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Maternity Prognosis Cesarean Fetal in Teenage Girls over a Decade at Fousseyni Daou Hospital in Kayes (Mali)

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Abstract

Introduction: WHO considers adolescence to be the period of human growth and development between childhood and adulthood (10 to 19 years). Caesarean section is a surgical procedure that involves removing the fetus by the upper route after opening the pregnant uterus. The objective of this work was to study the maternal-fetal prognosis of caesarean section in adolescent girls over a decade at Fousseyni Daou Hospital in Kayes. **Materials and methods:** This was a cross-sectional descriptive study spanning 10 years from January 1, 2014 to December 31, 2023. This study included all adolescent girls admitted to the delivery room for delivery who had undergone a cesarean section. Confidentiality and anonymity were respected. Statistical data processing and analysis were carried out using SPSS 20.0 software. **Results:** Over a decade, out of a total of 41,825 women delivered in the department, we performed 7,160 caesareans, a frequency of 17.12%, including 1,110 among adolescents, a frequency of 15.50% compared to the total number of caesareans performed. The age group between 16 and 19 years was the majority, *i.e.* 92.98%. Housewives represented 91.35%. 54.86% of parturients who underwent caesarean surgery had between 1 and 3 CPN; 17.84% did not have prenatal follow-up. The majority

of caesareans were performed in the active phase of labor, *i.e.* 57.03%. Eclampsia is the most common indication, *i.e.* a frequency of 23.51%. Emergency caesareans accounted for 8%, and 92% were prophylactic cesareans. Intraoperative complications accounted for 8.5% of cases. The majority of our complications were septicemic, *i.e.* 50%. We recorded 22 cases of maternal death (12 eclampsia, 10 HRP), *i.e.* 1.9%. 68.3% of newborns had an Apgar score > 7. **Conclusion:** Caesarean section in adolescents has become an effective intervention to save the life of the fetus and the mother in difficult situations, which is why its frequency continues to increase.

Keywords

Caesarean Section, Teenager, Prognosis, Kayes Hospital

1. Introduction

Adolescence is defined by the World Health Organization (WHO) as the age group between 10 and 19 years. There are 1.2 billion adolescents, one-sixth of the world's population [1]. Adolescent pregnancy represents a major public health issue, both because of its implications for the physical and mental health of the young mother. According to the World Health Organization (WHO), pregnant adolescents are more likely to experience pregnancy complications such as pre-eclampsia, infections, and premature or caesarean births [2]. Caesarean section, or surgical delivery, is an intervention that is becoming increasingly common worldwide. Among adolescents, caesarean section is of particular importance, as it is often linked to increased risks due to the physical, psychological, and sometimes social immaturity of young mothers [3]. The rate of cesarean sections among teenage girls varies significantly by country. In the United States, the overall cesarean section rate among young teenage mothers can reach up to 40% [4]. In France, in 2020, the French National Authority for Health (HAS) estimated that 22% of births in France were by cesarean section, with a higher rate among teenage girls and young mothers [5]. According to the World Health Organization (WHO), although the overall cesarean section rate is often lower in Africa (around 10% on average), some urban areas are seeing an increase in this procedure in cases of high-risk teenage pregnancies [6]. In Côte d'Ivoire: A study reported that the cesarean section rate among adolescents represented approximately 10% of total cesarean sections. This rate is relatively high compared to other regions where access to care is more limited [7]. In 2018, according to WHO data, the cesarean section rate in Mali was estimated at approximately 2.5% of deliveries [8]. A study conducted at Point G Hospital in Bamako, one of the main referral hospitals for high-risk pregnancies, revealed that among young mothers aged 15 to 19, approximately 6 to 10% of deliveries required a cesarean section [9]. In the Gynecology and Obstetrics department of Kayes Hospital, cesarean sections represented 60.3% of all adolescent deliveries in 2019 [10]. Adolescents with pregnancies may experience

specific complications related to their still developing bodies and low psychological maturity. In particular, cesarean section in these young mothers is often associated with a higher risk of complications such as infections, excessive bleeding, and postpartum psychological disorders. This phenomenon is particularly worrying in developing countries where access to quality postpartum care remains limited [11]. Thus, it is crucial to better understand the factors that influence the decision to perform cesarean section in adolescents, as well as the consequences of this procedure on maternal and child health. Geographical, socioeconomic, and cultural differences require in-depth analysis in order to adapt public health policies to these realities. The lack of study on this subject in the Kayes region led us to initiate this work.

