

COMPARISON OF MATERNAL AND FETAL OUTCOMES OF ELECTIVE AND EMERGENCY CAESAREAN DELIVERIES.

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ABSTRACT

Background: Caesarean delivery (CD) is a procedure which poses a major public health concern to Obstetricians. The outcome of emergency and elective caesarean delivery largely depend on the maternal and or fetal conditions. The study compared maternal and fetal outcomes in both elective and emergency caesarean delivery at the University College Hospital, Ibadan, Nigeria.

Methods: This was a six-year retrospective study of pregnant women who underwent caesarean delivery at the University College Hospital. Information was extracted from their medical records using a proforma. Comparison of maternal and fetal outcomes of elective and emergency caesarean deliveries was done. Data were analyzed using SPSS version 20.

Results: A total of 6,854 women had caesarean delivery (CD), mean age was 28.85 ± 5.62 years and ranged from 15-48 years. A higher proportion (85.5%) had emergency CD in which majority were unbooked (80.4%) with the commonest indication as prolong obstructed labour while repeat caesarean delivery (57.6%) was the commonest indication for elective CD. Haemorrhage, puerperal sepsis, wound infection, anaemia, blood transfusion, urinary tract infection, and admission into intensive care unit were more among those with emergency CD and all were statistically significant ($p < 0.05$). Low birth weight stillbirths and admission into special care baby unit were also higher among the fetus of those who had emergency CD, and these were statistically significant ($p < 0.05$). Women with postdated pregnancy had twice the chance of having emergency CD (OR= 2.15, 95% CI= 1.71-2.72).

Conclusion: Maternal and fetal complications were more among women with emergency caesarean delivery and prolong obstructed labour was the main indication thus it is expedient to educate pregnant women and the community on complications of pregnancy and labour to prevent or promptly intervene when necessary to reduce adverse maternal and fetal outcomes.

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INTRODUCTION

Pregnancy and childbirth are considered as normal physiological remarkable experience in women. About 10% of deliveries are considered as high risk, some of which may require CD¹. Caesarean delivery (CD) is one of the most commonly performed lifesaving surgical procedures all over the world^{1,2}. This is performed when a vaginal delivery would put the mother and or baby's life at risk, but sometimes it is also performed on request. However, there is no evidence of its benefits if not medically indicated^{1,3}.

The prevalence of CD has been on the increase, mostly due to a shift in emphasis from the technique of childbirth to a greater concern about perinatal outcome following delivery^{2,4}. Even though CD has been proven to be safe, it carries a significant maternal and fetal short- and long-

term morbidity and mortality when compared with vaginal delivery^{3,5}. These morbidities can extend further than the effect on the present delivery and affect future pregnancies³. Thus, the rise all over the world has raised concerns globally, especially among the obstetricians^{2,3}. Unlike in developed nations, poor socioeconomic conditions, low-quality obstetric care, relatively high cost and a low threshold of some doctors for CD are some of the main limitations that have besieged the practice of CD performed either as emergency or elective in developing nations including Nigeria^{6,7}.

Emergency CD is performed due to acute obstetric emergencies with a threat to the mother or fetus while elective CD is done at a pre-arranged time during pregnancy convenient for the mother and the doctor to ensure the best quality of obstetrics care, anaesthesia, nursing care and neonatal resuscitation^{2,8}. In Nigeria, 2% of all births are through CD with over three quarter done as emergencies, and this has been established to be associated with preventable conditions^{3,9}. In addition, several studies have shown that cases of emergency CD are higher than that of elective and indications for the emergency includes cephalopelvic disproportion, repeat caesarean deliveries, obstructed labour and fetal distress, however facilities to meet all the criteria of surgery are not always available^{6,10-12}.

