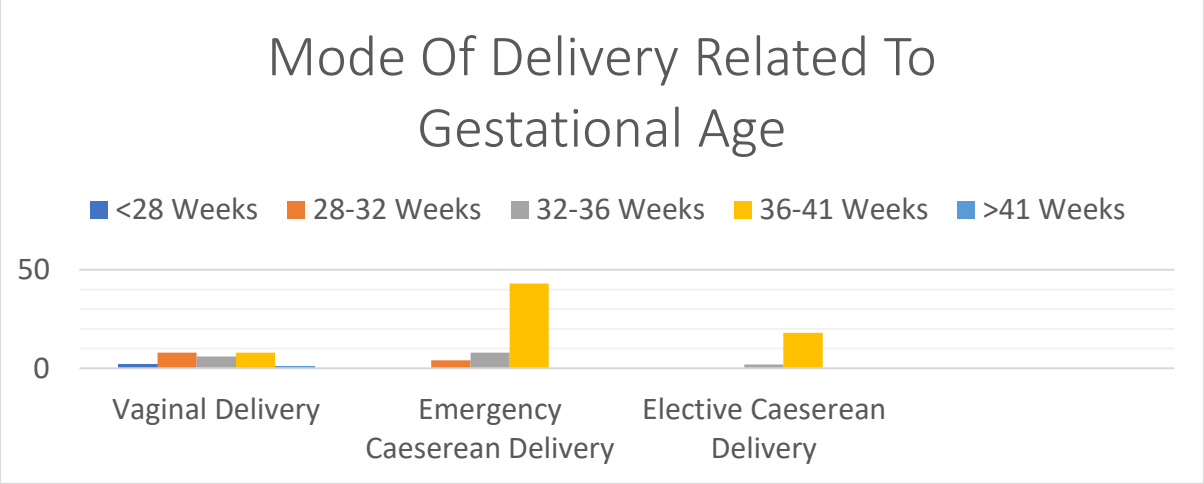


Figure 2: Mode of delivery related to the gestational age.



Average birth weight of vaginally delivered babies was 1.8 kg±0.4, those delivered by emergency caesarean was 2.5±0.3 kg and that was elective caesarean babies was 2.9 ±0.5 kg.

Figure 3: Mode of delivery related to birth weight.

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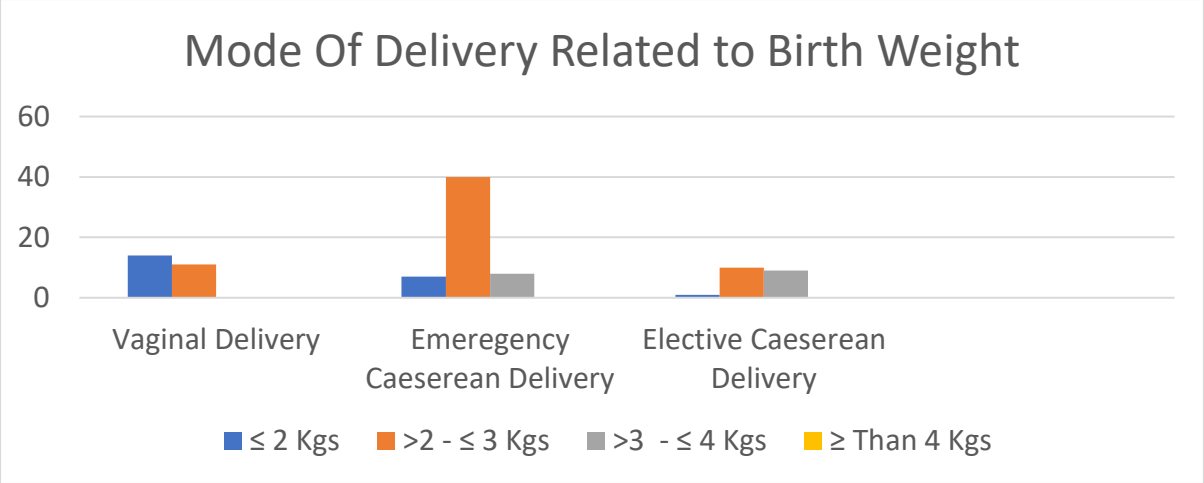
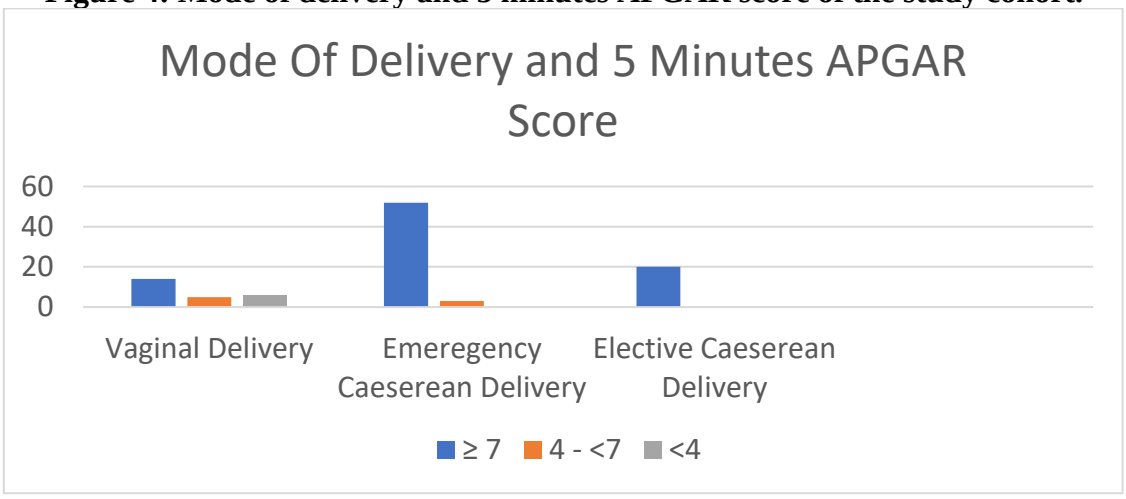


