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Indication of caesarean section in the childbirth of a macrosome in a Level 2 Health Center in Dakar

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Abstract

Objectives: To determine the factors influencing the mode of delivery in case of fetal macrosomia.

Materials and Methods: That was a retrospective, descriptive and analytical study carried out from October 1st 2010 to March 31st 2013 at the maternity of Gaspard Kamara Health Center in Dakar. A multivariate analysis using logistic regression was used to determine the factors which influence the mode of delivery in case of fetal macrosomia.

Results: We collected 333 delivery records of macrosome on 10639 registered births, a rate of 3.1%. Two hundred and fifteen (215) patients met the inclusion criteria. The labor's test was performed in 55.3% of patients with a failure rate of 15.1%. Caesarean section was performed in 22.8% of patients. The main indications were: acute fetal distress (36.7%), the fetal-pelvic disproportion (26.5%), premature rupture of membranes (12.2%), the extended labor (10.2%), and the lack of engagement (10.2%). All newborns had Apgar score in the fifth minute greater than or equal to 7. The factors that influenced the type of delivery were: fetal weight above 4300 g (p=0.007), nulliparity (p<0.001) and a uterine height upper than 34 cm (p=0.034).

Conclusion: In case of fetal macrosomia, fetal weight above 4300 g, nulliparity and the upper uterine height 34 cm are associated with a higher incidence of caesarean delivery.

Keywords: Fetal macrosomia; Caesarean section; Labor's test

Introduction

Fetal macrosomia is defined as a birth weight greater than or equal to 4000 grams or greater than the 90th percentile of the intra-uterine growth curves [1-3]. In recent years, there has been an increase in the prevalence of macrosomia in the world [6]. This is partly due to changes in dietary habits and also an increase in the prevalence of diabetes in the general population, particularly among pregnant women. In Senegal, this prevalence increased from 1.34% in 1999 to 3.11% in 2012 [4-6]. The birth of a macrosome fetus, especially when it is carried out by vaginal route, is associated with high maternal and fetal morbidity [7,8]. A judicious choice of candidates for the labor's test could contribute to a limitation of maternal and fetal complications.

The objective of our study was to determine the predictive factors for caesarean section in emergency in a context of fetal macrosomia.

Material and Methods

This was a retrospective descriptive and analytical study carried out over a period of 30 months from 1st October 2010 to 31st March 2013 at the maternity of Gaspard Kamara Health Center in Dakar. We have reviewed all the files of pregnant women who gave birth of a child weighing at least 4000 grams. The inclusion criteria were any monofetal delivery at term (37 weeks of amenorrhea completed) by vaginal route or cesarean section of a child in the presentation of the summit weighting at least 4000 grams.

The non-inclusion criteria were twin or multiple pregnancies, cicatricial uterus, non-cephalic presentation, and scheduled caesarean section. The maternal characteristics studied were age, parity, history of diabetes or macrosomia. The obstetric characteristics studied were gestational age at the time of delivery, labor input, spontaneous or labor-induced by oxytocin, and type of delivery (natural, Instrumental or by caesarean section). The various indications for caesarean section were analyzed.

Data were enterred and analyzed using SPSS 20.0 software. Student's t-test was used to study the association between the delivery route and the continuous variables. The Chi-square and Fischer tests made it possible to determine the categorical variables related to the delivery route.

The predictive factors for caesarean section in the case of macrosomia were identified by multivariate analysis based on logistic regression with 95% confidence interval calculation of the odds ratio.

Results

During the study period, 333 cases of macrosome delivery were recorded in the 10639 registered births, a frequency of 3.1%. Two hundred and fifteen (215) patient records met the inclusion criteria. Of these, 49 gave birth by caesarean section (22.8%) and 166 (77.2%) had given birth by vaginal route with 4 instrumental extractions per sucker (2.4%).

The maternal characteristics of the population are summarized in Table 1. The main indications for caesarean section were: acute fetal distress in 36.7% of cases (18/49), fetal-pelvic disproportion in 26.5%

(13/49), premature rupture of membranes in 12.2% (6/49), extended labor (5/49) in 10.2%, and lack of engagement in 10.2% (5/49). The obstetrical characteristics of the study population are summarized in Table 2.

All newborns had an Apgar score in the fifth minute greater than or equal to 7. Two newborns, 0.9%, experienced transient respiratory distress.

Two cases of elongation of the brachial plexus (0.9%), a fracture of the clavicle (0.45%) and a fracture of the humerus (0.45%) were recorded. These complications followed a natural birth.

A multivariate analysis showed that nulliparity, uterine height greater than 34 cm and fetal weight greater than 4300 grams were significantly associated with a risk of caesarean delivery (Table 3).

Discussion

The retrospective nature of our study excludes any improvement in the quality of data collection. Thus, not all the information in the survey sheet could be gathered exhaustively because some information was not specified.

