Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2024, 14, 1414-1421
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

Prevalence, Maternal and Perinatal Prognosis of Breech Delivery Compared to That of the Vertex in 242 Cases for 484 Controls at Ségou Hospital in Malti

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How to cite this paper: Traoré, T., Kané, F., Kassogué, A., Traoré, S., Dao, S.Z., Harber, B., Koné, S., Sidibé, K., Donigolo, B., Traoré, B., Coulibaly, A., Diarisso, A., Sidibé, A., Sima, M., Théra, A., Traoré, Y., Teguété, I. and Mounkoro, N. (2024) Prevalence, Maternal and Perinatal Prognosis of Breech Delivery Compared to That of the Vertex in 242 Cases for 484 Controls at Ségou Hospital in Malti. *Open Journal of Obstetrics and Gynecology*, **14**, 1414-1421.
https://doi.org/10.4236/ojog.2024.149112

Received: August 6, 2024
Accepted: September 16, 2024
Published: September 19, 2024

Abstract

Introduction: Breech birth has always been a subject of great interest because of its risks of perinatal morbidity and mortality. Aim: The aim of our study was to compare the maternal and perinatal prognosis of breech delivery with that of vertex delivery. **Patients and Method:** This was a retrospective case-control analytical study carried out in the obstetrics and gynaecology department of Ségou hospital over a 2-year period from 1 January 2020 to 31 December 2021, involving 242 breech deliveries compared with 484 top deliveries with a live single foetus without foetal malformation of gestational age ≥ 35 SA. The statistical tests used were: chi² ($p < 0.05$), Odds ratio (OR) and its 95% confidence interval (CI). **Results:** The frequency of breech delivery was 3.3%, with a predominance of caesarean section for breech presentation (64.88%) compared with 32.85% for vertex (P: 0.00; CI: (0.191 - 0.367). The perinatal prognosis of fetuses with breech presentations was marked by a higher rate of neonatal asphyxia (Apgar score < 7) (2.95%) than that of fetuses with apex presentations (0.41%) at both the 1st and 5th minute P: 0.00; CI: (0.00 - 0.004). The risk of stillbirth was 5 times higher for breech deliveries (2.07%) than for vertex deliveries (0%) (P: 0.00; CI: (0.00 - 0.004). Maternal complications were

more frequent in breech deliveries (2.48% post-partum haemorrhage, 1.24% perineal tear and 0.83% uterine rupture) compared with 1.65% post-partum haemorrhage, 1.03% perineal tear and 0.62% uterine rupture respectively in vertex deliveries. There were no deaths in either group. **Conclusion:** Breech birth is relatively rare in our department. It carries a higher risk of maternal morbidity and neonatal morbidity than breech delivery. However, the vital prognosis for the mother was identical in both groups.

Keywords

Delivery, Breech, Vertex, Prognosis, Mali

1. Introduction

Breech birth has always been a subject of interest because of its risk of perinatal morbidity and mortality [1]. The perinatal mortality of breech birth can be five times higher than that of vertex birth [2]. The incidence of breech delivery worldwide varies between 3% and 5% of single foetuses [3]. In Africa, it varies from 1.52 to 9% [2] [4] and in Mali from 1.2 to 1.72% [4]. The route of delivery is still a matter of debate, especially as the natural birth of a breech fetus remains a distressing situation for any obstetric team [1]. In 2000, the prospective multicentre randomised trial Breech Term Trial by Hannah *et al.* argued in favour of a systematic caesarean section for breech presentation in order to significantly reduce foetal mortality and morbidity.

In the absence of a consensus on good practice criteria for breech birth, the American College of Obstetric Gynaecologists revised its position on the subject in 2006 and recognised that breech birth by the natural route could be envisaged by experienced obstetric teams. The French multicentre PREMODA cohort study of term breech babies also favours vaginal delivery [5]. In this study, we report on our experience and describe the maternal and perinatal prognosis of breech birth compared with vertex birth.

2. Patients and Methods

This study was conducted at the Ségou regional hospital over a 2-year period from 1 January 2020 to 31 December 2021. This was a retrospective analytical case-control study. For each case of singleton breech delivery with a live fetus, we selected two controls with a singleton pregnancy with a vertex presentation, i.e. 242 cases for 484 controls. The statistical tests used were: chi^2 ($p < 0.05$), Odds ratio (OR) and its 95% confidence interval (CI). The aim of this study was to compare the maternal and perinatal prognosis of breech delivery with that of vertex delivery. We matched cases and controls on maternal age, maternal and neonatal prognosis.

