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Research Article

Childbirth on a Moderately Shrinked Pelvis at the Institut D'hygiene Sociale Hospital in Dakar

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Summary

Objectives: To assess the frequency of moderately narrowed pelvises, to specify the epidemiological and clinical profile of parturients, the mode of childbirth and to evaluate the maternal and neonatal prognosis in patients who underwent a trial of labour at the IHS hospital between the January 1st, 2019 and December 31st, 2020.

Patients and Methods: This was a descriptive and analytical retrospective study of all patients who underwent a trial of labour at the Gynaecology-Obstetrics Department of the IHS Hospital in Dakar between January 1st and December 31st, 2020, i.e. a period of 12 months. Data were collected from birth records. Data entry was performed with EPI INFO 7 software and analysis with SPSS 21 software.

Results: During the study period, we performed 101 labour trials among the 2156 childbirths, a frequency of 4.6% of childbirths. The epidemiological profile of the patients was that of a primiparous woman (73.3%) with an average age of 24, married (96.9%), having carried out at least 3 prenatal consultations (90%) and carrying a pregnancy at term (97%). Clinically, the average fundal height was 33 cm with extremes of 27 and 40 cm. The majority of patients (73.3%) had a borderline pelvis while the transversely narrowed pelvis accounted for only 26.7% of cases. The introductory palpation was only performed in 17 patients (16.8%) and it was doubtful in 11 of them (10.9%). The trial of labour ended in vaginal childbirth in 34.7% of cases or in caesarean section in 65.3% of patients. Failure of the trial of labour was more frequent in nulliparous (76.9%) compared to primiparous (64.9%), pauciparous (72.7%) (p=0.082) and in patients with borderline pelvis (79.5%) compared to those who had a transversely narrowed pelvis (68.7%) (p=0.392). In our series, 12 new-borns (11.9%) had benefited from neonatal resuscitation and eleven of them, that is a rate of 10.8%, were transferred to a neonatology unit. These were cases of non-reassuring fetal status occurring during the expulsive phase. Their evolution was favourable in all cases. One early neonatal death (1%) was recorded. No maternal complication had been notified.

Conclusion: Childbirths on a moderately narrowed pelvis are not uncommon in our practice. They require a prior clinical evaluation of the parturients, particularly with the introducer palpation in order to increase the chances of a favourable outcome and to avoid maternal and perinatal complications.

Keywords: Trial of labour; Moderately constricted pelvis; Caesarean section

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Introduction

Maternal and neonatal mortality is a major public health problem in developing countries. In 2015, worldwide, 303,000 women died from complications of pregnancy and childbirth [1]. Most of these deaths are recorded in sub-Saharan Africa. In Senegal, despite the many efforts made over the past 20 years, the maternal mortality ratio still remains high, estimated at 236 per 100,000 live births. These deaths most often come from direct obstetric causes, including prolonged labour and obstructed labour, which represent 2.3% of the causes of maternal death in Senegal [2]. To reduce the proportion of obstructed labour among the causes of maternal death, a rigorous obstetrical evaluation is necessary at the end of pregnancy in order to decide on the best way of childbirth. In surgical basins, caesarean section will be performed before going into labour and in the case of a moderately narrowed pelvis, vaginal childbirth can be attempted under certain conditions. This is trial of labour, which remains little documented in Senegal and in the world where very few works are recorded. This is how we conducted this study, the objectives of which were to assess the frequency of moderately narrowed pelvises, to specify the epidemiological profile of patients and to evaluate the maternal and neonatal prognosis in the event of childbirth in a moderately narrowed pelvis.

Patients and Methods

Type, Setting and Period of Study

This was a descriptive and analytical retrospective study carried out over a period of 12 months from January 1st to December 31st, 2020 and concerning childbirths in a moderately narrowed pelvis at the Gynecology-Obstetrics Department of the Institut d'Hygiène Social Hospital of Dakar.

Patient Selection Criteria

We included patients who were carriers of a singleton pregnancy at term with a foetus in vertex presentation and a moderately shrunken pelvis which is a symmetric shrunken pelvis with smooth reduction of all diameters.

