

A Five-year Survey of Caesarean Delivery at a Nigerian Tertiary Hospital

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Abstract

Background: The rising global rate in caesarean delivery has been a source of concern to obstetricians worldwide. In spite of remarkable improvement in the safety of anaesthesia and surgical techniques, caesarean section has higher risks of maternal death when compared with normal vaginal delivery. Thus, the current emphasis is to limit the rising rate of caesarean section to as much as possible.

Objective: To determine the rate of caesarean section, pregnancy out-come, major indications and complications of caesarean section.

Methods: A five year (January 1st 2005 to December 31st 2009) retrospective analysis of clinical data from the ward admissions and discharge books, patients' folders and the operating theatre record books at the University of Nigeria Teaching Hospital, Ituku Ozalla, Enugu.

Results: Out of the 3,554 deliveries during the study period, 980 cases were by caesarean section, giving a rate of 27.6%. Most cases 918 (93.7%) were by emergency caesarean sections, with elective procedure accounting only for 6.3% of the cases. The age range of the women was between 16-48yrs. Four hundred and seven (41.5%) were primigravidae, 503(51.4%) were between para one and para four, while 70 (7.1%) were grand-multipara. The rate of caesarean section was higher amongst the booked patients, 563 (57.5%) than the unbooked patients 355 (36.2%). Two previous caesarean section was the commonest indication for caesarean section 211(21.5%), followed by cephalopelvic disproportion 198 (20.2%), and foetal distress 188 (19.2%). A total of 1009 babies were delivered through caesarean section by the 980 women; 955 cases of singleton gestations and 25 cases of multiple gestations (21 twins and 4 triplets). Majority of the babies 918 (91%) were delivered by emergency procedure. More than half of the babies 582(57.7%) had birth asphyxia and there were 39 (3.9%) perinatal deaths. All the cases of perinatal deaths and 549 (94.3%) of birth asphyxia were following emergency procedure. Anaemia was the commonest postpartum morbidity and the maternal case fatality rate was 0.7%.

Conclusion: There is now a further rise in rate of caesarean section after a slight drop that followed the initial high 1.5fold rise from previous studies. The perinatal outcome is poor especially following emergency caesarean section. Reducing primary caesarean section rate and more encouragement of vaginal delivery after one previous caesarean section may reduce the prevalence of two previous caesarean sections which is the leading indication for caesarean section in the hospital.

Key Words: Caesarean section; survey; tertiary hospital: Nigeria.

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Introduction

Caesarean section refers to the delivery of a foetus, placenta, and membranes through an abdominal

and uterine incision after viability. The first documented caesarean section on a living person was performed in 1610.¹ It is one of the most commonly performed surgical procedures in obstetrics and it is certainly one of the oldest operations in surgery. In early caesarean sections, sutures were not placed in the uterus and sepsis usually occurred in those who survived the initial haemorrhage from the open sinuses.¹ Thereafter, the procedure was done for a wide range of isolated cases with accompanying variations and modifications of techniques so as to lower the enormous risks of death due to haemorrhage and sepsis.¹ Numerous advances and refinements in surgical technique, asepsis, antibiotic therapy, blood transfusion, and anaesthesia have reduced but not eliminated the risks associated with caesarean section.

The incidence of caesarean section varies from hospital to hospital, within a country and across nations.¹ In the past 30 years, the incidence has increased from 5% to approximately 25%.¹ The general range is from 5% to 15%² with a steady and continued increase during the last two decades in the developed nations up to 30%.¹ Efforts made in the last two decades to check this rising incidence include encouraging vaginal births after previous caesarean section, discouraging caesarean section on social indication, use of foetal scalp PH to confirm foetal distress before embarking on caesarean section, amongst others.¹ Despite these, the Obstetrician's low threshold to taking risk precipitated by the ever increasing cases of litigations following poor neonatal outcome, appear to have counteracted the gains made from the above measures.

Previous studies from the study centre have documented an increasing incidence of caesarean section, from rate of 10.4% in 1989³ to 25.3% in 2005.⁴ The feasibility of reducing the increasing rate of caesarean section in the study centre has been previously documented.⁵ It is thus pertinent to determine whether this rising rate has been halted or still sustained. This underscores the need for the study.

