

## Caesarean Section at the University of Benin Teaching Hospital Revisited.

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### Abstract

**Context:** Regular auditing of caesarean sections is necessary to establish trend, review indications, associated complications and proffer possible solutions to improve outcome.

**Objective:** To audit caesarean sections done over a 5-year period from January 1996 to December 2000 and to compare such with those from the same hospital 20 years ago.

**Materials and Methods:** A review of the clinical records of all mothers who had caesarean sections from January 1996 – December 2000 was made. Data on the indications, and on maternal and fetal outcome were extracted and analysed.

**Results:** The caesarean section (CS) rate was 22.2%. Dystocia (28.2%) was the commonest indications for CS. There were a total of 351 (39.3%) patients with complications, with anaemia being the commonest form of morbidity. Eight CS-related deaths were recorded – Maternal Mortality Ratio: 7.8 per 1000. The perinatal mortality rate (PNMR) was 128.3 per 1000 births. Being unbooked was associated with poor maternal and fetal outcome. Compared with 20 years ago, there was an increase in the CS rate from 10.1% to 23%. The indications remained essentially the same. There was a lowering of the maternal morbidity rate from 54.1 to 39.3%, but an increase in the PNMR from 88 to 128.3 per 1000 births.

**Conclusion:** The CS rate has more than doubled in the two decades since the last audit. Booking of high-risk cases in tertiary institutions and early referral of complicated cases to these institutions should be encouraged. The neonatal care services should be improved to cope with complications in neonates.

**Key Words:** Caesarean Section, Maternal Morbidity, Perinatal Audit [Trop J Obstet Gynaecol, 2003, 20: 63-66]

### Introduction

Caesarean delivery is one of the oldest operations in medical history with far reaching effect on the modern practice of obstetrics. In the last three decades, caesarean rates have increased worldwide, especially in developed countries. In the United States of America, it increased from 4.5% in 1965 to almost 25% in 1988<sup>1</sup>, while in the United Kingdom it rose from 5.2% in 1970 to 12.7% in 1987<sup>2</sup>. In developing countries like Nigeria, there had been some degree of conservatism in the use of caesarean section. However, there is evidence that the situation may be changing and that the incidence of caesarean section may be showing a similar pattern with developed countries<sup>3,4,5,6</sup>.

While several factors may be responsible for the increasing use of caesarean intervention by obstetricians, one reason clearly stands out: the increased safety of the procedure - from a maternal death rate of 85% in 1876 in Britain and Ireland to rates now between 0.2% and 1.8% in Nigeria<sup>4,7,8,9</sup>. Another is the better education and enlightenment of our pregnant women<sup>3</sup>.

It has been suggested that to alter the caesarean section rate and reverse the trend, it is necessary to analyse the reasons behind the high rate and also

audit caesarean sections for particular indications. This will identify whether agreed criteria were met and possibly highlight clinical indications where a decline in caesarean section rate is feasible.

This study reviews the caesarean sections done over a 5-year period from January 1996 to December 2000 in the University of Benin Teaching Hospital (UBTH). It aims to ascertain the current clinical indications for caesarean sections and documents the maternal and fetal outcomes associated with the caesarean sections performed. It also aims to compare the recent findings with those from the same hospital 20 years ago, and finally make recommendations based on the findings.

### Subjects and Methods

The University of Benin Teaching Hospital serves as a tertiary referral centre primarily for high-risk parturients. It also caters for the low-risk obstetric population of the surrounding communities. Residents carry out most of the caesarean operations

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done in the hospital. The hospital records of all caesarean deliveries from January 1996 to December 2000 were examined. The labour ward and theatre registers provided information on the total number of deliveries and caesarean sections (CS). Further detailed information was obtained from patients' case notes and the detailed case summaries of every delivery kept in the department. Information about the indications for the operations, the maternal and perinatal morbidity and mortality and other outcome measures were extracted from the notes.

The indications were categorised under 4 headings following the Ontario data pattern<sup>10</sup>. The four indications were, previous CS, breech, dystocia and fetal distress. This was also the hierarchical order that CS with more than one indication were placed. All deliveries in which one of the indications was previous CS were assigned to the indication 'previous CS'. All cases of breech presentation were assigned to breech. Cases of dystocia with or without fetal distress were assigned to dystocia. Cases were assigned to fetal distress only if none of the other three diagnoses were recorded. Cases that did not fall into one of the above four classes were classified as 'others'. All cases of one previous CS categorised as previous CS were further analysed for the indications for the second CS. Also all cases grouped under 'others' were further analysed for specific indications. Dystocia as used here, refers to difficult labour characterised by slow or no progress as a result of abnormalities of presentation or position of the fetus and also a bnormalities of the bony pelvis or birth canal<sup>2</sup>.