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Thus, procedures are done under defective conditions which adversely affect the maternal and or fetal outcome. This at times explains why both maternal and fetal complications are more common in emergency than in elective CD, although other factors to be considered are the maternal and fetal conditions prior to the procedure and the skill of the surgeon^{7,12}. While the significance of CD in obstetric practice is increasing, it has become expedient to continuously evaluate maternal and fetal outcomes of both emergency and elective CD because its associated risk cannot be taken for granted. It is on this background that the study aimed at comparing maternal and fetal outcome in elective and emergency CD at the University College Hospital, Ibadan, Nigeria.

METHODS

This was a retrospective study of pregnant women who had caesarean delivery over a six-year period from 1st January 2009 to 31st December 2014 at the University College Hospital, Nigeria. The institution which is in Ibadan is the first and largest federal government-owned teaching hospital in Nigeria that provides tertiary level obstetric care and serves as a referral centre for several hospitals. The hospital has appendages of community-based outreach activities where it offers primary and secondary health care services.

Every year, about 2,000 women book for antenatal care and on the average 2,400 women deliver at the hospital. Booked patients were regarded as those who received antenatal care at the University College Hospital, Ibadan while unbooked patients were those who did not access antenatal care at all or had it outside University College Hospital.

All women who were listed consecutively in the register as having had caesarean delivery were identified from the labour ward, post-natal ward and the medical records department. Their medical records were retrieved after removing duplicated records using hospital number from the different registers. Women with multiple pregnancies and those with gestational age less than 36 weeks were not included in the study. A detailed proforma was used to extract information from the medical records on their socio-demographic characteristics, obstetric history, type of caesarean delivery with indication, maternal and fetal intraoperative complications, post-op complications and outcome of pregnancy. Comparison of maternal and fetal outcomes of elective CD and emergency CD was done. Data were entered and analyzed using SPSS version 20.

RESULTS

Out of the 6,854 women who had caesarean delivery at gestational age of ≥ 36 weeks during the study period, a total of 6242 (91.1%) medical records was retrieved and were analyzed. A higher proportion (85.5%) of them had emergency CD of which the majority (80.4%) was among the unbooked patients and nulliparous women (52.0%).

The mean age was 28.85 ± 5.62 years, with age ranging between 15 to 48 years. All (100%) and almost all (94.1%) of the women less than 20 years and greater than 39 years had emergency CD respectively. Emergency CD was commonest among women age group 20 to 29 years with (Table 1)

As shown in Table 2, the commonest indication for

emergency CD was prolong obstructed labour 2,390 (43.3%) while previous caesarean delivery 423 (58.9%) was the commonest for elective CD. Other indications for emergency CD are fetal distress 803 (14.5%), antepartum hemorrhage 661 (12.0%), eclampsia/pre-eclampsia 504 (9.1%), mal-presentation 380 (6.9%), failed induction of labour 158 (2.9%), cephalopelvic disproportion 112 (2.0%) and cervical dystocia 19 (0.3%).

Maternal intra-operative and post-operative complications were commoner among the women who had emergency CD with a higher proportion having urinary tract infection 264 (100%), puerperal sepsis 553 (97.1%), wound infection 1040 (96.2%), admission into intensive care unit 182 (95.7%), blood transfusion 1032 (94.0%), obstetric haemorrhage 520 (92.6%), anaemia 1717 (91.2%) and anaesthetist complications 99 (85.7%) compared with those that had elective CD. Of the maternal complications hemorrhage ($p < 0.01$), puerperal sepsis ($p < 0.0001$), wound infection ($p < 0.0001$), anemia ($p < 0.0001$), blood transfusion ($p < 0.0001$), urinary tract infection ($p < 0.04$), and admission into intensive care unit ($p < 0.01$) among those who had emergency CD were statistically significant when compared with those who had elective. There was a total of ten maternal mortality with 8 (80%) among those who had emergency CD and 2 (20%) among those with elective CD. A fatality rate of 0.2% was recorded in both elective and emergency caesarean deliveries (Table 3).