Materials and Methods

This is a retrospective analysis of all the caesarean sections carried out at the University of Nigeria Teaching Hospital, Enugu from 1st January 2005 to 31st December 2009. The obstetric theatre and labour ward records were reviewed to identify patients who underwent caesarean section during the study period. In our centre, the obstetric theatre and labour ward records include patients' demographic data, parity, gestational age, and indications for surgery, Apgar scores, birth weight (including placenta weight), anaesthetic technique, major intraoperative complications, and transfer of mothers and babies to special care units. This helps in audits where some patients' folders may be unavailable. Thus, the records of caesarean sections were obtained from the patients' case notes, labour ward and theatre records.

The above data were first entered into 'case record forms' specifically prepared for the study and thereafter keyed into the *statistical package for social sciences (SPSS) computer software version 13.0 for windows*. The results were analysed using descriptive statistical methods.

Results

There were 3554 deliveries during the study period out of which were 980 cases of caesarean sections, giving an overall caesarean section rate of 27.6%. There were 918 (93.7%) emergency caesarean

sections and 62 (6.3%) elective caesarean sections. The age range of patients that had caesarean sections was between 16-48 years. Majority 395 (40.3%) were aged between 25-34 years, followed by 307 (31.3%) who aged between 30-34 years. These are shown in table 1.

Five hundred and seventy three 573 (58.5%) of the women that had caesarean section received regular antenatal care in the hospital (booked), while the rest 407 (41.5%) were unbooked. Amongst the booked patients, 563 (57.5%) had emergency caesarean section while the remaining 10 (1%) had elective caesarean section. Three hundred and fifty five 355 (36.2%) of the unbooked patients had emergency caesarean section while 52 (5.3%) were done as elective caesarean section.

The rate of caesarean birth was commonest in women with low parity; 407 (41.5%) were primigravidae, 333 (34.1%) were primipara, 170 (17.3%) were multipara, and 70 (7.1%) were grand-multipara. These are shown in table 2.

Caesarean section was more common in women with secondary school level education and above 837 (85.4%) than in those with only primary school level education or less 143 (14.6%).

Two previous caesarean section was the commonest indication for caesarean section 211

(21.5%), followed by cephalopelvic disproportion 198 (20.2%), foetal distress 188 (19.2%), pregnancy induced hypertension 140 (14.3%), obstructed labour 128 (13.1%), antepartum haemorrhage 70 (7.1%), and multiple pregnancy 25 (2.6%), table 3.

The 980 women; 955 cases of singleton gestations and 25 cases of multiple gestations (21 twins and 4 triplets) delivered 1009 babies through caesarean section. Majority of the babies 918 (91%) were delivered by emergency procedure. More than half of the babies 582 (57.7%) had birth asphyxia and there were 39 (3.9%) perinatal deaths. All the cases of perinatal deaths and 549 (94.3%) of birth asphyxia were following emergency procedure (table 4).

Anaemia was the commonest postoperative complication, occurring in 319 (32.5%) women, followed by pyrexia 236 (24%) and wound infection 88 (9%). There were 7 cases of maternal deaths recorded in the study period giving a case fatality rate of 0.7%. These are shown in table 5. Six of these seven maternal deaths (85.7%) followed emergency caesarean section. Five were caused by massive intraoperative haemorrhage, one was due to cardiopulmonary failure during anaesthesia, and the last one was due to valvular heart disease which was the only death recorded in the elective cases.

Table 1: The Age Range Distribution of the Women

Age Range (Years)	Number of Patients	Percentage
Teenagers	26	2.7
20 – 24	138	14.1
25 – 29	395	40.3
30 – 34	307	31.3
35 – 39	93	9.5
40+	21	2.1
Total	980	100

Table 2: The Parity Distribution of the Women

Parity	Number of Patients	Percentage
Primigravida	407	41.5
Primipara	333	34.1
Multipara	170	17.3
Grand-multipara	70	7.1
Total	980	100

Table 3: Indications for Caesarean Section

Indications	Number of Patients	Percentage
Two previous C/S	211	21.5
Cephalopelvic disproportion	198	20.2
Foetal distress	188	19.2
Pregnancy induced hypertension	140	14.3
Obstructed labor	128	13.1
Ante partum haemorrhage	70	7.1
Multiple pregnancy	25	2.6
*Others	20	2.0
Total	980	100

*Others include; Patients wish, bad obstetric history, etc

Table 4: Perinatal Outcome of Elective and Emergency Caesarean Sections

Perinatal Outcome	Elective (%)	Emergency (%)
Normal Apgar score	58 (63.7)	330 (36.0)
Mild birth asphyxia	24 (26.4)	248 (27.0)
Moderate birth asphyxia	9 (9.9)	192 (21.0)
Severe birth asphyxia	0 (0)	109 (11.9)
Perinatal death	0 (0)	39 (4.2)
Total	91 (100)	918 (100)

