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Emergency C-Section on Multi-Scar Uterus: Maternal and Fetal Prognosis at the Nianankoro Fomba Hospital in Segou, Mali

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Abstract

Background: Multi-scar uterus is a uterus with two or more scars due to surgery or trauma. **Objective:** The aim was to compare the maternal and fetal prognosis of emergency C-sections of bi-scar uteruses to those of uteruses with at least 3 scars at the Nianankoro Fomba Hospital in Segou. **Materials and Methods:** It was a descriptive and analytical cross-sectional study with prospective data collection over a 24-month period from March 20, 2018, to March 20, 2020. **Results:** In 2 years, we collected 103 emergency C-sections for multi-scar uterus out of 1198 C-sections with a frequency of 8.6%. The age group of 20 to 35 years was the most represented with 86.4%. The bi-scar uteruses were the most frequent with 77.7%. In 71.8% of cases, the C-section was performed during the latent phase of labor. The C-section was performed under loco-regional anesthesia in 89.3% of cases. Difficulties in hemostasis and bladder injury were the most frequent intraoperative accidents. Surgical site infection was the main postoperative complication. No maternal deaths

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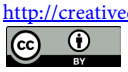

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were recorded. The perinatal prognosis was marked by 4.3% fresh stillbirths in bi-scar uterus against 3.7% in three or more scar uteruses and including 2 fresh stillbirths and 1 macerated. We did not record any early neonatal deaths after C-section. **Conclusion:** The frequency of emergency C-sections in patients with a multi-scar uterus remains very high in our hospital. A better awareness of the patients, their spouses and all the actors involved in the management of pregnancies and childbirth, can contribute to curb this trend.

Keywords

C-Section, Prognosis, Segou, Multi-Scar Uterus, Emergency

1. Introduction

The last decades have been marked by a rapid increase in the rate of C-section in most countries [1]. The rates of multi-scar uteruses reported in the literature are 52.2% in France, 24% in Netherland, 27.2% in the United States [2]. In Africa, this frequency is 20.40% in Mali, 16.6% in Cameroon and 20.40 in Senegal [1] [2] [3]. Pregnancy in these multi-scar uteruses carries an increased risk of maternal and perinatal morbidity and mortality. In most countries, delivery in these multi-scar uteruses is done by C-section and usually it is scheduled C-section before the onset of labor. In our daily practice, many patients who should benefit from a prophylactic C-section come into our delivery rooms in labor. Thus, we conducted this study to investigate the maternal and fetal prognosis of emergency C-section on these multi-scar uteruses.

2. Materials and Methods

This was a descriptive and analytical cross-sectional study with prospective data collection carried out from March 20, 2018 to March 20, 2020 in the obstetrics-gynecology department of Nianankoro Fomba Hospital in Segou. The aim was to compare the maternal and fetal prognosis of emergency C-sections of bi-scar uteruses to those of uteruses with at least three scars. Any patient on whom a C-section was performed in emergency for multi-scar uterus with an estimated gestational age of at least 28 weeks of amenorrhea (WA) was included in this study. The study consisted of dividing the parturients into 2 groups according to the number of uterine scars. Group I was composed of parturients with bi-scar uterus and group II included those with three or more uterine scars. Parturients with uni-scar uteri and pregnant women with multi-scar uteruses who had undergone a prophylactic C-section before the onset of labor were not included. The statistical test used was the odds ratio with a significance level set at 5%.

3. Results

In 2 years, out of 1198 C-sections, we collected 103 emergency C-sections for multi-scar uteruses with a frequency of 8.6%. Among these 103 cesareans, 80

(77.7%) had a bi-scar uterus (group I) and 23 (22.3%) had at least three uterine scars (group II). During the same period, 15.3% of scheduled C-sections for multi-scar uteri were performed.

The mean age was 27 years with extremes of 18 and 45 years. The 20 - 35 age group was the most represented in both groups (86.4%). They were housewives (87.3%), married (100%), not in school (65%), living in rural areas 53.4% versus 46.6% in urban areas (City of Segou). Pauciparous represented 61.2% of bi-scar uteruses; multiparous (26%) and large multiparous (69.6%) were more frequent in group II. Parturients had received prenatal consultations in 83.5% of cases, among them 91.3% in group I and 81.3% in group II, compared with 16.5% who did not (Table 1). These consultations were carried out in 48.6% of cases by healthcare providers who were not appropriate to monitor these high-risk pregnancies, including 33% by a midwife, 4% by an obstetric nurse and 11.6% by a matron/caregiver. In our study, 35% of parturients were referred while 65% came on their own. Of these, 20.4% came by medical transport, 46.6% by cab, 15.5% by personal vehicle and 17.5% by motorcycle. Gestational age was between 37 - 41 WA in 86.4% of cases and 71.8% of parturients were admitted in the latent

Table 1. Socio-demographic and clinical characteristics.

