

**Original Research Article****PATTERN AND OUTCOME OF HIGHER ORDER CAESAREAN SECTION IN A TERTIARY HEALTH INSTITUTION IN NIGERIA****ABSTRACT**

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

**Methods and Materials:** 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 from 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 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 feto-maternal morbidity and mortality.

**Conclusion:** Higher order caesarean section was associated with increased feto-maternal maternal 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 sub-Saharan Africa.<sup>[1]</sup> 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.<sup>[2]</sup>

The maternal and fetal risks are higher with repeat caesarean delivery when compared to normal birth and the first cesarean section.<sup>[3]</sup> The risk of uterine rupture after two previous lower segment Caesarean section is high.<sup>[4]</sup> This is even higher after three or more lower segment caesarean sections. This risk is more obvious in our environment with paucity of facility for monitoring uterine contractions and effective timely intervention.<sup>[5]</sup>

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.<sup>[6][7]</sup>

Women in our environment still do not readily accept caesarean delivery.<sup>[4]</sup> 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.<sup>[8]</sup> They go to traditional birth attendants or prayer houses to have their babies and end up with morbidities. Some of them loose their lives in the process and do not live to tell their story. The few that survive attribute it to divine intervention, thereby encouraging others to follow in their stead.

Inadequate patient counselling on the part of the health professionals make these women ignorant of the dangers of trying labour 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.<sup>[9]</sup>

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.<sup>[10][11][12]</sup>

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## 54 **2. MATERIALS AND METHODS**

### 55 **2.1 Study site**

56 This study was carried out at the obstetric unit of the University of Port Harcourt Teaching Hospital. The  
57 unit has 30 beds in the Antenatal ward, 40 beds in the postnatal ward, 40 beds in the unbooked ward,  
58 thirteen beds in the first stage room, four beds in second stage room, and eight beds in private/semi-  
59 private rooms. An average of 2,800 deliveries are conducted annually. It has the highest delivery rate  
60 among all the health facilities in Rivers State. There are five units, each unit has four consultant  
61 obstetricians, five specialist senior registrars and two registrars with many experienced nurses and  
62 midwives.

### 63 **2.2 Methods**

64 This was a retrospective study of all cases of HOCS performed at the University of Port Harcourt  
65 Teaching Hospital (UPTH), Port Harcourt over a 7 year period (January 1, 2008 – December 31, 2014).  
66 The variables to be analysed were retrieved from the theatre records, delivery register and case notes  
67 over the period under review. These variables included age, parity, booking status, order of caesarean  
68 section, gestational age at delivery, type of caesarean section (emergency or elective), foeto-maternal  
69 outcome, estimated intra operative blood loss and duration of stay in hospital after surgery. The proforma  
70 for each patient was checked for completion before it was entered into a spreadsheet and analysed.

### 71 **2.3 Statistical analysis**

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

## 74 **3. RESULTS**

75 There were 8,645 caesarean sections out of 20,258 deliveries over the period under review giving a  
76 caesarean section rate of 42.7%. There were 182 higher order caesarean sections, with a higher order  
77 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 35-39 years, with only 16 (8.8%) of the women aged 40 years and above. The mean age of the women was  $34 \pm 3.9$  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  $3.3 \pm 0.6$ .

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, 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 >5<sup>th</sup> degree caesarean section. 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.

Anemia was the commonest (22 of 182, 12.1%) postoperative complication in this study (Table 7). 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 giving a maternal mortality ratio of 549.1/100,000. There was no maternal death from elective caesarean section.