All presentations other than breech and vertex were excluded, as were multiple pregnancies, non-viable foetal malformations, premature deliveries of less than 35

weeks' gestation and terminated pregnancies. The data were analysed using SPSS version 20 software. Statistical tests used were: Chi^2 ($p < 0.05$), Odds ratio (OR) and its 95% confidence interval (CI).

3. Results

3.1 Prevalence

During the study period, we recorded 7360 deliveries, including 242 breech presentations, giving a prevalence of 3.3%.

3.2 Sociodemographic and Obstetric Characteristics

The mean maternal age was 24 ± 5 years in both groups, with extremes of 14 and 45 years. More than half of the women delivered were aged between 20 and 34 years, with 55.37% breech and 63.22% vertex respectively.

Multiparous and nulliparous women accounted for 61.98% and 29.34%, respectively, of women with a breech fetus, while multiparous women with a vertex fetus accounted for 54.75% (P: 0.006; CI: (0.000 - 0.011).

The majority of women (87.19%) with a breech fetus and 82.02% of those with a crown fetus had attended at least one antenatal clinic in the third trimester of pregnancy. However, 12.81% of women with a breech fetus and 17.98% of women with a vertex fetus had not received any antenatal care [OR: 0.618; CI: 95%].

Most of the breech fetuses (75.6%) were in buttock mode.

Abnormalities occurring during labour were stationary dilatation with 6.20% of cases in vertex presentations compared with 3.72% for breech (P: 0.002), cord procidence and acute foetal distress were more frequent in breech with 2.89% and 3.70% respectively compared with 0.20% and 0.40% of cases for vertex [P: 0.002; CI: (1.16 - 1.616)].

Women with a breech fetus were 2 times more likely to deliver by caesarean section (64.88%) than controls (32.85%) [P: 0.00; CI: (0.191 - 0.367)]. Our attitude was Vermelin in the majority of vaginal breech deliveries for both doctors (60%) and midwives (24.70%) [P = 0.1865 CI (0.0002 - 0.8617)]. Episiotomy was performed in 37.65% of women who delivered a fetus in breech presentation compared with 9.54% of those with a fetus in vertex presentation (OR: 2.227; CI: (1.323 - 3.747) (Tables 1 - 3).

Table 1. Apgar score of newborns at the first minute.

Apgar score	Breech		Summit		P	IC
	Number	%	Number	%		
0*	5	2.07	0	0	0.000	(0.00 - 0.004)
3 - 6	9	3.72	2	0.41	0.005	(1.557 - 11.911)
7 - 8	19	7.85	11	2.27	0.001	(0.2009 - 0.4604)
9 - 10	209	86.36	471	97.32	0.003	(0.1015 - 0.3412)
Total	**242**	**100**	**484**	**100**	-	-

*Fresh stillborn.

Table 2. Apgar score of newborns at the fifth minute.

Apgar score	Breech		Summit		P	IC
	Number	%	Number	%		
4 - 6	7	2.95	2	0.41	0.002	(0.00 - 0.001)
7 - 8	21	8.87	11	2.27	0.0220	(0.81 - 20.30)
9 - 10	209	88.18	471	97.32	0.0309	(0.1870 - 4.3346)
Total	**242**	**100**	**484**	**100**	-	-

NB: all newborns left the hospital alive.

Table 3. Maternal complications.

Apgar score	Breech		Summit		P	IC
	Number	%	Number	%		
IPPH*	6	2.48	8	1.65	0.333	(0.73 – 5.48)
Perineal tear	3	1.24	5	1.03	0.333	(0.74 – 5.71)
Uterine rupture	5	0.83	0	0.00	0.008	(0.83 – 6.37)
No complications	231	95.45	468	96.70	0.346	(0.92 – 5.57)
Total	**242**	**100**	**484**	**100**	-	-

*Immediate postpartum hemorrhage.
NB: no case of maternal death has been recorded.

4. Discussion

Prevalence: Our prevalence of 3.3% of breech deliveries is in line with the literature, as breech presentation is the most common irregular presentation. It occurs in 3 to 5% of singleton fetuses worldwide [3]. In Africa, it is 1.52 to 9% [2] [4] and in Mali between 2.7% [6] and 3.60% [4]. In France, 3.4 to 5% of women with a single foetus give birth to a breech baby after 37 weeks gestation [7] [8].

Our low rate of breech presentation is explained by the fact that we did not include in our series multiple pregnancies and premature deliveries, which are frequently associated with this type of presentation.

Sociodemographic and obstetric characteristics:

The mean maternal age of our deliveries was 24 ± 5 years in both groups, with extremes of 14 and 45 years. Higher mean maternal ages have been reported in some European series: Arrigo Fruscalizo *et al.* [3] with 32 years [IQR 30 - 35] years, A S. Martel with 33.75 years at Port Royal and 33.1 years at Neckeren in France [9]. Our age difference with developed countries could be linked to marriage or early pregnancies in developing countries such as ours.

