



Pattern and Outcome of Higher Order Caesarean Section in a Tertiary Health Institution in Nigeria

N. C. Orazulike^{1*} and J. O. Alegbeleye¹

¹Department 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 NCO did the study design and wrote the protocol. Authors NCO and JOA did the statistical analysis and literature searches while analyses of study was done by author JOA. Both authors read and approved the final manuscript.

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ABSTRACT

Objective: To determine the rate, pattern and outcome of higher order caesarean section (HOCS) in a tertiary health facility.

Materials and Methods: A retrospective study of 182 women who had undergone three or more caesarean sections at the obstetric unit of the University of Port Harcourt Teaching Hospital, (UPTH) Nigeria, between January 1, 2008 and December 31, 2014 was conducted. Data obtained from the theatre records and case notes of patients were analysed using the statistical package SPSS 20.

Results: Over the 7-year period under review, there were 20,258 deliveries. The overall caesarean section rate was 42.7%. The rate of HOCS per total caesarean section was 2.1%. Of the 182 higher order caesarean section, 114 (62.6%) were emergency HOCS and 68 (37.4%) were elective. The perinatal mortality rate from emergency higher order caesarean section was high (36.4/1000). There was no perinatal death with elective caesarean section. Major degree placenta praevia was the commonest antenatal complication while severe anaemia from primary post partum haemorrhage was the commonest post partum complication, The maternal mortality ratio was

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

549.1/100,000. There was no maternal death from elective higher order caesarean section. The proportion of higher order caesarean section that was done as an emergency was high with associated fetomaternal morbidity and mortality.

Conclusion: Higher order caesarean section was associated with increased fetomaternal morbidity and mortality especially when unplanned. Women should be encouraged to accept planned repeat caesarean section when they have had two or more.

Keywords: Higher order caesarean section; pattern; outcome.

1. INTRODUCTION

Caesarean section is the most common major surgical procedure in obstetrics and gynaecology in sub-Saharan Africa [1]. Over the last decade, there has been a rising rate of caesarean section. This has been a source of major concern to healthcare providers in many developed and developing countries as caesarean delivery is associated with increased risk of maternal morbidity [2].

The maternal and fetal risks are higher with repeat caesarean delivery when compared to normal birth and the first caesarean section [3]. The risk of uterine rupture after two or more previous caesarean births ranges from 9/975,92/10,000 compared with a single previous caesarean birth, 115/16,915, 68/10,000 from a multivariate analysis study due to trial of vaginal birth after caesarean delivery [4,5]. Uterine rupture is common in our setting due to the aversion for caesarean section, paucity of facility for monitoring uterine contractions and effective timely intervention. [6].

Elective repeat lower segment caesarean section is associated with better maternal and perinatal outcome, less blood loss and less blood transfusion compared with emergency repeat lower segment caesarean section [7,8].

Women in our environment still do not readily accept caesarean delivery [5]. Vaginal delivery is the accepted mode of giving birth in our environment. Delivery other than the vaginal route is regarded as a role failure on the part of the woman. These women keep away from hospitals to avoid either the first or repeat caesarean section and attempt vaginal delivery elsewhere, sometimes resulting in serious morbidities and mortalities [9]. They go to maternity homes or prayer houses to have their babies and end up with complications. Some of them die in the process and do not live to tell their story. The few that survive attribute it to divine intervention, thereby encouraging others to do the same.

Inadequate patient counseling on the part of the health professionals make these women ignorant of the dangers of trying vaginal birth after two lower segment caesarean sections. Instead, many of them are advised by family, friends, church members or neighbours against going back to hospitals, pointing out to them that vaginal delivery is a fulfillment of womanhood, thereby encouraging them to seek help elsewhere [10].

These hinder elective higher order caesarean section in favour of emergency HOCS with its attendant complications. The number of women who require more than three caesarean sections is rapidly growing as indications for primary and secondary caesarean sections have increased over the years [11,12,13].

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, each unit has four consultant obstetricians, five specialist senior registrars and two registrars with many experienced nurses and midwives.

