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## Emergency caesarean deliveries: Analysis of 592 cases in federal medical centre Keffi, North Central Nigeria

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### Abstract

**Background:** Life threatening obstetric conditions often requires prompt interventions especially by caesarean delivery which in itself is associated with immediate and long term risks to mothers and babies. This study aimed at determining emergency caesarean section rate, its indications, morbidities as well as maternal and fetal outcomes in our clinical setting.

**Materials and Methods:** This was a prospective analysis of all the patients delivered by emergency caesarean section between January 1<sup>st</sup> 2016 and 31<sup>st</sup> December 2017 at the Federal Medical Centre Keffi, Nasarawa state, Nigeria. Data was collected from the case files of the patients after discharge from the postnatal ward and documented in a pre-tested proforma. Analysis was done by simple percentages using SPSS version 20.

**Results:** A total of 2958 deliveries took place during the period study out of which 592 emergency caesarean sections (CS) were performed. Emergency CS accounted for 20.0% of all deliveries. About 62.3% (369/592) of the patients were unbooked for antenatal care. The most common indication for emergency caesarean section was obstructed labour due to cephalopelvic disproportion, accounting for 212 (35.8%) of cases. Others included antepartum hemorrhage, fetal distress, and severe preeclampsia/eclampsia.

Morbidities associated with emergency caesarean deliveries included post-operative site infection, puerperal sepsis, postpartum haemorrhage and obstetric fistula. There were one (0.2%) maternal and 23 (3.8%) perinatal mortalities.

**Conclusion:** Emergency caesarean section rate is relatively high in this centre mostly among un-booked patients. There is need to increase effective antenatal care coverage and skilled delivery in rural areas to avert potential obstetric consequences of this procedure among women.

**Keywords:** caesarean section, emergency, morbidities, operative obstetrics, Nigeria

### Introduction

Caesarean section is one of the commonest major obstetric surgical procedures performed on pregnant women worldwide often in life threatening obstetric conditions to the mother, fetus or both. This life saving procedure is usually indicated with the aim of reducing maternal and fetal morbidity and mortality [1, 2]. The procedure is however associated with complications as well as implication on the future mode of delivery among women with previous caesarean section [3, 5]. The rate of caesarean deliveries has been on the increase in maternity centres around the world largely due to a shift in emphasis from safety of the method and technique of deliveries to a greater concern about perinatal outcome following delivery [3, 7].

Various reasons are responsible for the rising rates of caesarean section including improved safety of the operation due to improved anesthesia, availability of blood transfusion and antibiotics, decline in vaginal breech delivery, increased number of women with age greater than 30 years and associated medical complications, fear of litigation in obstetric practice, and increased identification of risks in the mothers and fetuses before or at term. Others are wider use of repeat caesarean section in cases with previous caesarean delivery, rising rate of induction of labour and failure of induction and decline in operative and manipulative vaginal delivery (rotational forceps) [7, 8]. For Caesarean delivery to be labeled as emergency, an arbitrary time limit of 30 minutes is thought to be reasonable from the time of decision to the start of the procedure [8]. A greater risk of adverse events is associated with emergency caesarean section because anesthetic complications are more likely to occur especially when general anesthesia is administered sooner than 4-6 hours after taking foods and fluids [9]. The risk of complications is much lower in vaginal delivery and elective caesarean section compared with emergency caesarean section [10]. Historically, most caesarean deliveries are performed for obstetric complications or medical illnesses in pregnancy and that increase the possibility of adverse maternal and fetal outcomes [11, 12].

The decision to perform emergency cesarean section may be taken during antenatal or intra-partum period. In view of inadequate antenatal and intra-partum services especially in our environment and the consequences of emergency cesarean delivery, this study was undertaken to ascertain the rate of emergency cesarean section, its indications, complications as well as maternal and fetal outcomes in our clinical setting.

### Materials and Methods

This is a prospective study of cases of emergency caesarean deliveries at the department of Obstetrics and Gynaecology of Federal Medical Centre (FMC) Keffi, North central Nigeria. The department is made up of antenatal, gynecological, postnatal, eclamptic and labor wards. Federal medical center Keffi is a tertiary care center which was established in 2001 as a referral center for Nasarawa state and parts of neighboring states of Plateau, Kaduna, Kogi and Benue states and parts of Federal Capital Territory.