More than half of the women who gave birth were aged between 20 and 34, with 55.37% in the breech and 63.22% at the apex, as this is the most sexually active age group. The same age bracket was reported in France where A S. Martel obtained 53% of women in Port Royal and 64% in Necker aged between 25 and 34 [9].

Multiparous women accounted for 61.98% of parturients with a breech fetus

compared with 54.75% of multiparous women with a breech fetus (P: 0.006; CI: (0.000 - 0.011), indicating a causal relationship between multiparity and breech presentation. Nulliparous women accounted for 29.34% of parturients with a breech fetus.

These breech birth rates in nulliparous women are higher in developed countries, as shown by the studies of Arrigo Fruscalizo *et al.* [3] with 66.29%; Janet Lyons, MD in Canada 45.4% of cases [10]; Canary Islands with 80.0% breech versus 56.9% cephalic ($p < 0.001$) [11].

Uterine hypoplasia in nulliparous women and uterine hypotonia in multiparous women are favourable factors explaining the high frequency of breech in these categories of women.

The majority of our women (87.19%) with a breech fetus and (82.02%) with a vertex fetus had had at least one antenatal consultation in the third trimester of pregnancy [OR: 0.618; CI: (0.441 - 0.865)]. The same observation was made by Katenga B G *et al.* in Kisangani [2] in whom 70.7% of pregnant women with a breech fetus and 52.8% of those with a vertex fetus [P = 0.0001; OR (95% CI) = 0.4629 (0.3102 - 0.6909)] had at least one antenatal visit in the third trimester. Our high rate of antenatal care was explained by the good coverage of antenatal care in Mali, which is 93% in urban areas compared with 76% in rural areas [12].

Most fetuses (75.6%) in breech presentation were decompleted in the buttocks mode, as was the case in other African authors: 60.9% in Congo Brazzaville [1] and 60% in Lubumbashi in the Democratic Republic of Congo [13]. In the study by Traoré Y *et al.* [6], complete seats were more frequent (54.6%) compared with 45.4% of uncompleted seats (P < 5%).

We reported stationary dilatation in parturients with an apex fetus (6.20%) compared with 3.72% for breech, which proves that this is not the sole preserve of breech. Cord prolapse and acute foetal distress were more frequent in breech deliveries, with 2.89% and 3.70% respectively, compared with 0.20% and 0.40% for vertex deliveries [P: 0.002; CI: (1.16 - 1.616)].

Our study corroborates that of DR Congo [2] where intrapartum complications were more frequent in breech deliveries than in vertex deliveries: 27.8% acute foetal distress compared with 21.2%; hypokinesia 10.4% compared with 7.5% and shoulder dystocia 5.7% compared with 2.8%. On the other hand, in their study, cord prolapse was more frequent in vertex deliveries than in breech deliveries.

The probability of caesarean section in women with a breech fetus was highly significant, with twice the risk (64.88%) than those with a vertex fetus (32.85%) [P: 0.00; CI: (0.191 - 0.267)]. The frequency of our caesarean sections in breech fetuses was related to acute distress and cord prolapse. Despite this strong tendency for caesarean section in breech presentations, it is not systematic in Mali if obstetric conditions are favourable and the team is well-experienced.

Caesarean section rates for breech presentation vary widely, but overall they are higher than those at the summit. For example, Traoré. Y *et al.* in Mali [6] also reported a caesarean section rate 2 times higher in mothers with a breech fetus

(37.8%) than in vertex mothers (21%) (P: 0.00072; OR: 2.29; CI: 1.37 3.82); Mbongo JA *et al.* in Congo Brazzaville [1] performed 73.8% of breech deliveries by caesarean section due to intercurrent pathologies associated with the pregnancy and Thera T and Col [4] performed a caesarean section in 42.39% of breech deliveries versus 22.83% of vertex deliveries (P: 0.002).

On the contrary, other authors such as Katenga B G *et al.* in the DRC [2] performed more caesareans in the vertex group (10.4%) compared with 9.4% in the breech group; Fisher Exact = 0.4355; OR(CI): 1.1113 (0.5874 - 2.1037).

Our finding follows the universal trend of the influence of Hannah's "Term Breech Trial", which revolutionised the practice of caesarean section in breech birth [2].

The indications for caesarean section in breech presentations were dominated by breech on a scarred uterus (13.38%), breech in a primigravida (27.39%), multi scar uterus (22.93%). The main indication for caesarean section in vertex presentation was multi-scar uterus (53.46%).