#### Statistical Analysis

The chi ( $\chi^2$ ) test for significance was used for observed differences and a  $p$  value < 0.05 taken as the significant level.

#### Results

During the period of review, there were a total of 4644 deliveries, of which 1031 were by caesarean section giving an overall CS rate of 22.2%. There were 787 caesarean sections amongst the 3838 booked cases (CS rate: 20.5%) while 403 were done amongst the 806 unbooked cases (CS rate of 50%). The changes occurring in CS rates from year to year during the period is shown in Table 1.

Further analysis was done on the 893 (86.6%) retrievable case notes and detailed case summaries. Majority of the patients (58.5%), were within the age bracket 21-30 years, and 36.7% were within the age bracket 31-40 years. Only 3.5% were 20 years and below, while only 0.6% were above forty years.

Three hundred and forty-four (38%) mothers were nulliparae, 481 (54.3%) were of parity between 1 and 4, and 68 (7.7%) were grandmultipara. Overall, 712 (79.7%) of the operations were done as emergency procedures, while 181 (20.3%) were elective.

**Table 1**

#### Annual Changes in Caesarean Section Rates

<i>Year</i>	<i>Number of Deliveries</i>	<i>Number of CS</i>	<i>CS Rate (%)</i>
1996	852	158	18.5
1997	954	220	21.0
1998	896	206	23.0
1999	956	198	20.7
2000	986	249	25.3
<b>Total</b>	<b>4644</b>	<b>1031</b>	<b>22.2</b>

#### Indications

Table 2 shows the major indications for caesarean section classified into the 5 major groups. Overall, dystocia was the commonest indication. Sub-analysis of caesarean sections grouped under previous CS, showed that a total of 98 patients had 2 previous CS as indication while 146 patients had only 1 previous CS. Amongst these 146 patients, 49 had elective CS while 97 had emergency CS. Two previous CS was the commonest indication (40.6%), while dystocia was the second commonest indication (27.7%). Significant in this group are 6 patients (0.5%) who after having one previous CS declined attempting a vaginal delivery. Also 12 patients (1.4%) had a repeat caesarean section due to intrapartum bleeding.

**Table 2**

#### Indications for the Caesarean Sections

<i>Indication</i>	<i>Booked Patients</i> n (%)	<i>Unbooked Patients</i> n (%)	<i>Total</i> n (%)
<i>Previous CS</i>	208 (31.4)	36 (15.8)	244 (27.4)
<i>Breech Presentation</i>	56 (8.4)	27 (11.6)	83 (9.2)
<i>Dystocia</i>	198 (29.9)	53 (23.2)	251 (28.2)
<i>Fetal Distress</i>	68 (10.2)	17 (7.4)	85 (9.5)
<i>"Others"</i>	133 (20.1)	97 (42.1)	230 (25.7)
<b>Total</b>	<b>663 (100)</b>	<b>230 (100)</b>	<b>893 (100)</b>

Sub-analysis of the caesarean sections grouped under 'others' showed that preeclampsia/eclampsia, placenta praevia and abruptio placenta, were the major indications for caesarean section in this group. Cord prolapse occurred in 10 patients (1%). One patient (0.1%) had elective caesarean section, with previous hip surgery and rectal carcinoma as the indication.

#### Maternal Morbidity

There were a total of 351 (39.3%) cases with morbidity out of 893 caesarean sections (Table 3). Two hundred and eighty three patients (31.7%) stayed more than 10 days in the hospital. Majority of cases of prolonged hospital stay were caused by baby's admission into the Special Care Baby Unit, and, also, the inability of patients to settle their hospital bills. About 63% of the unbooked cases had some form of morbidity while 31% of booked cases had morbidity. This difference was statistically significant ( $\chi^2 = 74.3$ ,  $df = 1$ ,  $p < 0.001$ ). Nearly a third (32%) of the elective cases developed complications compared to 41.2% of the emergency cases, a statistically significant difference ( $\chi^2 = 4.91$ ,  $df = 1$ ,  $p < 0.05$ ).

#### Maternal Mortality

There were eight (8) maternal deaths associated with caesarean sections during the period of review, giving a CS mortality rate of 7.8 per 1000. Six (75%) of the deaths were in booked patients (MMR: 9.1 per 1000), while 2 (25%) were in unbooked patients (MMR: 13.8 per 1000). Three (37.5%) of the deaths were related to severe pre-eclampsia/eclampsia; 2 (25%) deaths were directly related to anaesthesia; one of the anaesthetic related deaths occurred in a patient that had sub-arachnoid block for the CS. Intra-operatively she developed difficulty in breathing and cardio-pulmonary arrest. She was resuscitated after 14 minutes, but died in the intensive care unit 2 hours later. Two (25%) deaths followed coagulation failure and 1 death was related to acute pulmonary embolism. Seven (87.5%) of the deaths followed emergency surgery (MMR: 9.8 per 1000), while 1 death followed elective surgery (MMR: 5.5/1000).

