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Caesarean Delivery at a Teaching Hospital, South-South Nigeria: A Five-Year Review

C. O. John[1] and J. O. Alegbeleye[1*]

[1]Department of Obstetrics and Gynaecology, University of Port Harcourt Teaching Hospital (UPTH), Rivers State, Nigeria.

Authors' contributions

This work was carried out in collaboration between both authors. Author COJ designed the study and wrote the protocol. Author JOA performed the statistical analysis and wrote the first draft of the manuscript. Authors COJ and JOA managed the analyses of the study and literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Objectives: To determine the rate, indications, outcome and complications of caesarean sections in a tertiary health facility.
Materials and Methods: A retrospective study of all caesarean sections carried out at the obstetric unit of the University of Port Harcourt Teaching Hospital, (UPTH) Nigeria, between January 1, 2011 and December 31, 2015 was conducted. Data was obtained from the theatre records and case notes of patients, and were analysed using the statistical package SPSS 20.
Results: Over the 5-year period under review, there were 12,421 deliveries. The overall caesarean section rate was 30.3%. There were 2,780 (73.8%) emergency caesarean sections and 987 (26.2%) elective caesarean sections. Feto-pelvic disproportion was the commonest indication for caesarean section 1049 (27.8%), followed by repeat caesarean section (16.7%). Anaemia was the commonest postoperative complication, occurring in 488 (19%) women, followed by pyrexia in 241 (9.6%) and wound infection 104 (3.7%). There were 4 cases of maternal deaths recorded in the study period giving a case fatality rate of 0.1%. Three of these four maternal deaths followed

**Corresponding author: Email: drefe_2@yahoo.co.uk;*

emergency caesarean section. Majority of the babies 2,799 (74.3%) were delivered by emergency procedure.
More than half of the babies 1,584 (41.4%) had birth asphyxia and there were 231 (6%) perinatal deaths. All the cases of perinatal deaths were following emergency procedure.
Conclusion: The CS rate in this study is high. Feto-pelvic disproportion was the most common indication. The perinatal outcome following emergency caesarean section is poor. Risk appraisal and efforts geared towards reducing caesarean section rate especially in our environment where subsequent deliveries might not be attended to by skilled health personnel must be done.

Keywords: Caesarean section; indications; outcome; South-South Nigeria.

1. INTRODUCTION

Caesarean section (CS) is one of the oldest and certainly one of the most common obstetric surgical procedure performed [1]. Irrespective of the indication, it is regarded as a time honored approach to shortening labour when danger is envisaged for either mother or child [2]. This remains a fact despite the traditional African belief that it is performed to free the baby from the dead mother, so that she would not be the infant's coffin [3]. Its role in saving the lives of women and children worldwide cannot be over-emphasied [4], in spite of different cultural and religious beliefs globally. Ever since the first recorded CS by Jacob Nufer in 1500 [5], current obstetric practice has been characterized by a continual increase in CS delivery rates globally [6,7]. This rise is irrespective of the advances in fetal monitoring during the antenatal and intrapartum periods [6,7]. Conversely, the improvement in anaesthesia, antibiotics, increased safety of the surgical procedure and improved neonatal care have all contributed to the increase in CS rates [4]. The rate of operative delivery by the World Health Organization is 15% [8]. Currently, rates exceed 20% in developed countries providing advanced obstetric care while the developing countries reported rates exceeding 70% [9-11]. This rise has led to several concerns with suggestions in the reduction of the rates, which globally are often due to medically unjustifiable reasons, litigation, and of loss of obstetric skills [12,13]. Indications for CS range from obstetric to present day social reasons with a growing debate over the latter. In Nigeria various centers report different rates of 10.4% in Awka [14], 9.1% in Ilorin [15], 11.8% in Maiduguri [16] and 18.5% in Nnewi [17]. Unfortunately most of these studies are majorly from tertiary institutions [14], with no input from many private and secondary care providers. Studies in Nigeria have illustrated like most developing countries, that emergency caesarean sections are higher and are therefore more prone to morbidity and mortality [4]. Poverty, recurrent infections, malnutrition, early marriage, lack of antenatal care, poor health care policies, ineffective transportation system, illiteracy and ignorance are various reasons reported for the resultant adverse obstetric complications in Nigeria [4,14-17]. These, together with the high cost of medical care have driven a lot of women to deliver in spiritual and maternity homes with adverse results [4]. The purpose of this study was to determine the rates of CS in a University Teaching Hospital in South-South Nigeria over a 5 year period. It was also to determine the trend, indications, type of anaesthesia, morbidity and mortality associated with CS. The importance of this lies not only for epidemiological reasons, but also to give a basis for comparison with other institutions and more importantly audit the obstetric practice in this center.

