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Original Research Article

Intraoperative maternal complications of the caesarean section: a cross-sectional study at the Provincial general hospital of Kananga in Democratic Republic of Congo

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ABSTRACT

Background: The maternal complications of caesarean section make it considered a riskier route of delivery than the vaginal route. The caesarean patient in fact combines the risks of giving birth and those of abdominal surgery. The intraoperative complications can compromise the vital prognosis and the obstetrical and functional future of the parturient. The aim of our study was to determine the epidemiological, clinical and therapeutic profile of intraoperative maternal complications of cesarean section at the Provincial General Hospital of Kananga from January 1, 2014 to December 31, 2020.

Methods: This cross-sectional study is performed on a series of cases from the medical files of caesarean patients who suffered from intraoperative complications of caesarean section and based on non-probabilistic sampling of suitability for case selection. Our sample is constituted of 361 cases of intraoperative complications of caesarean section.

Results: The frequency of intraoperative complications of caesareans is of 25.87% with an annual average of 51.60 (SD 5.62) cases per year, the average age of patients is 27.39 years, primiparous are the most affected with 27.44%, preoperative haemorrhages are the intraoperative complications most encountered in 74.94%, surgical repair is the most established treatment in 56.00% of cases, the maternal death rate due to intraoperative complications of caesareans is 0.32% of live births.

Conclusions: Intraoperative complications of caesarean section constitute a public health problem. Our results can serve as a basis for in-depth studies on the intraoperative complications of caesarean section in order to lower the risks associated with its practice in our environment.

Keywords: Caesarean section, Intraoperative complications, Kananga, Provincial general hospital

INTRODUCTION

Caesarean section is a surgical delivery technique that permits fetal extraction after hysterotomy. Its aim is to redeem the newborn and the mother in situations of dystocia or fetal distress.^{1,2} Its incidence is on the rise worldwide.^{3,4} The incidence of caesarean section varies

from country to country and from hospital to hospital within the same country.⁵ Over the past 30 years, the incidence of caesarean section has augmented from 5% to 25% or even more than 50% in some countries.⁵ The risk and safety associated with caesarean delivery differs around the world.⁶ Innovations in operative and anesthetic techniques to provide good maternal-fetal safety have

made caesarean section a common intervention in obstetrics. But its complications, especially maternal intra and postoperative, are not exceptional.² Despite these innovations, the rates of maternal complications remain high, sometimes jeopardizing the vital prognosis and the obstetric future of patients. In Africa, some authors have reported the incidence of maternal complications of caesarean section which varies from 10.3% in a Moroccan study to 40.55% in a Guinean study.⁷⁻¹⁰ Maternal complications from caesarean section make it considered a riskier route of delivery than the vaginal route. The caesarean patient in fact combines the risks of childbirth and those of abdominal surgery.² The absence of epidemiological data on intraoperative complications of caesarean section in our environment incited us to conduct this study, the objective of which is to describe the epidemiological, clinical and therapeutic profile of intraoperative complications of caesarean section in the maternity ward of the Provincial General Hospital (PGH) of Kananga from January 1, 2014 to December 31, 2020.

METHODS

Study design and setting

This cross-sectional study is performed on a series of cases of intraoperative complications of caesarean section registered at the maternity of the PGH of Kananga from January 1, 2014 to December 31, 2020. The maternity service of the PGH of Kananga was selected because of its situation as the 2nd provincial reference hospital for cases, the presence of trained and experienced staff and the high number of patients who trust its staff.

Study population

We used the medical files of patients aged between 16 and 45 years old who underwent caesarean section complicated by intraoperative maternal complications and registered at the maternity ward of the PGH of Kananga from January 1, 2014 to December 31, 2020.

Sampling

Our sampling is non-probabilistic of suitability. The sample size was determined by the limitation of our study in time and space. The following criteria allowed us to include the patients in the study: Patients aged between 16 and 45 years old, having undergone a caesarean section complicated by intraoperative maternal complications at the maternity ward of the PGH of Kananga from January 01, 2014 to December 31 2020 and whose medical file was complete. Patients who did not meet these inclusion criteria and incomplete medical records were excluded.

Collection of data

Data were collected from operating room registers, maternity registers, medical files of patients registered to the maternity of PGH of Kananga and the record data

collection. Our variables of study are: year of study, age of patients, types of intraoperative maternal complications of cesarean section, treatment Instituted and post-therapeutic evolution.

Statistical analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) software version 20. We used the average (SD) to present the quantitative variables and the proportion to present the qualitative variables.

