ORIGINAL ARTICLE

Changing Trends in the Delivery of Breech Presentation throughout the Last Four Decades

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Abstract

Background: To demonstrate the changing trends in the delivery of breech presentations throughout the last four decades.

Materials and methods: We retrospectively evaluated the birth data in the last four consecutive decades (1980s, 1990s, 2000s, and 2010s) for breech deliveries. A total of 25,513 deliveries between January 1980 and December 2017 were evaluated, with 371, 269, 292, and 275 breech deliveries in the 1980s, 1990s, 2000s, and 2010s groups, respectively.

Results: The incidences of breech presentation for the 1980s, 1990s, 2000s, and 2010s groups were 4.3%, 4.8%, 5.6%, and 4.6%, respectively, and the mean gestational weeks at birth were 37.84 ± 3.23, 36.90 ± 3.22, 36.15 ± 3.22, and 36.35 ± 2.77, respectively. The average gestational week at birth had statistically significantly decreased over the decades ($p < 0.001$). However, the appearance, pulse, grimace, activity, respiration (APGAR) scores gradually increased ($p < 0.001$). The cesarean section (CS) rates were 67.6% (251/371), 90.3% (243/269), 96.6% (282/292), and 99.3% (273/275) for the 1980s, 1990s, 2000s, and 2010s groups, respectively, which were statistically significantly different ($p < 0.001$). The CS rate had gradually increased over the decades.

Conclusion: Cesarean section rates in fetuses with breech presentation have gradually increased over the decades. Choosing vaginal delivery for selected breech presentations, providing proper education to obstetricians regarding breech delivery, regulating medicolegal issues, and encouraging physicians to perform more vaginal deliveries for breech presentation should be the key points in decreasing CS rates associated with breech presentation.

Keywords: Birth, Breech presentation, Delivery, Pregnancy.

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Introduction

The incidence of breech presentation is approximately 3–4% for singleton fetuses at term.[1] Although previous breech presentation, uterine abnormalities (bicornuate or septate uterus or fibroid), placental abnormalities (placenta previa or cornual placenta), multiparity, polyhydramnios, contracted maternal pelvis, fetal anomalies (anencephaly, hydrocephaly, sacrococcygeal teratoma), multiple gestation, short umbilical cord, and fetal growth restriction are common causes, the most common cause of breech presentation is preterm delivery.[2] Most of the fetuses with breech presentation return to vertex presentation as the gestational week of pregnancy increased.[3]

The route of delivery for breech presentation has been a matter of debate over the past decades. External cephalic rotation before labor, planned cesarean section (CS), and labor attempt in appropriately selected patients are the management options for breech presentation.[4,5]

Some studies in the literature reported adverse obstetric outcomes (fetal asphyxia, brachial plexus injury, labor trauma, and postpartum bleeding) for vaginal delivery of fetuses with breech presentation.[6–10] The term breech trial conducted by Hannah et al. in 2000 especially favored CS for breech presentations; therefore, it has been performed since then. Furthermore, changes in political trends, medicolegal concerns, lack of experience, and socioeconomic factors have led obstetricians to prefer CS for breech presentations. Thus, breech presentation has become one of the main indications for CS in recent years.[11,12]

However, various studies performed vaginal deliveries of fetuses with breech presentation in selected cases.[13–17] Additionally, changing trends in health policies to reduce increased CS rates have begun to investigate the rationale behind the routine performance of CS for breech presentation.[18,19] Vaginal delivery should be preferred in pregnancies with breech presentation in the following conditions: (1) no contraindication to vaginal birth (placenta previa, cephalopelvic disproportion, cord presentation, etc.), (2) no prior cesarean deliveries, (3) gestational age ≥36 weeks, (4) spontaneous labor, (5) availability of experienced healthcare professionals, (6) absence of incomplete breech presentation, (7) estimated fetal weight of ≥2,000 g and ≤4,000 g, (8) absence of a fetal anomaly that may cause labor dystocia, and (9) no hyperextension of the fetal head.[5,13,20]

This study aimed to demonstrate the changing trends in the route of delivery of breech presentations over the decades in a single tertiary healthcare center.