2. MATERIALS AND METHODS

2.1 Study Site

This study was carried out at the obstetric unit of the University of Port Harcourt Teaching Hospital. An average of 2,800 deliveries are conducted annually. It has the highest delivery rate among all the health facilities in Rivers State. The unit has a total of 135 beds, with 30 beds in the antenatal ward, 40 beds in the postnatal ward, 40 beds in the unbooked ward, 13 beds in the first stage room, 4 beds in second stage room, and 8 beds in private/semi-private rooms. There are five units and each unit has four consultant obstetricians, five specialist senior registrars and two registrars with many experienced nurses and midwives. It serves both urban and rural population within and outside the state.

2.2 Methods

This was a retrospective study of all caesarean sections carried out at the Obstetric unit of the

University of Port Harcourt Teaching Hospital, (UPTH) Nigeria, between January 1, 2011 and December 31, 2015. The data was retrieved from the theatre records, delivery register and case notes over the period under review and entered into a proforma created for this purpose. These variables included age, parity, booking status, gestational age at delivery, type of caesarean section (emergency or elective), indications for CS, type of anaesthesia, feto-maternal outcome and duration of stay in hospital after surgery. The total number of deliveries during the period under review was also obtained from the annual reports of the department and labour ward. The proforma for each patient was checked for completion before it was entered into a spreadsheet and analysed. Data were collated and entered into the SPSS 20 computer software and analyzed.

2.3 Statistical Analysis

The Statistical package SPSS 20 was used for data analysis. The results are represented in simple percentages and tables.

3. RESULTS

There were 12,421 deliveries over the period under review, out of which 3,767 were delivered by caesarean sections, giving a caesarean section rate of 30.3%.There were 2780 (73.8%) emergency caesarean sections and 987 (26.2%) elective caesarean sections. The annual rates varied between 40.7% in 2011 and 51.32% in 2015. The age range of patients that had caesarean sections was between 16-48 years. Majority 1452 (38.5%) were aged between 25-29 years, followed by 1203 (31.9%) who aged between 30-34 years. The mean age of the women was 30.28±4.8 years. About a third (40.2%) of the women were nulliparous, 18.1% were multiparous, while only 7.4% were grand multiparous. Of the 3,767 women, 2894 (76.8%) were booked and 873 (23.2%) were unbooked. Table 1 shows the caesarean section rate over the five-year period while Table 2 shows the caesarean section rates in relation to booking status. Foeto-pelvic disproportion was the commonest indication for caesarean section (27.8%), followed by repeat caesarean section (16.7%), hypertensive disorders (14.6%), fetal distress (9.5%), placenta praevia (6.7%), prevention of maternal to child transmission of HIV (PMTCT) (5.5%) abnormal lies and presentations (4.6%), failed induction of labour for prolonged pregnancy (4.0%) and multiple pregnancy (3.2%).This is shown in Table 3.

Majority (91.7%) of the women had subarachnoid block, 6.9% had general anaesthesia while 0.5% were done under local infiltration. There were four unspecified cases. Anaemia was the commonest postoperative complication, occurring in 488 (19%) women, followed by pyrexia 241 (9.6%) and wound infection 104 (3.7%). There were 4 cases of maternal deaths recorded in the study period giving a case fatality rate of 0.1%. These are shown in Table 4. Three of these four maternal deaths followed emergency caesarean section. Two women died from cardiopulmonary failure during anaesthesia, while two were from primary post-partum hemorrhage. Of the 3,767 women; 3,590 had singleton gestations and 118 had multiple gestations. Total number of babies delivered through caesarean section was 3,826. Majority of the babies 2,799 (74.3%) were delivered by emergency procedure. More than half of the babies 1,584 (41.4%) had birth asphyxia and there were 231 (6%) perinatal deaths. All the cases of perinatal deaths were following emergency procedure (Table 5).

Table 1. Annual caesarean delivery rates

Variable	2011 n(%)	2012 n(%)	2013 n(%)	2014 n(%)	2015 n(%)
Total number	1727	1627	82	77	254
Elective c/s	431 (25)	432 (26.6)	18 (22)	25 (32.5)	81 (31.9)
Emergency c/s	1296 (75)	1195 (73.4)	64 (78)	52 (67.5)	173 (68.1)
Total number of deliveries	3660	3413	2515	1095	1738

Table 2. Caesarean delivery rates and booking status

	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
Booked	39.1	44.3	47.1	51.34	48.04
Unbooked	47.73	69.1	65.1	64.53	63.97
Total	40.7	50.0	50.6	51.63	51.32

