CAESAREAN SECTION AT USMANU DANFODIYO UNIVERSITY TEACHING HOSPITAL: A CROSS SECTIONAL STUDY

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ABSTRACT

INTRODUCTION: Caesarean section remains the most common major operation performed on women worldwide and the rate is increasing.The World Health Organization (WHO) consider caesarean section rate of 5-15% to be optimum.

OBJECTIVE: To determine the rate of caesarean section, major indications, pregnancy out-come and the complications.

Subjects and Methods:This is a prospective study of all the cases of caesarean sections performed between 1st of January, 2012 and 31th of December, 2013 at UDUTH, Sokoto-Nigeria.The data were collated and analyzed using statistical soft package ware for social sciences (SPSS) version 20.

RESULTS: A total of 4,115 deliveries were recorded during the study period and 435 of them (10.6%) were through caesarean section (CS). Emergency CS accounted for 65.1% of caesarean deliveries.The mean age was 28±6 years. Previous CS was the commonest indication for caesarean section (25.7%). Elective CS had better fetal outcome ($t = 7.440$, $df = 388.523$, $p < 0.001$), while spinal anaesthesia was associated with less blood loss ($t = 4.569$, $df = 63.223$ and $p < 0.001$) and better fetal outcome ($t = 4.237$, $df = 57.224$, $p < 0.001$). Anaemia (19.8%) was the commonest complications encountered in the post operative period.

CONCLUSION: The CS rate from this study is within the WHO recommended rate. Previous CS was the commonest indication, the outcome was better among women that had elective CS under regional anaesthesia.

KEY WORDS: Caesarean section, CS rate, indication and outcome.

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INTRODUCTION

Caesarean section (CS) is defined as the delivery of a fetus, placenta and membranes through an abdominal and uterine incision after the age of viability (which is 28 weeks of gestation in developing countries).[1-3] Caesarean section remains the most common major operations performed on women worldwide and rate is increasing.[4] The exact origin of the term caesarean is unclear, controversial and apparently distorted overtime.[5]

The timely intervention with Caesarean section significantly reduces maternal and perinatal mortality.

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The World Health Organization (WHO) considers caesarean section rate of 5-15% to be the optimal range for targeted provision of life saving intervention for mother and infants.[6,7] Lower rates suggest unmet needs of the patients, while higher rates indicate improper selection.[6,7] The rate of CS varies from one country to the other, with rising trends in the developed countries such as USA (32%),[8] and the UK (25%).[9] Some developing countries such as China (16-36.4%),[10] India (25.4%)[11] and the Latin America (35.4%)[12] also have high CS rates. However lower rates were reported from countries in Sub-Saharan Africa (4-16.8%).[6] In Nigeria the national CS rate is 1.8%.[7] The rates are relatively higher from tertiary health institution in different parts of the country. Lower rates were reported from northern Nigeria, with 10.1% in Kano,[13] 11.8% in Maiduguri,[14] 17.7% in Jigawa[15] and 20.3% from Birnin-Kebbi;[16] while higher rates were reported from southern Nigeria as follows; 16.6% in

Abakaliki,[17] 25% in Sagamu,[18] 27.6% in Enugu,[19] and 34.5% in Abraka.[20]

Among women in sub-Saharan Africa including some part of Nigeria, CS is viewed with suspicion, fear, guilt, misery and anger; misconception about the procedure further increases the aversion to CS.[14,21] This leads to gross underutilization of the procedure compared to the large burden of obstetric morbidities requiring intervention through CS.[6,17] However some willingly request for CS (CS on maternal request) probably due to fear of labour pains or following assisted reproductive technology due to prolonged period of infertility.[22]

Caesarean section is used in cases where vaginal delivery is either not feasible or would impose undue risks to the mother or baby. Some of the indications for CS are clear and straightforward, whereas others are relative. In some cases, fine judgment is necessary to determine whether CS or vaginal delivery would be better. Frequent indications for the procedure include; previous CS, failure to progress in labour, obstructed labour, severe pre eclampsia/eclampsia, cephalo-pelvic disproportion, antepartum haemorrhage and fetal distress.[14-20] Other indications are malpresentation, malposition, abnormal lie, multiple pregnancies, fetal macrosomia, and failed induction of labour.[14-20] Caesarean section for maternal request is an emerging indication.[22]

