Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2025, 15(1), 202-211
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

Evaluation of the Practice of Childbirth in Cases of Antecedent Uterine Scarring at the Maternity Ward of the Community Hospital Centre in Bangui

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How to cite this paper: Matoulou-Mbala-Wa-Ngogbe, S., Koirokpi, A., Wongo, G.R.L.K., Songo-Kette, T., Gaunefet, C.E., Orongai, A., Gay, S., Ngbale, N.R. and Sépou, A. (2025) Evaluation of the Practice of Childbirth in Cases of Antecedent Uterine Scarring at the Maternity Ward of the Community Hospital Centre in Bangui. *Open Journal of Obstetrics and Gynecology*, **15**, 202-211.
https://doi.org/10.4236/ojog.2025.151017

Received: December 23, 2024
Accepted: January 28, 2025
Published: January 31, 2025

Abstract

Objective: Pregnancy in a scarred uterus is considered to be high-risk, especially during parturition. Nevertheless, the literature favours vaginal delivery as long as obstetric conditions are favourable. The aim of our study was to contribute to the improvement of delivery management for women with scar uteri at the CHU Communautaire. **Methodology:** This was a cross-sectional study conducted over an 18-month period from 01 January 2020 to 30 June 2021 on women with scar uterus who came to give birth at the CHU Communautaire maternity unit. The sample was exhaustive; any parturient with a history of scarred uterus of more than one year with a clinically normal pelvis and whose fetus was in cephalic presentation. The following were excluded from the study: pregnant women with a uterine scar of less than one year, fetuses in a non-cephalic vertex presentation, pregnant women with antecedent complicated childbirth at the previous cesarean section, large fetuses informed consent had been obtained from the pregnant women. Anomynia was respected throughout the study. **Results:** During this period, we recorded 205 parturients with a scar uterus. The incidence of delivery with a scar uterus was 9.5%. Uterine testing was attempted in 85.9% of cases, with a success rate of 75.6%. Factors predictive of a successful uterine test was: maternal age less than 35 years ($P = 0.0027$), entry into labour at the reference maternity hospital ($P < 0.001$), previous vaginal delivery ($P < 0.001$) and a single uterine scarred. We noted 7 cases of uterine rupture occurring in a scarred uterus, representing 0.3% of deliveries and 2.9%

of caesarean sections. The main factor in the occurrence of rupture was an inter-uterine interval of less than one year. Perinatal mortality accounted for 6.2% of live births. **Conclusion:** Delivery with a scarred uterus is an increasingly frequent occurrence at the Maternity Unit of the CHU Communautaire in Bangui. Uterine testing is the first option if conditions allow, but careful selection of candidates during antenatal care or at the very beginning of labour is necessary for this type of delivery.

Keywords

Scarred Uterus, Vaginal Delivery Agreement, CHU Communautaire

1. Introduction

Caesarean section rates are increasing throughout the world, with the result that scar uteri are becoming more common [1]. As a result, delivery in a scarred uterus is an increasingly common occurrence in obstetric practice today. This delivery is considered high-risk because of the high maternal-fetal morbidity and mortality caused mainly by uterine rupture [2]. The frequency of delivery in a scarred uterus varies from country to country and depends on obstetric practices. It is high when the caesarean section rate is high. In France, nearly 10% of women who give birth have a scarred uterus, whereas in the United States, the figure is around 15% [2] [3]. However, in Africa, the incidence varies from 6% to 8% during parturition [4]-[7].

Several studies emphasise that uterine testing should be the first reasonable option if obstetric conditions, technical facilities and the qualifications of maternity staff allow it [2] [4]-[7]. In the Central African Republic, epidemiological data on the prognosis of delivery with a scarred uterus dates back more than twenty years [8], so we felt that it was important to take stock of this topical subject in order to compare epidemiological data and assess the level of management.

To do this, we set ourselves the general objective of contributing to improving the management of labour in women with scar uteri at the University Community Hospital. More specifically, to

Determine the frequency of deliveries with a scarred uterus;

Assess the modalities of delivery in a scarred uterus;

Identify risk factors for uterine test failure and uterine rupture.

Patient and method: This was a descriptive and analytical cross-sectional study covering the period from 1 January 2018 to 30 June 2019 at the maternity ward of the Centre Hospitalier Universitaire Communautaire, *i.e.* a duration of 18 months. All parturients with at least one uterine scar who gave birth at the CHU Communautaire maternity unit and whose gestational age was greater than or equal to 28 weeks of amenorrhoea were included in the study. Not included were those who had given birth at home.