Certain classic indications for caesarean section were found, namely: a generally narrowed pelvis (8.28% for the breech presentation compared with 6.29% for the apex presentation) and pre-ruptured uterus (5.73% for the breech presentation compared with 3.77% for the apex presentation). The same indications are reported by Traoré. Y *et al.* in Mali [6] but with proportions different from ours.

Our attitude was Vermelin in vaginal breech delivery for both doctors (60%) and midwives (24.70%) [P: 0.1865 CI (0.0002 - 0.8617)]. Episiotomy was performed in 37.65% of breech presentations compared with 9.54% of tops (OR: 2.227; CI: (1.323 - 3.747). This practice is linked to insufficient amplification of the perineum by the breech to facilitate rapid release of the head, especially in primiparous women. In contrast to our study, in the Democratic Republic of Congo [2], breech birth was less likely to result in episiotomy than top birth [23.5% versus 26.9%; p: 0.4338, OR(CI):1.1915 (0.7681 - 1.8482)].

Perinatal morbidity and mortality: At 1 minute, the Apgar score ranged from 0 to 10 for breech babies compared with 3 to 10 for vertex babies [P: 0.00; CI: (0.00-0.004)]. At the 5th minute, the score varied between 4 and 10 and was between 4-6 in 2.95% of breech babies compared with 0.41% of vertex babies [P: 0.002 CI: (0.00 - 0.001)]. Five cases of fresh stillbirth (2.07%) were recorded among breech deliveries in which the parturient was an accepted reference with an absent foetal heart sound, compared with zero cases for vertex deliveries [P: 0.00; CI: (0.00-0.004)]. These results show that there is a statistically significant association between perinatal morbidity and mortality and the presentation of the breech fetus with a (P = 0.00).

Higher rates were found by Traoré. Y *et al.* in Mali [6] with 5 times more deaths born at 1 minute in breech delivery (15.1%) than in vertex delivery (3.4%) (P: 0.00005; OR: 5.12; CI: 2.02 - 13.33). At 5 minutes of life, the newborn's APGAR score was also poor overall, with 16.8% of deaths, whereas it was 5 times lower in the vertex group (P: 0.00000; OR: 5.81; CI: 2.33 - 14.91).

In the Democratic Republic of Congo [13] at 1 minute the risk of neonatal depression was multiplied by 12 for breech neonates compared with vertex neonates (OR: 11.87:3.35 - 44.51), with 38.7% of breech neonates with an Apgar < 7 compared with 5.1% in the vertex group. At 5 minutes, a comparison of the mean Apgar score of the two groups showed a highly significant statistical difference (p: 0.0000).

Bjellmo. S *et al.* [14] in Norway noted that breech babies had an increased risk of neonatal stillbirth and asphyxia compared with babies born in cephalic presentation. The Apgar score ranged from 0 - 3 in 0.6% of breech babies compared with 0.3% of cephalic babies at 1 minute and from 4 - 6 in 2.4% of breech babies compared with 1.7% of cephalic babies at 5 minutes.

Maternal complications: Maternal and foetal mortality and morbidity are indicators of the success of pregnancy and delivery.

In our study, maternal complications were more frequent in parturients with a breech fetus, with: 2.48% post-partum haemorrhage [P: 0.333; (0.73 - 5.48)]; 1.24% perineal tear [P: 0.333; (0.74 - 5.71)]; and 0.83% uterine rupture [P 0.008; CI: (0.83 - 6.37)] compared with 1.65% post partum haemorrhage, 1.03% perineal tear and 0% uterine rupture respectively in parturients who delivered a fetus at summit. Apart from uterine rupture with [P: 0.008] there was no statistically significant difference between maternal complications and breech birth. Maternal mortality related to childbirth was nil in both groups, as previously observed in Congo Brazzaville [1]. Thera. T *et al.* [4] also reported more maternal complications in breech deliveries. These were mainly tears of the perineum (OR = 1.31 [0.70 - 2.45], p: 0.37) and endometritis (OR = 0.96 [0.5 - 1.77], p: 0.88).

5. Conclusions

In the Democratic Republic of Congo [2], apart from postpartum haemorrhage [43.4% vs 30.7%; P: 0.0066; OR (95% CI) = 0.5768(0.3871- 0.8593)], breech birth was less likely to result in perineal tears than vertex birth [14.1% vs 18.9%; P: 0.1908; OR (CI) = 1.4109 (0.8411 - 2.3665)].

Breech birth is relatively uncommon in our department. Caesarean section was the main route of delivery. This is a delivery with a higher risk of maternal-fetal morbidity and perinatal mortality compared with a breech delivery, although the maternal prognosis remains identical in both groups. This type of delivery should be carried out by experienced birth attendants in order to reduce complications.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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