2. Methodology

The Kayes region is located in western Mali. It covers an area of 120,760 km2 and has a population of 2,338,999. The Fousseyni DAOU hospital in Kayes is a second-tier public hospital with a capacity of 160 beds. This was a cross-sectional study with a descriptive purpose spanning 10 years from January 1, 2014 to December 31, 2023. The data collection was retrospective over 9 years from January 1, 2014 to December 31, 2022 and prospective over one year from January 1 to December 31, 2023. This study focused on all adolescent girls admitted to the delivery room for childbirth who had undergone a cesarean section. The sampling was exhaustive, taking into account all adolescent girls admitted and having undergone a cesarean section in the department. Included in this study were all patients aged 10 to 19 years who underwent cesarean section during the study period. Excluded from the study were: all pregnant women aged less than 10 years and over 19 years; adolescent patients with gynecological pathologies only without pregnancy. A data collection form was used to collect the information. Data collection was done from the obstetric file supplemented as needed by the prenatal consultation register, the delivery and hospitalization register, the mothers' reference and evacuation forms. The following variables were studied: age, occupation, ethnicity, marital status, number of CPN, residence, level of education, mode of admission, gynecological, obstetric, medical, surgical history, blood pressure, size, uterine height, uterine contraction, fetal heart sounds, term of pregnancy, fetal presentation, type of presentation, pelvis, mode of delivery, indication for caesarean section, complication, weight of the newborn, Apgar, maternal-fetal prognosis. Data entry was carried out using Microsoft Office Word 2010 software. Statistical data processing and analysis were carried out using SPSS 20.0 software. Statistical calculations were performed using the chi-square test at a significance level of 0.05. Fischer's exact test was used when one of the recorded values was less than 5. The ethics committee of the Fousseyni hospital in Kayes gave its approval for the implementation of this study. Informed consent was requested for adult patients/parental or guardian consent was obtained for minors. Confidentiality and anonymity were respected.

Study difficulties: In the retrospective data collection, we faced some difficulties such as: poor record keeping; and incompleteness of some information in some records; making these records difficult to use for the study.

3. Results

During the study period (one decade), out of a total of 41,825 women delivered in the department, we performed 7,160 caesareans (17.12%), including 1,110 among adolescents, representing a frequency of 15.50% compared to the total number of caesareans performed. The age group between 16 and 19 years was the majority, *i.e.*, 92.98%. Housewives represented 91.35% (Table 1). Nulliparous women were the most numerous, with 84.2%, 13% primiparous, 2.6% pauciparous, and 0.1% multiparous. Fifty-four point eighty-six percent of women who had undergone caesarean delivery had between 1 and 3 CPNs; 17.84% did not have prenatal follow-up (Table 2). Parturients who came of their own accord were the most represented, with 46.58%, 30.45% referred, and 22.9% evacuated (Table 3).

Table 1. Distribution of patients according to sociodemographic characteristics.

	Effective (n = 1110)	%
Age groups (years)		
10 - 14	89	8
15 - 19	**1021**	**92**
Occupation		
Housewives Housekeeper	1014	91.4
Housekeeper	31	2.8
Student	54	4.9
Salesperson	6	0.5
Nursing Assistant	1	0.1
Obstetrician Nurse	1	0.1
Matron	1	0.1
Dyer	1	0.1
Marital status		
Married	1043	94
Single	67	06
Level of study		
Not enrolled	1032	93
Secondary	60	5.4
Higher	11	1
Primary	7	0.6

Table 2. Prenatal monitoring.

Prenatal consultation	Effective (n = 1110)	%
0	198	17.84
1 to 3	**609**	**54.86**
4 and above	303	27.30
Qualification of Prenatal Monitoring	**n = 1110**	
Midwife	**756**	**68.11**
Unattended	198	17.84
Obstetrician Nurse	57	5.14

Table 3. Clinical characteristics.

Clinical	Effective (n = 1110)	%
Pregnancy term		
Less than 37 weeks	157	14.1
Between 37 and 42 weeks	**953**	**85.9**
Presentation of the fetus		
Summit	**959**	**86.4**
Headquarters	122	11
Transverse	28	2.5
Front	1	0.1
Basin status		
Normal	**1010**	**91**
dystocia	100	09
Stages of labor		
Active phase	**633**	**57**
Not in labor	248	22.4
Latent phase	229	20.6

The majority of cesareans were performed during the active phase of labor, *i.e.*, 57.03%. Eclampsia was the most common indication, *i.e.*, a frequency of 23.51% (Table 4). Emergency cesareans represented 92%, and 8% were prophylactic cesareans.

