



Maternal mortality associated to cesarean section at the sylvanus olympio university hospital: Incidence, causes and risk factors

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Abstract

Caesarean section increases the risk of maternal death

Objective: To describe the causes and risk factors for maternal deaths related to caesarean section.

Patient and methods: A retrospective and descriptive study, conducted at the Gynecology-Obstetrics Department of Sylvanus Olympio University Hospital in Lomé, from January 1st, 2011 to December 31st, 2017. The study concerned patients who died during caesarean section or within 42 days who followed this caesarean section. Study variables were epidemiological data (frequency, age, educational level), clinical (indication of caesarean section), therapeutic (type of anesthesia, associated surgical procedure) and prognosis (caesarean section delay, cause of death).

Results: The caesarean section rate was 42.3% and the maternal death rate was 0.3%. The majority of patients were 20 to 34 years old (68%). Patients lived in concubinage in 76% of cases and were illiterate in 17% of cases. Patients were referred in 74.7% of cases and caesarean section was performed urgently in 97.3% of cases for severe preeclampsia/Eclampsia in 60% of cases. Caesarean section was performed in the hour in 26.7% of cases. Patients died during caesarean section in 5.3% of cases and after caesarean section in 94.7% of cases. Postpartum haemorrhage, in 44% of cases and complications of preeclampsia, in 42.7% of cases were the leading causes of post-caesarean maternal death.

Keywords: Maternal death, caesarean section, incidence, causes, risk factors

1. Introduction

Caesarean section is an artificial birth by surgical opening of the uterus, usually after laparotomy ^[1]. It is the most common surgical procedure in obstetrics. Its frequency has increased dramatically in recent decades, with nearly 22.9 million cases worldwide in 2012 ^[2,3]. The frequency has, for example, increased from 26% to 66.5% in Iran ^[4,5].

The fight against maternal and perinatal mortality has long been the main reason for the increased frequency of caesarean section ^[6]. The cost subsidy of caesarean section, one of the strategies for reducing maternal mortality, has contributed to this increase in the frequency in resource-limited countries ^[7]. However, caesarean section can lead to major complications and even death, especially in areas without the resources to provide surgical safety and treat surgical complications. The increase in the number of caesarean section and its potential negative health consequences for mothers and children is becoming a global concern ^[8].

There are no data available on maternal mortality related to caesarean section in Togo. We conducted this study to determine the frequency, causes and risk factors for maternal deaths during and after caesarean section.

2. Patients and Method

This retrospective and descriptive study was conducted from 1 January 2011 to 31 December 2017 at the Department of Gynecology and Obstetrics at Sylvanus Olympio University

Hospital in Lomé. The patients in the study were those who died during the caesarean section or within 42 days of this caesarean section. Patients who died outside of a caesarean section or beyond the 42 days following caesarean section were not included. The study parameters were epidemiological data (frequency, age, marital status, educational level, number of prenatal visits), clinical data (admission mode, gestational age, caesarean section indications), therapeutic data (type of anesthesia, complications, associated surgical procedure) and prognostic data (delay between caesarean section and death, cause of death). The data was collected by reviewing birth records, medical records and operative records using pre-established survey cards. Data entry and statistical analysis were performed using the Epi Data software. The graphics were made with Excel 2010 software.

3. Results

3.1. Epidemiological data

During the study period, 24,027 caesarean sections were performed out of 56,797 deliveries, giving a caesarean section rate of 42.3%. Seventy-five (75) cases of maternal deaths were recorded, or 0.3% of cases. The age of patients was between 15 and 43 years old and the average age was 30 years old. The majority of patients were aged 20 to 34 years (68%). Patients were primiparous in 38.6%, pauciparous in 46.7% and multiparous in 14.7%. They lived in concubinage in 76% and had an activity generating

income in 64%. Their level of education is illustrated in Figure 1 below.

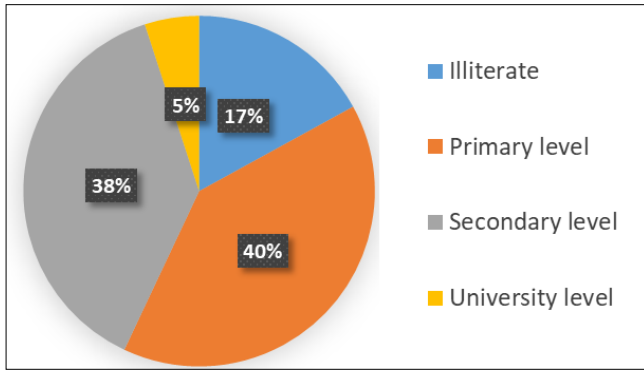


Fig 1: Distribution of patients by level of education

3.2. Clinical data

Patients were referred in 74.7% of cases and presented a pathology associated with pregnancy in 14.7% of cases. Pregnancy was at term in 68% and before term in 32% of the cases. Prenatal visits were performed in 72 cases, or 96%, but fewer than 4 visits in 54.7%. Caesarean section was performed urgently in 97.3% of cases. Caesarean section indications are specified in Table I below.