In our series, the prevalence of macrosomia was 3.1%, which corresponds to data from the literature, where rates vary between 2.5 and 4.5% of deliveries [5,9].

The rate of Caesarean section, which was 22.8% in our series oscillates between 9 and 34% according to the studies. The rate found by Mazouni [12] (18.3%) is closed to ours. On the other hand, that reported by Diebaté was significantly higher (54%) [5,9]. This could be explained by the diversity of inclusion criteria in these different studies. Indeed, in the Diebaté series [5], patients with a cicatricial uterus were included, which increased the probability of caesarean delivery.

The main indications for caesarean section in our series were acute fetal distress, fetopelvic disproportion, premature rupture of the membranes, stationary dilation and lack of engagement. Similar results were found in the Mazouni study [10] where the stagnation of dilation and lack of engagement were the most frequent indications. Diébaté [5] found a predominance of premature rupture of the membranes and feto-pelvic disproportion in the indications of caesarean section.

We carried out a multivariate analysis which showed that certain maternal and fetal characteristics, such as nulliparity, uterine height greater than 34 cm and birth weight greater than 4300 g, were factors associated with caesarean section in the case of fetal macrosomia (Table 3). Mazouni [10] also found a significant association between a uterine height greater than 34 cm and the failure of the vaginal path and showed that this risk was increased by the nulliparity. Measurement of uterine height is a good indicator in the choice of delivery route. Several authors have shown that estimating ultimate fetal weight by measuring uterine height is as relevant as the ultrasound estimate where the mean error is about 15% in the case of fetal macrosomia [2]. However, the sensitivity of clinical examination in the prediction of fetal macrosomia depends on the term of pregnancy and the degree of macrosomia [4,8].

In our series, a fetal weight greater than 4300 g was significantly associated with a risk of caesarean delivery, which differs from the recommendations of the High Authority of Health [11] and the American College of Obstetrics and Gynecologists [12]. Indeed, the latter recommend to perform a Caesarean section programmed in the case of weight estimate greater than or equal to 5000 g in the absence of diabetes or 4500 g in the case of diabetes (Table 4).

Due to the uncertainty of the ultrasound weight estimation, the

	Caesarean section (N=49)	Vaginal route (N=166)	p
Age	28,1	29,7	0,099
Parity +/- standard deviation	1,71 +/- 2,17	2,48 +/- 1,76	0,01
Diabetes	1 (2%)	6 (3,6%)	1,000
History of macrosomia	1 (2%)	6 (3,6%)	0,585

Table 1: Maternal characteristics of the study population.

	Caesarean section (N=49)	Vaginal route (N=166)	p
Mean pregnancy term (SA)	40,06 +/- 1,17	39,7 +/- 1,13	0,042
Exceeding pregnancy term (%)	6 (12,2)	14 (8,4)	0,427
Uterine height >34 cm (%)	46 (93,9)	135 (81,3)	0,034
Nulliparity (%)	20 (40,8)	20 (12)	< 0,001
Nulliparity + Uterine height > 34 cm (%)	18 (36,7)	14 (8,4)	<0,001
Latency stage of labor (%)	35 (71,4)	48 (28,9)	<0,001
Active stage of labor (%)	14 (28,6)	94 (56,6)	0,001
Labor test (%)	18 (36,7)	101 (60,8)	0,003
Use of oxytocin (%)	2/18 (11,1)	18/101 (17,8)	0,256
Mean birth weight (grs)	4258 +/- 388	4130 +/- 190	0,030
Birth weight >4300 g (%)	12 (24,5)	16 (9,6)	0,007

Table 2: Obstetrical characteristics of the study population.

	OR [95% IC]	P
Nulliparity	5,957 [2,713-13,080]	0,000
Uterine height >34 cm	4,251 [1,130-15,990]	0,034
Fetal birth >4300 g	2,88 [1,191-6,979]	0,007

Table 3: Caesarean Risk Factors for Fetal Macrosomia.

	OR [95% IC]	P
Nulliparity	5957 [2,713-13,080]	0,000
Uterine height >34 cm	4251 [1,130-15,990]	0,034
Fetal weight >4300 g	2,88 [1,191-6,979]	0,007

Table 4: Caesarean Risk Factors in Fetal Macrosomia.

caesarean section will be discussed case by case for an estimated weight between 4250 and 4500 g [13,14]. This difference in practice reflects the need to adapt the international recommendations to our context characterized by a lack of technical support with a notable lack of maternal and fetal means of surveillance.

Conclusion

In our context, in case of fetal macrosomia, the decision of the delivery route should be discussed with the patient, taking into account its parity, measurement of the uterine height and the estimation of the fetal weight which are the three main factors Risk of cesarean delivery.

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