Indications and the materno-foetal outcome of caesarean section in a secondary health facility in obudu, south-south Nigeria.

Maanongun MT*, Ornguze AA, Ojabo AO, Eka PO

Department of Obstetrics and Gynaecology, College of Health Sciences, Benue State University, Makurdi, Benue State, Nigeria

Abstract

Background: Caesarean section (CS) is an important tool in obstetric care for the reduction of maternal and foetal morbidities and mortalities. This study was done to determine the CS rate, the indications and maternal and foetal outcome of emergency and elective caesarean sections at the Sacred Heart hospital Obudu, Cross River State.

Method: A retrospective review of clinical records of all patients delivered by CS from September 2011 to August 2016 at the Sacred Heart hospital Obudu, Cross River State, Nigeria was conducted.

Results: There were 2445 deliveries with 453 caesarean sections during the review period giving a CS rate of 18.1%. Emergency CS accounted for 338(74.6%), while elective CS accounted for 115(25.6%). The main indications for emergency CS were cephalo-pelvic disproportion (CPD) (16.9%) and obstructed labour (16.0%) followed by breech deliveries. Previous CS was the main indication for elective CS (50.4%). Generally the maternal and foetal outcome of elective CS was better than emergency CS. There were 4 deaths all accounted for by emergency CS giving a CS mortality of 0.9%. Maternal morbidities like post-partum haemorrhage, sepsis, and prolonged hospital stay were worse among the emergency CS patients. Some conditions like obstetric fistula and ruptured uterus were found only amongst the emergency CS patients. For foetal outcome, poor Apgar score, sepsis, death, jaundice and need for referral were worse among emergency CS patients.

Conclusion: The incidence of CS is high in this centre with higher rate of emergency over elective CS. Also the maternal and foetal outcomes of emergency CS were worse than those of elective CS.

Keywords: Caesarean section, Emergency, Elective, Indication, Maternal, Foetal, Outcome

Accepted on July 17, 2017

Introduction

Caesarean section (CS) refers to the delivery of a foetus, placenta and membranes after the age of viability through an abdominal and uterine incision [1].

Caesarean section is further divided into two subtypes as far as urgency of the operation is concerned. Elective caesarean section refers to those occasions where the decision to carry out caesarean section is made and planned more than 24 hours before delivery [2]. Emergency Caesarean Section (ECS) on the other hand is defined as any caesarean delivery that is not planned or scheduled [3].

The initial purpose of caesarean section was to preserve the life of the mother with obstructed labour, but indications have expanded over the years to include caesarean delivery for a variety of more subtle dangers to the mother and the foetus [4].

Contributing to the more frequent use is the increased safety, which is largely due to better surgical technique, improved anaesthesia, effective antibiotics and availability of blood transfusion [4].

There are wide global variations in the prevalence of CS. The prevalence of CS rate is highest in the Caribbean, Latin and Asian countries which share the CS rates of 26% whereas the rates are low in South Asia and Sub-Saharan Africa [5]. In 2010, a World Health Organisation (WHO) global survey carried out in 24 countries showed that most African countries record an average CS rate of 9% [6]. In Nigeria CS rate varies from 3 to 21% [7]. The WHO guide lines revised in 1994 stated that the proportion of caesarean births should range between 5 to 15%, but both in developed and developing countries, caesarean section rate is on the rise [8].

It is well documented that caesarean section carries a much higher maternal mortality and morbidity when compared to vaginal delivery [9]. On the other hand some have proposed that the risks to the foetus associated with vaginal birth may be less acceptable to women and their caregivers, making caesarean birth perceived as an increasingly safe and acceptable alternative mode of birth [10].

There are several documented adverse health outcomes associated with caesarean birth both for the women and their infants [10-12]. Intraoperative maternal complications

include damage to adjacent structures such as the ureters, urinary bladder and the bowel as well as unintentional damage to the uterus or the cervix [13]. As for the effect of caesarean section on perinatal outcome, studies have suggested that perinatal mortality is significantly reduced for elective caesarean section when compared to vaginal delivery. This improvement was not however observed for intrapartum caesarean birth [1,10,12].

