

Profile of Women Giving Birth with a Scarred Uterus at the Brazzaville University Hospital Center (Republic of Congo)

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Abstract: *Objective.* Analyze the profile of women giving birth with a scarred uterus at the University Hospital Center of Brazzaville. *Patients and Method.* Monocentric case-control study conducted from June 1 to December 31, 2021, at the University Hospital Center of Brazzaville, comparing 88 women in labor with a single-scar cesarean uterus and 176 women in labor with a healthy non-myomatous uterus. The variables studied concerned the prepartum and peripartum periods. The p-value of the probability was considered significant for a value less than 0.05. *Results.* The women who gave birth with a scarred uterus were older (31 vs 28 years old; $p < 0.05$); paucigest (OR=2.7[1.5-4.8]; $p < 0.05$); not referred (OR=1.7[1.01-2.9]; $p < 0.05$); followed in private clinics (OR=1.8 [1.01-3.4]; $p < 0.05$); by obstetricians (OR=1.7[1.02-3.04]; $p < 0.05$). They benefited the most from the prognosis of childbirth (OR=2.9[1.5-5.5]; $p < 0.05$) and carried out the preoperative assessment (OR=3.9[1.4-11.2]; $p < 0.05$) and the pre-anaesthetic consultation (OR=32.8 [4.2-255.2]; $p < 0.05$). Caesarean section was the preferred delivery route (OR=1.9[1.1-3.2]; $p < 0.05$) and prophylactically (15.6% vs 1.6%; $p < 0.05$). The maternal prognosis was not influenced by the presence of the uterine scar. *Conclusion.* The profile of the mother with a scarred uterus differs from that of mothers with a healthy uterus. Prenatal contacts refocused on the scar, the prognosis of childbirth and the monitoring of labor are necessary to improve maternal prognosis.

Keywords: Scarred Uterus, Epidemiology, Childbirth, Prognosis

1. Introduction

The uterus is said to be scarred when it has one or more anterior myometrial lesions in any part of the body or isthmus [1]. The uterine scar increases the risk of maternal morbidity and increases the probability of a repeat cesarean by 8 to 10; hence Cragin's aphorism "once a cesarean, forever a cesarean", which is however called into question by certain authors [2, 3]. The occurrence of a pregnancy in the context of a uterine scar represents a very high-risk situation due to the risk of uterine rupture, therefore requiring rigorous monitoring focused on the analysis of the scar. Also,

childbirth in the event of a scarred uterus is of great concern to the obstetrician, requiring prior maternal-fetal evaluation and the establishment of the obstetric prognosis. Furthermore, the memory of a pregnancy with an unfavorable outcome can represent a disabling psychological situation through which the anxiety experienced would only stop after a favorable outcome of the birth. This would influence the behavior of pregnant women whose awareness would contribute to better monitoring and a favorable outcome. As a result, the profile of pregnant women with a scarred uterus attending our various maternity wards would be different from that of pregnant women with a healthy uterus, given the morbidity

associated with the scar. In Congo, in the same department, the most recent study focusing on scarred uterus concerned the predictive factors of outcome and prognosis, comparing vaginal births and those by cesarean section [4]. The present study, which compared those who gave birth with a scarred uterus and those who did not, set itself the objective of analyzing the profile of those who gave birth with a scarred uterus at the University Hospital Center (CHU) of Brazzaville.

2. Patients and Method

This was a Case – Control study, carried out from June 1 to December 31, 2021, in the Gynecology – Obstetrics department of the University Hospital Center (CHU) of Brazzaville, comparing 88 women giving birth with unicatricul uteri from cesarean section (Cases) and 176 women giving birth with a healthy non-myomatous uterus (Controls). The Cases were selected exhaustively while the Controls were the subject of a simple random selection without replacement. Were included for both groups, women whose pregnancy term was between 22 and 41 weeks of amenorrhea (SA) according to the date of the last period or early ultrasound and/or whose birth weight of the newborns born was at least 500g when chronological age was not

known. The variables studied concerned the prepartum (sociodemographic, reproductive, linked to pregnancy monitoring) and peripartum (maternal, fetal, adnexal, delivery modalities, after childbirth and/or surgery, maternal outcome) periods.

CsPro software version 7.7 was used for statistical analysis. The multivariate analysis consisted of relating the variable of interest (scarred uterus) with all the other explanatory variables. To study the form of the association between the variable of interest and the explanatory variables, the Odds ratio (OR) with its 95% confidence interval (CI) not containing the number "1", was estimated at significance threshold set at 5%. The variable of interest being binary, logistic regression was carried out to eliminate so-called confounding factors. Given the multi-collinearity between the explanatory variables, all clinically relevant variables with a p-value less than or equal to 20% were included in the logistic regression.