The variables studied were:

Sociodemographic: age, marital status and level of education;

Obstetric: gestational age, parity, intergenital space, number and type of previous scarreds, indications and postoperative follow-up of previous caesarean section, term of pregnancy, obstetric management, indications for caesarean section.

The data were entered and analysed using Epi info.7 software. The statistical tests used for comparison were the Yates Chi2 and Ficher tests. The difference was significant if $P < 0.05$. Text and tables were entered using Microsoft Office 2013 Word and Excel. From an ethical point of view, anonymity was observed throughout the survey, from data collection to analysis and processing. Informed consent had been obtained from the pregnant women. Anomynia was respected throughout the study.

2. Results

During the study period, we recorded a total of 205 cases of delivery in a scar uterus. Delivery was possible in 133 cases (64.9%), and in 72 cases (35.1%) patients underwent caesarean section. 2160 deliveries were recorded in the department during the same period. The prevalence of deliveries with a scar uterus was 9.5% of all deliveries in the department during the period of our study.

Women under the age of 35 were more heavily represented. Almost all the pregnancies were at term (Table 1).

Table 1. Breakdown of births by age group and number of uterine scars.

Available features	Number (n = 205)	Percentage
Age range		
<35 ans	113	55.1
≥35 ans	92	44.9
Gestation age		
>37 SA	12	5.8
≥37 SA	193	94.2

In the majority of cases, the uterine test has been attempted (Table 2).

Table 2. Distribution of parturients according to decisions on delivery method on admission.

Mode of delivery		Percentage
Utérine test	176	85.9
Emergency caesarean section	21	10.2
Scheduled caesarean	8	3.9
Total	205	100

Caesarean section on admission was more common in patients with at least two uterine scars. Similarly, failure of the uterine test was marked by uterine foetal distress in a third of cases (Table 3).

Table 3. Breakdown by indication of the 21 emergency caesarean sections decided on admission and the indication for caesarean sections following failures of the uterine test.

Indications for emergency cesarean section	Number (n = 64)	Percentage
Indication for caesarean section on admission (n = 21)		
Bicicatricial Uterus	9	42.8
Tricicatricial Uterus	3	14.3
Twin pregnancies	3	14.3
Severe pre-eclampsia Indication for caesarean section following failure of uterine test (n = 43)	3	14.3
Acute foetal distress	15	37.2
Pre-rupture syndrome	15	34.9
Dystocic presentations	6	14
Cervical dystocia	2	7
Other indications	2	7

The proportion of women who underwent an iterative caesarean section was higher among those aged over 35 years, with a statistically significant difference (OR = 0.39 [0.22 - 0.71]; Yates chi-square = 8.98; P = 0.0027). Similarly, those who had been evacuated from a health facility to the CHUC showed a statistically significant difference (OR = 24.38 [8.12 - 73.18]; Yates chi-square = 52.91; P < 0.001) (Table 4).

Table 4. Breakdown of deliveries according to mode of delivery and maternal age, and mode of delivery according to whether the parturient is evacuated or not.

Features	Caesarean section		Delivery by vaginal route		P
Age range	**number**	**percentage**	**number**	**percentage**	
<35 ans	29	40.3	84	27.1	<0.0027
≥35 ans	43	59.7	49	72.9	
Admission procedure					
Evacuated from a health facility	31	43.1	4	3.0	<0.001
From herself	41	56.9	129	97.0	
Total	72	1000	133	1000	

The risk of having an iterative caesarean section was higher in women with no previous history of vaginal delivery, with a statistically significant difference (OR = 8.10 [4.08 - 16.08]; Yates Chi-square = 38.94; P < 0.001) (Table 5).

Table 5. Breakdown by mode of delivery and history of vaginal delivery.

Previous vaginal deliveries	Caesarian section		Low-angle delivery		P
	number	percentage	number	percentage	
Yes	14	19.4	88	66.2	<0.001
NO	58	80.6	45	33.8	
Total	72	100	133	100	

3. Discussion

3.1. Mode of Delivery and Outcome of Uterine Test

Uterine testing was authorised in 85.9% of parturients in the study. The outcome was favourable in 75.6% of cases. As a result, 24.6% of parturients had a caesarean section after failure of the uterine test. The main indications for emergency caesarean section in women with a scar uterus were foetal distress followed by bicatric uterus in labour. The indication for scheduled caesarean sections was related to tricatrial uteri and multiple pregnancies.