Socio-demographic	Group I (n = 23)		Group II (n = 80)		Total (n = 103)	
	n	(%)	n	(%)	n	(%)
Age (year)						
≤19	0	0	2	2.5	2	1.9
20 - 35	19	82.6	70	87.5	89	86.4
>35	4	17.4	8	10	12	11.7
Profession						
Housewives	22	95.7	68	85	90	87.3
Shopkeeper	1	4.3	4	5	5	4.9
Public servant	0	0	5	6.2	5	4.9
Seamstress	0	0	3	3.8	3	2.9
Level of education						
Higher	0	0	3	3.7	3	2.9
Secondary	1	4.3	7	8.7	8	7.8
Primary	7	30.4	18	22.5	25	24.2
No	15	65.2	52	65	67	65
Parity						
Large multiparous	6	26	3	3.7	9	8.7
Multiparous	16	69.6	28	35	44	42.7
Pauciparous	1	4.3	49	61.2	50	48.5
Prenatal consultations						
Yes	21	91.3	65	81.3	86	83.5
No	2	8.7	15	18.7	17	16.5

phase of labor against 28.2% in the active phase.

The C-section was performed under loco-regional anesthesia in 89.3% to 10.7% of general anesthesia. The hysterotomy was segmental in 81.5%, segmental-corporeal in 12.5% and corporal in 5.8% of cases. Contraception by tubal ligation and resection was performed in 11.7% of the patients, 58% in group I against 42% in group II. Intraoperative complications were dominated by hemostasis difficulties (8.7%) and bladder lesions (8.7%) in group II against 1.3% of hemostasis difficulties in group I (Table 2). The average duration of the C-section in our study was 27 minutes with extremes of 10 and 60 minutes in both groups. Intraoperative complications were dominated by hemostasis difficulties (8.7%) and bladder lesions (8.7%) in group II versus 1.3% of hemostasis difficulties in group I (Table 2). Postoperative complications in group II were marked by surgical site infections (17.4%) and anemia (4.3%). In Group I, surgical site infections accounted for 5%. No maternal deaths or uterine disunion were recorded. The perinatal prognosis was marked by 21.7% neonatal distress, 4.3% fresh stillbirths in group I to 26.2% neonatal distress, 3.75% stillbirths in group II of which one macerated and two fresh stillbirths (Table 3). No early

Table 2. Distribution according to maternal complications.

Maternal complications		Group I		Group II		Total		OR	CI	P
		n	%	n	%	n	%			
Intraoperative	Hemorrhage	2	8.7	1	1.3	3	2.9	8.3	[0.7 - 96.6]	0.1
	Bladder injury	2	8.7	0	0	2	1.9	-	-	-
	No	19	82.6	79	90.7	98	95.1	Ref	-	-
	Total	**23**	**100**	**80**	**100**	**103**	**100**		-	-
Postoperative	Anemia	1	4.3	0	0	1	1	-	-	-
	Surgical site infection	4	17.4	4	5	8	7.8		[0.5 - 32.02]	0,2
	No	18	78.3	76	95	94	91.2	Ref		
	Total	**23**	**100**	**80**	**100**	**103**	**100**			

Table 3. Distribution of newborns according to perinatal complications.

Condition of the newborn	Group I n (%)		Group II n (%)		Total n (%)		OR [CI]	P
Stillborn macerated	0	0	1	1.2	1	1	-	0.7
Fresh stillbirth	1	4.3	2	2.5	3	2.9	1.6 [0.1 - 18.7]	0.6
Neonatal distress	5	21.7	21	26.2	26	25.2	0.7 [0.2 - 2.3]	0.4
Prematurity	2	8.7	8	10	10	9.7	0.8 [0.1 - 4.1]	0.5
Hypotrophy	0	0	2	2.5	2	1.9	-	0.6
Macrosomia	1	4.3	2	2.5	3	2.9	1.6 [0.1 - 18.7]	0.6
Healthy newborn	14	60.9	44	55	58	56.3	Reference	
Total	23	100	80	100	103	100		

neonatal deaths were recorded. The stillbirths were from referred parturients in whom fetal heart sounds were absent on admission.