3. Results

Those who gave birth with a scarred uterus were older, educated and consulted themselves. They had fewer carried pregnancies (Table 1) and were twice as likely to be followed privately by obstetrician-gynecologists.

Table 1. Sociodemographic and reproductive characteristics of women who have given birth.

	Cases (N=88)		Controls (N=176)		OR	CI (95%)		p
	n	%	n	%				
Median age (years) (q1-q3)	31 (26-35.5)		28 (23-34)		-	-	-	0.003
Place of residence								0.04
Urban area	86	97.7	176	100	-	-	-	-
Educational level								
None	6	6.8	6	3.4	-	-	-	0.5
Primary	7	8.0	6	3.4	-	-	-	0.3
Secondary	36	40.9	105	59.7	1.9	1.1	3.3	0.02
Superior*	39	44.3	59	33.5	-	-	-	-
Without gainful activity	40	45.5	104	59.1	1.7	1.03	2.9	0.03
Marital status								0.1
Bachelor	2	2.3	12	6.8	-	-	-	-
In a relationship with	86	97.7	164	93.2	-	-	-	-
Socio-economic level								1
Down	62	70.5	135	76.7	-	-	-	-
Average	25	28.4	41	23.3	-	-	-	-
High*	1	1.1	0	0	-	-	-	-
Not referred	49	55.6	120	68.2	1.7	1.01	2.9	0.04
Gesture								0.001
Primigest	0	0.0	44	25	-	-	-	0.001
Paucigest	39	44.3	30	17	2.7	1.51	4.87	0.001
Multigesture*	49	55.7	102	58	-	-	-	-
Parity								0.1
Primiparous	43	48.9	102	58	-	-	-	-
Pauciparous	30	34.1	39	22.2	-	-	-	-
Multiparous*	15	17.0	35	19.9	-	-	-	-

*Reference variable

They carried out the preoperative assessment and the preanesthetic consultation the most. Compared to those who gave birth with a healthy uterus, the prognosis of delivery for those who gave birth with a scarred uterus from cesarean section was three times more likely to be achieved (Table 2).

Table 2. Characteristics related to pregnancy monitoring of those who have given birth.

	Cases (N=88)		Controls (N=176)		OR	CI (95%)		p
	n	%	n	%				
Prenatal contacts (PNC)	80	90.9	156	88.6	-	-	-	0.5
Number of contacts								0.6
0	8	9.1	20	11.4	-	-	-	-
1-7	77	87.5	145	82.4	-	-	-	-
8-10*	3	3.4	11	6.3	-	-	-	-
Location of prenatal contacts								
Private clinic	33	41.3	49	31.4	1.8	1.01	3.4	0.04
Integrated health center (IHC)	17	21.3	24	15.4	-	-	-	0.1
Hospital*	30	37.5	83	53.2	-	-	-	-
PNC provider					1.7	1.02	3.0	0.04
Obstetrician	38	47.5	53	34.0	-	-	-	-
Midwife	42	52.5	103	66.0	-	-	-	-
Term of 1st PNC (WA) ¹								
8-11	2	5.6	4	4.5	-	-	-	0.7
12-15 *	15	41.7	37	41.6	-	-	-	-
16-22	19	52.8	48	53.9	-	-	-	0.9
Comorbidity ²	21	23.9	34	19.3	-	-	-	0.3
Pre-operative assessment	11	13.8	6	3.8	3.9	1.4	11.2	0.009
Pre-anesthetic consultation	66	82.5	155	99.4	32.8	4.2	255.2	0.001
Childbirth prognosis	56	70	136	87.2	2.9	1.5	5.5	0.002

*Reference variable

¹Week of amenorrhea (WA)²Comorbidities: arterial hypertension (17.5% vs 12.2%; p<0.2); HIV infection (0% vs 2.6%; p<1); sickle cell disease (5% vs 0.6%; p<0.06); diabetes (5% vs 9%; p<0.2)

Except for the increased risk of stillbirth noted in Cases, no statistical difference was noted in terms of clinical characteristics (Table 3).

Although the difference was not statistically significant, labor was spontaneous in almost all cases in cases of scarred uterus. Cesarean section has been the dominant method of

delivery in cases of scarred uterus. It was most often performed as a prophylaxis (15.6% vs 1.6%; p< 0.0001) than as an emergency (84.4% vs 98.4%; p< 0.6). Indications for cesarean section were dominated by safety cesarean section (21.4%), arterial hypertension and its complications (14.3%), pelvic anomalies (14.3%) and cervical dystocia (14. 2%).