Materials and Methods

We retrospectively evaluated the birth data during the last four consecutive decades (1980s, 1990s, 2000s, and 2010s) for breech deliveries. Required data were withdrawn from the Hacettepe

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University Hospital Division of Perinatology electronic database. Approximately 25% of deliveries were randomly selected from each decade and used to compare the birth outcomes.

Stillbirths, multiple pregnancies, and births that occurred in less than 24 weeks were excluded from the study. Maternal age, gravida, parity, gestational week at birth, birthweight of the newborn, first-minute APGAR score, and the route of delivery were compared between the groups.

Data were presented as the number, percentage, mean ± standard deviation, or median and interquartile range according to the skewed distribution. Groups were compared using one of the appropriate methods, i.e., Student's *t* test, Mann–Whitney *U* test, or Chi-square test. *p* value of less than 0.05 was considered statistically significant. Statistical analyses were performed using the IBM Statistical Package for the Social Sciences version 22 (SPSS.22, IBM SPSS Corp., Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.).

The study protocol was approved by the Hacettepe University's Ethics Committee (GO 17/845-11).

Results

A total of 25,513 deliveries were evaluated between January 1980 and December 2017, with 371, 269, 292, and 275 breech deliveries that met the required criteria in the 1980s (1980–1989), 1990s (1990–1999), 2000s (2000–2009), and 2010s (2010–2017) groups, respectively. Furthermore, the incidences of breech presentation were 4.3%, 4.8%, 5.6%, and 4.6% for the study groups, respectively.

The mean maternal ages were 27.10 ± 4.80, 29.30 ± 5.10, 30.30 ± 5.40, and 30.70 ± 5.50 years for the 1980s, 1990s, 2000s, and 2010s groups, respectively, which had statistically significantly increased over the decades ($p < 0.001$).

The mean gravidas were 2.30 ± 1.75, 2.80 ± 2.80, 2.30 ± 1.60, and 2.48 ± 1.86 for the 1980s, 1990s, 2000s, and 2010s groups, respectively, with statistically significant difference between the study groups ($p = 0.007$). The mean parities were 0.70 ± 1.06, 0.85 ± 1.17, 0.70 ± 0.98, and 0.75 ± 1.13, respectively, but without statistically significant difference ($p = 0.30$).

The percentages of nulliparous breech deliveries were 55.5% (206/371), 49.4% (133/269), 53.4% (156/292), and 54.2% (149/275) in the 1980s, 1990s, 2000s, and 2010s groups, respectively, without statistically significant difference between the study groups ($p = 0.49$).

The mean gestational weeks at birth were 37.84 ± 3.23, 36.90 ± 3.22, 36.15 ± 3.22, and 36.35 ± 2.77 in the 1980s, 1990s, 2000s, and 2010s groups, respectively, which statistically significantly decreased over the past four decades ($p < 0.001$). Additionally, the mean birthweights were 3026.98 ± 746.01 g, 2870.04 ± 803.20 g, 2772.40 ± 818.46 g, and 2818.33 ± 751.7 g in the study groups, with statistically significant difference between the groups ($p < 0.001$). Furthermore, the mean first-minute APGAR scores were 8.86 ± 1.60, 9.27 ± 1.47, 9.33 ± 1.33, and 9.30 ± 1.30 in the 1980s, 1990s, 2000s, and 2010s groups, respectively, with a statistically significant difference between the groups ($p < 0.001$).

Finally, the CS rates were 67.6% (251/371), 90.3% (243/269), 96.6% (282/292), and 99.3% (273/275) in the 1980s, 1990s, 2000s, and 2010s groups, respectively, with a statistically significant difference between the groups ($p < 0.001$). The CS rate had gradually increased over the past four decades.

Table 1 shows the mean and standard deviation values with minimum–maximum values of maternal age, gravida, parity, gestational week at birth, birthweight, and first-minute APGAR score with the percentages of nulli-/multiparity and CS rates in the study groups with *p* values.