With regards obstetric history, women with previous caesarean delivery(ies) (OR= 0.16, 95% CI= 0.13-0.19), previous history of induction of labour (OR= 0.36, 95% CI= 0.03-0.49), and booking of index pregnancy were less likely to have emergency CD while women who presented with postdated pregnancy had twice the chance of having emergency caesarean delivery (OR= 2.15, 95% CI= 1.71-2.72). (Table 4)

Considering the fetal outcome, low birth weight, stillbirth and admission into special care baby unit was higher among the fetus of those who had emergency CD, and these were statistically significant ($p < 0.05$). (Table 5)

DISCUSSION

The study revealed a high rate of emergency caesarean delivery with its associated maternal and fetal complications and a high preponderance of which was among the unbooked patients. This is largely because the hospital the study was conducted is a tertiary health facility, and many cases are referred there from both peripheral hospitals and mission/traditional birth homes and as such handle's difficult cases. However, the complications were more because most of the unbooked patients would have been poorly managed or had several interventions instituted at the source of referral and they will only be referred if the interventions failed or after complications had set in. This is not surprising because from the national demographic health statistic, merely 61% of pregnant women access antenatal care while only 38% of birth was attended by skilled birth attendant¹³. This is further worsening by the cultural beliefs, fears associated with having a CD, cost of surgery, delays in seeking treatment, and poor access to optimum quality obstetric emergency care which makes emergency CD commoner even when there had been indications for elective CD

during pregnancy¹⁴.

An emergency caesarean delivery rate of 85.5% was found among the study population, which is higher than the rate of 75.2% reported by Onoh et al. in southeastern part of Nigeria and 77.9% in the previous study conducted in our hospital more than a decade ago but similar to that reported in northwestern Nigeria with a rate of 86.4%^{9,15,16}.

The most common indication for emergency CD was prolonged obstructed labour, and this supports findings from other studies in Nigeria^{7,9,12,14}. This shows prolonged obstructed labour is still a major issue in Nigeria despite its associated complications with studies confirming its great contribution to the overwhelming neonatal and maternal morbidity and mortality^{14,17,18}. Although the need for emergency CD in order to avoid the complications of prolonged obstructed labour is indisputable, it's more expedient for skilled personnel to identify the risk factors and to adequately monitor labour with partograph so as to offer elective CD if risk factors are identified or have early recourse to emergency CD when indicated in order to reduce the associated complications.

Majority of the emergency CD was performed among women aged 20 to 29 years which is similar to the findings of a study in Maiduguri, Nigeria¹⁹.

Furthermore, the commonest indication for elective CD in this study was a previous CD and this was more among the booked patients. This is similar to findings from other studies^{2,6,7,9}. However, with this trend of increased incidence of both primary and repeat CD it is paramount to ascertain the indication for primary CD and if not medically indicated to avoid it so as to prevent repeat CD. Also, in well-equipped hospital with the presence of skilled personnel – senior obstetrician, the incidence of repeat CD could be reduced with careful selection of cases with one previous CD who meet the criteria for vaginal birth after caesarean delivery (VBAC) who should be encouraged to have a trial of labour, and the use of instrumental vaginal delivery when indicated should be promoted to prevent primary CD^{20,21}.

Although only a few (11; 1.5%) cases had maternal request as the indication for the CD, several factors have been documented to influence the decision. These include patients' perception of the safety of the procedure, improved surgical techniques and anaesthesia, physicians' practice patterns, and pressures on caregivers to make defensive medical decision⁴. Conversely, there is no evidence of the benefit of CD over vaginal delivery if not medically indicated and if women are adequately counselled on the risks associated with CD majority will opt for vaginal delivery^{3,20}.

