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Original Research Article

Prophylactic and emergency cesareans: a comparative study on 718 observations at the maternity ward of Ignace Deen National hospital

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ABSTRACT

Background: The objective of the study is to compare the frequency, the socio-demographic characteristics, the indications, the fetal maternal prognosis and the Robson classification of prophylactic and emergency caesarean sections.

Methods: This was a comparative study of prophylactic and emergency caesarean sections at the maternity of Ignace Deen national hospital. It was a 12 month (July 1, 2016 to June 30, 2017) descriptive and analytical study.

Results: Prophylactic caesarean sections accounted for 12, 51% of caesarean sections and 3.96% of deliveries at the ward. Prophylactic caesarean sections involved pregnant women aged from 20 to 29, holder of higher education degrees (51.54%), married (92.76%) employed (56.83%) and whose prenatal visit was provided by the obstetrician (73.54%). While the emergency caesarean section concerned parturient aged between 20 and 34, mostly non-schooled (36.49%), transferred patients (80.22%) and nulliparous (58.5%). Surgical indications were mainly scarred uterus (32.32%) and maternal pathologies (18.11%) prophylaxis; bleeding in the last quarter (25.90%) acute fetal distress (20.33%) in emergency. Groups 6 and 5 of the Robson classification were the most represented with a 2.23% morbidity and a zero maternal lethality in prophylaxis versus groups 5 and 6 with a 10.03% morbidity and a 1.67% maternal lethality in emergency.

Conclusions: Improving this prognosis would be achieved through an increase in the frequency of prophylactic caesarean sections.

Keywords: Emergency caesarean section, Ignace-Deen, Maternal and fetal prognosis, Prophylactic caesarean section

INTRODUCTION

Guinea, like its African peers, has undertaken efforts to provide effective emergency obstetric and neonatal care (EmONC) to pregnant women since the 1987 Nairobi conference on safe motherhood.¹ Despite these efforts, the maternal death ratio is still high in our country. Indeed, Guinea is one of those African countries where the maternal death ratio has improved for just a little for about two decades. This ratio moved from 870 in 1990.² to 550 deaths per 100,000 live births in 2017.³ Authors have low coverage of maternal health needs. About five

out of ten pregnant women (51%) receive at least the four quality antenatal visits recommended by WHO.³

There are few facilities authorized to provide comprehensive emergency obstetric and neonatal care (SONUC), particularly caesarean sections, in Guinea.⁴

According to the results of the national assessment of emergency obstetric and neonatal care (EmONC) needs conducted in July 2013 and to those from a hospital study cited by Keita N et al, authors have overall caesarean section rates of 2.7% and 36% respectively.⁵

The capital city, Conakry, has a population of 2,500,000 and has five public facilities capable of providing SONUC. However, only two of them operate 24 hours a day, making them overexploited. This explains why prophylactic caesarean sections are often urgently required, thus putting a strain on the mother-foetal prognosis.

The objectives of the study were to determine the frequency, the socio-demographic characteristics, the main indications, the maternal-fetal prognosis, and to apply Robson's classification to evaluate the practice of prophylactic and emergency caesarean sections.

METHODS

This was a comparative study of prophylactic and emergency caesarean sections at the maternity ward of Ignace Deen National Hospital. It was a 12-month (from July 1, 2016 to June 30, 2017) prospective, descriptive and analytical study.

Inclusion criteria

- It concerned prophylactic caesarean sections (performed before the onset of labour); these consist of cases and emergency caesarean sections; controls were constituted by simple random representative sampling with a sampling pitch of seven (07) which was obtained from the ratio of the number of emergency caesarean sections to the number of

prophylactic caesarean sections by referring to the previous statistics of the service (2380/338=7.04).

Exclusion criteria

- Pregnant and parturient women who gave birth by natural means and those who refused to participate in the study.

Socio-demographic parameters, prenatal monitoring, delivery room management, and Robson classification (based on the following characteristics: parity, type of pregnancy i.e. single or multiple, presentation, mode of onset of labour, gestational age, and history of caesarean section) were studied. Patients consented to the study and had previously signed an informed consent form for both the caesarean section and the study, which was included in the record. The Chi-2 test was used for comparison. The accepted materiality level was $p < 0.05$.

RESULTS

Frequency

From July 1, 2016 to June 30, 2017 authors recorded 9053 deliveries, among which 2869 caesarean sections were performed, i.e. a frequency of 31.70%. Of the 2869 caesarean sections, 359 were prophylactic caesarean sections and 2510 were emergency caesarean sections, i.e. 12.51% and 87.49% of all caesarean sections respectively.