Total of 1009 babies (21 twins and 4 triplets)

Table 5: Maternal Complications of Elective and Emergency Caesarean Section

Complications	Elective C/S	Percentage	Emergency C/S	Percentage
Anaemia	21	2.1	298	30.4
Pyrexia	20	2.0	216	22.0
Wound infection	14	1.4	74	7.6
Maternal death	1	0.1	6	0.6

Discussion

The caesarean section rate of 27.6% is almost three times more than the 10.4% recorded in this centre over two decades ago.³ A similar high incidence of 27.4% obtained in the centre in 1996⁶, dropped to 25.3% recorded in the centre in 2005.⁴ The current figure of 27.6% is higher than the 23.1% obtained in a similar study in Shagamu in 2004,⁷ and much higher than rates of 12.2% in Ile-Ife in 1983,⁸ 11.6% in Onitsha in 1992⁹ and 18% in Jos in 2002.¹⁰ Around the world, the reported caesarean section rate is 21% in Pakistan in 2004,¹¹ 15% in France in 2001,¹² 17.4% in rural Australia in 2001,¹³ 29.1% in USA in 2005¹⁴ and 30% in Mexico in 2001.¹⁵

The increasing incidence of caesarean section in this centre from a steep of 25.3% recorded in 2005 (after an initial rapid rise from 10.4% in 1989 to 27.4% in 1996) to 27.6% obtained in this study, may not be unconnected to the movement of the entire hospital from its initial temporary site at the heart of the city to its current location at the out skirt of the city. This has caused a remarkable drop in the number of normal deliveries in the hospital and a relative increase in difficult cases presenting to the centre, hence a higher caesarean section rate. This is in addition to the recent proliferation of private and mission hospitals in the city, which often undertake the normal deliveries, referring high risk women and difficult deliveries to the

centre.⁴ Other contributing factors to the rising rate of caesarean section globally, may also have contributed to the rise in caesarean section rate in the centre. These include the liberal use of caesarean section for breech presentation, the decreasing skills for operative vaginal deliveries, the increasing incidence of preterm delivery, the HIV infections with increased viral load, and the obstructed labour with intrauterine foetal death in the absence of the skills for destructive operation.^{16, 17}

The emergency caesarean section accounted for 93.7% of the total caesarean sections in this study and the figure is comparable with 91.5% obtained in Ilorin 2006¹⁸ and the 93% reported in Zaire in 1996.¹⁹

Most of the post operative complications recorded were seen in the unbooked subjects. This may explain why there were more deaths in that group; many of them only presented in labour with complications or were referred from cottage and private hospitals after complications had set in. Lack of antenatal-care and late presentation in labour have been identified by many authors as among the major predisposing factors to maternal death.^{8, 20}

The finding in this study that caesarean section was commoner among low parity women than the grandmultiparous women may be probably because labour is usually faster and smoother in the later.

That two previous caesarean section was noted as the commonest indication for caesarean section, followed by cephalopelvic disproportion, was consistent with the earlier studies done in this centre.^{4,5} Usually, trial of vaginal delivery after one previous caesarean delivery is offered except where there are absolute contraindications to vaginal delivery. This is aimed at reducing the rate of caesarean section because repeat caesarean delivery is known to be a major contributor to the rising caesarean birth rate.⁴ A further leap towards conducting vaginal delivery after two previous caesarean sections in well selected cases may reduce the rising incidence in the centre.

This study also examined the perinatal outcome and complications associated with elective and emergency caesarean sections. The poorer perinatal outcome observed following emergency caesarean section might not be unconnected to the very deplorable state of the women prior to surgery as most emergency cases in the centre were referred and there would have been development of severe foetal distress from prolonged labour before referral.

The finding that anaemia was the commonest post operative complication of caesarean section in this study was in agreement with earlier findings by previous studies from the centre.^{4,6} Majority of these complications were seen in emergency procedure and it is worthy of note that anaemia was 14.5 times commoner with emergency caesarean section than elective in this study. There were seven maternal deaths recorded during this study. The recorded higher case fatality rate following emergency caesarean section may again not be unconnected to the very deplorable state of the affected women as

most were unbooked and often presented in a much compromised state.

In conclusion, the current rate of caesarean section in the hospital is high and it depicts a further rise in rate after a slight drop that followed the initial high 1.5 fold rise from previous studies. Two previous caesarean sections is the leading indication for caesarean section in the hospital, and anaemia is the commonest postoperative maternal morbidity. The perinatal outcome is poor especially following emergency caesarean section. It is thus recommended that efforts should be made towards reducing primary caesarean section rate in addition to more encouragement of vaginal delivery after one previous caesarean section so as to reduce the prevalence of two previous caesarean sections. There is also need to commence conducting vaginal delivery after two previous caesarean sections in well selected cases.