This study is aimed at determining the rate, indications and materno-foetal outcome of caesarean section for both emergency and elective caesarean sections. No similar study has been done in this environment, and so the results of the study will form a baseline for further review of the trends of caesarean section in this environment. The information will also help in the modification of clinical approach to maternal care where possible through education and anticipatory prevention at both the primary and secondary levels of care so as to prevent poor clinical outcomes.

Furthermore the findings in this study will make up for the lack of local data on indications and outcomes of caesarean section. The study may also make a valuable contribution to national and international data.

Materials and Methods

Study area

The study was conducted at the Sacred Heart Catholic Hospital, Obudu. Obudu is situated in the Northern part of Cross River State in South-South Nigeria. The Hospital is the most prominent secondary level Hospital in the area with a functional obstetric and Gynaecological unit with a children's ward. There are also both male and female medical and surgical wards. The Obstetrics and Gynaecologic unit is headed by an Obstetrician Gynaecologist with at least one other medical officer assisting him at any point in time. There are 16 nurse/midwives, 8 cleaners, 5 porters and other assisting staff that man the obstetric and Gynaecological unit. The maternity unit has 26 beds and 6 delivery beds. Normal/uncomplicated vaginal deliveries are discharged within 24 hours and uncomplicated surgical deliveries are discharged within 7 days. There is a separate obstetric theatre for both elective and emergency caesarean deliveries.

Study design

This is a 5 year retrospective study. The study period under review was from September, 2011 to August, 2016.

Inclusion criteria

All caesarean deliveries performed after the period of viability (28 weeks) with full information of personal data, indications for caesarean section and maternal and foetal outcome were included in the study.

Exclusion criteria

Caesarean deliveries that lack full information above in the inclusion criteria were excluded.

Data collection procedure

Data for the study was extracted from theatre records, labour wards records and neonatal wards records using a structured questionnaire. The information obtained included socio-demographic variables, obstetrics history and outcome of caesarean section.

Statistical analysis

The data collected was checked for its completeness, entered into a computer and analysed using SPSS version 20.0. Frequencies and graphs were use to describe some variables. Bivariate analysis and chi-square test were used to examine association between dependent and independent variables. A 95% CI and P-Value less than 0.05 were considered to be statistically significant. To assess the effects of each independent variable on the outcome variables, multivariate logistic analysis was carried out and fit to the final model.

Ethical consideration

Ethical clearance was obtained from Research and Ethics Committee of the Benue State University Teaching Hospital, Makurdi. Permission was also sought and obtained from the Management of the Sacred Health Catholic Hospital Obudu before the commencement of the study.

Results

In the 5 years under review there were two thousand four hundred and forty five (2445) deliveries at Sacred Heart Hospital Obudu out of which 453 (18.5%) were caesarean births.

Table 1 provides an overview of the socio-demographic characteristics of the respondents. Of the 453 cases reviewed, elective caesarean sections constituted 115 (25.4%) while the rest 338 (74.6%) were emergency CS. Majority of the patients was aged between the 20-30 years. About a quarter of them (24.3%) were civil servants, followed by house wives (21.2%) Students (17.4%), farmers (14.8%) teachers (11.7%) business women (9.9%) and the least were bankers (0.4%).

The patients had multi ethnic groups but the highest proportions were the Bete 133 (28.9%) followed by Ekoi 49 (10.8%) tribes. Most patients were married 362 (88.5%) and of the Christian faith 413 (95.2%).

Most of the women were multiparous 220 (48.5). Primiparous women constituted 167 (36.9%) and grand multiparous made up the remaining 66 (14.6%).

There were higher numbers of elective CS cases among the booked patients 105 (91.3%) than the unbooked ones 10 (8.7%) On the other hand there were higher emergency CS cases among the unbooked patients 180 (53.2%) than the booked patients 148 (43.8%). For anterior abdominal wall incisions, there were more pfannenstiel than midline sub-umbilical incisions for both emergency and elective caesarean sections. As for the type of anaesthesia, there were more spinal than general anaesthesia given for elective CS. The reverse was the case for emergency CS.