We excluded babies with major congenital malformations and ID from the APGAR SCORE analysis. Out of 19 vaginally delivered, 53 delivered by emergency caesarean, and 20 electively delivered babies, 8 had APGAR <7 at 1 min, out of which 5 were in the vaginally delivered group and 3 in the emergency caesarean group. Only three babies, one from the vaginally delivered group and two from the emergency caesarean group, had an Apgar score of less than 7 at 5 minutes.

Figure 4: Mode of delivery and 5 minutes APGAR score of the study cohort.



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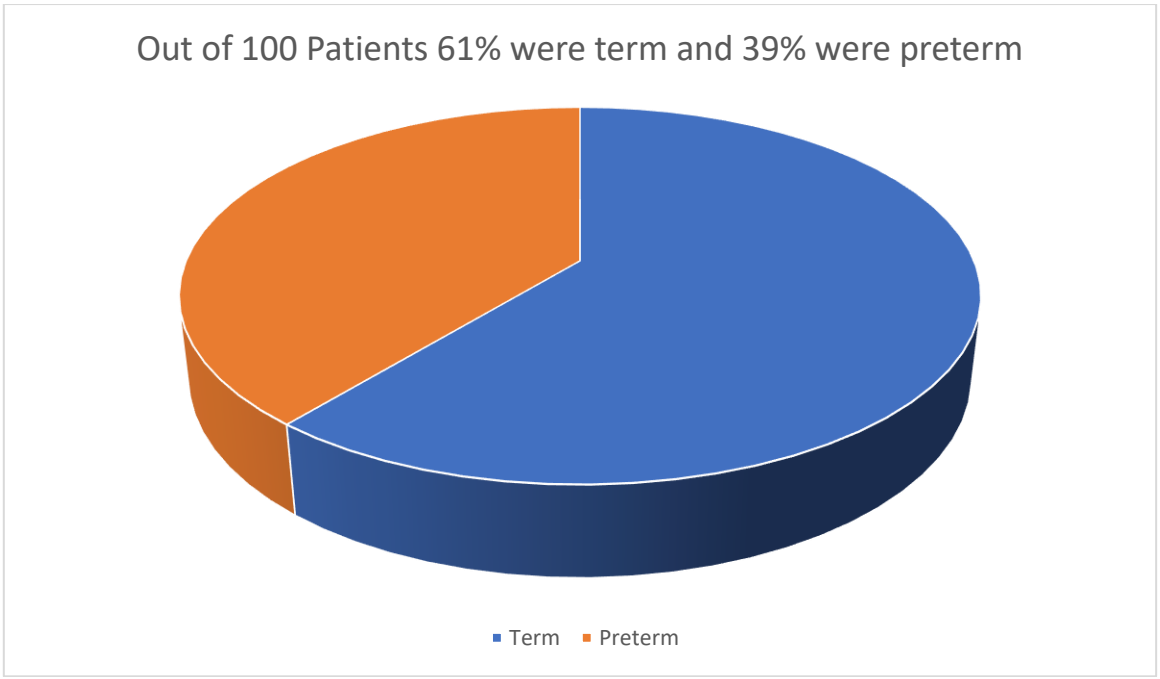