Table 1: Perinatal lethality.

Perinatal lethality	Prophylactic caesarean sections		Emergency caesarean sections		Total	
	N	%	n	%	n	%
Yes	6	1.65%	80	21.56%	86	11.72%
No	357	88.35%	291	78.44%	648	88.28%
Total	363	100%	371	100%	374	100%

Chi²=69.8, ddl=1, $p < 0.001$.

Table 2: Perinatal lethality period.

Lethality period	Prophylactic caesarean sections		Emergency caesarean sections		Total	
	N	%	n	%	n	%
Antepartum	2	33.33%	7	8.75%	9	10.46%
Intrapartum	0	0.00%	68	85%	68	79.08%
Early Neonatal	4	66.67%	5	6.25%	9	10.46%
Total	6	100%	80	100%	86	100%

Chi²=69.8, ddl=1, $p < 0.001$.

Socio-demographic parameters

Age

The average age of patients who underwent a prophylactic caesarean section was 27 with extremes of 15 and 44. The 20-29 age group was the most affected in both the study and control populations (50.42% versus

54.04%) and the differences were not statistically significant ($p=0.717$). The chi 2 was calculated for all age groups ($p=0.717$).

Occupation

Prophylactic caesarean sections were performed more frequently among employed women (with a professional

activity) followed by students, i.e. 56%, 83% and 23.95% respectively. Whereas for emergency Caesarean sections, women with a liberal profession predominate, followed by housewives with 48.76% and 23.95% respectively, with a significant difference (chi 2 was calculated for all socio-professional strata).

Marital status

In the cases group, 79.4% of gestating women were married, while in the control group 92.8% were married ($p < 0.001$).

Educational level

In the cases group, 51.4% were university graduates, while in the control group, only 10.3% attended university ($p < 0.0001$).

Mode of admission

Hospital admission was spontaneous in 95% of cases in the cases group and 19.77% in the control group ($p < 0.0001$).

Table 3: Breakdown of indications according to Robson's classification.

Robson's classification	Prophylactic caesarean sections		Emergency caesarean sections		Total	
	n	%	n	%	N	%
Group I	0	0%	11	3.06%	11	1.53%
Group II	52	14.48%	81	22.57%	133	18.52%
Group III	6	1.67%	30	8.36%	36	5.01%
Group IV	6	1.67%	26	7.24%	32	4.46%
Group V	83	23.13%	87	24.23%	170	23.68%
Group VI	106	29.53%	60	16.71%	166	23.12%
Group VII	17	4.73%	34	9.47%	51	7.10%
Group VIII	11	3.06%	12	3.35%	23	3.20%
Group IX	21	5.85%	8	2.23%	29	4.05%
Group X	57	15.88%	10	2.78%	67	9.33%
Total	359	100%	359	100%	718	100%

Khi²=103.3, ddl=9, $p < 0.001$

Obstetrical parameters

Parity

A total 147 cases out of 359 (41%) of those operated on for prophylaxis versus 210 cases out of 359 (58.49%) of those operated on in the emergency room, were nulliparous ($p < 0.0001$).

Previous caesarean section

This notion existed in 116 cases out of 359 (32.31%) of those operated on prophylactically versus 29 cases out of 359 (8.09%) of those operated on in emergency ($p < 0.001$).

Number of prenatal contacts

Two hundred and fifty-eight (258) of 359 (71.9%) of prophylactic caesarean section deliveries versus 46 of 359 (12.8%) of emergency deliveries had five (5) or more prenatal contacts ($p < 0.0001$).

Prenatal contact agent (PNCA)

Among 264 out of 359 (73.5%) of the cases and 6 out of 359 (1.7%) of those operated on in the emergency department, prenatal follow-up was provided by the obstetrician ($p < 0.0001$).

Venues of ANC

In 332 cases out of 359 (92.5%) of those operated on for prophylaxis versus 32 cases out of 359 (8.91%) of those in emergency, prenatal visits were made at the national hospital, a level 3 facility in the maternal health pyramid (CHU) ($p < 0.001$).

Membrane condition prior to the caesarean section

Among 350 out of 359 (97.5%) of people operated on in prophylaxis versus 47 out of 359 (13.1%) of emergency cases, membranes were intact ($p < 0.001$).

Appearance of the amniotic fluid at the time of the caesarean section

Among 317 out of 359 (88.3%) of prophylactic operations versus 104 out of 359 (28.97%) of emergency cases, the amniotic fluid was clear during the caesarean section.

Surgery indications

Maternal indications

A total 116 out of 359 (32.32%) of the operative reasons for prophylaxis versus 29 out of 359 (8.1%) of the emergency cases were scarring of the uterus.