Data Collection and Analysis

Data were collected from birth records and entered using EPI INFO Version 7 software. Data analysis was done using *Statistical Package for Social Sciences* (SPSS) Version 21 software two parts:

- A descriptive analysis: the qualitative variables were described in number, percentage and the quantitative variables on average with the standard deviation, the extremes and the median, and a bivariate analysis: it consisted of a comparison between the outcome of the work test and the other variables. The Chi2 test was used for proportion comparison. The difference was statistically significant when the p value was strictly less than 0.05.

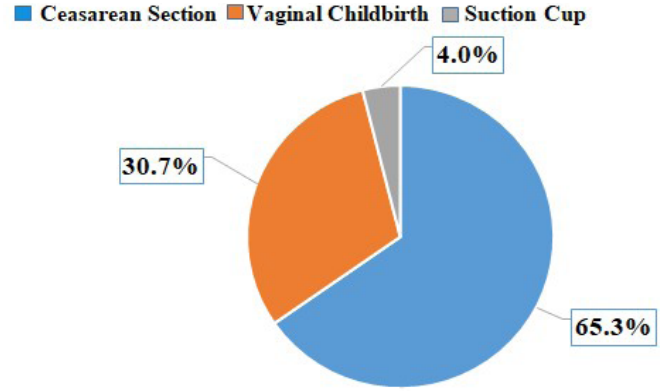
Results

Descriptive Results

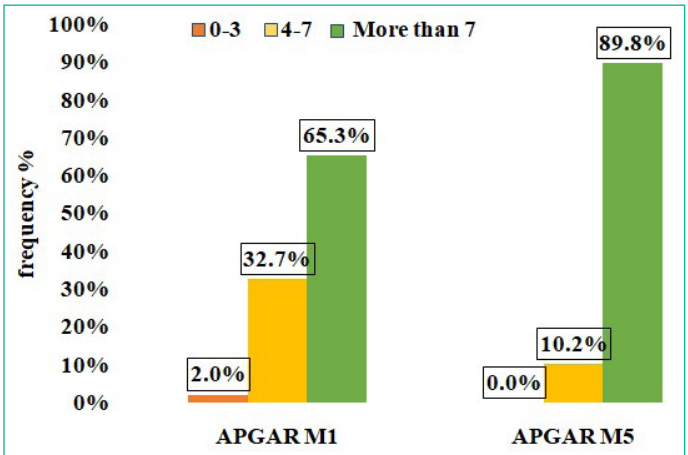
Frequency: During the study period, we recorded 2,156 childbirths, including 101 after a trial of labour, representing a frequency of 4.6% of childbirths.

Socio-Demographic Characteristics of Patients

The average age of the patients was 24 years old with extremes of 17 and 40 years old. The 21 to 30 age group was the most represented with a frequency of 48.5%. Almost all of the patients were married (96.9%), most often in a monogamous regime (69.7%). Most of them came from outside our health district (92.9%). The average parity was 1.1 with extremes of 0 and 4. Nearly three quarters of the patients (73.4%) were primiparous. The mean number of live births was 1±0.7 with extremes of 0 and 4. The majority of patients (94.7%) had previously given birth vaginally (Table 1).



Graphic 1: Distribution by mode of childbirth of patients who underwent a trial of labour at the IHS in 2020 (N=101).



Graphic 2: Distribution according to the Apgar score of new-borns from the trial of labour at the IHS in 2020 (N=101).

Table 1: Socio-demographic characteristics of patients who underwent a trial of labour at the IHS hospital in Dakar between January 1st and December 31st, 2020 (N=101).

Patient characteristics	Number (n)	Frequency (%)
Age (years)		
Less than or equal to 20	37	36.6
21 to 30	49	48.5
31 to 39	15	14.9
Marital status		
Bride	95	94
Single	3	3
Not specified	3	3
Parity		
Nulliparous	13	12.9
Primiparous	74	73.3
Pauciparous	11	10.9
Multipara	3	3
Number of living children		
0	16	15.8
1	74	73.3
2	8	7.9
Greater than or equal to 3	3	3
Residence		
Outside the Southern District	92	91.1
Southern District	7	6.9
Not specified	2	2

Prenatal Monitoring Data

The mean number of PNCs was 3.6±0.9 PNCs with extremes of 0 and 6. Nine patients out of ten (90%) had performed at least 3 PNCs. Fourteen patients (13.9%) had presented pathologies during their pregnancies. Arterial hypertension, term overrun and anemia were the most frequent with respective rates of 5.9%, 4% and 2% (Table 2).