References

1. Marc H. Operative Delivery. In: Alan HD and Lauren N (Eds). *Current Obstetrics and Gynecological Diagnosis and Treatment*. 10th ed. New York: MC Graw Hill Publishers; 2007: 469-476.
2. Shiroro PH, Fielden JG, MC Bellis D, Rhoads GG and Pearse WH. Recent trends in caesarean birth and trial of labour rates in the United States. *AMJ* 1987; 257(4): 494-497.
3. Megafu U and Nweke PC. Maternal Mortality from caesarean section at the University of Nigeria Teaching Hospital, Enugu, Nigeria. *Trop J Obstet Gynecol* 1989; 7: 36-39.
4. Okezie AO, Oyefara B and Chigbu CO. A 4-year analysis of caesarean delivery in a Nigerian teaching hospital: One-quarter of

- babies born surgically. *J Obstet Gynecol* 2007; 27(5): 470 – 474.
5. Nkwo PO and Onah HE. Feasibility of reducing the caesarean section rate at the University of Nigeria Teaching Hospital, Enugu, Nigeria. *Trop J Obstet Gynecol* 2002; 19(20) 86-89.
6. Ibekwe PC and Tabansi ST. Increase in caesarean section delivery at the University of Nigeria Teaching Hospital, Enugu, Nigeria. *Journal of Obstetrics and gynecology* 2005; 25(4): 342-346.
7. Oladipo OT, Sotunsa JO and Sule-Odu AO. The rise in caesarean birth in Sagamu, Nigeria: reflection of changes in obstetric practice. *J Obstet Gynecol* 2004; 24: 377-381.
8. Makinde OO. A review of caesarean section at University of Ife Teaching Hospital, Ile-Ife (1982 – 1983). *Trop J Obstet Gynaecol* 1987; 6: 26-30.
9. Ikpeze OC. Current obstetrics and prenatal indices of the Nigerian Igbo Population. *Orient Journal of Medicine* 1992; 4: 1-3.
10. Aisian AO, Lawson JO and Adebaya AA. A five-year appraisal of caesarean section in a Northern Nigeria University Teaching Hospital. *Nigerian Postgraduate Medical Journal* 2002; 9: 146-150.
11. Khawaja NP, Yousaf T and Tayyeb R. Analysis of caesarean delivery at a tertiary care hospital in Pakistan. *J Obstet Gynecol* 2004; 24: 139 -141.
12. David S, Mamelle N and Riviere O. Estimation of expected caesarean section rate taking into account the risk: the case of a maternity hospital. Analysis from AUDIPOG sartinolle Network [France] obstetrician AUDIPOG. Association of users of computerized files in perinatology, Obstetrics and Gynecology. *BJOG* 2001; 108: 919- 926.
13. Cameron B and Cameron S. Outcomes in rural obstetrics, Atherton Hospital, 1991-2000. *Australian Journal of Rural Health* 2001; 9: 539-942.
14. Kaiser Network. Daily Health Policy Report Menlo Park, CA: Henry J Kaiser Family Foundation; 2005.
15. Gonzales-Perez GJ, Vega-Lopez MG, Cabrera-privaral C, Munoz A and Valle A. Caesarean section in Mexico: are there too many? *Health Policy Plan* 2001; 16: 62 – 67.
16. Derom R, Pate NB and Thierry M. Implications of increasing rates of caesarean sections. In: Studd J (Ed). *Progress in Obstetrics and Gynaecology*. London: Churchill Livingstone; 1987; 176-191.
17. Aboyegi AP and Fawole AA. Obstructed labour in Ilorin, Nigeria. A one year prospective study. *Nig Med Pract* 1999; 38: 25-28.
18. Ijaiya MA and Aboyegi AP. Caesarean Delivery: The trend over a Ten-year period at Ilorin, Nigeria. *Nig J Surg Research* 2001; 3(1): 11-18.
19. Onsrud L and Onsrud M. Increasing use of caesarean section even in developing countries, Tidssk Nor Loegen foen (English translator from Medline search) 1996; 116: 67-71.
20. Adetoro OO. Maternal mortality-A twelve year survey at the University of Ilorin Teaching Hospital (U.I.T.H) Ilorin, Nigeria. *Int J Gynecol Obstet* 1987; 25: 93-98.