RESULTS

Frequency of intraoperative complications of caesarean section

We registered 361 intraoperative complications of caesarean sections. Out of 1395 caesarean sections at the HGP of Kananga during the study period. The rate of intraoperative morbidity related to caesarean section is of 25.87%. Its evolution in our study was from 24.10% in 2014 to 27.20% in 2020 (Figure 1). The average number of cases of intraoperative complications of caesarean section is 51.60 (SD 5.62) cases per year.

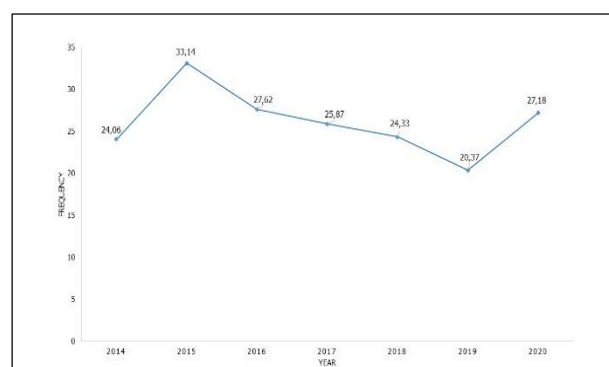


Figure 1: Frequency's evolution of intraoperative maternal complications of caesarean section.

Age of patients and types of intraoperative complications

The age group most concerned by intraoperative complications of caesarean sections is between 16 and 25 years old with 57.88% of cases. The average age of patients who suffered from intraoperative complications of caesarean sections is 27.39 years (SD 1.23). As for intraoperative complications of caesarean section, preoperative bleeding is presented in 74.94% of cases, bladder lesions in 14.94% of cases, intestinal lesions in 9.57% of cases, inhalation of gastric contents in 1.53% of cases (Table 1).

Instituted treatment and post-therapeutic evolution

Blood transfusion is initiated in 43.00% of cases, surgical repair in 56.00% of cases and other treatments in 1.53% of cases. As for the post-therapeutic evolution, it is good with

maternal healing in 92.33% of cases and characterized by maternal death in 7.67 % of cases of intraoperative complications of cesarean section and 0.32% of deliveries (Table 2).

Table 1: Apportionment of cases by age range and intraoperative complications of caesarean section.

Age group	N=361	Percentage
16-25	209	57.88
26-35	90	25.00
36-45	66	17.10
Intraoperative complications of caesarean section		
<i>Intraoperative haemorrhage</i>		
Atony uterine	267	74.94
Tear of inferior segment		
Tear of varicose veins of the inferior segment		
Bladder lesions	51	14.94
Intestinal lesions	36	9.57
Inhalation of gastric contents (Mendelson's syndrome)	7	1.53

Table 2: Apportionment of cases by the treatment instituted and post-evolution evolution.

Treatment instituted	N=361	Percentage
Blood transfusion	155	43.00
Surgical repair	201	56.00
Other treatment	5	1.53
Post-thérapeutic evolution		
Good with maternal healing	333	92,33
Maternal death	28	7,67

DISCUSSION

The maternal complications of caesarean section make it considered a riskier route of delivery than the vaginal route. The caesarean patient in fact combines the risks of giving birth and those of abdominal surgery. Thanks to advances in obstetrics, antibiotic prophylaxis and heparin prophylaxis, postoperative complications of caesarean section are increasingly controlled, while intraoperative complications are serious and can compromise the vital prognosis and the obstetrical and functional future of the parturient.^{2,11} The frequency of intraoperative complications of caesarean section, otherwise known as "intraoperative maternal morbidity rate of caesarean section" is 25.87% in our milieu. Its evolution during the study period went from 24.10% in 2014 to 27.18% in 2020 passing through a peak of 33.14% in 2015. Our intraoperative maternal morbidity rate of caesarean section is higher than those of Abbessi et al in Morocco, Trabelsi et al in Tunisia, and Berkirane et al in Morocco which are respectively 4.40%, 7.50%, and 7.20%.^{12,2,13} It is lower than that of Ugwu et al in Conackry which is 40.55%.⁹

The average age of caesareans complicated by intraoperative maternal complications is 25.39 years (SD 1.23). Our results are lower than those of Benkirane et al in Morocco, Trabelsi et al in Tunisia and Kemfang et al in Cameroon who reported an average age of complicated caesareans of 30.50 years, 30.20 years and 28.13 years.^{13,2,10} The primiparous were more concerned in 99 cases or 27.44%. This corroborates the results of Trabelsi et al in Tunisia and Kemfang et al in Cameroon.^{2,10}

As for intraoperative complications of caesarean section, intraoperative hemorrhages were the most encountered intraoperative maternal complications in 267 cases or 74.94%. Our results are far superior to those of Trabelsi et al in Tunisia, from Diallo et al in Guinea and Nicola et al in England which are respectively 3.60%, 12.5% and 7.30%.^{2,14,15} The clinical estimation of blood loss being very imprecise, often led to an underestimation of the incidence of bleeding (from 30 to 50%), which would explain the variable rates recorded in the literature. Sarfati proposed a biological assessment based on the drop in hemoglobin and haematocrit.¹⁶ In our study, we considered as hemorrhagic caesarean sections where blood loss was judged subjectively important by the operators.