Clinical and Paraclinical Data on Admission

In our series, most patients (62.4%) were admitted to the ward through medical evacuation. Almost all of the patients (97%) were carriers of a full-term pregnancy. Exceeding the term accounted for only 3% of cases. The vaginal examination found an applied presentation in more than half of the patients (53.7%). Movable and fixed presentations accounted for 37.3% and 9% of cases respectively. The membranes were intact in most patients (76.2%). Amniotic fluid was clear in all patients who presented with premature rupture of membranes. The data of the introducer palpation were not specified in the majority of patients (83.2%). It had only been carried out in 17 of them (16.8%). Of these, 10.9% had a dubious introducer palpation (Table 3). Most patients had a borderline pelvis (73.3%), transversely narrowed pelvises represented only 26.7% of cases.

Scanopelvimetry was only performed in 2 patients (1.9%). One had a transversely narrowed pelvis and the other a borderline pelvis. The ultrasound evaluation of the biparietal diameter had not been specified in the files. The Magnin diagram had not been used in any patient.

Birth Data

More than half of the patients (65.3%) had given birth by caesarean section and 34.7% of them vaginally, including 4% with a vacuum extractor (Figure 1). Indications for caesarean section were dominated by dynamic dystocia and lack of engagement with respective rates of 83% and 17%.

The average fetal weight was 3039 grams with extremes of 2000 and 4000 grams. In our series, the mean Apgar score at the first minute was 7.5 with extremes of 4 and 9. The mean Apgar score at the fifth minute was 9 with extremes of 6 and 10 (Figure 2).

Table 2: Data from the prenatal follow-up of patients who underwent a trial of labour at the IHS hospital in Dakar between January 1st and December 31st, 2020 (N=101).

Prenatal monitoring data	Number (n)	Frequency (%)
Number of prenatal consultations		
Any	3	3
1	2	2
2	5	5
3 and more	91	90
Pathologies encountered		
Any	87	86.1
hypertension / Preeclampsia	6	5.9
Gestational Diabetes	1	1
Anemia	2	2
Premature rupture of membranes	1	1
Term overrun	4	4

Table3: Results of the introductory palpation in patients who have undergone a test at the IHS hospital in Dakar between January 1st and December 31st 2020 (N=101).

Results of the introducer palpate	Number (n)	Frequency (%)
Doubtful	11	10.9
Favourable	6	5.9
Not specified	84	83.2
Total	**101**	**100**

Neonatal Prognosis

In our series, 12 new-borns (11.9%) had benefited from neonatal resuscitation and eleven of them (10.8%) had benefited from a transfer to a neonatology unit. These were cases of non-reassuring fetal status occurring during the expulsive phase. Their evolution was favourable in all cases.

An early neonatal death had been recorded, i.e., a rate of 1%. The latter corresponded to acute fetal distress in the expulsive phase in whom childbirth had been terminated by instrumental extraction with the application of a suction cup.

Maternal Prognosis

No maternal complication was recorded in our series.

Analytical Results

Result of the trial of labour according to the mode of admission: In our series, the prevalence of failed trial of labour was 65.1% in patients admitted by medical evacuation and 75% in those who came on their own. However, this difference was not statistically significant (p=0.685) (Table 4).

Result of the trial of labour according to parity: Failure of the trial of labour was more frequent in nulliparous (76.9%) compared to primiparous (64.9%), pauciparous (72.7%) and multiparous (null) with no statistically significant difference (p= 0.082) (Table 5).

Outcome of the trial of labour according to the type of abnormality of the pelvis: Failure of the trial of labour was more

Table 4: Outcome of trial of labour and mode of admission to IHS hospital in 2020 (N=101).

Mode of admission	Result of the trial of work					
	Failure		Success			
	N	%	N	%	Total	p-value
Evacuation	41	65.1	22	34.9	63	0.685
Come by itself	3	75	1	25	4	
Unspecified	22	64.7	12	35.3	34	
Total	**66**		**35**		**101**	

Table 5: Outcome of the trial of labour and parity at the IHS hospital in 2020 (N=101).