104 Table 1: Socio-demographic features

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

105 Table 2: Type of Caesarean Section

| Type of caesarean section | Frequency | Percentage (%) |
|---------------------------|-----------|----------------|
| Emergency                 | 114       | 62.6           |
| Elective                  | 68        | 37.4           |
| Total                     | 182       | 100            |

106 Table 3: Degree of High Order Caesarean Section

| Degree         | Frequency | Percentage (%) |
|----------------|-----------|----------------|
| 3 <sup>0</sup> | 169       | 92.9           |
| 4 <sup>0</sup> | 12        | 6.6            |
| 5 <sup>0</sup> | 1         | 0.5            |

107 \*3<sup>0</sup> = third degree, 4<sup>0</sup> = fourth degree, 5<sup>0</sup> = fifth degree

108 Table 4: Fetal Outcome following HOCS

| Variables      | Frequency | Percentage (%) |
|----------------|-----------|----------------|
| Preterm birth  | 36        | 19.7           |
| Birth Asphyxia | 22        | 12.0           |
| Neonatal death | 4         | 2.2            |

109 Table 5: Antenatal complications

| Variables        | Frequency | Percentage (%) |
|------------------|-----------|----------------|
| Placenta praevia | 18        | 9.9            |
| Uterine rupture  | 4         | 2.2            |

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111 Table 6: Intra-operative complications

| Variables              | Frequency | Percentage (%) |
|------------------------|-----------|----------------|
| Primary PPH            | 22        | 12.1           |
| Bladder injury         | 3         | 1.7            |
| Bowel injury           | 1         | 0.6            |
| Caesarean hysterectomy | 1         | 0.6            |

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114 Table 7: Post-operative complications

| Variables         | Frequency | 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            |

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116 Table 8: Type of Caesarean section and duration of Hospital stay

| TYPE OF CS | DURATION OF STAY |                  | Chi-square<br>(p-value) |
|------------|------------------|------------------|-------------------------|
|            | 5 Days or less   | more than 5 days |                         |
| Elective   | 41               | 27               | 48.79<br>(0.000)        |
| Emergency  | 13               | 101              |                         |

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## 118 4. DISCUSSION

119 The proportion of higher order caesarean section to the total caesarean section in this study was 2.1%.

120 This is much lower than the reports from other studies.<sup>[13][14]</sup> This may be due to a decrease in the  
121 number of patients in the last three years of our study.

122 The study showed that 62.6% of them were done as emergencies. Similar findings have been reported in  
123 other parts of Nigeria.<sup>[13]</sup> This may be due to the strong aversion to caesarean section in our environment  
124 due to religious, cultural, or socio-economic factors and superstitious beliefs.<sup>[13][15] [16]</sup> It could also be  
125 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<sup>0</sup> caesarean section to 0.5% for  $\geq 5^0$  caesarean section. This has been demonstrated in other studies.<sup>[13][14]</sup>

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.<sup>[17][18]</sup> 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.<sup>[19][20]</sup>

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.<sup>[21]</sup> 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.<sup>[22]</sup>

Our results showed placenta praevia as the most common complication and is in concordance with the previous findings on placental complications.<sup>[23][24]</sup>

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

In our study, 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.<sup>[25]</sup>

It was also observed that patient who had emergency HOCS stayed longer in the hospital. This was

statistically significant and was due to post partum anaemia, 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.<sup>[23]</sup> 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.

## REFERENCES

1. Fenton P M, Whitty CJM, Reynolds F. Caesarean section in Malawian; Prospective study of early maternal and perinatal mortality. *Brit Med J* 2003; 327: 587-98.
2. Villar J, Carroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A, et al. Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. *BMJ* 2007; 335(7628):1025.
3. O'Dwyer V, Hogan JL, Farah N, M Kennelly MM, Fitzpatrick C, Turner MJ. Maternal mortality and the rising caesarean rate. *Int J Gynaecol Obstet*, 2012; 116(2): 162–164.
4. Ezechi CO, Fasubaa OB, Kalu B., Nwokoro C, Obiesie LO Caesarean delivery: Why the aversion? *Trop J Obstet Gynaecol* 2004; 21:164-167.
5. Njokanma FO, Egri-Okwaji MT, Nwokoro CA, Orebamjo T, Okeke GC. Birth Asphyxia, perinatal and maternal mortality associated with caesarean section. *Trop J Obstet Gynaecol* 2002;19:25-29.

