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Peter Waibode Alabrah
Department of Obstetrics and
Gynaecology, Federal Medical
Centre, Yenagoa, Nigeria

Isaac Joel Abasi
Department of Obstetrics and
Gynaecology, Niger Delta
University Teaching Hospital,
Nigeria

Stanley Ebiogbo Ozori
Department of Obstetrics and
Gynaecology, Federal Medical
Centre, Yenagoa, Nigeria

Corresponding Author:
Peter Waibode Alabrah
Department of Obstetrics and
Gynaecology, Federal Medical
Centre, Yenagoa, Nigeria

Caesarean delivery and the attendant FETO-maternal aftermath at a rural hospital in South Southern Nigeria

Peter Waibode Alabrah, Isaac Joel Abasi and Stanley Ebiogbo Ozori

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Abstract

Background: Caesarean delivery is a necessary tool in the management of obstetric patients when indicated. However, there is general apprehension about the increasing proportion of births by caesarean section (CS) across the globe.

Objectives: To ascertain the CS rate (CSR), the indications and the outcomes of caesarean delivery in the hospital.

Methodology: The obstetric and theatre records of all caesarean deliveries at Federal Medical Centre Yenagoa, Otuoke outreach, South-South Nigeria, between January 2017 and December 2021 were assessed retrospectively. Generated data were analyzed using SPSS version 23.

Results: There were 770 deliveries, out of which 104 were caesarean deliveries, giving a CSR of 13.5%. The majority, 71 (68.3%) of the patients had emergency caesarean delivery while 33 (31.7%) had an elective caesarean delivery. The commonest indication for caesarean delivery was cephalopelvic disproportion (CPD) (27.9%) followed by previous CS and breech in primigravida (17.3% and 7.7% respectively). The majority of the patients, 58 (55.8%) were booked while 46 (44.2%) were unbooked. The commonest morbidity encountered was anaemia which complicated 21.1% of cases. There was one maternal death and six perinatal deaths giving maternal and perinatal mortality rates of 960/100,000 and 49/1000 respectively.

Conclusion: The caesarean section rate was within the limits laid down by the World Health Organization. CPD was the chief indication for CS followed by repeat CS and breech in primigravida. Efforts to maintain the CS rate, within acceptable limits, as noted in this study, should be continued.

Keywords: Caesarean section, cephalopelvic disproportion, obstructed labor and perinatal outcome

Introduction

Caesarean sections are undeniably essential for reducing foetomaternal morbidity and mortality in cases where delivery is expedient, labour is obstructed or when a vaginal delivery would pose risks to the baby, the mother or both. Caesarean sections can cause substantial and occasionally lasting maternal complications, disability or death chiefly in settings that lack the equipment and/or competence to properly conduct safe surgery and manage surgical complications. Therefore, it should ideally only be undertaken when it is medically necessary and its use must be timely and judicious when it is indicated.

The incidence of caesarean section is steadily rising. "Worldwide caesarean section rates have risen from around 7% in 1990 to 21% today, and are projected to continue increasing over this current decade ^[1]. The causes of the high incidence of caesarean section vary widely between and within countries. It is high in many middle-income to high-income countries, ² and rates as high as 25.9% in China, 32.3% in Australia/New Zealand and 45.9% in Brazil have been reported ^[2, 3]. "However, in several low-income countries, where over 60% of the world's births occur, the population-based prevalence of CS is low-for example, 3.0% in West Africa". ^{2,4} This low prevalence portends poor availability of/accessibility to comprehensive essential obstetric care services in the countries/region ^[3, 5]. Reported caesarean section rate across Nigeria ranges 2.1% - 38.8% ^[5-7].