Intraoperative bleeding was due to uterine atony in 62.54% of cases, tearing of the lower segment in 26.96% of cases and varicose lesions of the lower segment in 10.49% of cases. Uterine atony can occur either during the operation or immediately after, it is favored by the use of utero relaxants, uterine overdistension, long labor and general anesthesia.^{2,11} And caesarean sections performed in an emergency context are more prone to haemorrhage.^{2,11} This also explains the high frequency of atony (62.54% of cases) in our series of cases.

Segmental tears by extension of the hysterotomy are often the consequence of a poor appreciation of the necessary dimension of the hysterotomy leading to a traumatic fetal extraction. It is also seen in case of lower segment weakened by a long work. Complications also depend on the experience of the operator.² For Lesley, lower segment tears were more frequent on scarred uterus, for advanced dilatations with a presentation that tends towards engagement and for posterior varieties whereas Va-Ham found that uterine lesions sit more willingly on the left because of the dextro-rotation of the uterus, and that they are more frequent when the child is macrosome, or by lack of mastery of the operative technique when using the lower edge of the fulcrum uterus, during manual extraction of the fetus.^{17,18} This may also explain the occurrence of cervical tears in our environment. According to Combs et al in England, hysterorrhaphy difficulties are incriminated with uterine inertia in the occurrence of haemorrhage during caesarean section without identifying the specific risk factors.¹⁹ They were not found in our case series.

Bladder lesions were present in 51 cases or 14.94% in our case series. Our results are much lower than those reported in the literature (0.1 to 1.8%).² They are harmless if

diagnosed and repaired in time as in our case series.^{2,11} Unrecognized, they can be discovered postoperatively during peritonitis or vesicovaginal fistula.^{2,11} Intestinal lesions were present in 36 cases, i.e. 9.57% in our case series, whereas they are rare in the literature (0.50%).² Mendelson's syndrome is a rare but the most formidable complication.^{2,20} No case of this syndrome was found in the series of Trabelsi et al in Tunisia while it is present in 1.53% of cases in our study.² This syndrome can be prevented by fasting for 6 to 8 hours before repeat caesareans and by packing the gastric contents before any emergency caesarean section.^{20,21} Ureteral wounds, the frequency of which in the literature has been estimated at 1 to 3 per 10,000, are favored by the uncontrolled lateral enlargement of the hysterotomy, in difficult extractions and wounds of the uterine pedicle.^{2,18} In our case series, they were not present.

Regarding the established treatment, blood transfusion is initiated in 43.00% of cases, surgical repair in 56.00% of cases and other treatments in 1.53% of cases. Our results can be explained by the high frequency in our environment of hemorrhagic complications whose treatment is rapid and medical-surgical, as had also been observed by Trabelsi et al in Tunisia and Racinet et al in France.^{2,22} As for the post-therapeutic evolution, it is characterized by the maternal death of 0.32% of live births. Our maternal death rate is lower than that of Kinenkinda et al in Lubumbashi which is 0.64% of live births and higher than that of Benkirane et al in Morocco which is 0.16 of live births.^{23,13}

According to observations of many authors here in the DRC as well as in most developing countries, the high maternal mortality in maternities is justified not only by the absence of modern means of monitoring pregnancy and parturition, the low socio-economic and intellectual level of the populations, the lack of qualified personnel in the outlying maternities, the under-equipment that characterizes our health institutions, but also and above all by the role that ethnoculture still plays in the behavior of the reproduction even in the middle of an urban environment.²³⁻²⁷ These may also explain the high maternal mortality observed in our study.

Our weakness of the study is not to have studied the indications of cesarean section and its postoperative complications at the same time while our strength is to be the first to study the epidemiological, clinical and therapeutic particularity of the intraoperative complications of cesarean section in the hospitals of Kananga in central Kasai.

CONCLUSION

It clearly appeared in this study that the intraoperative morbidity rate of cesarean section was 25.87% with an average age of patients of 27.39 years, intraoperative haemorrhages were the most encountered intraoperative maternal complication of cesarean section (74.94%), surgical repair was more practiced (56.00%) and the

maternal death rate due to intraoperative maternal complications of cesarean section was 0.32% of live births. Our results can serve as a basis for in-depth studies on the intraoperative maternal complications of cesarean section in order to decrease the risks associated with the practice of caesarean section in our environment.

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