Fetuses

A total 63 out of 359 (17.6%) of the operative reasons for prophylaxis versus 44 out of 359 (12.3%) of the emergency cases were dystocia presentations.

Type of parietal opening

For 222 out of 359 (61.8%) people operated on in prophylaxis versus 251 out of 359 (69.92%) in emergency, the opening was of the Joël Cohen type ($p < 0.02$).

Prognostic parameters

Maternal

In 10 cases out of 359 (2.8) of those operated on as prophylaxis versus 36 cases out of 359 (10.03%) of those operated on in emergency, the maternal condition got complicated.

Period of occurrence

In 8 out of 359 (2.23%) of prophylactic operations versus 28 out of 359 (7.8%) of emergency operations, post-operative complications were observed

Length of hospitalization

Three hundred and forty-eight (348) out of 359 (96.4%) of those operated on prophylactically versus 327 out of 359 (91.1%) of those in emergency stayed less than five days in hospital ($p < 0.02$).

Maternal lethality

Zero operated for prophylaxis versus 6 out of 359 (1.67%) in the emergency department.

Fetus

Three hundred and sixty-four (364) newborns out of 371 (98.1%) of prophylactic C-sections versus 151 out of 371 (40.7%) of emergency C-sections had a good Apgar score ($p < 0.001$).

DISCUSSION

Frequency

From July 1, 2016 to June 30, 2017, authors recorded 2869 caesarean sections out of 9053 deliveries, i.e. a frequency of 31.70%. Among the 2869 caesarean sections, 359 were prophylactic, i.e. 12.5%. Higher proportions are described in certain African series: 15.6% in Abidjan, 51.4% in Lubumbashi, 13% in Ouagadougou and European rates varying between 15.3% in Island and 35.4% in Italy.⁵⁻⁸ In other series caesarean sections were

mostly performed in an emergency context.^{9,10} The low proportion could be explained by the inadequate provision of prenatal contacts which would have made it possible to identify, at an early stage pregnant women that should benefit from a prophylactic caesarean section, the lack of appropriation by some pregnant women of decisions resulting from the prenatal visits, either for cultural or financial reasons, and the fact that some health service providers perform tests (labour or uterine) in facilities that do not have a surgical unit.

Socio-demographic parameters

Patients in the 20-29 age group had the highest proportion of prophylactic caesarean sections, i.e. 50.42% versus 54.04%. The difference observed was statistically significant. In the Yaoundé group, adolescents were the most concerned by emergency C-sections.¹¹ The high proportion in this second decade of their life is due to the fact that it is a period of intense sexual activity and therefore reproductive activity. The proportion of adolescent girls was not negligible: 6.13% for prophylaxis versus 16.71% for emergency C-sections.

Occupation influences the type of C-section. Salary earning women were more likely to have a prophylactic C-section i.e. 56.8% versus 14.5%. The difference observed was statistically significant. The finding was similar to the Ivorian observation.⁵ This predominance of prophylactic C-sections among salary earning women could be explained by the fact that they have a source of income and therefore a certain financial "autonomy", making them less dependent on their husband and/or family. This allows these women to quickly seek emergency obstetrical care (EmOC) services, unlike housewives who have no source of income, who are more represented in the emergency context.

In this group, married who underwent a caesarian section were the most concerned with 92.8% on prophylaxis versus 79.39%. The difference observed was statistically significant. These results corroborate those of Guinea-2017 DHS.³ For Cameroonian authors, unmarried women were the most affected.¹¹ The high percentage of married women would be justified by their high proportion in the general population on the one hand and, on the other, by the fact that marriage is the only legal framework recognized by customs and morals for procreation in our societies.

Patients who attended higher education institutions had more preventive C-sections 51.5% versus 10.03%. They were followed by those who completed secondary school education (37.88% versus 28.41%). The differences observed were statistically significant. The description was in favour of secondary and primary levels of education in the African series.^{5,11} From this observation it results that the more patients are educated, the better their adherence to decisions made during antenatal visits.

In study sample, 95% of those operated on for prophylaxis versus 19.8% of those operated on in the emergency room willingly came to the ward. The result is dissimilar to those of many authors in the region: Thiam et al 31.2% in Senegal, Tshabu A et al 30.4% in Benin and Etienne B, 37.5%.¹²⁻¹⁴ Differences observed were statistically significant. This high percentage would reflect a more or less adequate provision of antenatal visits and the appropriation of their content by pregnant women and/or their spouses.