Parity	Result of the trial of work					
	Failure		Success			
	N	%	N	%	Total	p-value
Nulliparous	10	76.9	3	23.1	13	0.082
Primiparous	48	64.9	26	35.1	74	
Pauciparous	8	72.7	3	27.3	11	
Multipara		-	3	100	3	
Total	**66**		**35**		**101**	

Table 6: Outcome of trial of labour and type of pelvic anomaly at IHS hospital in 2020 (N=101).

Basin type	Result of the trial of work					
	Failure		Success			
	N	%	N	%	Total	p-value
Transversely narrowed pelvis	7	25.9	20	74.1	27	0.392
Moderated narrowed pelvis	59	79.7	15	20.3	74	
Total	**66**		**35**		**101**	

Table 7: Outcome of the trial of labour and results of the introducer palpation at the IHS hospital in 2020 (N=101).

Palpate introducer	Result of the trial of work					
	Failure		Success			
	N	%	N	%	Total	P-value
Doubtful	10	90.9	1	9	11	0.013
Positive	2	33.3	4	66.7	6	
Unspecified	54	64.3	30	35.7	84	
Total	**66**		**35**		101	

frequent in patients with a borderline pelvis (79.7%) compared to those with a transversely narrowed pelvis (25.9%) without any statistically significant difference (p=0.392) (Table 6).

Outcome of the trial of labour according to the data of the introducer palpate: In our series, the failure of the trial of labour was more frequent for patients in whom the introducer palpate was doubtful (90.9%) compared to those in whom it was positive (33.3%) with a statistical difference significant (p= 0.013) (Table 7).

Discussion

Epidemiology

Frequency: During the study period, we collected 101 birth records in a moderately narrowed pelvis, representing a frequency of 4.6% of all births. This frequency is lower than that found in the literature, particularly in the Cissé series which reported a rate of 5.3% [2]. It would certainly be underestimated if we know that osseous dystocia represented 12.6% of childbirths in Dakar in 2004 [2]. Indeed, in Senegal, only 65% of births are medicalized, which explains why some parturients can do their job and give birth at home without special assistance. Also, the small size of our study sample could also be an explanation. Thus, we should expect more trials of labour in our practice, which justifies the need for a good assessment of the prognosis of childbirth at the last prenatal follow-up visit and awareness of pregnant women for childbirth in hospital environment.

Epidemiological Profile of Patients

The profile of our patients was that of a primiparous (73.3%) young person aged on average 24 years, married (96.9%), having benefited from at least 3 prenatal consultations (90%) and carrier of term pregnancy (97%). This profile is comparable to that found in the Cissé study [2]. Indeed, in this series, primiparous were in the majority with an average age of 24 years and the average gestational age was 38 SA with extremes of 37 and 41 SA.

Clinical Data at Admission

Origin and mode of admission of patients: The majority of our patients were followed outside the Southern District (91.1%). We recorded an evacuation rate of 94%. This shows that our structure is a reference center in the South District and takes care, beyond its area of responsibility, of obstetric emergencies from other health structures in Dakar. This gives an idea of our workload, especially emergency activity. However, the high frequency of evacuation in parturients with a narrowed pelvis shows that there are still shortcomings concerning prenatal follow-up. Indeed, the latter should in principle be the subject of a referral to surgical maternities at the end of pregnancy.

Basin Pre-Assessment

The evaluation of the capacity of the pelvis was carried out by clinical pelvimetry and by scanopelvimetry. In our study, we mainly encountered two types of moderately constricted pelvis: symmetrical or “limit” (63.4%) and transversely constricted (36.6%). These two types of pelvic anomalies are by far the most frequent in the literature [3]. In the Cissé series, the same observation was made with rates superimposable on ours [2]. This situation is probably favoured by the tendency to a verticalization of the upper strait in the black African woman because of her natural arch [2-4]. For moderately narrowed pelvises, we cannot identify a risk profile, because they are most often patients with no particular history with a morphotype superimposable on that of the general population [2]. This observation justifies the need to carry out a meticulous examination of the pelvis at the last prenatal consultation or, failing that, upon admission to the labour room. Like the results of Cissé and those of other authors [2,5], we can say that clinical pelvimetry is efficient not only to assess the degree of permeability of the pelvis, but also to approach as closely as possible the type of existing anomaly. In our context of exercise, which is characterized by the weakness of the means, the indications of the scanopelvimetry must be more selective and limited to the case where the clinical examination of the pelvis is doubtful. This justifies the limited number of scanopelvimetry performed in our series.