Table 3. Indications for caesarean sections

Indications	Frequency	Percentage (%)
Feto-pelvic disproportion	1049	27.8
Repeat caesarean section	628	16.7
Hypertensive disorders	550	14.6
Fetal distress	359	9.5
Placenta praevia	254	6.7
Prevention of mother-to-child transmission of HIV	208	5.5
Abnormal lie & presentation	174	4.6
Failed Induction of labour	152	4.1
Placenta abruption	151	4.0
Twin pregnancy	118	3.2
Impacted transverse lie	47	1.2
Cord prolapse	36	1.0
Others	41	1.1

**Others=Bad obstetric history and patient request*

Table 4. Maternal complications of elective and emergency caesarean sections

Complications	Elective c/s	Percentage	Emergency c/s	Percentage
Anaemia	23	2.3	465	16.7
Pyrexia	15	1.5	226	8.1
Wound infection	0	0	104	3.7
Maternal death	1	0.1	3	0.1

Table 5. Perinatal outcome of elective and emergency caesarean sections

Perinatal outcome	Elective c/s	Emergency c/s
Normal Apgar score	772	1239
Mild birth asphyxia	196	701
Moderate birth asphyxia	59	380
Severe birth asphyxia	0	248
Perinatal death	0	231
Total	1027	2799

**Total of 3826 babies (118 twin pregnancies)*

4. DISCUSSION

The overall caesarean section rate in this study was 30.3%. This rate is higher than the suggested 15% by the WHO [8]. The rate however compares to rates reported in developed countries and a few rates reported in Lagos (34.6%) [18] and from Enugu (27.4%) [19], but the rate in this study is lower in other centers in Nigeria [14-17]. However, an observation from these studies shows that most of these rates as reported were prior to this study period therefore limiting comparisons. A striking and common factor from these studies is that there is a rising trend in the caesarean section rate.

It also shows rising emergency CS rates annually. The factors responsible for the relative high rate of C/S in our center could be the status of the hospital as a referral center for other health institutions in the State, both public and private. Another important factor is the high turnout of unbooked patients managed by this center, contributing over a third to the overall CS rate. This factor was also observed in Nnewi [17]. The unbooked patient continuously remains a rising calamity within the sub-Saharan region and adds to the growing morbidity and mortality statistics in this center. The unbooked in this study included women mismanaged from the private health institutions, traditional birth attendants, home deliveries, churches and prayer houses. In this study they contributed to 38.1% of patients and 23.1% of caesarean sections carried out. This unbooked patients contribute largely to indications such feto-pelvic disproportion (cephalo-pelvic disproportion and obstructed labour), eclampsia, foetal mal presentation and ante partum haemorrhage. Studies in the Nigeria have shown a higher caesarean section rates in unbooked patients [6]. The commonest indication overall for CS in this study was feto-pelvic disproportion which accounted for over a third of all indications (27.8%). This also accounted for the most common indication for emergency caesarean section while repeat caesarean section (16.7%) was the second commonest indication but the most common indication for elective caesarean

section. However, other studies in Nigeria report repeat CS as the commonest indication [16,17,19]. Regional anaesthesia has long been a welcome shift from general anaesthesia in this center. Subarachnoid block was the commonest form of anaesthesia (91.7%) in preference to general anaesthesia. Another innovative form done in 0.5% of patients was local infilteration with lidocaine, sedation and face mask carried out in very septic and eclamptic patients. There were 4 maternal deaths and 231 perinatal mortalities within the study period related to CS. Two of the maternal deaths were from anaesthetic complications while two were from post-partum hemorrhage. There was a booked patient who died from a high spinal while an unbooked patient died from poor intubation at general anaesthesia. The two cases of post-partum hemorrhage were unbooked patients.

5. LIMITATION

The study had some limitations. Patients' records were not properly kept, some indications were either not properly stated or were vague. The diagnosis of fetal distress which was one of the major indications for caesarean section, was made clinically without the use of cardiotocography or fetal acid-base study.

6. CONCLUSION

The current rate of caesarean section in the hospital is high. If unchecked, the rate might reach more unacceptable levels. Because previous caesarean section was a major maternal indication, it is recommended that vaginal birth after caesarean section should be encouraged in appropriately selected cases. Also, the benefits of antenatal care and early referral of complicated cases will go a long way in reducing the caesarean section rates and associated morbidity in unbooked patients. It is also recommended that cardiotocography and fetal acid-base study should be used for early detection of neonatal asphyxia and improve intra-partum surveillance, thereby reducing perinatal deaths. The study would also serve as a template for the need for an internal audit so as to improve our practice.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

All authors hereby declare that the research work was examined and approved by the hospital ethics committee. The protocol number of the Ethical approval is UPTH/ADM/90/S.II/VOL.XI/31.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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