The common complications associated with CS includes postpartum haemorrhage, anaemia, endometritis and wound infection.[1,13,23] Administrating prophylactic antibiotics and ensuring haemostasis prior to closure of abdomen have helped to decrease the incidence of these complications.[1,13,23] Determination of CS rate together with its indications and complications will assist in the formulation of health policy that will minimize morbidity and mortality associated with the procedure. This study aimed at determining the rate, indications and complications of caesarean section performed at Usmanu Danfodiyo University Teaching Hospital (UDUTH) Sokoto, North-Western Nigeria.

MATERIALS AND METHODS

This was a prospective cross sectional study of all the cases of caesarean sections performed over the period of two years, between 1st January, 2012 and 31th December, 2013. The minimum sample size was calculated as 137 using formula for cross sectional study at CS rate of 9.9% as reported earlier in the same centre by Nwobodo et al.[3] Ethical clearance was obtained from the Committee on Ethics and Research of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto. The patients are recruited as the decision for CS was taken by their doctors; their verbal consents were obtained and in some instances consent were obtained for the patient's relation. The data was collected using a proforma which was filled as the patients were recruited and completed at the time they were leaving the hospital. All women who had Caesarean section during the period of the study were included. Information obtained included; demographic data of the patient, indication for the CS, type and technique of CS, cadre of the surgeon and type of anaesthesia. Other components of the data included fetal and maternal outcome and associated complications. Data was analyzed using statistical software package for social sciences (SPSS) version 20.0 for windows. Categorical variables were presented using proportions and percentages and quantitative variables were summarized using mean and standard deviations. The mean differences were compared using independent sample t-test. Significant level is set as $p < 0.05$.

RESULTS

During the 24 months period of the study, there were 4,115 deliveries of which 435 were through caesarean section (CS) giving a CS rate was of 10.6%. Emergency and elective procedure accounted for 65.1% and 34.9% caesarean section respectively. Majority of the patients (85.7%), as shown in table 1, were booked for antenatal care.

Most of the patients 75.4%, as depicted in table 1, were between 20-34 years. Their mean age was 28±6 years.

As shown in table 1, primigravidae and multigravidae accounted for 88.3% of CS. Caesarean section was more common in women with secondary 41.4% and tertiary 37.0% levels of education, compared to those with no formal education 19.1% and primary level of education 2.5%.

Majority of subjects, 433 (99.5%) were married while the rest 2 (0.5%) were unmarried.

Most of the patient 70.3%, as shown in table 1, were house wives (whom were not gainfully employed).

Table 1 Socio-demographic characteristics of the patients

Variables	Frequency (N = 435)	Percentages (%)
Age (years)		
≤19	29	6.7
20-24	88	20.2
25-29	133	30.6
30-34	107	24.6
35-39	70	16.1
≥40	8	1.8
Total	435	100
Parity		
Primigravidae (0)	166	38.2
Multigravidae (1-4)	218	50.1
Grandmultiparae (≥5)	51	11.7
Total	435	100
Educational Status		
No formal education	83	19.1
Primary	11	2.5
Secondary	180	41.4
Tertiary	161	37.0
Total	435	100
Occupation		
Housewife	306	70.3
Civil servant	103	23.7
Trader	23	5.3
Others	3	0.7
Total	435	100
Booking Status		
Booked	373	85.7
Not booked	62	14.3
Total	435	100

The commonest indications for caesarean section are previous caesarean section, hypertensive disorders in pregnancy and failure to progress in labour. These are shown in [Table 2].