Table 1. *Sociodemographic characteristics of respondents by type of CS (n=453)*

Variables	Type of Cs		
	Elective (n=115)	**Emergency (n=338)**	**Total (n=453)**
Maternal age	Frequency (%)	Frequency (%)	Frequency (%)
<20	6 (5.2)	40 (11.8)	46 (10.2)
20-30	62 (53.9)	211 (62.4)	273 (60.3)
31-40	39 (33.9)	77 (22.8)	116 (25.6)
>40	8 (7.0)	10 (3.0)	18 (4.0)
Occupation			
Civil servant	39 (33.9)	71 (21.0)	110 (24.3)
House wife	17 (17.7)	79 (23.4)	96 (21.2)
Student (health worker)	17 (14.8)	62 (18.3)	79 (17.4)
Farmer	8 (7.0)	59 (17.5)	67 (14.8)
Teacher	20 (17.4)	33 (9.8)	53 (11.7)
Business	13 (11.3)	32 (9.5)	45 (9.9)
Banker	1 (0.9)	1 (0.3)	2 (0.4)
Others	0 (0.0)	1 (0.3)	1 (0.2)
Marital status			
Married	113 (98.3)	293 (86.7)	406 (89.6)
Single/Divorced	2 (1.7)	45 (13.3)	47 (10.4)
Religion			
Christian	110 (95.7)	330 (97.6)	440 (97.1)
Muslim	5 (4.3)	7 (2.1)	12 (2.7)
Traditional	0 (0.0)	1 (0.3)	1 (0.2)
Parity			
One	26 (22.6)	141 (41.7)	167 (36.9)
Two	40 (34.8)	80 (23.7)	120 (26.5)
Three	30 (26.1)	36 (10.7)	66 (14.6)
Four	8 (7.0)	26 (7.7)	34 (7.5)
≥ Five	11 (9.6)	55 (16.3)	66 (14.6)
Booking Status			
Booked	105 (91.3)	148 (43.8)	253 (55.8)
Unbooked	10 (8.7)	180 (53.2)	190 (42.0)
Referred	0 (0.0)	10 (3.0)	10 (2.2)
Abdominal Incision			
Midline Sub-umbilical	50 (43.5)	66 (19.5)	116 (25.6)
Pfannesstiel	65 (56.5)	272 (80.5)	337 (74.4)
Type of Anaesthesia			
General	47 (40.9)	186 (55.0)	233 (51.4)
Spinal	68 (59.1)	152 (45.0)	220 (48.6)

Maternal outcome of caesarean section

Table 2 provides an overview of the maternal outcome of CS within the review period. There were 4 maternal deaths and all were during emergency CS, giving a CS mortality of 0.9%. Among those that had elective CS, 93.9% experienced less than 1 litre blood loss while 6.1% lost about a litre of blood or more. The pattern of blood loss among the patients who had emergency CS was similar but generally, the blood loss following emergency CS was proportionally higher. The relationship between blood loss and the type of CS was statistically significant (P=0.020).

A total of 24 (5.3%) patients developed post-operative sepsis. Out of these, 23 (6.8%) were from the group who had emergency CS and only 1 (0.9%) was from the elective CS group (P=0.015). Uterine extension was more frequent among the emergency CS 25 (7.4%) than elective CS group 8 (6.9%) (p=0.029). There were 13 (3.8%) fistula cases in women that had emergency CS but none in those that had elective CS, and again, this was statistically significant.

Conditions like ruptured uterus, bladder trauma, small bowel perforation, need for hysterectomy and death were found only among the ECS.

Foetal outcome

Table 3 represents the foetal outcome by types of CS. Apgar score in the 1st minute of less than 6 was 1.7% in mothers that had elective CS as compared to 23.7% in mothers that had emergency CS (p=001). Similar results were obtained for 5th minute Apgar scores.

Also poorer Neonatal outcome were found in women who had emergency CS than elective CS with regard to sepsis (15.2% versus 2.6% p=0.001), need for admission (20.5% versus 3.5% p=0.001) and death (7.7% versus 0.9% P=0.008).

There was need to refer 1.8% of neonates for neonatology care in those who had emergency CS but none in those that had elective CS. There were also 3.6% of babies that had jaundice in women that had emergency CS but only 0.9% for those that had elective CS but this was not statistically significant.