Caesarean section is the most common surgical operation in obstetric practice for a myriad of reasons. Apart from the increased safety of the operation due to technological advancements that have engendered improved anaesthesia, availability of safe blood transfusion services, antibiotics, and safer surgical techniques. The other responsible factors for the high rates of caesarean section are the dying art of operative vaginal delivery, increase in the number of

elderly primigravidae due to educational/career pursuit, suspected fetal distress, the decline in vaginal breech delivery, increase litigations in obstetric practice, economic incentives and extensive use of repeat caesarean section in cases with previous caesarean delivery [1, 5, 8]. Furthermore, elective caesarean deliveries are increasingly carried out for varied foetomaternal indications and patient request [8]. Other reasons are the deployment of electronic fetal monitoring and lack of input by an obstetrician [9]. Failed induction of labour also leads to an increase in the caesarean section rate.

The high rate of caesarean section in the developing countries as in Nigeria, is due largely to cephalopelvic disproportion, obstructed labour, failure to progress in labour, severe preeclampsia/eclampsia repeat caesarean section and the mismanagement of labour by traditional birth attendants [9, 10].

Aim of the study

The study aims to evaluate the incidence, indications, and outcomes of caesarean section in this hospital during the period under review.

Materials and Methods

This was a retrospective cross-sectional study of patients who had a caesarean delivery in Federal Medical Centre Yenagoa, Otuoke outreach from January 2017 to December 2021. The patients' case files were retrieved from the Medical records department, postnatal and labour ward registers and the theatre. The age, parity, indication for surgery, booking status, social class, marital status, place of domicile, type of caesarean delivery, and the complications were obtained for each patient and coded onto a self-designed study proforma. Six (6) of the patient's case files were incomplete and were not used for the analysis. The data were analyzed using SPSS version 23. Social class was determined according to the scheme reported by Oyedepi [11].

Results

The total number of deliveries in the period under review was 770, out of this number, 104 parturients were delivered by

caesarean section giving a CS prevalence rate of 13.5%.

Table 1: Sociodemographic characteristics of parturients.

Characteristics	Frequency N = 104	Percent (%)
Age group (years)		
13 - 19	3	2.9
20 - 24	10	9.0
25 - 29	38	36.5
30 - 34	25	24.0
≥ 35	28	26.9
Mean age ± SD in years 30.0 ± 5.4 Range 17 – 41 years		
Religion		
Christian	103	99.0
Moslem	1	1.0
Level of Education		
Primary	1	1.0
Secondary	45	43.2
Tertiary	58	55.8
Family type		
Monogamous	102	98.1
Polygamous	2	1.9
Social class		
1	9	8.7
2	27	25.9
3	41	39.4
4	22	21.2
5	5	4.8
Residence		
Rural	77	74.0
Suburban	22	21.2
Urban	5	4.8

Table I. shows the sociodemographic attributes of parturients who had a caesarean delivery. The age range of the parturients was from 17 - 41 years with a mean of 30.0 ± 5.4 years. Slightly below two-fifth of the parturients (36.5%) were within the age group 25-29, and this comprised the most age group in the study. This was followed by parturients aged ≥ 35years and they constituted slightly above one-quarter of the study population (26.9%)

Table 2: Obstetric features of women who delivered in the health facility

Characteristics	Frequency N = 104	Percent (%)
Parity		
0	29	27.9
1	29	27.9
2-4	42	40.3
≥ 5	4	3.8
Booking Status		
Booked	58	55.8
Un-booked	46	44.2
GA at delivery (weeks)		
<37	13	12.5
≥37	91	87.5
Caesarean section		
EMCS	71	68.3
ELCS	33	31.7

As shown in Table 2. About 4 out of every 10 parturient were multiparae (para 2-4) while 5 to 6 out of 10, were booked. A good majority of the study subjects (87.5%) were delivered at

term. Slightly above one-third of the caesarean sections were elective (31.7%).

Table 3: Indications for caesarean section.

Indications	Numbers (N=104)	Percent (%)
CPD/Obstructed labour	29	27.9
Previous caesarean section	18	17.3
Breech in primigravida	8	7.7
Pre-eclampsia/Eclampsia	7	6.7
Failure to progress	6	5.8
Foetal distress	5	4.8
Leading twin breech	5	4.8
Antepartum haemorrhage	4	3.8
Triplets	3	2.9
Retained second twin	2	1.9
*Others	17	16.3

*Others include; cord prolapse, abnormal lie, bad obstetric history, breech with severe oligohydramnios, elderly primigravida and a footling breech in labour.