2.2 Methods

This was a retrospective study of all cases of HOCS performed at the University of Port Harcourt Teaching Hospital (UPTH), Port Harcourt over a 7-year period (January 1, 2008 – December 31, 2014). 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, order of caesarean section, gestational age at delivery, type of caesarean section (emergency or elective), foeto-maternal outcome, estimated intra operative blood loss and duration of stay in hospital after surgery. The proforma for each patient was checked for completion before it was entered into a spreadsheet and analysed.

2.3 Statistical Analysis

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

3. RESULTS

There were 8,645 caesarean sections out of 20,258 deliveries over the period under review giving a caesarean section rate of 42.7%. There were 182 higher order caesarean sections, with a higher order caesarean section rate of 0.9%. The rate of higher order caesarean section per total caesarean section was 2.1%. Almost half of the women, 87 (47.8%) were aged between 35-39years, with only 16 (8.8%) of the women aged 40 years and above. The mean age of the women was 34±3.9 years. Out of the 182 women who had higher order caesarean section, 172 (94.5%) were booked, 10 (5.5%) were unbooked. Majority of the women were Para 3 (76.4%), 36 (19.8%) were Para 4 while 7(3.8%) were grandmultipara giving a mean parity of 3.3±0.6.

Of the 182 higher order caesarean sections, 114(62.6%) were done as emergencies and 68(37.4%) were done as elective cases. Of these, 146 (80.2%) were done at term. These are shown in Tables 1 and 2.

The third degree caesarean section constituted the highest number of higher order caesarean section, 169(92.9%). Fourth degree caesarean section accounted for 12 (6.6%) while there was only one (0.5%) fifth degree caesarean section (Table 3). The total number of babies delivered was 183; 114(62.3%) from emergency caesarean sections and 69(37.7%) from elective caesarean sections. The only patient with twin gestation was delivered by an emergency caesarean section. Thirty-six (19.8%) of the babies were delivered before 37 weeks of gestation due to preterm labour, antepartum haemorrhage, preterm prelabour rupture of membranes, hypertensive disorders of

pregnancy and uterine rupture. Twenty - two (12%) had birth asphyxia and there were four fresh stillbirths giving a perinatal mortality rate of 36.4/1000. There was no case of birth trauma. This is shown in Table 4.

Table 5 shows the antenatal complications associated with HOCS. Eighteen (9.9%) of the women had placenta praevia, 4 (2.2%) had uterine rupture, three from 3rd degree caesarean section and one from >5th degree caesarean section. All cases of uterine rupture were diagnosed pre-operatively and had laparotomy. None of the patients had placenta accreta. Twenty-two (12.1%) of the women had primary post partum haemorrhage, mainly from major degree placenta praevia. This is shown in Table 6.

Table 1. Socio-demographic features

Variables	Number of patients	Percentage (%)
Age (in years)		
25-29	22	12.1
30-34	57	31.3
35-39	87	47.8
≥ 40	16	8.8
Parity		
3	139	76.4
4	36	19.8
5	4	2.2
>5	3	1.6
Booking status		
Booked	172	94.5
Unbooked	10	5.5
GA at delivery		
≥37 weeks	146	80.2
< 37 weeks	36	19.8

Table 2. Type of caesarean section

Type of caesarean section	Number of patients	Percentage (%)
Emergency	114	62.6
Elective	68	37.4
Total	182	100

Table 3. Degree of high order caesarean section

Degree	Number of patients	Percentage (%)
3 ^o	169	92.9
4 ^o	12	6.6
5 ^o	1	0.5

*3^o= Third degree, 4^o= Fourth degree, 5^o= Fifth degree

Table 4. Fetal outcome following HOCS

Variables	Number of patients	Percentage (%)
Preterm birth	36	19.7
Birth asphyxia	22	12.0
Neonatal death	4	2.2

Table 5. Antenatal complications

Variables	Number of patients	Percentage (%)
Placenta praevia	18	9.9
Uterine rupture	4	2.2

Table 6. Intra-operative complications

Variables	Number of patients	Percentage (%)
Primary PPH	22	12.1
Bladder injury	3	1.7
Bowel injury	1	0.6
Caesarean hysterectomy	1	0.6

Anemia was the commonest (22 of 182, 12.1%) postoperative complication in this study (Table 7). This was due to both antepartum and postpartum haemorrhage. All those who had severe anemia with packed-cell volume less than 21% received blood transfusion for this indication.