Table 2. *Maternal outcome by types of CS*

Maternal outcome	Type of Cs			P- Value
	Elective (n=115)	**Emergency (n=338)**	**Total (n=453)**	
Maternal blood loss (Litres)	Frequency (%)	Frequency (%)	Frequency (%)	
<1	108 (93.9)	288 (85.7)	396 (87.8)	
≥ 1	7 (6.1)	48 (14.3)	55 (12.2)	0.020*
Sepsis	1 (0.9)	23 (6.8)	24 (5.3)	0.015*
Uterine extension	8 (6.9)	25 (7.4)	33 (7.3)	0.397
Hospital Stay (days)				
<7	108 (93.9)	292 (86.4)	400 (88.3)	
≥ 7	7 (6.1)	46 (13.6)	53 (11.7)	0.029*
Fistula	0 (0.0)	13 (3.8)	13 (2.9)	0.032**
Ruptured Uterus	0	9 (7.8)	9 (2.0)	
Bladder tear	0	2 (1.7)	2 (0.4)	
Small bowel perforation	0	1 (0.9)	1 (0.2)	
Need for BTL	0	4 (3.5)	4 (0.9)	
PPH	0	4 (3.5)	4 (0.9)	
Death	0	4 (3.5)	4 (0.9)	
Hysterectomy	0	1 (0.9)	1 (0.2)	
Myomectomy	0	1 (0.9)	1 (0.2)	0.886**

*Correlation is significant at the 0.05 level (2-tailed)
**Fishers Exact test

Indications for CS

For elective CS the most common indication was previous CS (50.4%) followed by placenta praevia (15.7%), abnormal lie (9.6%), severe pre-eclamsia (6.1%), multiple gestation (5.2%) and breech presentation (4.3%). Others included poor obstetrics history, previous myomectomy and elderly primigravida. For emergency C/S the commonest indication was cephalo-pelvic disproportion (16.9.0%) followed by obstructed labour (16.0%), breech presentation (13.0%), placenta praevia (7.4%), previous CS (7.1%) and foetal distress (6.2%). Others included abnormal position, abruption placenta, abnormal lie cord and limb prolapse (Tables 4 and 5).

Discussion

The CS rate in this study was 18.1% which is similar to 18% reported in Jos [13] and 18% reported from the National review of caesarean delivery in Ethiopia [14]. The rate was however higher than 10.5% in Makurdi [15], 10.4% in Awka [16] and 5.39% in Calabar [7], but lower than 22.2% in Benin City [17], 26.5% in Enugu [18] and 34.6% in Lagos [19] all in Nigeria. The rate of 18.1% was also higher than the 15% recommended by the WHO.

In this study, there were more emergency CS than elective CS accounting for 74.6% of the total caesarean sections. Similar and even higher results were obtained from previous studies. For example, emergency CS accounted for 79.7% in Benin City [17], 83.6% in Makurdi [16], 85.2% in Jos [13] and 90.4% in Ethiopia [4]. From available data, it is obvious that more women undergo emergency CS than elective CS. This is due to various indications during labour and partly because many of these patients come to the hospital as a referral from a maternity home or after an unsuccessful attempt at home delivery. Of the patients who had emergency CS, 53.2% were unbooked and 3.0% were referred as compared to 43.8% of those booked.

Cephalopelvic disproportion (CPD) and obstructed labour were the commonest indications for emergency CS in this review and together they accounted for 32.9% of emergency CS. This is similar to findings in previous studies [4,14,16,19]. Breech presentation was the most common foetal indication for emergency CS. This is at variance with previous studies [20] where foetal distress was the commonest indication for emergency CS. Breech presentation together with other foetal indications like abnormal lie, abnormal position, and foetal distress form a large percentage of the other indications for emergency CS in this study.

The percentage of elective CS in this review was 25.4% which is higher than 14.8% from Makurdi [21], 16.4% from Jos [22] and other African countries [7]. It is however lower than findings from the Caribbean and Latin American countries [6]. Recently however, there have been observed increases in elective caesarean sections [15,22]. This may be explained by the ever increasing list of indications for elective CS and larger cohorts of patients with two or more previous CS. Better patient selection by clinicians with the use of improved diagnostic techniques such as ultrasound scan may also have contributed to this trend [23].