The indications for caesarean deliveries are highlighted in Table 3. Though some patients had more than one indication for the caesarean sections. The most common indication for CS was cephalopelvic disproportion. Slightly below one-third of the parturient has caesarean deliveries for cephalopelvic disproportion (27.9%). The next common indication was for two or more previous caesarean sections (17.3%), following this in descending order were breech presentation in a primigravida (7.7%), severe pre-eclampsia/eclampsia (6.7%), and failure to progress 5.8%.

Table 4: Fetal Outcomes of babies delivered in the facility

Characteristics	Frequency N = 356	Percent (%)
Fetal Maturity		
Preterm	12	11.5
Term	90	86.5
Post-term	2	1.9
Mean GA \pm SD in weeks at delivery	38.2 \pm 1.7	
Number of gestations		
Singleton	89	94.1
Twin	12	5.1
Triplets	3	0.8
Total number of fetuses	122	
Sex distribution		
Male	62	50.8
Female	60	49.2
Birth weight (kg)		
Very Low Birthweight (1.0 – 1.49kg)	1	0.9
Low Birthweight (1.5 – 2.49 kg)	10	9.6
Normal Birthweight (2.5 – 3.99kg)	84	80.8
Macrosomia (\geq 4.0kg)	9	8.7
Mean birth weight \pm SD in kg	3.1 \pm 0.5	

Most of the caesarean sections were carried out at term (86.5%), and multiple pregnancies accounted for 5.9% of deliveries in this study. There was a slight male sex preponderance and expectedly the fetal birth weight was normal in the majority of cases 84 (80.8%).

Table 5: Caesarean section morbidity and mortality

Maternal	Number	Percent (%)
Anaemia	22	21.1
Postpartum pyrexia	9	8.7
Wound sepsis/breakdown	4	3.8
Pelvic abscess	1	0.9
Wound breakdown	1	0.9
Mortality	1	0.9
Fo et al. (Number = 122)		
Fresh/macerated stillbirth	4	3.8
Birth asphyxia	11	10.6
Early Neonatal death	2	0.9
Neonatal sepsis	1	0.9
Meningocele	1	0.9

Post-operative anaemia was the commonest maternal morbidity seen in 22 (21.1%) of the cases. This was followed by postpartum pyrexia 9 (8.7%) While birth asphyxia, 28 (5.4%) was the commonest fetal morbidity. There was one (1) maternal death giving a maternal mortality rate of 960/100,000. Six (6) perinatal deaths occurred, giving a perinatal mortality rate of 49/1000.

Discussion

It is established that recourse to caesarean delivery whenever indicated can be a necessary and lifesaving intervention in obstetric practice. The caesarean section rate in any locality is contingent on the intrinsic features of the obstetrics population, sociodemographic pattern, religious beliefs, breech presentation, the availability and skill for instrumental delivery, and respect for maternal choice and wishes, amongst other [12, 13].

The caesarean section rate (CSR) in this study was 13.5% and it is higher than the 10.4% in Maiduguri and 11.3% in Sokoto reported by Nnadi *et al.* [14] and Daniel *et al.* [15] respectively but it is comparable to the 12.2% reported by Bukar *et al.* [16] in Gombe, and 13.6% reported by Eta *et al.* [17] in Uyo. It is lower

than the rates of 17.69% to 38.8% reported by authors in other centres [5-7, 18, 19]. Tahir *et al.* [20] in Abbottabad and Khasawneh *et al.* [21] in Jordan reported a CSR of 46.7% and 50.5% respectively. The differences in the CSR reflect differing geographical locations, practice patterns and biodemography characteristics. The CSR is within the 10-15% rate endorsed by WHO [22]. The CSR reported in this study is attributed to the fact that the majority of the decisions for caesarean section were taken by the obstetric consultant after a diligent review of the patients. This is against the backdrop that the hospital is a referral one and high-risk cases are referred to it. Moreover, patients that met the criteria for vaginal birth after caesarean section were duly selected and closely monitored until delivery. The majority of the patients (36.5%) who had CS were in the age group 25-29 years, a similar finding was reported by other author [15, 18, 23]. Eight out of every 10 sections (86.5%) were carried out at term. The ratio of emergency caesarean delivery (68.3%) to elective caesarean delivery (31.7%) reported in this study is 2 to 1. This is similar to the report by other authors [7, 12, 24]. These studies substantiate the fact that emergency cesarean sections add majorly to the rising trend in CSR. The bulk of the

