

Original Research Article

CAESAREAN DELIVERY AT A TEACHING HOSPITAL, SOUTH-SOUTH NIGERIA: A FIVE-YEAR REVIEW.

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 obtained from the theatre records and case notes of patients 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 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 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

26 **poor. Risk appraisal and efforts geared towards reducing caesarean section rate**
 27 **especially in our environment where subsequent deliveries might not be attended to by**
 28 **skilled health personnel must be done.**

29 **Caesarean section, indications, outcome, South-south Nigeria.**

30 **1. INTRODUCTION**

31 Caesarean section (CS) is one of the oldest and certainly one of the most common obstetric
 32 surgical procedure performed.^[1] Irrespective of the indication it is regarded as a time honored
 33 approach to shortening labour when danger is envisaged for either mother or child,^[2] this
 34 remains a fact despite the traditional African belief that it is performed to free the baby from
 35 the dead mother, so that she would not be the infant's coffin.^[3] Its role in saving the lives of
 36 women and children worldwide cannot be over-emphasied,^[4] in spite of different cultural
 37 and religious beliefs globally.

38 Ever since the first recorded CS by Jacob Nufer in 1500,^[5] current obstetric practice has been
 39 characterized by a continual increase in CS delivery rates globally.^[6,7] This rise is irrespective
 40 of the advances in fetal monitoring during the antenatal and intrapartum periods.^[6,7]

41 Conversely, the improvement in anaesthesia, antibiotics, increased safety of the surgical
 42 procedure and improved neonatal care have all contributed to the increase in CS rates.^[4]

43 The rate of operative delivery by the World Health Organization is 15%.^[8] Currently, rates
 44 exceed 20% in developed countries providing advanced obstetric care while the developing
 45 countries reported rates exceeding 70%.^[9-11] This rise has led to several concerns about the
 46 reduction of the rates as suggestions which are often medically unjustifiable reasons,
 47 litigation to loss of obstetric skill has echoed globally.^[12,13] Indications for CS range from
 48 obstetric to present day social reasons with a growing debate over the latter.

49 In Nigeria various centers report different rates of 10.4% in Awka,^[14] 9.1% in Ilorin,^[15]
 50 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. These secondary health facilities are owned by the government or religious organizations located in the rural and semi urban areas where a greater proportions of the population are located.^[17] They are therefore subject to government policy change and attitude to provision and availability of good health care.^[17]

Studies in Nigeria have illustrated like most developing countries that emergency caesarean sections are higher and are therefore more prone to morbidities and mortalities.^[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] Religious and cultural beliefs have widely contributed to the myth of delivery by caesarean section as a shame to womanhood and increased the strong aversion to CS in Nigeria. 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, morbidities and mortalities 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,

76 13 beds in the first stage room, 4 beds in second stage room, and 8 beds in private/semi-
77 private
78 rooms. There are five units, each unit has four consultant obstetricians, five specialist senior
79 registrars and two registrars with many experienced nurses and midwives. It serves both
80 urban and rural population within and outside the state.

81 **2.2 Methods**

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

94 **2.3 Statistical Analysis**

95 The Statistical package SPSS 20 was used for data analysis. The results are represented in
96 simple percentages and tables. P-values <0.05 were considered statistically significant.

97 **3. RESULTS**

98 There were 12,421 deliveries over the period under review, out of which 3,767 were
99 delivered by caesarean sections, giving a caesarean section rate of 30.3%. There were 2780
100 (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. These are shown in Table 1

Table 2 shows the caesarean section rate over the five-year period while Table 3 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 550 (14.6%), fetal distress 359(9.5%), placenta praevia 254 (6.7%), prevention of maternal to child transmission of HIV (PMTCT) 208 (5.5%) abnormal lies and presentations 174(4.6%), failed induction of labour for prolonged pregnancy 152 (4.0%) and multiple pregnancy 118 (3.2%). This is shown in Table 4.

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 5. 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

126 2,799 (74.3%) were delivered by emergency procedure. More than half of the babies 1,584
 127 (41.4%) had birth asphyxia and there were 231 (6%) perinatal deaths. All the cases of
 128 perinatal deaths were following emergency procedure (table 6).

129 **Table 1: Socio-demographic features**

Variables	Frequency	Percentage (%)
Age (years)		
≤20	104	2.8
20-24	552	14.7
25-29	1452	38.5
30-34	1203	31.9
35-39	372	9.9
≥40	84	2.2
Parity		
0	1516	40.2
1	1291	34.3
2-4	680	18.1
≥5	280	7.4
Booking status		
Booked	2894	76.8
Unbooked	873	23.2

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135 **Table 2: 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)

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137 **TABLE 3: 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

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139 **Table 4: Indications for caesarean sections**

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Indications	Frequency	Percentage (%)
Feto-pelvic disproportion	1049	27.8
Repeat c/s	628	16.7
Hypertensive disorders	550	14.6
Fetal distress	359	9.5
Placenta praevia	254	6.7
PMTCT	208	5.5
Abnormal lie & presentation	174	4.6

Failed IOL	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

141 *Others=Bad obstetric history and patient request

142 **Table 5: 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

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144 **Table 6: 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

145 *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 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 a 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 fetopelvic disproportion (cephalopelvic disproportion and obstructed labour), eclampsia, foetal malpresentation and antepartum haemorrhage. Studies in the Nigeria have shown a higher caesarean section rates in unbooked patients.^[6] The commonest indication for CS in this study was fetopelvic 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

171 indication.^[16,17,19] Regional anaesthesia has long been a welcome shift from
 172 general anaesthesia in this center. Subarachnoid block was the commonest form of
 173 anaesthesia (91.7%) in preference to general anaesthesia. Another innovative form done in
 174 0.5% of patients was local infiltration with lidocaine, sedation and face mask carried out in
 175 very septic and eclamptic patients. There were 4 maternal mortalities and 231
 176 perinatal mortalities within the study period related to CS. Two of the maternal mortalities
 177 were from anaesthetic complications while two were from post-partum hemorrhage. There
 178 was a booked patient who died from a high spinal while an unbooked patient died from poor
 179 intubation at general anaesthesia. The two cases of post-partum hemorrhage were unbooked
 180 patients.

181 **5. CONCLUSION**

182 The current rate of caesarean section in the hospital is high. If unchecked, the rate might
 183 reach more unacceptable levels. Because previous caesarean section was a major maternal
 184 indication, it is recommended that vaginal birth after caesarean section should be encouraged
 185 in appropriately selected cases. The use of cardiotocography for continuous fetal heart rate
 186 monitoring in labour with confirmation of suspected fetal distress through fetal blood acid-
 187 base study is also recommended. Also, the benefits of antenatal care and early referral of
 188 complicated cases will go a long way in reducing the caesarean section rates and associated
 189 morbidities in unbooked patients.

190 **ETHICAL APPROVAL**

191 All authors hereby declare that all experiments have been examined and approved by the
 192 appropriate ethics committee.

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