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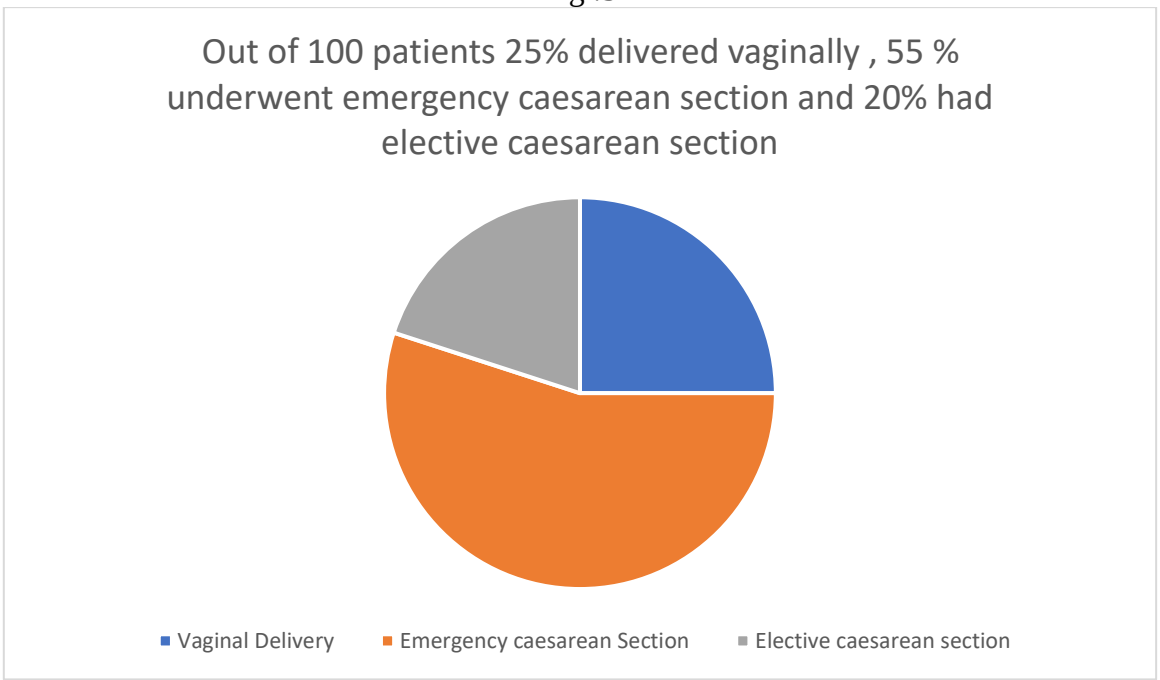