Table 4. Indications for caesarean section.

Indications for cesarean section	Effective	%
Eclampsia	261	23.5
Fetopelvic disproportion	150	13.5
Acute fetal distress	146	13.2

Continued

Breech in primigravida	109	9.8
Stationary dilation	100	9
Retroplacental hematoma	67	6
Bone Dystocia	64	5.8
Distorted Presentation	43	3.9
Fetal Macrosomia	40	3.6
Placenta Previa	30	2.7
Scarred Uterus on Borderline Pelvis	28	2.5
Uterine Prerupture Syndrome	24	2.2
Immature Pelvis	23	2.1
Twin Pregnancy, First in Breech Presentation	16	1.4
Prolapsed Cord	9	0.8
Total	**1110**	**100**

We noted 83.06% of general anesthesia. Intraoperative complications represented 8.5% of cases (94/1110), comprising 03 cases of anesthesia complications and 91 cases of hemorrhage. The majority of our postoperative complications was parietal suppuration (39.90%), followed by anemia (31.03%) (Table 5).

Table 5. Post operating complications.

Types of postoperative complications	Effective	%
Sepsis	3	1.48
Parietal suppuration	**81**	**39.90**
Anemia	**63**	**31.03**
Obstruction	2	0.99
Breast abscess	1	0.49
Puerperal psychosis	12	5.91
Thrombo-phlebitis	2	0.99
Paralytic ileus	1	0.49
Evisceration	7	3.45
Eventration	3	1.48
Endometritis	5	2.46
Hemorrhage	10	4.93
Pelvic peritonitis	5	2.46
Probable pulmonary embolism	1	0.49
Vaginal bladder fistula	7	3.45
Total	203	100

The duration of hospitalization was 04 to 06 days in 76.8%, less than or equal to 03 days (21.6%), and greater than 06 days (1.6%). The APGAR score at the first minute was greater than 7 in 68.30% of cases. We recorded 8.8% of stillbirths (Table 6).

Table 6. Apgar score at the 1st minute.

Apgar score at the 1st minute	Effective	%
Stillborn	**101**	**8.80**
1 - 4	116	10.16
5 - 7	145	12.70
Greater than 7	**780**	**68.30**
Total	**1142**	**100**

We recorded 22 cases of maternal death (12 eclampsia, 10 HRP), or 2% (Table 7).

Table 7. Maternal deaths and their causes.

	Effective	%
Maternal death	**N = 1110**	
No	**1088**	**98**
Yes	22	2
Causes of maternal death	**N = 22**	
Eclampsia	**12**	**54.5**
Retroplacental hematoma	**10**	**45.5**

4. Discussion

We conducted a cross-sectional study with a descriptive aim extending over 10 years from January 1, 2014 to December 31, 2023. The collection was retrospective over 9 years from January 1, 2014 to December 31, 2022, and prospective over one year from January 1 to December 31, 2023. We faced some difficulties such as poor maintenance of certain records and incompleteness of certain information in certain records, making these records difficult to use for the study. In total, out of 41,825 deliveries in the department, we performed 7,160 caesareans (17.12%), including 1,110 among adolescents, a frequency of 15.50% compared to the total number of caesareans performed. The bulletin of the National Institute of Demographic Studies (INED), in issue 581 of Population & Societies, shows that while 21% of births are by caesarean section worldwide, national averages range from 1% to 58%. In our country, Mali, for example, the number of women giving birth by caesarean section has almost doubled in a decade. According to the 2022 yearbook of the National Health and Social Information System of Mali (SNIS), the country recorded 23,277 caesarean deliveries in 2011 compared to 45,601 in 2021 and 45,842 in 2022. The adolescent caesareans were between 13 and 19 years old.