- 190 6. Mutahir JT, Daru PH, Ujah IAO. Elective Caesarean section at Jos University Teaching  
191 Hospital. Trop J Obstet Gynaecol 2005; 22(1):39-41.
- 192 7. Onwuzurike BK, Onah HE. Caesarean section in Twin Pregnancies in Enugu, Nigeria. J  
193 of College of Medicine 2004; ((1): 8-11.
- 194 8. Onah HE. Formal education does not improve the acceptance of caesarean section among  
195 pregnant Nigeria women. Int J Gynaecol Obstet 2002; 76: 321-33.  
196  
197
- 198 9. Aziken M, Omo-Aghoja L, Okonofua F. Perceptions and attitudes of pregnant women towards  
199 caesarean section in urban Nigeria. Acta Obstet Gynecol Scand 2007; 86(1):42-47.
- 200 10. Shiba M, Sachin P, Niranjani M, Janki M. Trends in Caesarean delivery: Trends and indications. J  
201 Obstet Gynaecol India 2014; 64(4): 251-254.
- 202 11. Barber EL, Lundsberg LS, Belanger K, et al. Indications contributing to the increasing caesarean  
203 delivery rate. Obstet Gynaecol 2011; 118(1): 29-38.
- 204 12. Liu S, Rusen ID, Joseph KS, et al. Recent trends in caesarean delivery rates and indications for  
205 caesarean delivery in Canada. J Obstet Gynaecol Can 2004; 26(8): 735-745.
- 206 13. Obum JA, Ugboma HAA, Ejikeme BN, Umeora OUJ, Agwu UM. Pattern and Outcome  
207 of Higher order Caesarean Section in a Secondary Health Facility in Nigeria. Res Obstet  
208 Gynaecol 2012; 1(3): 19-22.  
209  
210
- 211 14. Ezegwui H, Nwogu-ikojo E, Ikeako L, Nweze S. Morbidity and Mortality following High  
212 Order Caesarean Section in a developing country. J Pak Med Assoc 2012; 62(10):  
213 1016 - 1019.  
214  
215  
216  
217
- 218 15. Swende TZ. Emergency Caesarean section in a Nigerian tertiary health care center. Nig J  
219 Medicine 2008; 17(4): 396-399.
- 220 16. Ibekwe PC, Obuna JA. Appraisal of Indications for Caesarean sections in Abakaliki, Nigeria. Trop  
221 J Obstet Gynaecol 2006; 23(2): 150-152.
- 222 17. Rashid M, Rashid RS. Higher order repeat caesarean sections: how safe are five or more?  
223 BJOG. 2004; 111(10): 1090-1094.

- 224 18. Alchalabi HA, Amarin ZO, Badria LF, Zayed FF. Does the number of previous caesarean  
225 deliveries affect maternal outcome and complication rates? East Mediterr Health J. 2007; 13(3):  
226 544-550.
- 227 19. Ugwu EO, Obioha KCE, Okezie OA, Ugwu AO. A five-year survey of Caesarean Delivery at a  
228 Teaching Hospital. Ann Med Health Sci Res 2011; 1(1):77-83.
- 229 20. Shah A, Fawole B, M'imunya JM, Amokrane F, Nafiou I, Wolomby JJ . Caesarean delivery  
230 outcome from the WHO global survey on Maternal and Perinatal health in Africa. Int J Gynaecol  
231 Obstet 2009; 8(13): 191-197.
- 232 21. Miller DA, Challot JA, Goodwin TM. Clinical risk factors for placenta praevia-placenta accretae.  
233 Am J Obstet Gynaecol 1997; 177: 210-214.
- 234 22. Gilliam M, Rosenberg D, Davis F. The likelihood of placenta praevia with greater number of  
235 caesarean section and high parity. Obstet Gynaecol 2002; 99: 976-980.
- 236 23. Juntunen K, Makarainen L, Kirkinen P. Outcome after high number (4-10) of repeated caesarean  
237 section. Br J Obstet Gynaecol 2004; 111: 561-563.
- 238 24. Qublan HS, Tahat Y. Multiple caesarean section: The impact on maternal and fetal outcome.  
239 Saudi Med J 2006; 27(2): 210-214.
- 240 25. Kirkinen P. Multiple caesarean sections: Outcomes and complications: Br J Obstet Gynecol 1988;  
241 95:778-782.  
242