Assessment of Prognostic Factors

The predictive factors for the success of the trial of labour found in our study are identical to those found in the literature [6,7]. In our series, the introducer palpate was performed in 17 parturients (16.8%) and it was positive in 5.9% of cases. These rates are much lower than those found in the literature. Indeed, in Cissé's series, introductory palpation was systematic in all patients after rupture of the membranes and was positive in 82.5% of cases [2]. This low prevalence of the introducer palpation noted in our series could be due to a lack of notification in the files or the absence of achievement. This last hypothesis would constitute a limit in the implementation of the trial of labour because the introductory palpation is a fundamental element which makes it possible to assess the cephalo-pelvic confrontation and to make a good selection of candidates for the trial of labour. Also, the Magnin diagram had not been used in any of our patients. It is the same in the study of Cissé [2] which recommends using the data of the cephalo -pelvic confrontation to the detriment of the indices and diagrams proposed by certain authors because the standards having been used for their confections are not relevant to the black populations.

Birth Data

Mode of Childbirth

- In our series, the trial of labour ended in vaginal childbirth in 34.7% of cases. Our caesarean section rate, which was 65.3%, is much higher than those noted in the literature, in particular by Cissé, who had found a rate of 26.4% [2]. Several explanations could be given: The large proportion of evacuees in our study, most often at an advanced stage of labour with early anomalies that required cesarean section,

- The preliminary evaluation of the prognostic factors which was incomplete with especially the absence of achievement of the palpating introducer which would have made it possible to select the good cases,

- And the indications for caesarean section which were dominated by dynamic dystocia (83%) in particular cases of hypokinesia and stationary dilation which do not always require a caesarean section but which, in the absence of mechanical impingement, could be corrected by oxytocin infusion.

Factors Influencing the Outcome of the Trial of Labour

In our series, the failure of the trial of labour was more frequent when the introducer palpation was doubtful (90.9%) than when it was positive (33.3%) with a statistically significant difference (p=0.013). In gross analysis, a dubious introducer palpate would statistically significantly increase the risk of failure

to the trial of labour. This same observation had been made by Cissé [2]. Indeed in his series, the trial of labour resulted in success in 8 out of 10 patients when the introducer palpate was positive [2].

The prevalence of failed trial of labour was 76.9% in nulliparous, 64.9% in primiparous, 72.7% in pauciparous and null in multiparous. However, there was no statistically significant relationship between risk of trial of labour failure and parity (p=0.082). The same was true for the mode of admission (p=0.685). This could be justified by our small sample size but also by the lack of systematic evaluation of the predictors of success in the trial of work. Also, the failure of the trial of labour was more frequent in patients with a borderline pelvis (79.5%) compared to those who had a transversely narrowed pelvis (68.7%) without having a statistically significant difference between the two groups (p=0.392).

Maternal and Fetal Prognosis

In our series, the perinatal prognosis was favourable in most cases (88.1%). Only 11.9% of new-borns had benefited from neonatal resuscitation. In Cissé's series, postnatal mortality in new-borns after a trial of labour was superimposed on that recorded in controls and linked to neonatal suffering almost always correlated with a lack of commitment [2]. This justifies a good evaluation at the start of the different levels of the pelvis and a good cephalo-pelvic confrontation to establish good indications for the trial of labour. Also, throughout the event, close monitoring must be instituted to detect probable complications early. A consensus exists on the need to judge the results of the trial of labour after a delay of 2 to 3 hours [2,7].

Maternal mortality was null in our series. Cissé [2] recorded the same result in his study. We also found no maternal complications.

Conclusion

Childbirths on a moderately narrowed pelvis are relatively frequent in our practice. They are associated with a good maternal and perinatal prognosis. However, this could be improved by a good selection of cases for the trial of labour and a referral before the onset of labour to a surgical maternity unit where the childbirth is to take place.

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