

A five-year survey of cesarean delivery at a Nigerian tertiary hospital

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ABSTRACT

Background: Caesarean section is one of the most commonly performed surgical procedures in obstetrics and certainly one of the oldest operations in surgery; the incidence of caesarean section is steadily rising. The increasing use of CS as a mode of delivery is due to improved safety of the procedure because of increasing use of antibiotics, blood availability, and improved anesthetic techniques. Despite all these, problems of safety and cost still pose some concern, particularly in resource-poor countries.

Objective: To evaluate the incidence, indications, and outcomes of caesarean section in this hospital during the period under review.

Materials and Methods: This is a retrospective descriptive analysis of all the caesarean sections carried out at the University of Abuja Teaching Hospital, Gwagwalada from 1st January 2012 to 31st December 2016. The labor ward delivery register and theatre operation register were also reviewed. The nature and indications for the procedure were analyzed. Other parameters reviewed included booking status of the patient, parity, and fetal outcome. Results were presented using simple percentages and ratios.

Results: Out of 9,604 deliveries during the study period, 2,053 cases were by caesarean section, giving a caesarean section rate of 21.4%. Most cases 1647 (80.2%) were by emergency caesarean sections and elective caesarean section accounted for 406 (19.8%) cases. The rate of caesarean section was higher among unbooked patients 1304 (63.5%) than booked patients 749 (36.5%). Cephalopelvic disproportion was the most common indication 633 (30.8%) followed by fetal distress 484 (23.6%) and severe pre-eclampsia/eclampsia 224 (10.9%). Anemia was the most common postpartum morbidity and there were 17 maternal deaths and the maternal case fatality rate was 0.8%, and there were 62 (2.9%) perinatal deaths due to birth asphyxia following emergency caesarean section.

Conclusion: The rate of caesarean section has been increasing gradually and is associated with maternal and perinatal morbidity and mortality. There is need for education of the populace to reduce late presentation.

Key words: Caesarean section; incidence; indications; outcomes.

Introduction

Caesarean section refers to the delivery of the fetus, placenta, and membranes through an abdominal and uterine incision. The first documented caesarean section on a living person was performed in 1610.^[1] The high rate of caesarean section in the United States is related to the small family size


and probably the fear of medicolegal repercussion if not performed. The incidence is about 15% to 21% in most West African countries and would have been higher if there had

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not been acceptance of vaginal birth after caesarean section and some types of breech presentations.^[2] However, the incidence is about 20 to 30% in most teaching hospitals in Nigeria.^[3] The high rate of caesarean section in the tropics is due to fetopelvic disproportion and obstructed labor.^[4] The Teaching hospitals, for example in Nigeria, have a higher caesarean section rate because they serve as referral centres, and therefore, have higher risk patients concentrated in them.^[4] In Midland Province of Zimbabwe, variation has been shown as well, where they found that interhospital differences in caesarean section rate ranges from 2.2% to 16.8% per 100 deliveries, which could not be accounted for by differing numbers of high-risk pregnancies.^[5]

The incidence of caesarean section is steadily rising. Apart from the increased safety of the operation due to improved anesthesia, availability of blood transfusion and antibiotics, the other responsible factors are decline in operative vaginal delivery, decline in vaginal breech delivery, fear of litigation in Obstetric practice, identification of at risk mothers, and wider use of repeat caesarean section in cases with previous caesarean delivery.^[6] Also elective caesarean deliveries are increasingly being performed for a variety of indications including for pelvic floor injuries associated with birth, medically indicated preterm birth, to reduce the risk of fetal injury and for patient request.^[7] Other reasons are malpractice litigation, the use of electronic fetal monitoring, prevalence of obesity has risen dramatically and obesity increases the risk of caesarean delivery. The rate of labor induction continues to rise, and induced labor, especially among nulliparas, also increases the risk of caesarean delivery.^[8]

Aim of the study

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

Materials and Methods

The case records of patients delivered by caesarean section between 1st January 2012 and 31st December 2016 were reviewed. The labor ward delivery register and theatre operation register were also reviewed. The nature and indications for the procedure were analyzed. Other parameters reviewed were the booking status of the patients, parity, and fetal outcome. Results were presented using simple percentages and ratios.

Results

During the period under review, Table 1 shows different methods of delivery that were employed. Spontaneous vertex vaginal delivery was the most common (73.8%) while caesarean section was next (21.4%) of the total deliveries.