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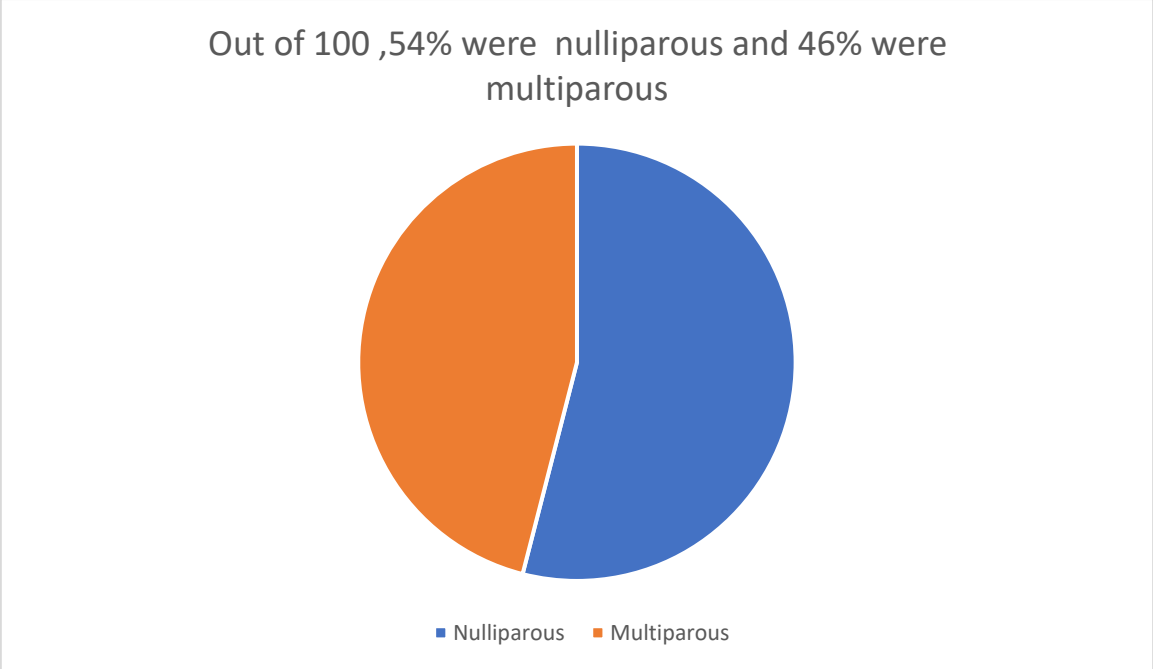

Fig: 7

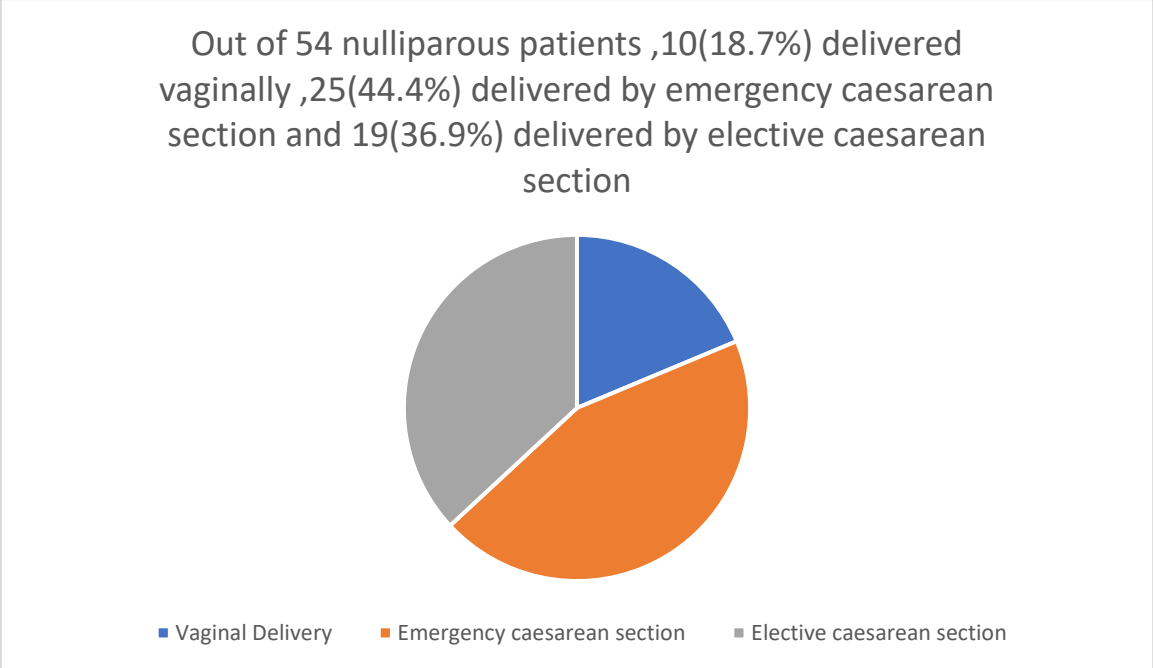

Fig:8

The patients who had associated risk factors included those with a seizure disorder, gestational diabetes mellitus, PIH, hypothyroidism, fibroid, intrahepatic cholestasis of pregnancy, anemia, lupus nephritis, and imminent eclampsia. The doctors performed an elective caesarean section on the patient with lupus nephritis and seizure disorder, while they performed an emergency caesarean section on the patient with imminent eclampsia due to their poor health. Amongst 42 patients delivered by emergency caesarean section, 8 patients had PROM, 4 had PPROM, 2 had acute fetal distress, 1 had footling presentation, 1 had cord prolapse, and 1 had imminent

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eclampsia. We excluded 6 babies with IUD and 2 with congenital malformations during the APGAR score assessment. There were two congenital malformations: one with hydrocephalus and one with anorectal malformations.