Table 1: Patient distribution according to Caesarean section indications

	N = 75	%
Severe preeclampsia/Eclampsia	45	60
Retroplacental hematoma	11	14.7
Dystocia	11	14.7
Fetal distress	5	6.6
Placenta previa	3	4

3.3. Therapeutic data

Caesarean section was performed within 60 minutes after the decision in 26.7% and within 48 hours after the decision in 89.3% of the cases. General anesthesia was performed in 60% and spinal anesthesia in 40% of cases. Laparotomy was performed by a transverse subpubic incision in 97.3% and by a medial under umbilical incision in 2.7% of cases. The most common therapeutic procedures associated with cesarean section were blood transfusion in 49.3% of cases and haemostatic hysterectomy in 13.3% of cases. Per-cesarean hemorrhages with 38.7% of cases and anesthesia accidents with 14.7% of cases were the most observed intraoperative complications. Surgical site infections, observed in 14.7% of cases, were the most common postoperative complications.

3.4. Prognostic data

Caesarean section was performed in the first hour in 26.7% of cases and in 48 hours in 89.3% of cases. Death occurred during caesarean section in 5.3% of cases and in the postoperative period in 94.7% of cases. Maternal deaths causes are specified in the following Table II.

Table 2: Distribution of patients by cause of maternal death

	N = 75	%
Postpartum haemorrhage	33	44
Complications of severe preeclampsia	32	42.7
Anesthesia accidents	4	5.3

Septic shock	3	4
Pulmonary embolism	3	4

Complications of severe preeclampsia included eclampsia in 21 cases (28%), HELLP syndrome in 5 cases (6.7%), strokes in 3 cases (4%), and acute pulmonary edema in 3 cases (4%). The death occurred within 24 hours after cesarean section in 77.3% of cases.

4. Discussion

Caesarean section is an essential surgical procedure to save the life of the mother and the unborn child [9]. It is practiced in 42.3% of cases in our study and 42.8% in that of Farnaz [10]. The average rate of caesarean section in Africa is 7.3%, ranging from 0.6% in Ethiopia to 51.8% in Egypt [11]. Caesarean section, like any major surgery, can endanger the life of the mother of the unborn child. The maternal mortality rate associated with caesarean section, though variable, is higher in sub-Saharan African countries. It was 0.3% in our study and that of Nyamtema and 0.16% in that of Benkirane [12, 13]. The majority of patients were 20 to 34 years old in our study and 18 to 35 years old in that of Changizi [14], with an average age of 30 years in our study and 35 years in that of Benkirane [13]. The patients lived in concubinage in 76% of the cases and had an activity generating income in 64% of the cases. They were mostly primiparous or pauciparic and had a level of primary or secondary education. However, 17% of patients were illiterate in our study and 14.7% of those in Changizi [14]. These patients with little or no education are characterized by their lack of knowledge of the danger signs during pregnancy and the absence or irregularity of prenatal visits. Patients had fewer than 4 prenatal visits in the majority of cases in our study. The absence or inadequacy of antenatal care increases the risk of maternal death [15]. Maternal mortality in sub-Saharan Africa mainly affects referrals. These referred patients accounted for 74.7% of the cases in our study. This situation reflects the inequality of access to quality care. References to university hospitals are often made in case of complications requiring emergency care. Reference conditions are often difficult with long distances to be traveled by bush taxi or motorcycle taxi, on bad roads and at high costs [16]. Emergency caesarean sections pose a higher risk of maternal death. Caesareans were urgently needed in 97.3% of cases in our study, 82% in the Benkirane study and 63.2% in the Changizi study [13, 14]. Caesarean section anesthesia is the leading cause of maternal death by anesthesia. General anesthesia is the most incriminated [17]. General anesthesia was performed in 60% of cases in our study and in 73.2% of cases in the Changizi study [14]. Preeclampsia and its complications are the indications for cesarean section most at risk of maternal death during and after cesarean section. Indeed, the main indication for Caesarean section was severe preeclampsia / eclampsia, followed by retroplacental hematoma and mechanical dystocia in our study. The delay in obtaining appropriate care is one of three delays leading to preventable maternal deaths [18]. In spite of the urgency, the time of realization of cesareans often exceeds one hour. Caesarean section was performed in the first hour in only 26.7% of cases in our study. A long delay in Caesarean section practice is a major risk factor for maternal death. According to the recommendations of the American College of Obstetrics and Gynecology (ACOG) and the American

Academy of Pediatrics (AAP), an emergency caesarean section must be performed within 30 minutes of the decision to practice ^[19]. Because of the overburdened and weak health systems that characterize low-income countries, caesarean section is often extended to 75 minutes ^[20]. The maternal and perinatal prognosis deteriorates when the caesarean section exceeds 75 minutes, hence the need to perform caesarean section within a short time to preserve the health of the mother and the child in the most urgent situations ^[20, 21]. The shortage of infrastructures, equipments and human resources for the practice of surgery is common in sub-Saharan African countries such as ours. Developing countries, especially Africa, have few human resources ^[22, 23]. Postpartum haemorrhage and hypertensive disorders are the leading causes of maternal death associated with caesarean section ^[14]. Postpartum hemorrhages and severe preeclampsia complications was the cause of maternal death in our study in 86.7% of cases. According to Adu-bonsaffoh, Hypertensive disorders during pregnancy account for 50% of maternal deaths in sub-Saharan Africa ^[24].

5. Conclusion

Cesarean section, an increasingly frequent surgical procedure, presents a high risk of maternal death. Maternal mortality is often associated with emergency caesarean sections performed under general anesthesia for complications of preeclampsia, retroplacental hematoma and mechanical dystocia. It is necessary to reduce the caesarean section for urgent indications to reduce maternal mortality.

6. Reference

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