Other methods of delivery were assisted breech (2.8%), vacuum (1.4%), forceps (0.7%), and destructive (0.05%). Table 2 shows the age distribution of patients who had caesarean deliveries. The age group 25–29 had the highest caesarean section rate of 37.1% follow by the age group of 30–34 (28.2%) and 20–24 (17.4%). Other age group 15–19 accounted for 2.9%, 35–39 (10.4%), and 40+ (4.0%). Primigravida had the highest rate of 37.1%. There appears to be a fall in caesarean section rate with increasing parity, as showed in Table 3.

There was a gradual increase in caesarean section rate from 24.2% in 2012 to 24.3% in 2013 with a drop in 2014 (19.9%) to 2015 (19.6%) and an increase in 2016 (20.2%), as showed in Table 4. The overall caesarean section rate for the period studied was 21.4%. Emergency caesarean section formed the bulk of the procedure 80.2% while 19.8% accounted for elective cases as seen in Table 5. From Table 6 it can be seen that, out of a total of 2,053 patients who had C/S, 63.5% were unbooked which comprised cases referred from other hospitals/clinics or from traditional birth attendants (TBA) or from churches while the remaining 36.5% were booked.

Cephalopelvic disproportion was the most common indication for caesarean section 686 (33.4%), followed by fetal distress 484 (23.6%), severe pre-eclampsia/eclampsia 224 (10.9%), prolonged obstructed labor 201 (9.8%), and antepartum hemorrhage 180 (8.8%). Others include breech presentation 94 (4.6%), 2 previous caesarean sections 72 (3.5%), multiple gestation 32 (1.6%), and others 30 (1.5%), as seen in Table 7.

Majority of the babies 1667 (79.9%) were delivered by emergency procedure. Five hundred and eighty-eight (28.2%) had birth asphyxia and there were 62 (2.9%) perinatal deaths. All the perinatal deaths and 550 (93.5%) of birth asphyxia were following emergency procedure [Table 8].

Anemia was the most common maternal morbidity occurring in 416 (20.3%) women followed by pyrexia 380 (18.5%) and wound infection 118 (5.7%) [Table 9]. There were 17 cases of maternal deaths recorded in the study period giving a case fatality rate of 0.8%. All the cases of maternal deaths were

Table 1: Methods of delivery

Methods	Number	Percentage
Spontaneous vertex	7,085	73.8
Caesarean section	2,053	21.4
Assisted breech	270	2.8
Vacuum	123	1.4
Forceps	68	0.7
Destructive	5	0.05
Total	9,604	100

Table 2: The age range distribution of the women

Age range (years)	Number of patients	Percentage
15-19	60	2.9
20-24	358	17.4
25-29	761	37.1
30-34	578	28.2
35-39	214	10.4
40+	82	4.0
Total	2053	100

Table 3: Parity distribution of women

Parity	Number of patients	Percentage
0	762	37.1
1	456	22.2
2	322	15.7
3	220	10.7
4	160	7.8
≥5	133	6.5
Total	2,053	100

Table 4: Trend of caesarean section

Years	2012	2013	2014	2015	2016	Total
Total deliveries	1,574	1,664	1,987	2185	2194	9604
Cesarean section	381	394	396	429	453	2,053
Cesarean section rate	24.2	24.3	19.9	19.6	20.2	21.4

Table 5: Types of caesarean section

Types of caesarean section	Number	Percentage
Elective	406	19.8
Emergency	1647	80.2
Total	2053	100

referred cases. Twelve died of postpartum hemorrhage, and the remaining 4 died of eclampsia.

Discussion

The overall caesarean section rate of 21.4% in this study is consistent with data from other Teaching Hospitals in Nigeria. However, the incidence is about 20 to 30% in most teaching hospitals in Nigeria, it varies between under 5% and upto 75% around the world.^[3] However, there seemed to be decrease in the yearly rates of the procedure from 2012 to 2016, with a slight increase in 2016. The current figure of 21.4% is lower than the 23.1% and 27.6% obtained in a similar study in Shagamu in 2004 and in Enugu in 2011, respectively.^[9,10] Also the rate is much higher than the one obtained in Ile-Ife 12.2% in 1983^[11] and 18.0% in Jos in 2002,^[12] respectively. These are variations within the same country.