Table 2: Indications for the caesarean section

Indications for caesarean section	N (%)
*Previous CS	112(25.7%)
Hypertensive disorder in pregnancy	70(16.1%)
Failure to progress in labour (FTP)	68(15.6%)
Antepartum Haemorrhage	49(11.3%)
Malpresentation/Abnormal lie	39(9.0%)
Twin gestation with malpresentation of leading twin	18(4.1%)
Prolonged pregnancy	18(4.1%)
Prolonged obstructed labour	14(3.3%)
Fetal distress	13(3.0%)
Fetal macrosomia	11(2.5%)
Bad obstetrics history	5(1.2%)
Failed induction of labour	5(1.2%)
Cord prolapsed	4(1.0%)
Previous myomectomy/VVF repair	3(0.7%)
Premature rupture of membrane	3(0.7%)
Fetal congenital anomaly	2(0.5%)
Active genital Herpes at term	1(0.2%)
TOTAL	435(100%)

Some patients had more than one indication
***These include; one previous CS with additional obstetric indication 79(18.1%) while those with two or more previous CS were 33(7.6%).**

The commonest skin incision employed for CS was Pfannenstiel 92.0%. Most of the operations 94.3% were performed by residents.
The mean APGAR scores at birth were 5.8 and 7.8 at the 1st and 5th minutes respectively. There were 19 still births (4.2%) and 4 early neonatal death (0.9%) giving a perinatal mortality of 52 per 1000 death. The mean 5th minute Apgar was higher among the babies delivered via elective CS (t = 7.440, df =388.523, p< 0.001). This is shown in [Table 3] below.

Table 3: Association between the type of CS and the 5th minute Apgar scores

	Emergency CS	Elective CS	Test Statistics
Mean 5th Minute Apgar score	7.34	8.59	t = 7.440, df =388.523, p< 0.001

Spinal anaesthesia (88.0%) was the most common procedure employed. The mean estimated blood loss was 585.4 ml. Blood loss was higher among the patients that had general anaesthesia mean EBL 723.08 ml (t = 4.569, df=63.223 and p< 0.001). This difference is statistically significant. This is shown in [Table 4] below

Table 4: The different form of anaesthesia and effect on estimated blood loss (EBL) and 5th minute Apgar scores.

	Spinal Anaesthesia	General Anaesthesia	Test Statistics
Mean EBL (ml)	566.71	723.08	t = 4.569, df=63.223 and p< 0.001
Mean 5th Minute Apgar score	7.99	6.17	t = 4.237, df = 57.224, p < 0.001

The mean 5th minute Apgar score was higher among babies delivered with spinal anaesthesia (t = 4.237, df = 57.224, p < 0.001) and it is statistically significant, see [table 4] above.

Post operative complication was encountered in 100 (23%) of the patients. The commonest complications encountered during the study were anaemia 86 (19.8%) and post operative wound infection 10 (2.5%), see [table 5] below.

Table 5: Post operative complications from different types of CS

Type of CS	Anaemia	Wound infection	Puerperal Sepsis
Emergency	62	9	3
Elective	24	2	0
TOTAL	86	11	3

There were two maternal deaths during the study period given the case fatality rate of 0.46%. The two maternal deaths were due to eclampsia.

DISCUSSION

The caesarean section rate of 10.6% in this study is within the recommended rate by the WHO.[6,7] It is similar to that in Kano(10.1%),[13] Maiduguri(11.8),[14] and Jigawa 17.7% but much lower than USA (32%),[8] the UK(25%),[9] the Latin America(35.4%)[12] and the Asia(16-34%).[10,11] It is slightly higher than previous work of Nwobodo et al (9.9%) in the same centre.[3] However even though the CS rate is similar there is rising trends in the rate of elective CS from 21.8% to 34.9%. This could be explained with the commonest indication of CS from this study and most of our patients are booked. The rates in southern parts of Nigeria (16.6-34.5%) are higher.[17-20] The increasing rate of CS particularly in developed countries has been attributed to the fear of litigation, more liberal use of caesarean section for breech presentation, the detection of fetal distress by continuous electronic fetal monitoring, abdominal delivery of growth-retarded infant, and improved safety of caesarean section.[8-12,14]

In this study, 59.6% of the caesarean sections were performed in patients within the age range 20-34 years which was similar to 52.8% reported in Maiduguri North eastern, Nigeria.[14] This may be due to the fact that this age group represents the most active reproductive age.