parturients that underwent emergency sections were un-booked patients whose labours had been poorly supervised elsewhere by unskilled traditional birth attendants or referrals from neighboring health facilities for varied reasons. The main reasons for the prior presentation to a traditional birth attendant are because of their aversion to CS, sociocultural beliefs and economic constraints [25]. The intricacies and logistics of accessing healthcare for lower socioeconomic patients are easier and cheaper to procure at a nearby traditional birth attendant than in the hospital.

The commonest indication for caesarean section was cephalopelvic disproportion/obstructed labour. This corroborates the findings of other reports [14, 15, 19, 23]. Some of the reasons averred for this finding include the inadequate growth of the bony pelvis due to poor nutrition and poor supervision of the labour processes. Previous caesarean section was the second most commonest indication for surgery and this sequence is replicated by other studies [6, 9, 14, 15, 19]. A major contributory factor in the CSR in this study was that none of the patients with two or more previous caesarean sections was selected for vaginal birth after caesarean section. This is because the full complement of equipment to monitor these categories of patients in labour was lacking in the centre. Furthermore, fetal distress also contributed considerably to the frequency of caesarean sections, this might be due to the dependence on intermittent fetal heart auscultation in the absence of electronic fetal monitoring and fetal scalp electrodes for sampling in our facility. Fetal distress as a major contributor to CSR was reported by other researchers [9, 16, 23, 24].

Anaemia was the commonest cause of maternal morbidity. This finding was held by other researcher [6, 7, 27] whereas other authors [9, 16, 28] reported surgical site infection as the commonest maternal postoperative complication. This result is not surprising because it is mainly a rural area, where poverty is prevalent and there was difficulty in obtaining blood for transfusion when needed. Furthermore, the restrictive blood transfusion strategy was used for the replacement of blood loss at surgery [29].

There was one (1) maternal death giving a caesarean maternal mortality rate of 960/100,000. This is higher than the 908.6/100,000 live births [24], 870/100,000 live births [30] and 646 per 100,000 live births [18] reported by other researchers but lower than 4654.8 per 100,000 live birth reported by John *et al.* [27]. The only maternal death was neglected prolonged obstructed labour with intrauterine fetal death and chorioamnionitis. In this region of the Niger Delta in Nigeria.

Multiple pregnancies account for 14.4% of the total delivery and all of them had good obstetric outcomes, this is even though two (2) out of the fifteen (15) cases of twins had retained a second twin. There were Six (6) perinatal deaths, giving a perinatal mortality rate of 49/1000 which is higher than 43.9/1000 reported by Adelaiye *et al.* [30] but lower than 165.6/1000 reported by Ugwa *et al.* [19]. Four (4) of the perinatal deaths were intrauterine fetal death following prolonged obstructed labour and the two early neonatal deaths were from prematurity from delivery because of severe preeclampsia while the other was severe birth asphyxia from cord prolapse.

Conclusion

The caesarean section rate was within the limits set out by the World Health Organization and the prime indication for caesarean section was cephalopelvic disproportion. Post-operative morbidity can be minimized if patients are duly optimized as before surgery. At the study centre, close

supervision by consultants enabled careful selection of cases and proper management of induction and augmentation of labour, good evaluation of suspected fetal distress and the use of partograph. There was consultant input in nearly all decisions for caesarean section. These are proven measures that enhance the practice and have contributed to maintaining the normal CSR. However further well-designed studies especially in the third world setting are needed for a definite conclusion.

Declaration of interest

The authors declare no conflict of interest.

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