

Caesarean Delivery: The Trend Over a Ten-Year Period at Ilorin, Nigeria

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ABSTRACT

Background: There has been tremendous increase in caesarean deliveries in modern obstetric practise as a result of extension of the indications for caesarean section, which is now an international public health issue.

Method: Records of all caesarean deliveries that occurred at University of Ilorin Teaching Hospital (U.I.T.H.) between 1st January 1990 and 31st December 1999 were reviewed retrospectively.

Results: Two thousand, seven hundred and sixty-four caesarean births occurred out of 30,267 deliveries giving an overall caesarean section rate of 9.1%. Caesarean birth rose from 1 in 26 deliveries in 1990 to 1 in 5 deliveries by 1999. Cephalopelvic disproportion, 851 (30.8%) remained the commonest indication for caesarean section throughout the study period. The other indications were antepartum haemorrhage 363 (13.1%) and pre-eclampsia/eclampsia, 258 (9.3%). The common causes of caesarean section related maternal mortality were sepsis, 9 (31.0%), haemorrhage 8 (27.6%), anaesthesia 4 (13.8%) and embolism 4 (13.8%). There were 29 and 12 maternal deaths following caesarean section and vaginal delivery respectively. All caesarean mortality cases recorded were under emergency situations. Maternal mortality ratio relating to caesarean section (1,050 per 100,000) was higher than that for vaginal delivery (40 per 1000). The difference was statistically significant ($p < 0.0$).

Conclusion: Caesarean section rate has dramatically increased during the study period. This high caesarean birth and caesarean mortality can be reduced by improving socio-economic condition of the populace, strict policy on active management of labour, improve blood transfusion services and anaesthetic technique in this centre.

KEY WORDS: Caesarean delivery; trend; Ilorin

Introduction

In current obstetric practice, caesarean section is the commonest operation aside from episiotomies. The operation dates from antiquity and was usually performed to save the living foetus in dead and near miss pregnant women.¹ The indications for this operation are being continually reviewed and extended; hence high caesarean birth rate is reported in many developed and developing countries.²⁻¹⁰ The high incidence has become an issue of international public health concern. Despite the high incidence, some patients in this environment still have aversion to the operation for many socio-cultural reasons, among which is the feeling that caesarean section represents a form of reproductive failure because of inability to deliver per vaginam.¹¹

The risks and safety of caesarean section differ from place to place. In areas where there is poorly developed health system, a high rate of caesarean section represents a hazard to maternal health. Although caesarean section is now safer than it has ever been, it can never be entirely safe and therefore, is not an alternative to vaginal delivery.¹⁰ The report reviews the experience with caesarean delivery in Ilorin, Nigeria.

Materials and Methods

This retrospective study was carried at the University of Ilorin Teaching Hospital, Ilorin between January 1990 and December 1999. There were 2,764 caesarean sections performed out of 30,267 deliveries conducted during the study period. The records of caesarean sections were obtained from patients' case notes, labour ward and theatre records and mortality register. The data analysed include age, parity, indication and maternal death. The amount of

blood loss, cadre of surgeon and anaesthetist were also studied. They were analysed using simple percentages and chi-square test.

In this centre, there is 24-hour coverage of labour ward by a registrar and a senior registrar. Labour is managed actively with use of partograph and final decision for caesarean section is taken by a consultant. The decision to delivery interval is between 15 - 60 minutes, which is the waiting period to get a screened and compatible blood and for initial resuscitation in some cases.

The type of abdominal incision used depended on the case, skill and the choice of the surgeon. Midline subumbilical or Pfannestiel incision was usually employed. Lower segment caesarean section was used routinely except occasionally when there was indication for classical caesarean section. The amount of blood lost during surgery was estimated by measuring the degree of wetness of the gauze/pack and adding the total obtained to the volume of blood collected in the suction reservoir.

Intravenous cefuroxime, 1.5gm administered at the time of induction of anaesthesia and repeated twelve hours later was used as prophylactic antibiotics for elective cases while a complete therapeutic course of triple antibiotics (ampicillin, metronidazole and gentamicin) was used for emergency cases. Patients who were at high risk of developing infection or with clinical chorio-amnionitis had endocervical or high vaginal swab taken for microbiology analysis and antibiotics were changed if need be depending on the sensitivity pattern. All the caesarean sections were performed under general anaesthesia in the centre.

In this study, where there were two or more indications for caesarean section, a single indication was assigned according to International classification

of diseases (clinical modification, ninth edition, ICD-9-CM) hierarchical categories. Patients' relations did not usually give consent to post-mortem examination.

Results

During the period under review, there were 30,267 deliveries and 2,764 caesarean sections, giving an overall caesarean rate of 9.1%. There were 2,529 (91.5%) and 235 (8.5%) cases of emergency and elective caesarean section performed respectively. Of the 2,764 patients that had abdominal delivery, 1,429 (51.7%) received antenatal care in this centre while 713 (25.8%) received antenatal elsewhere and 622(22.5%) had no antenatal care.