The increasing incidence of caesarean section in this center (though with slight drop between the years) is not far from what obtains in different parts of the world. The high

Table 6: Booking status of caesarean section patients

Status	Total number	Percentage
Booked	749	36.5
Unbooked	1304	63.5
Total	2053	100

Table 7: Indications for caesarean section

Indications	Number	Percentage
Cephalopelvic disproportion (in labor)	686	33.4
Fetal distress	484	23.6
Severe pre-eclampsia/Eclampsia	224	10.9
Prolonged obstructed labor	201	9.8
Antepartum hemorrhage	180	8.8
Breech presentation	94	4.6
Two previous caesarean sections	72	3.5
Bad obstetric history	50	2.4
Multiple gestation	32	1.6
*Others	30	1.5
Total	2,053	100

Table 8: Perinatal outcome of elective and emergency caesarean sections

Perinatal outcome	Elective	Percentage	Emergency	Percentage
Normal Apgar score	382	91.0	1055	63.3
Mild birth asphyxia	33	7.9	225	13.5
Moderate birth asphyxia	5	1.1	243	14.6
Severe birth asphyxia	0	-	82	4.9
Perinatal death	0	-	62	3.7
Total	420	100	1667	100

Total of 2087 babies (30 twins and 2 triplets)

Table 9: Maternal morbidity associated with caesarean section

Maternal morbidity	Number	Percentage
Anaemia	416	20.3
Pyrexia	380	18.5
Wound infection	118	5.7

rate of caesarean section in the United States is related to the small family size and probably the fear of litigation if not performed. The high rate of caesarean section in the tropics is due to cephalopelvic disproportion and obstructed labor.^[4] The teaching hospitals in Nigeria, including ours, have a higher caesarean section rate because they serve as referral centre, and therefore, have higher risk patients concentrated in them.^[4] Therefore, the increase in caesarean section rate in our environment may be due to other factors. For example, it was observed in this study that the increasing number of caesarean sections were due to cephalopelvic disproportion (33.4%). Although cephalopelvic disproportion has always been the foremost indication for caesarean deliveries in developing countries,^[13] it is becoming obvious that its contribution to the procedure is on the rise. A possible explanation is that mothers who because they were

malnourished, had smaller pelvises, or even normal pelvic now live in a relatively more affluent era and therefore give birth to bigger babies. Other possible reasons which can be advanced for the steadily increasing caesarean deliveries in our hospitals include the specialist nature of Teaching Hospital. There is a shift of high risk deliveries from the General Hospital, private clinics and maternity homes, traditional birth attendants^[14] and churches to teaching hospitals.

The emergency caesarean section accounted for 80.2% of the total caesarean sections in this study which is low when compared with 91.5% obtained in Ilorin 2001^[15] and the 93% reported in Zaire in 1996.^[16] The possible explanation for this would be that they serve as referral centres for other health facilities.

The post operative complications recorded were seen in the unbooked cases. This may explain why there were more deaths in that group; many of them only presented in labor with complications or were referred from General hospitals and private hospitals after complications had set in. Lack of antenatal care and late presentation in labor have been identified by many authors as being among the major predisposing factors to maternal death.^[17]

From this study, there were more caesarean sections in primigravida and low parity women than the grandmultiparous women, probably because labor is usually faster and smoother in the latter. Cephalopelvic disproportion (33.4%) was the most common indication higher than the finding in Gombe (20.8%).^[18]

Also from this study, perinatal outcome and complications associated with elective and emergency caesarean section was examined. The perinatal outcome was poorer with emergency caesarean section as most emergency cases were referred and there would have been development of severe fetal distress from prolonged labor before referral.

The post-operative complication of caesarean section in this study agreed with study from Enugu. Anemia in our study accounted for 20.3% while in Enugu it accounted for 32.5% followed by pyrexia 18.5% (in Enugu 24%) and wound infection 5.7% (in Enugu 9%).^[14] There were seventeen maternal deaths recorded during this study. The high case fatality rate following caesarean sections were due to emergency cases that were referred from other hospitals and unbooked cases.

Conclusion

This study demonstrated that Cephalopelvic disproportion, Fetal distress, Severe preeclampsia/eclampsia, prolonged obstructed labor and antepartum hemorrhage were the most

common indications for caesarean section. Emergency caesarean section accounted for most of the cases and is associated with increased maternal and perinatal morbidity and mortality. Late presentation is associated with poor fetal outcome. Education of the populace about supervised pregnancy and delivery will reduce maternal and perinatal morbidity and mortality.

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Conflicts of interest

There are no conflicts of interest.

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