The maternal outcome was generally better for elective CS than emergency CS. Maternal deaths were found only in those who had emergency CS. Conditions like post-partum haemorrhage, puerperal sepsis, obstetric fistula and prolonged hospital stay were found more amongst the emergency CS patients, and this was statistically significant. Other complications like ruptured uterus, bladder and bowel injury were found only in emergency CS patients. It should be noted that there is an Obstetrician supervising this unit, so for these conditions to occur in emergency CS patients would suggest that these patients might have presented with prolonged and/or obstructed labour as referrals or unbooked patients with initial attempts at home delivery. The findings in this study are similar to both retrospective and prospective studies elsewhere [24,25]. The study in Nepal [25] had more post-partum haemorrhage among elective CS. This they explained was due to adhesions from previous caesarean sections.

Foetal outcome showed a similar trend. There were more foetal deaths among emergency CS patients. There were also more cases of poor Apgar scores (at both the first and fifth minute), sepsis, jaundice, and need for admission and referrals among the emergency than elective CS patients.

Table 3. *Foetal outcome by type of CS*

Foetal outcome	Type of Cs			P-Value
	Elective (n=115)	Emergency (n=338)	Total (n=453)	
Apgar Score				
First 1st Minutes				
<6	2 (1.7)	80 (23.7)	82 (18.1)	
≥ 6	113 (98.3)	258 (76.3)	371 (81.9)	0.001*
5th Minute				
<6	1 (0.9)	45 (13.3)	46 (10.2)	
≥ 6	114 (99.1)	293 (86.7)	407 (89.8)	0.001*
Sepsis	3 (2.6)	51 (15.2)		0.001*
Admission	4 (3.5)	69 (20.5)	73 (16.2)	0.001*
Death	1 (0.9)	26 (7.7)	27 (6.0)	0.008*
Jaundice	1 (0.9)	12 (3.6)	13 (2.9)	0.136
Need for referrals	0 (0.0)	6 (1.8)	6 (1.3)	0.152**

*Correlation is significant at the 0.05 level (2-tailed)
**Fishers Exact test

Table 4. *Indications for elective CS (n=115)*

Variable	Frequency	Percent
Previous CS	58	50.4
Placenta praevia	18	15.7
Abnormal lie	13	11.3
Severe pre-eclampsia	7	6.1
Multiple gestation	7	6.1
Breech presentation	6	5.2
Poor Obstetric history	4	3.5
Elderly primigravida	2	1.7

Table 5. *Indications for emergency CS (n=338)*

Variable	Frequency	Percent
CPD	57	16.9
Obstructed labour	54	16.0
Breach	44	13.0
Placenta praevia	25	7.4
Previous CS	24	7.1
Foetal distress	21	6.2
Abnormal position	20	5.9
Abruptio placenta	18	5.3
Abnormal lie	15	4.4
Eclampsia	14	4.1
Severe Pre-eclampsia	12	3.6
Cord prolapsed	10	3.0
Limb prolapsed	9	2.7
Multiple pregnancy	6	1.8
Cervical distosia	5	1.5

Conclusion

Caesarean section remains an important tool in obstetrics practice for the reduction of maternal and neonatal morbidity and mortality. In this review, the main indications for emergency CS was CPD, obstructed labour and breech presentation, while previous CS was the main indication for elective CS. The review also showed that emergency CS had poorer maternal and foetal outcomes than elective CS.