Majority of the operations were performed by senior registrars 1,163 (42.1%) and registrars 1,129 (40.8%). Consultants performed only 472 (17.1%) of the operations. Two thousand, four hundred and sixty-five patients (89.2%) were anaesthetised by nurse anaesthetists, and the remaining 299 (10.8%) by physician anaesthetists.

The age range was 15 - 44 years (28.1 years). Most of the patients, 1,963 (71.0%) were aged 25 - 34 years. Caesarean birth was commonest among low parity women (Para 0 and 1). Nine hundred and ten (32.9%) and 633 (22.9%) patients were nulliparous and primiparous respectively.

Table 1 shows the trend in caesarean delivery during the period of study. There was dramatic rise in caesarean delivery rate from 3.8% in 1990 to 20.7% by 1999 with a dip in 1994 (Figure 1).

Cephalopelvic disproportion (CPD) was consistently the commonest indication for caesarean section in 851 (30.8%) patients. Antepartum haemorrhage, failed induction, pre-eclampsia/eclampsia and foetal distress were responsible for 363 (13.1%), 296 (10.7%), 258 (9.3%) and 237 (8.6%) respectively. The other indications included breech presentation 201 (7.3%), previous caesarean section 184 (6.7%), abnormal lie 127 (4.6%), cervical dystocia 80 (2.9%) and cord prolapse/presentation 79 (2.9%) (Table 2). The blood loss at surgery was 300 - 3,000mls (mean 650mls).

Table 1:Caesarean Delivery Rates

Year	Total Deliveries	Caesarean Deliveries	%
1990	5,396	206	3.8
1991	5,467	305	5.6
1992	5,438	321	5.9
1993	2,307	222	9.9
1994	2,083	195	9.4
1995	2,065	267	12.9
1996	2,059	262	12.7
1997	2,045	337	16.5
1998	1,914	340	17.8
1999	1,492	309	20.7
Total	30,267	2764	Overall % = 9.1

Table 2: Indications for Caesarean Section

Indications	No. (%)
Cephalopelvic disproportion	851 (30.8)
Antepartum haemorrhage	363 (13.1)
Placenta Praevia (231)	
Abruption Placenta (132)	
Pre-eclampsia/Eclampsia	258 (9.3)
Foetal Distress	237 (8.6)
Breech Presentation	201 (7.3)
Previous Caesarean Section	184 (6.7)
Abnormal Lie	127 (4.6)
Transverse Lie (113)	
Oblique Lie (14)	
Cervical Dystocia	80 (2.9)
Cord Prolapse/Presentation	79 (2.9)
Cord Prolapse (73)	
Cord Presentation (6)	
Multiple Pregnancy	22 (0.8)
Failed Vacuum Extraction	15 (0.5)
Elderly Primigravida	13 (0.5)
Previous Infertility	12 (0.4)
Compound Presentation	7 (0.3)
Intra-uterine Growth Retardation	6 (0.2)
Diabetes Mellitus	5 (0.2)
Oligohydramnios	4 (0.1)
Premature Rupture of Membrane	4 (0.1)
Total	2,764 (100)

Table 3: Clinical Causes of Maternal Death

Cause	No. (%)
Sepsis	9 (31)
Haemorrhage	8 (28)
Anaesthesia	4 (14)
Embolism	4 (14)
Cerebrovascular accident (Haemorrhagic)	1 (3)
Acute Renal Failure	1 (3)
Heart Failure	1 (3)
Lobar Pneumonia	1 (3)
Total	29 (100)