The uterine test failure rate in our work is lower than that found by Dembélé *et al.* in Burkina (32.1%) [9]. On the other hand, it is similar to that of Djanhan in Abidjan (22.1%) [10]. However, we noted a success rate of attempted vaginal delivery of 75.6%. This rate is almost similar to the rate described in the literature, which ranges from 64 to 80% [2] [11]. As Miller pointed out, a judicious choice of indications for uterine testing is a guarantee of a high success rate [12]. Nevertheless, it should be noted that in some cases parturients who should have benefited from an elective caesarean section went directly into labour or were referred from an outlying health facility. This indicates a lack of communication about the indications for attempting vaginal delivery in a scarred uterus during ANC sessions. In other cases, despite having been informed, parturients preferred to go into labour before coming to hospital for fear of an iterative caesarean section.

3.2. The Uterine Test and the Mother's Age

Several authors have studied the effect of maternal age on the risk of uterine rupture and on the success rate of uterine testing [13] [14]. For these authors, it has been shown that there is a reduction in the possibility of giving birth by natural means as maternal age increases. This work shows that the proportion of women who had an iterative caesarean section was higher among those aged over 35, with a statistically significant difference (OR = 0.39 [0.22 - 0.71]; Yates Chi-square = 8.98; P = 0.0027).

It has to be said that there is not enough evidence in the literature to determine a maternal age threshold above which elective caesarean section is preferable to uterine testing in the case of delivery on a scarred uterus. However, the obstetrical future of the pregnant woman is a factor to be taken into account when informing and deciding on the mode of delivery for these patients. It would therefore be excessive to conclude that the patient's age alone is associated with the success and/or failure of the uterine test [15].

3.3. The Uterine Test and Admission Conditions

It has been established that late medical evacuations have an impact on the obstetrical prognosis of parturients [16] [17]. If we take into account the conditions for accepting a vaginal delivery in a scarred uterus that we mentioned above, namely that the uterine test can only be envisaged in a setting with an adequate technical platform. This could explain our results in relation to admission conditions. Indeed, we found that the risk of undergoing an iterative caesarean section was higher in parturients evacuated during labour, with a statistically significant difference (OR = 24.38 [8.12 - 18]; Yates Chi-square = 52.91; $P < 0.001$). These shortcomings could be related to the quality of antenatal follow-up. According to Saizonou *et al*., for good quality antenatal care, all pregnant women should receive at least 20 minutes of consultation on average for prevention, screening and early management of complications [18]-[20]. Unfortunately, it has been shown that in maternity wards in large African cities, an impressive number of pregnant women arrive for antenatal care and do not benefit from a relationship of trust between users, their relatives and healthcare staff [21]. As a result, some women with a scarred uterus are not informed of the risks they run during childbirth and do not go directly to a referral facility.

3.4. Intergenital Interval and Number of Uterine Scars

The intergenital interval and the number of previous scars are essential parameters in the decision to undergo a uterine test [22]-[24]. An intergenital interval of less than 1 year is a contraindication to vaginal delivery. Similarly, a multicatric uterus is an indication for prophylactic caesarean section [2] [24].

In our series, the majority of women had waited at least 1 year before giving birth and almost 10% of them had waited at least 5 years. It should be noted that the average fertility rate in the Central African Republic is 5.1 children per woman [25]. We can therefore understand that these women are braving the risks associated with uterine scars in order to have the number of children they want.

As for the number of uterine scars, in the majority of cases we found a single history of uterine scarring. All the causes of these scars were related to previous caesarean sections. As our study was retrospective, we were unable to obtain information on other causes of scarring of the uterus. In addition, we did not have information on the indications for previous caesarean sections in the majority of parturients with uterine scars who came to give birth.

3.5. Pregnancy Follow-Up and Mode of Admission

According to the WHO, an increase in the frequency of ANC is associated with a lower probability of morbidity or maternal complications during pregnancy. Since 2016, the WHO has recommended at least 8 contacts during the course of antenatal follow-up [26]. We found that almost one in three women with a scar uterus had not undergone at least 4 ANCs, and only 2% had been able to complete the recommended 8 contacts. These shortcomings in antenatal monitoring may be linked to a lack of awareness of the risks of pregnancy in a scarred uterus. This could explain why, in almost 20% of cases, when these women went into labour, they first went to health facilities that did not have the appropriate technical facilities to treat them, hence their referral to the CHUC.