Table 3. Characteristics related to childbirth.

	Cases (N=88)		Controls (N=176)		OR	CI (95%)		p
	n	%	n	%				
Median term (WA) ¹ (q1-q3)	38.8 (37-39.9)		38.7 (37.4-40)		-	-	-	0.1
Mode of entry into labor								0.9
Spontaneous	43	93.5	111	93.3	-	-	-	-
Induction ²	3	6.5	8	6.7	-	-	-	-
Median uterine height (cm) q1-q3	32 (31-34)		32 (31-34)		-	-	-	0.7
Presentation								0.9
Eutocic*	78	88.6	156	88.6	-	-	-	-
Dystocic	10	11.4	20	11.4	-	-	-	-
Number of fetuses								0.1
1*	86	97.7	164	93.2	-	-	-	-
2	2	2.3	12	6.8	-	-	-	-
Fetal death	10	11.4	7	4	3.09	1.1	8.4	0.02
Placental insertion								0.1
Low	7	8.0	6	3.4	-	-	-	-
Normal*	81	92.0	170	96.6	-	-	-	-
Labor of delivery								0.6
Latency phase	56	63.6	107	60.8	-	-	-	-
Active phase	19	21.6	42	23.9	-	-	-	-
Full dilation	3	3.4	20	11.4	-	-	-	-
Presentation to the vulva*	10	11.4	7	4	-	-	-	-
Condition of the membranes								0.5
Intact*	39	44.3	71	40.3	-	-	-	-
Broken	49	55.7	105	59.7	-	-	-	-
Appearance of Amniotic Fluid								0.4
Clear*	70	79.5	132	75	-	-	-	-
Tinted	18	20.5	44	25	-	-	-	-
Delivery route								

	Cases (N=88)		Controls (N=176)		OR	CI (95%)		p
	n	%	n	%				
Caesarean section	42	47.7	57	32.4	1.9	1.1	3.2	0.01
Uterine rupture	1	1.1	1	0.6				0.6

¹Weeks of amenorrhea (WA)

²In the three cases of those giving birth with a scarred uterus, delivery was induced due to intrauterine fetal death.

On the other hand, among the Controls, the indications for prophylactic cesarean section were high blood pressure and macrosomia in 33.3% of cases each.

In the postpartum period, no difference was noted between the two groups (table 4).

Table 4. Maternal prognosis.

	Cases (N=88)		Controls (N=176)		OR	CI (95%)		p
	n	%	n	%				
Postpartum and/or surgical procedures								0.3
Simple	60	6.2	110	62.5	-	-	-	-
Complicated	28	31.8	66	37.5	-	-	-	-
Becoming maternal								0.9
Alive	88	100	174	98.9	-	-	-	-
Dead	0	0	2	1.1	-	-	-	-
Inpatient stay (days)	4 (2-5)		2 (2-4)		-	-	-	0.05
Median (q1-q3)								

After logistic regression, several confounding factors were noted (Table 5). The area (AUC) thus determined through the ROC curve was estimated at 63% with a confidence interval varying between 56% and 72%, which is an accepted value for the validation of the model.

Table 5. Profile of women giving birth with a unicatrical cesarean uterus.

	Logistic regression			
	OR _b (CI [95%])	p	OR _a (CI [95%])	P
Median age of 31 years	-	0.003	-	-
Place of residence (Urban)	-	0.04	-	-
Referred	0.5 (0.3-0.9)	0.04	-	-
Educated (at least secondary level)	1.9 (1.1-3.3)	0.02	-	-
Without gainful activity	1.7 (1.03-2.9)	0.03	-	-
Paucigest	2.7 (1.5-4.8)	0.001	-	-
PNC location (private clinic)	1.8 (1.01-3.4)	0.04	-	-
PNC Provider (Obstetrician)	1.7 (1.02-3.04)	0.04	-	-
Pre-anesthetic consultation	32.8 (4.2-255.2)	0.001	33.5 (4.6-257)	0.001
Pre-operative assessment	3.9 (1.4-11.2)	0.009	4.9 (1.7-14)	0.0003
Childbirth prognosis	2.9 (1.5-5.5)	0.002	-	-
Caesarean section	1.9 (1.1-3.2)	0.01	-	-
Stillbirth	3.09 (1.1-8.4)	0.02	-	-