Discussion

Breech presentation is the most common form of malpresentation with an incidence of approximately 3–4% for singleton fetuses at term.[1] Although breech presentation may be associated with various maternal and fetal risk factors, it is mostly related to preterm delivery.[2] Choosing the appropriate route of delivery for the fetuses with breech presentation has become a challenging issue in the last two decades.[6–10] Some physicians recommend CS for breech presentation at term based on the results of several studies, personal experiences, and medicolegal concerns.[11,12] However, other studies in the literature reported similar obstetric outcomes with vaginal delivery in properly selected cases.[13–17]

The incidence of breech presentation was similar with the literature in the study groups (4.3%, 4.8%, 5.6%, and 4.6% in the 1980s, 1990s, 2000s and 2010s groups, respectively).[1] Additionally, maternal age had increased over the decades, which was also consistent with the trends in the recent literature.[21] In our series, the mean gestational week at birth, birthweight, and first-minute APGAR score were all statistically significantly different between the decades. Earlier gestational weeks at birth and lower birthweights

Table 1: Mean and standard deviation values with minimum–maximum values for maternal age, gravida, parity, gestational week at birth, birthweight, and first-minute APGAR score together with the percentages of nulli-/multiparity and cesarean rates in the study groups with *p* values

Variables	*1980s (371/8,579) (4.3%)*	*1990s (269/5,614) (4.8%)*	*2000s (292/5,164) (5.6%)*	*2010s (275/5,956) (4.6%)*	*p values*
Maternal age (years)	27.10 ± 4.80 (18–42)	29.30 ± 5.10 (18–44)	30.30 ± 5.40 (18–47)	30.70 ± 5.50 (14–44)	$p < 0.001$
Gravida	2.30 ± 1.75 (1–11)	2.80 ± 2.80 (1–10)	2.30 ± 1.60 (1–13)	2.48 ± 1.86 (1–15)	$p = 0.007$
Parity	0.70 ± 1.06 (0–8)	0.85 ± 1.17 (0–9)	0.70 ± 0.98 (0–7)	0.75 ± 1.13 (0–11)	$p = 0.30$
Nulliparous	55.5% (206/371)	49.4% (133/269)	53.4% (156/292)	54.2% (149/275)	$p = 0.49$
Multiparous	44.5% (165/371)	50.6% (136/269)	46.6% (136/292)	45.8% (126/275)	
Gestational week at birth	37.84 ± 3.23 (25–42)	36.90 ± 3.22 (25–42)	36.15 ± 3.22 (24–40)	36.35 ± 2.77 (24–40)	$p < 0.001$
Birthweight (g)	3026.98 ± 746.01 (800–4,950)	2870.04 ± 803.20 (540–5,000)	2772.40 ± 818.46 (570–4,200)	2818.33 ± 751.7 (310–4,600)	$p < 0.001$
First-minute APGAR score	8.86 ± 1.60 (4–10)	9.27 ± 1.47 (4–10)	9.33 ± 1.33 (4–10)	9.30 ± 1.30 (4–10)	$p < 0.001$
Cesarean rate	67.6% (251/371)	90.3% (243/269)	96.6% (282/292)	99.3% (273/275)	$p < 0.001$

were observed in the last decades (after the 2000s) in our study. However, the mean APGAR scores had increased decade by decade. These findings seem to be associated with better antenatal care programs, improved technology, and increased CS rates in our study. The most significant finding in this study was the gradually increasing CS rates over the decades, which is consistent with the current literature.[11,12]

Lack of experience in the delivery of fetuses with breech presentation, medicolegal concerns, and current changes in the healthcare systems forced physicians to be more cautious. Thus, elective CS for breech presentation has almost become a routine procedure.[11,12] However, the uncontrolled, increasing trend in CS rates has alarmed physicians, government, and healthcare organizations worldwide.[18,19] Therefore, most countries have changed their healthcare policies, encouraging vaginal births and decreasing CS rates. As breech presentation accounts for nearly 3–4% of deliveries at term, vaginal birth for selected fetuses with breech presentation has become a major goal in many organizations.[20,22]

The main limitation of this study was the retrospective design, followed by single-center experience and lack of long-term neonatal outcomes. However, this has revealed the changing trends in the route of delivery of breech presentations in the same clinic over the past four decades. On the contrary, our data consisted of 1,207 breech deliveries, which was the main strength of this study.

Conclusion

In conclusion, CS rates in fetuses with breech presentation have gradually increased over the decades. Choosing vaginal delivery for selected breech presentations, providing proper education to obstetricians regarding breech delivery, regulating medicolegal issues, and encouraging physicians to perform more vaginal deliveries for breech presentation should be the key points in decreasing CS rates associated with breech presentation.

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