4. Discussion

1) Frequency of multi-scar uteruses

In 2 years, out of 1,198 C-sections, we collected 103 emergency C-sections for multi-scar uteruses with a frequency of 8.6%. Among these 103 C-sections, 80 (77.7%) had a bi-scar uterus (group I) and 23 (22.3%) had at least three uterine scars (group II). We contrasted our frequency with that of other studies such as:

Those of Mali [1] and Burkina-Faso [4] reported lower frequencies than ours with respectively 3.70%; 8% of bi-scar uterus and 2% of tri-scar uterus in labor.

In Cameroon [5], the frequency of bi-scar uterus in labor was 1.8% while that of tri-scar uterus was 16.6%**.** In the study of Yassine I in Morocco [6], parturients with two, three and four-scarred uteruses represented 12.7%, 2.2% and 0.5% respectively.

Unlike most developing countries where obstetric rules do not allow testing of the multi-scar uterus; the Collège National des Gynécologues et Obstétriciens de France of 2012 (CNGOF) stated "that a woman with a bi-scar uterus may be allowed to attempt a trial of labor. The choice between attempted vaginal delivery and C-section is made on a case-by-case basis." Thus, a study in France reported 96 uterine tests out of 180 (52.2%) cases of bi-scar uteri. In the USA it was carried out in 1082 bi-scar uteruses out of 3970 cases (27.2%) [2].

Our difference with these developed countries can be accounted for by the quality of their technical facilities, which permits them to perform uterine tests on a bi-scar uterus if obstetrical conditions are favorable, unlike most developing countries where vaginal delivery is not indicated. In our case, it was not a matter of uterine tests but rather of pregnant women admitted in labor either due to lack of knowledge, lack of prenatal follow-up or late recourse to quality care.

2) Socio-demographic characteristics of patients

The mean age was 27 years with extremes of 18 and 45 years. The age group 20 - 35 years was the most represented in both groups (86.4%).

The frequency of this age group is due to the fact that it corresponds to the optimal age for fertility. The same age group of 20 - 35 years was the most concerned in the study of Valère M K *et al.* [5] in Cameroon with 72.3% of cases (extremes of 19 and 42 years) and of Traoré S. *et al.* [7] in Mali with 87.1%.

They were housewives (87.3%), married (100%), not in school (65%), living in rural areas 53.4% to 46.6% in urban areas (city of Segou). These socio-economic conditions, which are due to the low school enrollment rate for girls in Mali (24%), but also to early marriage [8], constitute an obstacle to access to quality prenatal consultations that allow for the detection of women with multi-scar uteri so that they can benefit from scheduled C-sections.

Pauciparous accounted for 61.2% of bi-scar uteruses. Multiparous (26%) and large multiparous (69.6%) were more frequent in group II. In contrast to the

study of Tété E.D.M. [9] in Senegal, pauciparous were the most represented with 80% of cases. The frequency of multiparous and large multiparous in group II in our series is explained by: delivery by C-section on multi-scar uteruses in most countries, the high fertility rate in Mali with an average of 6.1 children per woman, due also to the unmet need for family planning in 26% of women in union between 15 - 49 years of age and the precocity of sexual activity with (39%) of women beginning their reproductive life in adolescence [8].

The parturients had received prenatal consultations in 83.5% of cases, 91.3% in group I and 81.3% in group II, compared to 16.5% who were not followed up (**Table 1**). These consultations were performed in 48.6% of cases by healthcare providers who were not the right persons to monitor these high-risk pregnancies, including 33% by a midwife, 4% by an obstetric nurse and 11.6% by a matron/caregiver. This could be related to the illiteracy of the pregnant women, their low economic income (87.3% of them were housewives with no source of income), the poor distribution of qualified health personnel and a poor assessment of the risks associated with these pregnancies by these health providers. Like our study, in Dakar, Senegal [9], scar uteruses were mostly followed by inappropriate personnel, with nearly 2/3 of the cases followed by midwives. In the series by Yassine I [6] in Morocco, scar uteruses were consulted only after the onset of labor in 83.4% of cases.

These results show that more needs to be done to raise awareness for more efficient prenatal monitoring and strict compliance with reproductive health standards and procedures.