The average age was 17 years with a predominance in the age group of 16 and 19 years, *i.e.* 92.98% (**Table 1**). The patients were mainly housewives, 91.4% of cases, and married in 94%. They were not in school in 93% of cases (**Table 1**). The professional occupations of the patients can constitute an obstacle to access to care. Some professional orders are very exposed [12]. The patients concerned by this study were mostly adolescents who came on their own, 46.58%. This result is lower than that of Diallo A *et al.* [9] who found 85.4%. Pregnancy monitoring is considered by different authors as sufficient from four prenatal consultations [13]-[17]. In this study, 54.86% carried out at least three (03) CPN (**Table 2**), this rate is higher than that of Souley I [18] and Diallo A *et al.* [9] who showed us respectively 28.8% and 22.3%. This rate could be explained by the low schooling of adolescents and the lack of awareness of the importance of prenatal consultations. Fourteen point fourteen percent (14.14%) of the adolescents in this study gave birth prematurely (**Table 3**). This rate is lower than that of Collin [19], who found 20% and higher than that of Souley I [18] who found 5.3%. This result could be explained by the inadequacy of prenatal consultation. Better monitoring of pregnancy in adolescents could reduce the risk of premature delivery. We had 86.40% of cephalic presentation, 10.99% of breech presentation, and 2.52% of transverse presentation, which is very close to the data in the literature: 82.7%, 10.2%, and 7.1% respectively of cephalic presentation, transverse and breech reported by KEITA Y [20] (**Table 3**). Cesarean sections were performed in 51.98% while the ovular membranes were ruptured, TEGUETE I [21] and Diarra FL [22]. found respectively 43.1%, 71.87%, and 51% in the Klouz series [23]. Opening the egg before delivery carries a septic risk and therefore exposes, in the case of caesarean section, to increased infectious morbidity, for which many authors require antibiotic prophylaxis. Compared to the indications for caesarean section, this work found a rate of bone dystocia at 5.8% (**Table 4**). TEGUETE I [21] in Mali reported 37.6%. We counted 261 cases of eclampsia among the indications for caesarean section, or 23.51% of all caesarean sections. It is the most frequent maternal pathology. GORDAH [24] found 0.6% of maternal pathologies in Tunisia. Dystocic presentations included transverse presentations, frontal and facial presentations (sacral chin). There were 43 of them, and they represent half of the indications related to mechanical dystocia and 03.9% of all caesarean sections (**Table 4**). KLOUZ [23] in Tunisia, BOISSELIER [25] in France, GORDAH [24] in Tunisia noted, respectively, 13.1%, 14.2%, 14.5%. Breech presentation in primigravida was associated with caesarean section in 9.82% of cases. The cesarean section rate for this indication in the review varies between 1.9% DIALLO A *et al.* [9], and 19.0%, SPERLING in Denmark [26]. We noted 40 cases of fetal macrosomia, a rate of 3.60% of all indications. Our rate is low compared to that of MESTIRI [27] 14.7% in Tunisia. We noted 146 cases of acute fetal distress, or 13.15% of all indications. This rate is comparable to that of DIARRA F. bin Tunisia noted a rate identical to ours, 2.70%. During this work, the rate of retro-placental hematoma was 6.04%, DIALLO A [9] reported 5.62%. We noted 92.8% of transverse segmental hysterotomy; for segmento-corporeal hysterotomy, we noted 17 cases or 7.2%. This type of inci-

sion was dictated by operative difficulties in accessing the lower segment or fetal extraction. We noted 83.06% of general anesthesia, KEITA Y [20] and TEGUETE I [21] found respectively 31.5% and 20.4% of general anesthesia. Among the complications, peroperative hemorrhages represented 10/203 cases or 4.93%; TEGUETE I [21] reported 12.6%. Among the postoperative complications, we noted 81/203 or 39.90% and 31.03% of anemia (63/203). KONE AI [28] in Mali reported a lower rate, 19.7%. In this series, the average duration of hospitalization after cesarean section was 4 to 6 days, 76.76%. This result is lower than that of TEGUETE [21] 9.3 days. The maternal prognosis was good in 98% of cases. Maternal deaths represented 2% of the cases, 22/1088; the causes were 12 eclampsias and 10 retro-placental hematomas. The APGAR score at the first minute was higher than 7 in 68.30% of cases; we recorded 8.8% of stillbirths. This rate is lower than that of Souley I [18] who reported 9.45% [29] [30].

5. Conclusion

Caesarean section has become an effective intervention to save the life of the fetus and the mother in difficult situations, which is why its frequency continues to increase. However, it should not be considered an easy solution, because it is not without maternal morbid complications and perinatal complications.

Conflicts of Interest

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

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