Similar to previous reports intra-operative and post-operative complications - obstetric haemorrhage, puerperal sepsis, wound infection, anaemia, blood transfusion, urinary tract infection, anaesthesia complication and admission into intensive care unit were commoner in the emergency caesarean delivery group^{2,7,9,12}. It is worthy of note that obstetric haemorrhage, the leading cause of maternal mortality in Nigeria was 12.5 times commoner among the emergency CD group than the elective group. Additionally, another important finding was the high rate of puerperal sepsis among those who underwent emergency CD which was 33.5 times

commoner in them compared to those who had elective CD. These findings support the report of previous study on complications of CD¹⁵. Moreover, some of the previously identified predisposing factors for maternal morbidities including haemorrhage and sepsis were lack of antenatal care and or late presentation in labour and caesarean delivery²²⁻²⁴. Hence this reflects the poor accessibility, availability and affordability of quality maternal health and the burden of high maternal morbidity among women who had emergency CD in Nigeria. There were ten (10) maternal deaths with a fatality rate of 0.2% and over three-quarter of this death occurred among the emergency CD group which could be linked to their high unbooked status. This is lower than the rate of 0.7% reported in a similar tertiary health facility in southeastern Nigeria⁶.

In this study, the emergency CD group has higher cases of low birth weight, stillbirth and admission into special care baby unit, which were statistically significant ($p < 0.05$). This is similar to findings from other studies^{8,14}. Equally, the high prevalence of prolonged obstructed labour and fetal distress contributed significantly to this high fetal mortalities and morbidities that merited admission into special care baby unit. Therefore, good antenatal care, quality monitoring of labour and prompt intervention will improve the fetal outcome.

This study is not without its limitation, as with retrospective study rather than a prospective trial it may be difficult to control for confounders. It is hoped that future studies are prospective to reduce the confounders like assessing the unbooked patients that had intrapartum care the facility including the type and duration of care which might influence the outcome of the caesarean delivery.

CONCLUSION

Maternal and fetal complications were more among women who delivered through emergency caesarean delivery. Prolonged obstructed labour and repeat caesarean delivery were the main indications for emergency and elective caesarean delivery, respectively. It is expedient to educate pregnant women and the community on the benefit of antenatal care, among which is detecting those patients that are candidates for elective caesarean delivery and be managed as such. This will also prevent the complications of pregnancy and labour associated with emergency caesarean delivery and ensure better maternal and fetal outcomes despite the mode of delivery.

Table 1: Demographic profile of patients

Variable	Type of Caesarean deliveries		Total (%) N=6242
	Emergency (%) N=5524(85.5)	Elective (%) N=718(11.5)	
Age (yrs.)			
< 20	306(100)	0(0)	306
20-29	2884(92.3)	239(7.7)	3123
30-39	2205(82.4)	470(17.6)	2675
>39	129(94.1)	9(5.9)	138
Mean=28.85±5.62			
Occupation			
Housewife	514(91.2)	50(8.8)	564
Civil servant	602(70.2)	256(29.8)	858
Trading	2502(91.3)	239(8.7)	2741
Student	446(90.0)	50(10.0)	496
Artisan	907(95.7)	41(4.3)	948
Others	553(87.0)	82(13.0)	635
Marital Status			
Married	5203(88.0)	710(12.0)	5913
Single	321(97.5)	8(13.0)	329
Educational status			
None	66(100)	0(0)	66
Primary	3111(95.7)	140(4.3)	3251
Secondary	900(93.2)	66(6.8)	966
Tertiary	1447(73.8)	512(26.2)	1959
Parity			
0	2874(94.6)	165(5.4)	3039
1-4	2568(82.3)	553(17.7)	3121
>4	82(100)	0(0)	82
Booking status			
Booked	1082(64.5)	595(35.5)	1677
Unbooked	4442(97.3)	123(2.7)	4565