This study was conducted over a 2 year period between 1<sup>st</sup> January 2016 and 31<sup>st</sup> December 2017. The study population comprised of all parturients in the hospital antenatal and labor wards delivered by emergency cesarean section on accounts of various indications as well as emergency cases referred from other neighboring hospitals. The clinical information of all the parturients was reviewed and the records as well as operative findings were documented on a proforma for each patient. Data collected included each patient's age, parity, booking status, indication for cesarean section, type of anesthesia, complication(s), estimated blood loss as well as maternal and fetal outcomes. The data was entered and analyzed using the SPSS version 20 (IBM, Armonk, NY, USA). Ethical clearance for the study was obtained from the Ethical committee of FMC, Keffi.

### Results

During the period of study, there were 2958 deliveries out of which 737 were by caesarean section, giving overall caesarean section rate of 24.9%. However, among women delivered by caesarean section, 592 were by emergency cesarean section. Emergency cesarean section therefore accounted for 20.0% of all deliveries but 80.3% of caesarean deliveries in this clinical setting. The mean gestational age at emergency cesarean delivery was  $37.8 \pm 3.0$  weeks with a range of 32 – 41 weeks of gestation.

The mean age of the patients was  $28.6 \pm 5.6$  years with a range of 16 – 43 years while the mean parity of the women was  $4.7 \pm 1.3$  and a range of 0 – 7.

Three hundred and sixty-nine (62.3%) of the women that had emergency deliveries were un booked for antenatal care and majority of these attempted home deliveries before presentation in the hospital. Eighty-five (14.4%) of the cases the women were HIV positive. The mean pre-operative packed cell volume (PCV) was 31.8% with a range of 22 – 41%. The average post-operative PCV was 30.5% and range of 28 – 35%. The commonest indications for emergency cesarean section were obstructed labour and antepartum haemorrhage (placenta praevia and abruption placentae with live baby). Table 1 depicts the indications for emergency cesarean section. Three hundred and ninety four (66.5%) of the women had spinal anesthesia, 190 had general anesthesia (32.1%) while 8 had epidural anesthesia (1.4%). The average estimated blood loss among the women was  $549 \pm 210$  mL and a total of 40 (6.8%) women were transfused at least 2 units of blood. The average Apgar scores of the fetuses at 1 and 5 minutes were 7.1 and 9.0 respectively.

Complications that occurred following emergency cesarean section included post-operative site infection, puerperal sepsis, postpartum haemorrhage and obstetric fistula. One (0.17%) maternal death and twenty-three (3.8%) fetal deaths were recorded among the women that had emergency cesarean deliveries. The maternal death was a case of an unbooked 16-year old primigravida who presented at 32 weeks gestational age with eclampsia.

**Table 1:** Indications for emergency cesarean deliveries

Indications for cesarean section	Number	Percentage
Obstructed labour	212	35.8
Antepartum haemorrhage (Placenta praevia & Abruptio)	103	17.4
Fetal distress	74	12.5
Severe preeclampsia/Eclampsia	73	12.3
One previous CS and one or more obstetric risk factor	40	6.8
Breech presentation	15	2.5
Cord prolapse	15	2.5
Failed induction of labour	15	2.5
Transverse Lie in labour	13	2.2
Two or more previous caesarean section	12	2.0
Bad obstetric history	10	1.7
Retained second twin	5	0.9
Triplet pregnancy	5	0.9
Total	592	100.0

### Discussion

The overall caesarean section rate in this study was 24.9%. This is lower than reported figure of 18.0% in Jos, Nigeria [12] but similar to 22.2% and 26.5% in Benin City and Enugu respectively [13, 14]. However this is lower compared to rate of 36.4% in Lagos [15]. This high caesarean section rate as well as other figures above from others tertiary centers across Nigeria compared to World Health Organization (WHO) recommended rate of 15% or lower [16] are attributable to the fact that the hospitals are tertiary referral centers and this is typified in this study where most of the patients were unbooked.