3) Admission

In our study, 35% of parturients were referred while 65% came on their own. Of these, 20.4% came by medical transport, 46.6% by cab, 15.5% by personal vehicle and 17.5% by motorcycle. These referrals were made by health facilities that are not suitable for the management of multi-scar uteruses in labor. This rate of referrals was due either to unattended pregnancies received in these health centers at the time of uterine contractions or to the quality of the ANC that did not allow for the timely detection of the multi-scar uterus. For those who came on their own, their attitude could be explained either by the fact that they were informed of their route of delivery, or by the fact that they were deliberately referred without a chart by health workers who were aware of course that they were not the most appropriate persons to follow up these high-risk pregnancies.

The same trend was reported by Diouf A.A. *et al.* [3] in Senegal with 54.2% of scar uteruses evacuated in labor, 55.8% of which came from non-surgical health facilities where they were monitored in 70% of cases, but the referral was not made in time, let alone in the desirable conditions in 60.3% of cases. This really shows the lack of organization of the perinatal network in our health districts.

The use of non-medicalized means of transport by our parturients was explained by the poor organization of referral/evacuation, the cost of which is

borne by the family, so that the means of transport are most often used to get to the health care facilities.

Gestational age was between 37 and 41 WA in 86.4% of cases and 71.8% of parturients were admitted in the latent phase of labor versus 28.2% in the active phase. In the Algerian [10] and Moroccan [6] series, pregnancies presumed to be at term were also in the majority with 77% and 92% of cases respectively.

The same predominance of the latent phase has also been reported in Morocco with respectively: 61.4% and 46.42% of parturients against 39.58% and 20.2% in the active phase [6] [11].

4) Therapeutic aspects

The C-section was performed under loco-regional anesthesia in 89.3% to 10.7% of general anesthesia. The hysterotomy was segmental in 81.5%, segmental-corporeal in 12.5% and corporal in 5.8% of cases. Contraception by tubal ligation and resection was performed in 11.7% of the patients, among them 58% in group I to 42% in group II. The use of loco-regional anesthesia in our study was explained by the choice of the practitioners because of its advantages, as for corporal hysterotomy, corporal segmental and tubal resection ligation, they were linked to the adhesions that made the lower segment inaccessible. Bonneau and Nizard [12] found 26%, 44.8%, 54.5% adhesions in patients with a two, three and four-scarred uterus respectively.

5) Maternal prognosis

Despite the innovations in operative and anesthesiological techniques, C-section remains a surgical procedure with a risk of complications that can affect the vital prognosis of the mother. Thus, during our study, intraoperative complications were dominated by hemostasis difficulties (8.7%) and bladder lesions (8.7%) in group II versus 1.3% of difficulties of hemostasis in group I (**Table 2**). Postoperative complications in group II were marked by surgical site infections (17.4%) and anemia (4.3%). In group I, surgical site infections accounted for 5% of cases. There was no statistically significant difference between the number of uterine scars and the occurrence of complications (P = 0.1).

The average duration of the C-section in our series was 27 minutes with extremes of 10 and 60 minutes. This duration was greater than the average in 60.9% of the patients in group II versus 13.7% in group I (P = 0.0001). This difference was related to adhesions which increase with the number of scars.

The same postoperative complications were reported in lower proportions than ours by: Dao S.Z. *et al.* [13] with 1.81% of parietal suppuration, 1.44% of endometritis; Traoré S. *et al.* [6] with 1.9% of parietal suppuration and 1.3% of anemia; 2.6% of endometritis.

We did not record any maternal death or uterine disunion, but in the study of Abbassi H *et al.* [14] maternal morbidity was marked by uterine dehiscence in 16 cases (1.9%); Tété E.D.M. [9] in Senegal had found out 3% of uterine disunion, and one case of maternal death (0.34%) due to an extensive hematoma caused by an iatrogenic wound of the external iliac artery.

6) Perinatal prognosis

C-section contributes to the reduction of neonatal morbidity and mortality. During our study, the perinatal prognosis was marked by 21.7% of neonatal distress, 1 case (4.3%) of fresh stillbirths in group I to 26.2% of neonatal distress, 3 cases (3.75%) of stillbirths including one macerated stillbirth and two fresh stillbirths in group II (Table 3). We did not record any early neonatal deaths after C-section. The stillbirths were from referred parturients in whom fetal heart sounds were absent on admission. All cases of neonatal distress were resuscitated and admitted to the neonatology department. Unlike our study, Abbassi H. *et al.* [14] had not noted any case of neonatal distress or perinatal death.

5. Conclusion

The frequency of emergency C-sections in patients with a multi-scar uterus remains very high in our hospital. A better awareness of the patients, their spouses and all the actors involved in the management of pregnancies and childbirth, can contribute to curb this trend.

Conflicts of Interest

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

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