4. Discussion

The profile of the woman giving birth with a scarred uterus is like that observed in several African but also European series [4-13]. Regardless of the scar, the age of those giving birth in the different series is close to that found in our study. The progression of societies and cultures in Africa, which tend to become Westernized, would help to explain the increase in the age of women at first pregnancy. Indeed, the evolution of the female literacy rate in the world (58% in 1976 compared to 83% in 2020) [14], the extension of the duration of studies as well as the progression of female employment would contribute more to the choice of a primary professional project to the detriment of a family project that has long been iconic in a pronatalist African society. To this should be added the improvement in

contraceptive prevalence (from 13% in 2005 to 20% in 2012 in Congo) [15] and the spacing of births with a view to respecting the inter-birth interval imposed by childbirth, in case of scarred uterus. This would also explain the paucigestity observed in several series, both African and Western [4, 8-13]. Understanding the issues and dangers linked to the scarred uterus would explain the awareness by pregnant women who adhere best to the monitoring project and do not always wait for a referral to a health facility. On the other hand, in Europe, referral to a health center or the place designated for childbirth management is systematically made as soon as the pregnant woman approaches her 8th month of pregnancy [10, 16].

Pregnancy in the case of a scarred uterus is a high-risk situation, and the existence of a scar multiplies this risk by two or even four in certain cases [4, 6-8]. Therefore, the monitoring of pregnancies is essential, because it corresponds

to the period during which the pregnant woman learns about the risks involved and the delivery methods. The women who gave birth with a scarred uterus in our study were followed by obstetricians, and most often carried out the preoperative assessment, the preanesthetic consultation and the delivery prognosis. This observation is different from that made by Sima Olé in Gabon, which states that 24.86% of pregnancies are not monitored. When they are, a little more than half (55.12%) are followed by midwives [10]. Aubert M. in France in 2014 noted that pregnant women are rarely followed in a hospital environment at the start of their pregnancy but are often referred by their gynecologist in the last trimester of pregnancy [9]. Also, the preoperative assessment and the preanesthetic consultation are requested from pregnant women regardless of the route of delivery with a view to the possibility of an epidural [9, 16], unlike in our maternity wards, where the preoperative assessment and the preanesthetic consultation are not systematic and are only done with a view to performing a cesarean section.

The route of delivery is subject to controversy. Some authors authorize a uterine test in 27.8% of cases with a success rate varying between 45 and 92.5% [13]. In our study, women gave birth the most by cesarean section (OR = 1.9 [1.1-3.2] $p < 0.01$) and prophylactically (15.6% vs. 1.6%; $p < 0.0001$) for both maternal and obstetric indications, dominated respectively by safety cesarean section, high blood pressure and obstetric dystocia. Furthermore, Koulimaya-Gombet in Senegal showed that there is a link between the method of admission and the outcome of the work [13]. Women who come on their own are more likely to give birth by cesarean section than those referred during pregnancy, including 47.6%, or more than two-thirds, in an emergency [13]. This contrasts with the practice in the Gabonese series, which reported 48.52% of prophylactic cesarean sections in cases of scarred uterus [10]. The differences observed in the practice of childbirth in cases of scarred uterus could be explained by the admission to the birthing room of women in sometimes advanced labor, who have not benefited from a delivery prognosis beforehand. In France, in 2014, the authors reported 63.8% of women with a single-scarred uterus in spontaneous labor and 19% induced, among whom 83% had a vaginal delivery intention and only 53% gave birth through low track [9]. Induction of labor in the event of a scarred uterus is prohibited in our maternity wards except in the case of stillbirth.

Concerning the postpartum period, no statistical difference was noted between the two groups. Conversely, the review of the literature reports that short-term maternal morbidity in the event of an attempted vaginal delivery is associated with an increased risk of uterine rupture, delivery hemorrhage, blood transfusion, endometritis, and postpartum fever [17-18]. The difference in risk of death, hysterectomy, hemostasis, and deep vein thrombosis remains debated. Furthermore, in the long term, repeat cesarean sections are associated with chronic morbidity (chronic pain and adhesion) [17-18].

5. Conclusion

The profile of the woman giving birth with a unicatrical cesarean uterus is that of a paucigest, benefiting from specialized monitoring in a private clinic and a prognosis of the delivery with preoperative assessment and preanesthetic consultation. She most often gives birth by prophylactic cesarean section for both maternal and obstetrical indications, dominated by safety cesarean section, high blood pressure and obstetric dystocia. Prenatal contacts refocused on the scar, the prognosis of childbirth and the monitoring of labor during childbirth remain the necessary pillars for improving maternal prognosis.

Conflicts of Interest

All the authors do not have any possible conflicts of interest.

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