Emergency caesarean section accounted for 20.0% of all deliveries and 80.3% of caesarean sections in this study. The emergency caesarean section rate in this study is similar to reported figures of 79.7% and 74.3% from Benin City and in IyiEnu Mission hospital [13, 17] but slightly less than that reported figures of 83.6% and 85.2% in Makurdi and Jos respectively [18, 19]. This high emergency caesarean section rates were also reported in other parts of Nigeria, the 76.5% in Owerri and 77.9% in Ibadan [20, 21]. In other studies conducted in hospitals in parts of the world, emergency caesarean section accounted for 75.85%, 64.14% and 52.0% of all deliveries in Rabat Morocco, Australia and Croatia respectively [22, 24]. This high rate of emergency caesarean section rate may be attributed to poor attitude of women to antenatal care as well as its inadequate coverage in our environment. This is supported by the fact that about two-third of the women that had emergency cesarean deliveries were un booked and these women usually present with emergency obstetric conditions that need immediate intervention to prevent adverse maternal and fetal outcomes. The rates of emergency caesarean deliveries in Nigeria mirror the finding in Morocco, an African country which is also reported having similar challenges like inadequate antenatal care [22]. However, the figures from Australia and Croatia are lower compared to figures in Nigeria which may suggest their better maternal health coverage including obstetric care. Also, the fact that our hospital

is a referral centre for high risk and complicated cases may also be a reason for high emergency cesarean section rate.

Obstructed labor was the commonest indication for emergency caesarean section as also noted elsewhere in Nigeria<sup>[20, 21]</sup>. This is however contrary to the finding of fetal distress as the commonest indication for emergency caesarean section in Southeast Nigeria and Morocco<sup>[17, 22]</sup>. Chronic childhood malnutrition and infection in the Northern part of Nigeria leading to inadequate pelvic development and resultant cephalopelvic disproportion could be a possible explanation for these high cases of obstructed labor in this study population<sup>[25]</sup>. Also high prevalence of early marriage among our populace may explain the reason for this high figure in this study. This reason of teenage marriage in our environment is buttressed by findings from our close towns of Kaduna and Zaria in Northern Nigeria<sup>[26]</sup> compared to Southern part of Nigeria<sup>[27]</sup>. Other indications for emergency caesarean section in our study were antepartum hemorrhage (17.4%) and fetal distress (12.5%). Again, this could be due to undiagnosed cases of placenta praevia and poorly managed labor at home or clinics in rural areas, thereby leading to presentation of the women with these emergency obstetric conditions.

Most of our patients had Spinal and epidural anesthesia for emergency cesarean delivery. This is a reflection of the increasing availability of skilled personnel for regional anesthesia in our environment<sup>[28]</sup>. This finding was also noted across other tertiary health centres in Nigeria<sup>[4, 6, 10, 12]</sup>.

The complications associated with the emergency caesarean section in this study included operative site infection, puerperal sepsis, and postpartum haemorrhage. These were also reported by other researchers in Nigeria<sup>[6, 10, 15, 17, 19]</sup>. There was one case of maternal death (0.17%) and this is similar to 0.78% and 0.51% reported in Benin City and Lagos respectively<sup>[13,15]</sup>. Although maternal and perinatal mortality from caesarean section has greatly reduced in developed countries to the extent that there may not be a single maternal mortality in several thousands of caesarean sections<sup>[29]</sup>, however the case is different in developing country like ours where persistent late presentation of pregnant women in labor<sup>[30]</sup> may lead to adverse maternal and perinatal outcomes as seen in the study.

Prolong obstructed labor and preeclampsia/eclampsia is associated with severe fetal asphyxia and death if delivery is unduly delayed<sup>[30]</sup> and this may explain the high perinatal mortality of 3.8% in this study. This perinatal mortality rate is higher than 1.0% and 1.1% reported among women that had emergency caesarean delivery in Rabat, Morocco<sup>[22]</sup> but lower than 11.9% from Sokoto, Nigeria<sup>[31]</sup>. These may be attributed to differences in timing of presentation in hospitals by women in emergency situations as well as quality of obstetric and neonatal care in these clinical settings.

### Conclusion

Emergency caesarean section rate is high in our clinical setting mainly on unbooked patients with potential future obstetric implications for these women as a result of the uterine scars. The need for concerted efforts at increasing antenatal care coverage in rural areas and training of skilled health workers to mitigate the high emergency caesarean section rate cannot be overemphasized.

**Conflict of interest:** Authors declare no conflict of interest

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