One woman who had emergency caesarean section died from primary postpartum haemorrhage, giving a maternal mortality ratio of 549.1/100,000. There was no maternal death in elective caesarean section.

Table 7. Post-operative complications prolonging hospital stay

Variables	Number of patients	Percentage (%)
Anaemia	22	12.1
Wound dehiscence	6	3.3
Wound sepsis	4	2.2
Incisional hernia	2	1.1
Burst abdomen	1	0.5
Puerperal sepsis	1	0.5
Secondary PPH	1	0.5

4. DISCUSSION

The proportion of higher order caesarean section to the total caesarean section in this study was 2.1%. This is much lower than the reports from

other studies [14,15]. This may be due to interruption of services in the last three years from industrial action by staff.

Table 8. Type of caesarean section and duration of hospital stay

Type OF CS	Duration of stay		Chi-square (p-value)
	5 days or less	More than 5 days	
Elective	41	27	48.79
Emergency	13	101	(0.000)

The study showed that 62.6% of them were done as emergencies. Similar findings have been reported in other parts of Nigeria [14]. This may be due to the strong aversion to caesarean section in our environment due to religious, cultural, or socio-economic factors and superstitious beliefs [14,16,17]. It could also be attributed to the fact that this is a tertiary health facility, which serves as a referral centre where complicated cases from both primary and secondary health facilities are referred and managed.

There was a steady decline in the percentage of higher order caesarean section from 92.9% for 3^o caesarean section to 0.5% for ≥ 5^o caesarean section. This has been demonstrated in other studies [14,15].

Our results showed that high order caesarean is associated with a greater blood loss. The cadre of the surgeons may have been contributory as most of the elective caesarean sections were done during the day by experienced obstetricians. This is against the emergency caesarean section which may come up at nights when the very skilled hands are not available, thereby increasing both blood loss and operating time [18,19]. Likewise, intraperitoneal adhesions, may lead to difficulty in separating the lower segment and corresponding increase in blood loss. It was also observed that majority of the women who had primary post partum haemorrhage had varying degrees of placenta praevia.

There was a high perinatal and maternal morbidity and mortality from emergency HOCS in this study. This is similar to the findings from other studies [20,21].

Rupture of the gravid uterus either during pregnancy or labour is the most significant and

catastrophic risk for both mother and baby. The four perinatal deaths in our study were from uterine rupture due to late presentation. The poor perinatal outcome observed following emergency caesarean section may be due to severe pre-eclampsia and antepartum haemorrhage resulting in birth asphyxia and preterm delivery with its complications.

In the normal population, the incidence of placenta praevia is less than 0.5% of deliveries, but becomes two to threefold in women with previous caesarean section [22]. This risk also increases with greater parity, independent of the number of prior caesarean sections. The likelihood of placenta praevia is eight- to nine folds among women with parity greater than four and with more than three caesarean sections [23]. Our results showed placenta praevia as the most common complication and are in concordance with the previous findings on placental complications [24,25].

Antenatal ultrasonography will help make the diagnosis prior to surgery and adequate precautions taken to prevent adverse maternal outcome.

In our study, adhesiolysis for severe pelvic adhesions were responsible for bladder injury in three patients and bowel injury in one patient. Similar findings have been reported in other studies [26]. It was also observed that patient who had emergency HOCS stayed longer in the hospital. This was statistically significant and was due to postpartum anaemia from primary postpartum haemorrhage, wound dehiscence, wound sepsis and puerperal sepsis.

The incidence of primary and repeat caesarean section is increasing all over the world, primarily due to maternal preferences, medical disorders in pregnancy and extensive intrapartum fetal monitoring. Other additional factors are improved safety of anesthesia, antibiotics, availability of blood products and pre- and postoperative monitoring [24]. Consequently, there is a rise in higher order caesarean sections with associated complications. This trend was also seen in this study especially in the last three years of the study period.

5. CONCLUSION

Higher order caesarean section was associated with increased maternal and perinatal morbidity and mortality especially when unplanned.

Indications for both primary and repeat caesarean sections should be carefully reviewed, as this will reduce the rate of higher order caesarean section, especially in the developing countries like ours which places a high premium on child-bearing. Women should be encouraged to accept planned repeat caesarean section when they have had two or more.

CONSENT

All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this paper and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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