We recorded 7 cases of uterine rupture in patients with a history of scarred uterus. During the study period, a total of 10 cases of uterine rupture were recorded in 2160 deliveries and 237 caesarean sections. The incidence of uterine rupture was 0.3% of deliveries and 2.9% of caesarean sections. The rates of uterine rupture in our series are similar to those found in the department by Ngbalé *et al.* in 2012 [27]. According to Koné *et al.*, the rate of uterine rupture in black Africa is between 0.13 and 3.3% [28]. The decrease in the frequency of uterine rupture could be due to the increase in the number of qualified staff in the referral maternity unit and in peripheral health facilities. For nearly 10 years, urban health centres have been staffed by general practitioners and midwives. The contribution of these staff is undeniable in the early diagnosis and appropriate management of obstetric emergencies or their referral to the referral centre.

3.6. Uterine Test and History of Vaginal Delivery after Previous Caesarean Section

In several studies, previous vaginal delivery after the first caesarean was a predictive factor for success of the uterine test. Conversely, the fact of not having given birth by vaginal delivery is a predictive factor of failure of this attempt [15] [28]. Our study also shows that not having previously delivered vaginally is correlated with a higher risk of undergoing an iterative caesarean section, with a statistically significant risk (OR = 8.10 [4.08 - 16.08]; Yates Chi-square = 38.94; P < 0.001). In fact, according to George *et al.*, vaginal delivery before caesarean section confirms pelvic patency, and vaginal delivery after caesarean section confirms scar strength [29]. Similarly, according to Smith, parturients with one or more previous vaginal deliveries have higher uterine test success rates than parturients who have never had a vaginal delivery [29]. However, for other authors, the increase in attempts at vaginal delivery after caesarean section increases the risk of uterine rupture by thinning the scar [10] [29].

The uterine test and the inter-birth interval. According to the literature, the risk of uterine rupture increases with a reduction in the interval between delivery by caesarean section and the date of conception of the next pregnancy [29]. In developed countries, an attempt at vaginal delivery may be authorised even in the

case of a delay of less than 6 months if obstetric conditions are favourable [29]. In our study, the risk of having an iterative caesarean section was higher among women with an inter-birth interval of less than 1 year, with a statistically significant difference (OR = 17.03 [2.08 - 139.18]; Yates Chi-square = 9.95; Fischer < 0.001). It should be noted that in the department's current practice, the threshold of the intergenital interval is set at 1 year for accepting an attempt at vaginal delivery in patients with a scarred uterus. Other factors must also be taken into account when assessing the quality of the uterine scar. These include: parity, previous placentation, indication for caesarean section, circumstances and sequelae of previous surgery, number of scars, and intercurrent events [24]. In our context, it is often difficult to obtain reliable information on these different parameters. As a result, elective caesarean section is usually proposed for patients with an inter-pregnancy interval of less than 1 year.

4. Conclusions

Giving birth in a scarred uterus is increasingly common at the Maternity Unit of the Bangui Community University Hospital. This is a high-risk delivery, mainly due to uterine rupture.

The results of our study, compared with those in the literature, allow us to confirm certain facts.

Uterine screening is a reasonable option, especially if the choice of indications is judicious, particularly during antenatal follow-up. The factors predicting the success of a uterine test are linked to the age of the parturient, the number of previous scars, the intergenital interval and the history of vaginal delivery.

The main factor contributing to the occurrence of uterine rupture in women with a scarred uterus is the shortness of the intergenital interval and the late referral of parturients from other institutions. The same applies to parturition outside the reference maternity unit.

It is therefore not necessary to limit attempts at vaginal delivery, but it is necessary to better select the parturients who are candidates for the attempt from the prenatal follow-up and to have qualified medical staff, as is the case in our department with the availability of obstetricians 24 hours a day, as well as the functionality of the operating theatre and the availability of blood products in the event of transfusion. This is an opportunity to implement good practice in targeted antenatal consultations in order to avoid harmful consequences for the parturition.

Acknowledgements

The authors would like to thank all the staff of the CHU Communautaire delivery room and the medical students who contributed to this study.

Conflicts of Interest

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

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