References

1. Incerpi MH. Operative delivery. In: Decherney AH, Nathan L, Goodwin TM, Laufer N (eds.), Current diagnosis and treatment obstetrics and gynaecology (10th edn). Mc Graw Hill, New York. 2007;461-76.
2. Heffner LJ, Elkin E, Fretts RC. Impact of labour induction, gestational age, and maternal age on caesarean delivery rates. ACOG. 2003;102(2):287-93.
3. Smith GC, White IR, Pell JP, et al. Predicting caesarean section and uterine rupture among women attempting vaginal birth after prior caesarean section. PLoS Med. 2005;2(9):871-9.
4. Ayano M, Beyene WA, Geremew MA. Prevalence and outcome of Caesarean Section in Attat Hospital, Gurage Zone, SNNPR, Ethiopia. Archives of Medicine. 2015;7(48):1-6.
5. Stanton CK, Holtz SA. Levels and trends of caesarean births in the developing world. Stud Fam Plann. 2006;37(1):41-8.
6. Lumbiganon P, Laopaiboon M, Gulmezoglu AM, et al. Method of delivery and pregnancy outcomes in Asia. The WHO survey on maternal and perinatal health 2007-2008. Lancet. 2010;375(23):490-9.
7. Osonwa OK, Eko JE, Ekeng PE. Trends in caesarean section at Calabar general hospital, Cross River State, Nigeria. EJBR. 2016; 4(1):1-5.
8. Santhanalakshmi C, Gnanasekaran V, Chakravarthy AR. A retrospective analysis caeserean section in a tertiary care hospital. IJSR. 2013;4(9):2097-9.
9. Mukherjee J, Bhattacharya PK, Lahiri TK, et al. Perinatal mortality in caesarean section: A disturbing picture of unfulfilled expectations. J Indian Med Assoc. 1993;91(8):202-3.
10. Grivell MR, Dodd JM. Short and long term outcomes after caesarean section. Expert Rev of Obtet Gynaecol. 2011;6(2):205-15.
11. Beigholt T, Stenderup JK, Vedsted J, et al. Introperative surgical complication during caesarean section: An observation study of the incidence and risk factors. Acta Obstet Gynecol Scand. 2003;82(3):251-6.
12. Villar J, Carroli G, Zavaleta N, et al. Maternal and neonatal individual risks and benefits associated with caesarean delivery: Multi centre prospective study BMJ. 2007;335(7628):1025.
13. Aisien AO, Lawson JO, Adebayo AA. A five year appraisal of caesarean section in a northern Nigerian university teaching hospital. Nig Postgrad Med J. 2002;9(3):146-50.
14. Fisseha N, Getachew A, Hailu M, et al. A National review of caesarean delivery in Ethiopia. Int J Gynaecol Obstet. 2011;115(1):106-11.
15. Swende TZ. Emergency caesarean section in a Nigerian tertiary health centre. Niger J Med. 2008;17(4):396-398.
16. Ikeato LC, Nwajaku L, Ezegwui HU. Caesarean section in a secondary health hospital in Awka, Nigeria. Niger J Surg Res. 2009;3(1):11-8.
17. Okonta PI, Otoide VO, Akogbenin SA. Caesarean section at the university of Benin teaching hospital revisited. Trop J Obstet Gynaecol. 2003;20(1):62-6.
18. Chigbu CO, Ezeome IV, Iloabachie GC. Caeseran section on request in a developing country. Int J Gynaecol Obstet. 2007;96(1):54-6.
19. Ezechi OC, Nwokoro CA, Kalu BKE, et al. Caesarean morbidity and mortality in a private hospital in Lagos, Nigeria. Trop J Obstet Gynaecol. 2002;19(12):97-100.
20. Mutihir JI, Daru PH, Ujah IAO. Elective caesarean section at the Jos university teaching hospital. Trop J Obstet Gynaecol. 2005;22(1):39-41.
21. Sule ST, Matawal BI. Comparisms of indications for caesarean section in Zaria: 1885 and 1995. Ann Afr Med. 2005;22:39-41.
22. Kalogiannidis I, Petousis S, Margioula-Siarkou C, et al. Caesarean delivery in a university hospital in Northern Greece. West Afr J Med. 2011;30(4):250-4.

23. Swende TZ, Agida ET, Jogo AA. Elective caesarean section at the federal medical centre Makurdi, North Central Nigeria. Niger J Med. 2007;16(4):372-4.

24. Thakur V, Chiheriya H, Thakur A, et al. Study of maternal and foetal outcome in elective and emergency caesarean section. Int J Med Res Rev. 2015;3(11):1300-5.

25. Suwal A, Shrivastava VR, Giri A. Maternal and foetal outcome in elective verses emergency caesarean section. J Nepal Med Assoc. 2013;52(192):563-6.

***Correspondence to:**

Dr Maanongun Michael
Department of Obstetrics and Gynaecology
College of Health Sciences
Benue State University
Benue State, Nigeria
E-mail: maanongun@yahoo.com