Obstetrical parameters

Women giving birth for the first time were the most concerned with 40.95% in prophylaxis versus 58.50% in emergency. This result is similar to those of many authors in the sub-region.^{12,14,15} The differences observed were statistically significant. Nulliparous women are thus more exposed to emergency caesarean sections since they are experiencing their first maternity and are unaware of all the risks they are exposed to and therefore, they report late to the maternity hospital. In contrast multiparous women have already gone through several births, so they are aware of the risks and pay attention to the advice given to them by health workers.

In this study group, the history of the caesarean section was a predisposing factor to prophylactic caesarean sections, i.e. 53.20% versus 11.14% of emergency caesarean sections. Differences observed were statistically significant. This observation corroborates that of Mounanga M et al, according to which a gestational caesarean section patient has less than a 50% chance of delivering vaginally in the next pregnancy.¹⁶

In this study sample 71.9% of prophylactic C-sections versus 12.8% of emergency C-sections had five or more prenatal visits. Thus, the number of prenatal visits influences the type of C-sections. Differences observed were statistically significant. Thus, the number of ANC's influences the type of caesarean section.

According to the 2012 DHS, the proportion of pregnant women who completed at least the four quality prenatal visits was 57% in 2012.⁴ The decision to carry out a prophylactic caesarean section is most often made when a pregnancy and/or a delivery would involve a high risk. These high-risk pregnancies, which threaten both the mother and fetus life, would require close visits, hence their high number on the one hand, and on the other hand, caesarean sections were most often performed among salary earning women (56.8%) and among women with a higher level of education (51.4%), hence those who easily understand pieces of advice given by health workers and who have a higher attendance of health facilities as they have more financial means to meet inherent expenses. And emergency caesarean sections were more frequently performed by women in the liberal professions (48.76%) who are self-employed in small income generating activities (sewing, petty trade, hairdressing, etc.) and

housewives (23.95%) who do not engage in any income generating activities and who only take care of household chores at home; women who did not go to school (36.49%) and secondary school graduates (28.41%), hence a lower attendance of health facilities because they do not easily understand the need and do not have adequate financial resources to go to hospital and the hospital will thus be an obligatory stopover given the emergency that arises.

In Guinea and in many other African countries, in accordance with the recommendations of the World Health Organization, standards and procedures require at least four (04) refocused ANC's, a number recently increased (08). Unfortunately, the observation of pregnant mothers' health books shows that they are insufficiently filled out by health workers. So better than the number of visits, it is the quality of the latter that is most important. In 73.54% of the cases versus 1.67%, it was the obstetrician who carried out the prenatal visit, as noted by the Ivorian authors.⁵ The nurse had made many more prenatal contacts in the Cameroon series. The difference observed was statistically significant. From this observation, it follows that the qualification of the provider has an influence on the practice of preventive cesarean.

In the study population, pregnancies were followed in most cases at the National Hospital (NH) 92.48% versus 8.91%. The differences observed were statistically significant. Study results join those of Bokossa M et al in Ivory Coast, which had found 59.4% of prophylactic cesareans versus 27.4% of those in emergency followed at the CHU; but contrary to those of Foumane P et al.^{5,17} This finding better reveals that the number of antenatal consultations (ANC) the quality of the service provider has an influence on the type of cesarean. In private and HN structures, these gestants are most often followed by obstetricians and generalists with skills in obstetrics. They are able to correctly set the indications for elective cesarean section and make pregnant women aware of it in time. These pregnant women then agree to lend themselves to performing elective cesareans contrary to those followed on the periphery.

Membranes were intact in almost all cases for prophylactic caesarean sections (99.7% versus 13.1%). Prophylactic caesarean sections are performed in women who are not in labour, the cervix is closed, and membranes are generally intact. Cases of ruptured membranes in this group occurred spontaneously before the presumed date of the of surgery, unlike in cases of emergency caesarean sections.

Amniotic fluid (AF) was clear in the majority of prophylactic caesarean sections (88.30% versus 29%). In emergency C-sections, however, authors noted the abnormal appearance of the AF (meconium amniotic fluid and pea purée) in 64.6% of cases. A situation that

would indicate severe acute fetal pain as opposed to prophylactic C-sections.