Table 2: Indications for Caesarean deliveries

Indication	Type of Caesarean deliveries		Total
	Emergency 5524	Elective 718	
Prolong obstructed labour	2390(43.3)	0(0)	2390
Cervical dystocia	19(0.3)	0(0)	19
Cephalopelvic disproportion	112(2.0)	0(0)	112
Eclampsia/Pre-eclampsia	504(9.1)	98(13.7)	602
Fetal distress	803(14.5)	0(0)	803
Antepartum haemorrhage*	661(12.0)	42(5.8)	703
Failed induction of labour	158(2.9)	0(0)	158
Previous Caesarean deliveries	497(9.0)	423(58.9)	920
Malpresentation	380(6.9)	136(18.9)	516
Maternal Request	0(0)	11(1.5)	11

* Antepartum haemorrhage include major placenta previa without vaginal bleeding

Table 3: Maternal complications

Complication	Type of Caesarean deliveries		Total(%)	Chi-Square	P-value
	Emergency(%) 5524	Elective(%) 718			
Haemorrhage					
Yes	520(92.6)	41(7.4)	561	10.65	<0.01
No	5004(88.1)	677(11.9)	5681		
Anaesthetic complication					
Yes	99(85.7)	17(14.3)	116	1.15	0.28
No	5425(88.5)	701(11.5)	6126		
Blood transfusion					
Yes	1032(94.0)	66(6.0)	1098	39.48	<0.0001
No	4492(87.3)	652(12.7)	5144		
Wound infection					
Yes	1040(96.2)	41(3.8)	1081	76.35	<0.0001
No	4484(86.9)	677(13.1)	5161		
Puerperal sepsis					
Yes	553(97.1)	17(2.9)	570	44.73	<0.0001
No	4971(87.6)	701(12.4)	5672		
UTI					
Yes	264(100)	0(0)	264	-	0.04
No	5260(88.0)	718(12.0)	5978		
Anaemia					
Yes	1717(91.2)	165(8.8)	1882	19.81	<0.0001
No	3807(87.3)	553(12.7)	4360		
ICU admission					
Yes	182(95.7)	8(4.3)	190	10.24	<0.01
No	5342(88.3)	710(11.7)	6052		
Maternal death					
Yes	8(80.0)	2(20.0)	10	0.26	0.61
No	5516(88.6)	716(11.5)	6232		

*UTI - Urinary tract infection; ICU - Intensive care unit

Table 4: Obstetrics history

History	Type of Caesarean deliveries		Chi-Square	P-value	Odds ratio(95%CI)
	Emergency(%)	Elective(%)			
Postdated pregnancy					
Yes					
No	1265(22.9)	87(12.1)	43.54	P<0.0001	2.15(1.71-2.72)
	4259(77.1)	631(87.9)			
Previous Preterm delivery					
Yes	342(6.2)	54(7.5)	1.89	0.17	NA
No	5182(93.8)	664(92.5)			
Previous history of induction					
Yes	155(2.8)	54 (7.5)	43.65	P<0.001	0.36(0.03-0.49)
No	5369(97.2)	664(92.5)			
Previous Caesarean deliveries					
Yes	1061(19.2)	429(59.8)	574.72	P<0.0001	0.16(0.13-0.19)
No	4463(80.8)	289(40.2)			
Booking Status					
Booked	1082(19.5)	595(82.8)	156.45	P<0.0001	0.05(0.04-0.06)
Unbooked	4442(80.4)	123(17.1)			

Table 5: Fetal outcome

Outcome	Type of Caesarean deliveries		Total(%)	Chi-Square	P-value
	Emergency(%)	Elective(%)			
Stillbirth					
Yes	669(100)	0(0)	669	7.58	<0.01
No	4855(87.9)	718(12.6)	5573		
Birth weight (kg)					
<2.5	702(96.6)	25(3.4)	727	6.42	0.01
..	4822(87.4)	693(12.6)	5515		
SCBU admission					
Yes	1280(96.3)	50(3.7)	1330	12.16	<0.001
No	4244(86.4)	668(13.6)	4912		
Congenital malformations					
Yes					
No	91(100)	0(0)	91	1.45	0.23
	5433(88.3)	718(11.5)	6151		

*SCBU - Special Care Baby Unit

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