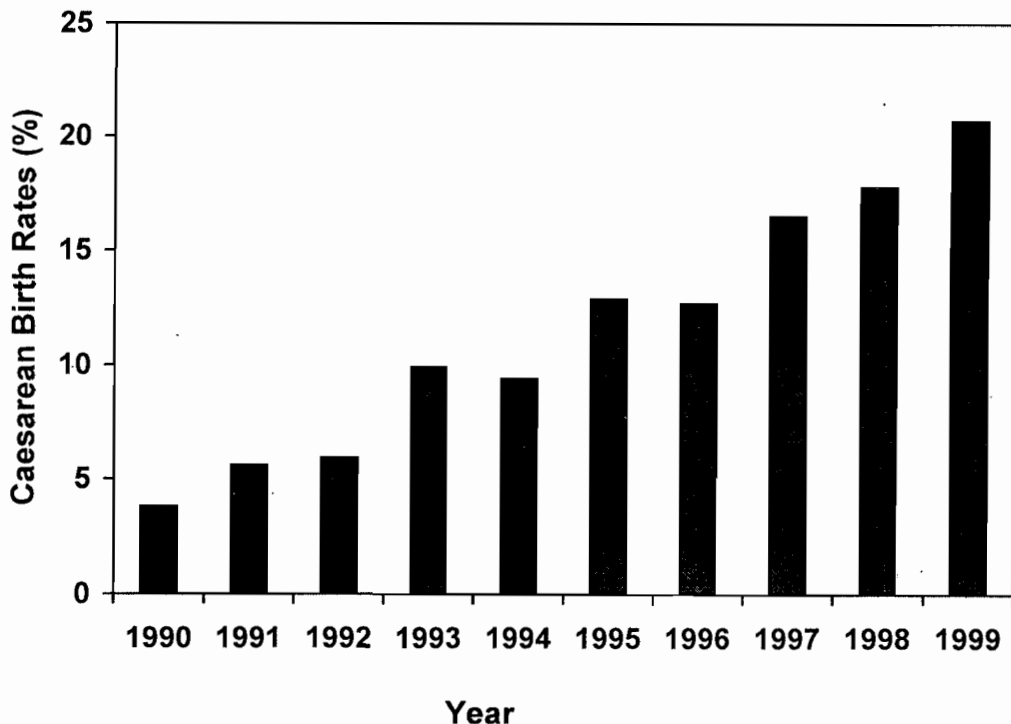


Figure 1: Yearly Caesarean Birth Rates

Table 3 shows the 'clinical' causes of maternal death. Twenty-nine caesarean section associated deaths were recorded during the study period, giving a maternal mortality ratio of 1,050 per 100,000 caesarean sections. The major causes of death were sepsis 9 (31.0%), haemorrhage 8 (27.6%), anaesthesia 4 (13.8%) and embolism 4 (13.8%). There was one death each from cerebrovascular accident, acute renal failure, heart failure and lobar pneumonia. Twelve maternal deaths following vaginal delivery were recorded during the same period, accounting for 40 per 100,000 maternal mortality ratio. The difference was statistically significant ($p < 0.05$).

Discussion

This study shows an overall caesarean section rate of 9.1%, which is comparable with 10.1%, reported from Benin⁵ and 11.4% in Ogidi, Nigeria¹¹ and 10% in Ethiopia.¹ Emergency caesarean section accounted for 91.5% of caesarean sections done at centre, which is similar to 93% reported from Zaire, another developing African country.¹⁴

Within the study period, caesarean birth had risen from 1 in 26 deliveries in 1990 to 1 in 5 deliveries in 1999. The trend shows a quadruple rise over the period. This is in keeping with general rise observed in most studies.^{2-4,6,8,15}

This consistent increase in caesarean rate is one of the most dramatic features of modern obstetrics. The only exception to this is National Maternity Hospital, Dublin where a constant caesarean section rate has been reported.¹⁰

The main reason for the increase in caesarean section rate in this centre is a relative increase in difficult cases presenting to the centre in recent time. In the past, there were few private hospitals in Ilorin so the centre received a large number of deliveries then. But with the proliferation of private hospitals, there is marked drop in total deliveries, especially the number of normal deliveries while the annual number of caesarean section hardly changed over the same period. Expansion of indications for caesarean section also contributes to the increase in caesarean section rate. This includes liberal use of caesarean section for breech presentation, preterm delivery and obstructed labour with intra-uterine foetal death in the absence of skilled hands for destructive operation.^{10, 16, 17}

The most common indication for caesarean section was obstructed labour/cephalopelvic disproportion which is similar to reports from other developing countries.^{5, 13-15} The possible explanation is that many of our women probably had suffered from childhood malnutrition as a result of poverty and chronic infection with resultant impaired pelvic bone development.^{18, 19} Antepartum haemorrhage, from placenta praevia and abruptio placenta, failed induction, pre-eclampsia/eclampsia, foetal distress and breech presentation were other major indications observed in this study. This finding is similar to other reports.^{5, 13, 14, 17} Caesarean section for very low birth weight babies and previous caesarean section were not as common as in the western world.^{7, 10}

All maternal mortality relating to caesarean section recorded in this study was associated with emergency caesarean deliveries. This is not surprising because in elective surgery, patients are usually well prepared for the procedure and fit for general anaesthesia. During the period, the overall maternal mortality ratio related to caesarean section was 1,050 per 100,000, while that for vaginal delivery was 40 per 100,000, which implies that the risk of dying from caesarean delivery is 26 times higher than vaginal delivery. The difference is statistically significant. Corresponding high rates – 1,100 per 100,000 and 1,600 per 100,000 have been reported from Lagos.⁵ These rates are higher than 350 per 100,000 reported from England and Wales.¹⁴ The leading 'clinical' cause of death was sepsis in patients with pre-existing chorioamnionitis from prolonged obstructed labour with intra-uterine foetal death. These patients could have benefited from destructive operation which is associated with less post-operative morbidity and mortality in infected cases.^{20, 21} Destructive operation also reduces the incidence of caesarean section and risk of rupture from scarred uterus in subsequent unsupervised delivery. But this is seldom performed due to loss of skill with time in this centre.¹⁶ The other major causes of maternal death were haemorrhage, anaesthesia and embolism. Unacceptably high mortality from anaesthesia could be due to use of general anaesthesia for all cases of caesarean section irrespective of the indication and severity of associated morbidity and the fact that most (89.2%) of the patients were anaesthetised by nurse anaesthetists. These deaths are preventable in skilled hands and by using alternative forms of anaesthesia such as regional anaesthesia.

Improving socio-economic condition of the populace will reduce the future rise in the incidence of CPD/obstructed labour and resultant caesarean section rate and mortality. There is need for strict policy on active management of labour, early referral of high-risk patients, improved blood transfusion services and anaesthetic techniques in the environment.

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