There was no maternal mortality in any group. The majority of deliveries in the vaginal group were preterm (60%; 14). Most of the patients in the emergency caesarean group came into labor and refused vaginal delivery (52%). Caesarean section increased with increasing birth weight, and the difference was statistically significant ($p<0.001$). A low 1-minute Apgar score was noted in vaginally delivered babies as compared to caesarean sections, and the difference was significant ($P<0.001$), which was explained due to the large number of preterm births in vaginal delivery.

Discussion:

Comparative comparison of VD and CD for fetuses with breech presentation provides significant new perspectives on the ongoing debate on the most effective and safest technique of birth. The findings of our research highlight the complex balance among the possible risks and benefits connected to every mode of delivery. This underlines the significance of basing individual treatment decisions on the particular situation of the mother and fetus, the knowledge and experience of the labor and delivery team, and the patient's wishes. Whereas the emergency caesarean group comprised 56.3% (31) nulliparous and 43.7% (24), the vaginal delivery group in our study comprised 40% (10) nulliparous and 60% (15) multiparas. The elective caesarean group comprised 38% (8) multiparas and 62% (12) nulliparous. For nulliparous women, the suggestion and performance of CD were more common indicating concerns about the increased dangers connected to VD, including prolonged labor, greater probability of delivery trauma, and emergency CD resulting from failed attempts at VD. Möllmann et al. [1] show that shorter durations of labor and less favorable pelvic dynamics cause nulliparous women greater trouble efficiently reaching VD. For this demographic, scheduled cesarean delivery is therefore usually considered as a safer option to lower the incidence of complications in mothers and newborns.
On the other hand, women who had given birth several times exhibited more chances of a successful vaginal delivery for breech presentation. This suggests that a good outcome during vaginal birth is more likely in those with well-defined pelvic dimensions and past delivery experience. Research [1,3,5,6] showed that when trying VD, multiparous women had considerably lower incidence of emergency CD. This emphasizes how likely safe VD is given

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suitable expert care. Furthermore, for women who have given birth several times, the lower mother morbidity connected with VD—including faster recovery durations and less surgical complications—makes it a reasonable alternative [4,5]. These findings underline the significance of considering parity and offering individualized care while handling breech presentations. Obstetric history of the patient should be considered while making clinical decisions. To maximize results especially fit for the patient's parity status, this should involve informed discussions on the possible dangers and benefits of every delivery technique.

For breech fetuses, gestational age clearly affects the safety and viability of VD versus CD. Cesarean sections are commonly used to treat early-term breech presentations in order to solve issues regarding inadequate fetal physiology and increased VD risk of complications. Particularly in fetuses with lower birth weights, studies [10–12] have linked early CD to lower infant morbidity when compared to VD. Strict guidelines and competent obstetric care during full-term gestational ages, however, help to control VD and produce newborn results similar to those of CD [11,12]. Full-term breech fetuses gain from VD when mother pelvic adequacy, fetal size, and position meet criteria. Because of the increased size of the fetus, which might complicate VD and raise the likelihood of obstructed labor or emergency CD, late-term pregnancies usually favor cesarean delivery. Maximizing benefits for the woman and the infant depends on customizing delivery mode decisions based on gestational age.

The manner of delivery for posterior presentation which affects both mother and newborn outcomes is mostly determined by birth weight. Recent studies confirm that the success and safety of VD depend much on birth weight than in CD.

Concerns regarding the newborn's ability to withstand labor stress and the increased risk of delivery trauma during VAD led CD to be often selected for low birth weight (LBW) infants (<2500 grams). Studies by [5] found that compared to cesarean section deliveries, vaginally delivered LBW newborns had more risk of problems including poor Apgar scores, brachial plexus damage, and fractures. The results of this study highlight the more fragility of smaller transverse fetuses, which could make VD a less preferred choice in such cases.