Primigravidae accounted for 38.2% of caesarean section in study and is comparable to 36.7% reported in Maiduguri.[14] This is unacceptably high because of the implications of caesarean section on the future reproductive carrier of these groups of patients, especially in this environment (such as North-eastern and North-western Nigeria) where large family size is desired.[14]

The majority of caesarean sections in this study (65.1%) were performed as emergencies procedure even though 85.7% of the patients were booked for antenatal care and their labour was monitored. However it is not surprising because the commonest indication was previous CS, where some of the patients had failed vaginal birth after CS or previous CS with additional Obstetric complication such as hypertensive disorders of pregnancy and postdatism. Some of the previous studies in Maiduguri,[14] Jigawa,[15] Birnin Kebbi,[16] Sagamu,[18] Enugu,[19] and Abraka,[20] all in Nigeria had found emergency CS commonly among the unbooked patients. The experiences of previous authors are not surprising because the unbooked population are likely to present as emergencies in the tertiary hospital, as a last resort, when there are complications.[15,16,18] Poverty may be the responsible for this paradox as only those who can afford the cost of tertiary health care will access services in such institution.

The four leading indications for caesarean section in this study were previous caesarean section, hypertensive disorders in pregnancy, failure to progress in labour and antepartum haemorrhage. They are similar to the reports of previous authors in other centres in Nigeria.[14,18,20] These findings were also similar in other parts of Sub-Saharan Africa.[6] Previous caesarean section accounts for as much as 50 – 60 % of cases of repeat caesarean section.[1-3,14,24] Efforts to lower caesarean section rates should therefore include, reduction in primary caesarean section rates, attempts at vaginal delivery after caesarean section.[24,25]

The type of anaesthesia used in this study was predominantly spinal (subarachnoid block). There was less blood loss and better fetal outcome among women who had spinal anaesthesia against general anaesthesia. There is a global trend towards increasing use of spinal anaesthesia because of its advantage over general anaesthesia (GA), which includes better neonatal outcome and less risk of aspiration.[26] In addition the type of maternal complications associated with spinal anaesthesia such as spinal headache are less serious and easily managed as compared to those from GA.[26]

This study also examined the perinatal outcome through the assessment of APGAR Scores and perinatal death. The fetal outcome was better among babies delivered by elective CS. All the perinatal deaths were observed following emergency caesarean section. This is similar to finding from Enugu, where the perinatal outcome was poorer among the emergency CS group.[19] This might not be unconnected to poor clinical state of the women prior to surgery as some emergency cases in the centre were referred and there would have developed severe fetal distress from

prolonged labour before referral. However this perinatal mortality of 52 per 1000 is much than the perinatal mortality of 165.6 per 1000 reported from Jigawa North-Western Nigeria.[15] The two maternal death also recorded were from unbooked eclamptic patients who laboured at home before presenting after they fitted several times at home. This might had contributed to their poor clinical state at presentation.

The leading complications of caesarean section in this study (anaemia, excessive haemorrhage and wound infection). These complications were seen more among women that hard emergency CS, however the difference was not statistically significant. These complications were similar to the findings in Kano, Enugu and Abraka.[13,19,20]

CONCLUSION

The caesarean section rate of 10.6% in this study is within the WHO recommended rate. Previous caesarean section, hypertensive disorders in pregnancy and failure to progress in labour were the most frequent indications for the procedure. Poor perinatal outcome was observed among the emergency CS group, spinal anaesthesia was the commonest form of anaesthesia associated with less blood loss and better fetal outcome. The commonest maternal complication encountered was anaemia. Therefore reducing the rate of primary CS through careful patient selection and trial of vaginal birth after one previous CS can reduce the rising CS rate. Elective caesarean section should be offered to patient with indication as emergency CS is associated with more complications. The use of regional anaesthesia should be encouraged as it is associated better feto-maternal outcome.

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