According to Racinet, indications for caesarean section are often intricate, and making an indication is an act resulting from an intellectual approach specific to each obstetrician.¹⁸ Thus, authors have noted a predominance of scarred uteruses (32.32% versus 8.1%) followed by maternal pathologies (18.11% versus 4.46%) in the Ivorian group.⁵

The indication for an iterative prophylactic caesarean section is given in the absence of information on the quality of the uterine scar or when the first indication is permanent as in pelvic angustia (anomaly of the pelvis: shrinkage, deformation). According to Graizin "One a caesarean section, always a caesarean section".¹⁹ At Conakry University Hospital and in many other peer centers, Graizin's assertion that caesarean section once is always equal to caesarean section always is no longer a systematic practice in the absence of an abnormality added to the scarred uterus.^{7,14,20,21}

According to Robson's classification, authors found a predominance of group 6 indications (29.53% versus 16.71%) followed by group 5 (23.1% versus 24.2%). The differences observed were statistically significant. She proposed a classification of women into 10 or 12 subgroups and for each of these subgroups, the calculation of her caesarean section rate and her contribution to the overall caesarean section rate. Its adoption allows for the evaluation and the comparison of factors contributing to C-section rates and their effects.

Joel Cohen's incision was the most frequently performed in this unit for both types of C-sections (61.8% versus 69.9%). It is the Stark caesarean section technique or Misgav Ladach technique with a parietal opening according to Joel Cohen through a superficial transverse rectilinear incision of the skin at about 3 cm from the inter-iliac line joining the two anterior superior iliac spines. The incision is deepened in the centre with the scalpel until contact is made with the aponeurosis of the straight muscles of the abdomen, which is opened transversely for 2 cm. The rest of the parietal opening is made by digital dilaceration (the index and median fingers of the operator and assistant are folded back) of the rectus abdominis muscles and the peritoneum. The differences observed were statistically significant.

The high frequency of Joël Cohen's incision could be explained by the fact that it is the first step in the Misgav Ladach technique, which has become the reference at Conakry University Hospital since 2008, following the results of an in-situ study conducted by Kaba A, et al, which demonstrated the advantages of this technique compared with conventional caesarean sections by median under umbilical laparotomy (usually performed in the unit) in terms of ease, speed, reduction of immediate postoperative morbidity and cost.²²

Prognostic parameters

Maternal prognosis

Authors found among prophylaxis operated women 2.2% versus 10% of complications. The difference observed was statistically significant. The trend is similar in several series.²²⁻²⁵ Thus, the more urgent the caesarean section, the higher the risk of complications.

Infectious complications in the postoperative period were (1.4% versus 5.6%) followed by anaemia (0.6% versus 2.2%) for the prophylactic caesarean section.

In the emergency context, the importance of infection is related to late obstetric evacuation, conditions and difficulties in management. It should also be noted that the operation is carried out in a field that is conducive to infection (premature rupture of membranes, genitourinary infection, anaemia), not forgetting the septic conditions of labour (pregnant women undergoing iterative vaginal touching in a context of dubious asepsis, the water pocket having been ruptured several hours ago). Authors agree with Boulanger JC.²⁶

In this series, the average length of hospital stay for prophylactic caesarean sections was 3.12 days versus 4.04 days and the standard deviation 1 versus 4.51. The stay for prophylactic C-sections was less than 05 days (96.94% versus 91.09%). The differences observed were statistically significant. Similar findings are reported in the literature.^{5,17,26}

There were no maternal deaths in the study population compared with 06 in the emergency caesarean section population (1.7%). Subtil in France states that the risk of direct obstetric mortality is lower for pre-labour caesarean sections (risk multiplied by about 3) than for caesarean sections during labour (risk multiplied by about 9).²³

Fetal prognosis

Newborns in the study population had an Apgar score at the fifth minute greater than or equal to 7 in 98.07% versus 40.70% for emergencies as reported by teams in the sub-region.^{6,7,15} The differences observed were statistically significant. In the case of emergency caesarean sections, fetal distress (consequence of dystocia or maternal pathology that went unnoticed during pregnancy) was often associated with the main indication.

There is approximately 13 times more perinatal lethality in the emergency caesarean section population (21.6%) compared to the prophylactic population (1.7%). The differences observed were statistically significant. In some emergency caesarean sections, even though the child is dead, the caesarean section is unavoidable, as in the case of the neglected shoulder, this added to acute

fetal distress (AFD) could explain this higher rate of perinatal lethality.

Authors recorded (66.7% versus 6.3%) of lethality in the early neonatal period followed (33.33% versus 8.75%) by antepartum for prophylactic caesarean section versus (85%) by intrapartum for emergency caesarean section. The observation is similar in several other studies.^{7,11,25} This high intrapartum lethality in emergency caesarean section is often the consequence of acute fetal distress during labour, being itself the consequence of dystocia or unknown maternal pathology, hence the interest in prophylactic caesarean section if it is the appropriate mode of delivery.

CONCLUSION

The improvement in this prognosis would require an increase in the frequency of prophylactic caesarean sections.

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