On VD, however, newborns with a normal birth weight of 2500–4000 grams showed better results, especially if the operation was carried out under close supervision of a qualified obstetrician in carefully chosen situations. Studies [1,2] indicate that, with certain tight criteria such as the baby being in the correct position and the mother's pelvis being large enough VD

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could be just as safe as CD for normal-weight breech newborns. The good pelvic-fetal ratio in this weight range emphasizes the need of tailored evaluation and helps to facilitate safer VD. Still, our study showed that because of the increased risk of obstructed labor, shoulder dystocia, and emergency CD during attempted vaginal delivery, CD was preferred more in high birth weight (HBW) newborns (>4000 grams). These results were validated in another investigation [4] underlined by the fact that HBW significantly raises the risk of negative consequences in VD. This implies that for this population a scheduled CD could be the safer option. All taken together, these findings highlight the need to consider birth weight while deciding on the delivery method for breech presentations. By customizing the method to the weight of the newborn, one can maximize results and reduce the hazards connected to both VD and CD.

An important gauge of newborn health right after birth, the 5-minute Apgar score offers information on how well different delivery techniques work for breech presentations. Our study found notable variations in 5-minute Apgar scores depending on CD and VD, consistent with earlier studies. Infants born by CD had higher 5-minute Apgar scores than those delivered by VD. This finding validates earlier research [13–16] showing that planned CD usually produced superior infant outcomes. The avoidance of certain stresses related to breech VD, like the risk of umbilical cord compression, fetal head entrapment, and delivery trauma, helps us to explain the better Apgar scores in CD instances.

For example, compared to VD, a study [13] found that CD was linked with better 5-minute Apgar ratings and less cases of instantaneous newborn pain. This benefit is particularly important in posterior deliveries since labor problems could affect newborn adaption negatively.

On the other hand, our studies also showed that, under ideal circumstances—including suitable fetal monitoring and expert obstetric care VD might get 5-minute Apgar ratings comparable to those reported in CD. This validates the results of [14,15], who under careful management found that effective VD in breech presentations did not significantly impact newborn outcomes.

Still, the possibility of reduced 5-minute APGAR scores in VD highlights the need of strict criteria and readiness for possible interventions, especially in cases of difficulties or an emergency CD is needed. This danger is supported by the results of [16,17], who found that an unexpected switch to CD after a failed VD attempt usually lowered newborn scores. While CD

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usually yields better 5-minute Apgar readings, VD can also show good outcomes under careful management. A careful review of individual case elements should direct the choice of delivery techniques to guarantee best neonatal health.

Implications and suggestions for clinical practice: Our findings show that, in cases with breech presentations, VD can be a safe and effective replacement for CD dependent on the careful patient selection and the delivery of competent treatment. The study emphasizes the need of customizing treatments for each patient considering factors such mother health, fetal size and presentation, and the presence of experienced obstetricians. Patients should receive comprehensive prenatal counseling, which should clearly describe the possible risks and benefits of every technique of birth thereby enabling informed decision-making.

Of great relevance are acquisition and preservation of obstetric knowledge in vaginal breech birth. Many clinical environments have seen a loss of expertise resulting from the drop in VD for breech presentation, which fuels demand for CD. Emphasizing the use of training programs and simulation to foster skill development, a study [4] underlined how this might enhance safety results for intended VD. In some cases, changing present recommendations and including breech vaginal delivery as a choice could help to reduce the general birth defect count. This would assist with the mother's health as well as with the linked surgical delivery medical expenses.

Limitations of the present study:

The retrospective design has the potential to introduce inherent biases, such as incomplete data and potential confounders that are not accounted for in the analysis. Furthermore, the study's generalizability may be compromised by its single-center setting. The results should be validated in a broader population and additional potential factors influencing the choice of delivery mode in breech presentations should be investigated in future prospective studies. This holistic approach enabled a thorough comparison of VD and CD outcomes, which contributed to the evidence base that informs clinical decision-making and provided valuable insights into the management of breech presentation at term.

Conclusions:

The current study found that when a patient is carefully chosen, appropriate patient counseling,

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strict intrapartum monitoring, and the presence of an obstetrician can be used to plan vaginal delivery in both term and preterm breech babies. They receive training on how to deliver breech babies. Breech birth via vaginal delivery and routine drilling aids in the education of residents in this field, enabling more qualified obstetricians to handle the inevitable vaginal births that occur during advanced labor. While scheduled cesarean sections appear to be healthier, they actually increase total maternal morbidity and the difficulties that come with them. Planned vaginal birth of selected individuals can achieve comparable results in countries with limited resources and high rates of perinatal death.

Conflict of interest:

There is no conflict of interest among the present study authors.

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