#### Fetal Outcome

There were a total of 920 births: 227 (24.65%) were preterm neonates, 663 (72.1%) term neonates and 30 (3.2%) post term neonates. Five hundred and eight neonates (55.3%) had good Apgar scores, 259 (28.2%) had mild asphyxia, 58 (6.3%) had moderate asphyxia and 94 (10.2%) were severely asphyxiated. About 71% of the neonates were of normal birth weight (2.5-3.9kg). Nearly a quarter (22%) were of low birth weight (1.5kg- 2.4kg), 19.7% were of very low birth weight (1.0kg - 1.4kg), and 1.6% were of

extreme low birth weight (<1.0kg). About 4% were macrosomic (birth weight 4kg and above).

There were a total of 118 perinatal deaths (29 still births and 89 early neonatal deaths.) The perinatal mortality rate was 128.3 per 1000 births. Unbooked patients had 22 of the 29 stillbirths (75.9%). The indications for the caesarean sections amongst these patients were, obstructed labour - 15, foetal distress- 5, placenta praevia - 5, eclampsia and breech, 2 each. Forty-four (6.4%) of 685 births in the booked patients ended up with perinatal deaths compared to 74 (32.0%) of 255 births in the unbooked patients, a statistically significant difference ( $\chi^2 = 86.45$ ,  $df = 1$ ,  $p < 0.001$ ).

A comparison with a previous study of caesarean operations in the same institution (1973 - 1976)<sup>7</sup> showed that the CS rate had increased from 10.1% to 22.2% ( $\chi^2 = 233.44$ ,  $df = 1$ ,  $p < 0.001$ ). The commonest indication remained the same - dystocia. However, the proportion of patients who developed morbidity reduced from 54.2% to 39.3% ( $\chi^2 = 13.12$ ,  $df = 1$ ,  $p < 0.0001$ ). The CS-related mortality was not significantly different, 8 per 1000 in 1973-1976 and 7.8 per 1000 in 1996-2000. Sadly, the perinatal mortality rate of 128.3 per 1000 live births recorded in this series is higher than the 88 per 1000 live births found in the earlier study<sup>7</sup>, although the difference was not statistically significant ( $\chi^2 = 3.0079$ ,  $df = 1$ ,  $p > 0.05$ ).

#### Discussion

The overall CS rate in this review was more than twice the 10.1% rate obtained by Oronsaye in the same hospital between 1973 and 1976<sup>7</sup>. This rise in caesarean section rate is similar to trends observed in other studies<sup>3, 6, 11</sup>. Various factors have been known to influence the rate of caesarean operations in any locality. These include the geographical location with its associated obstetric problems, changing obstetric population as well as the calibre of medical personnel. Another factor is the referral status of the hospital<sup>2, 3, 4</sup>. Over the years, the calibre of medical personnel has changed, with a larger number of residents in training. Training programmes for obstetricians and gynaecologists have been implicated as a cause for increasing caesarean section rates<sup>12</sup>.

Unbooked cases were disproportionately more likely to have CS. About 50% of all unbooked deliveries were by caesarean section. This reflects the nature of the hospital as a referral centre. But it may also imply that there is a poor referral system for antenatal care. Many of these unbooked cases should have been referred for antenatal care at the

teaching hospital. A planned vaginal delivery may have been possible, especially in those with breech presentation.

Dystocia was the commonest indication for caesarean section in this series, just as it was in this hospital 20 years ago, accounting for 52.8% of CS cases<sup>7</sup>. This also agrees with the findings of Okonofua and Makinde who had dystocia rates of 39.3% and 21.0% respectively<sup>3, 13</sup>. Adinma, in a secondary-level hospital, however had foetal distress as the commonest indication for CS<sup>4</sup>. In the more developed countries, previous caesarean section is the commonest indication for caesarean section<sup>10, 14</sup>.

Previous caesarean section was the next commonest indication for caesarean section in this study. In only 3 cases was there evidence of uterine scar dehiscence at surgery. In the absence of continuous electronic foetal monitoring to give early signs of uterine scar dehiscence, there will always be a low threshold for a repeat CS for intrapartum bleeding, that would otherwise have been insignificant in the absence of a uterine scar.

The increase in the perinatal mortality rate (PNMR)

associated with CS in the institution is cause for concern and the factors underlying this increase require urgent attention and action.

Compared with figures from UBTH 20 years ago, there has been an increase in the caesarean section rates. Dystocia still remains the leading indication for caesarean section. Unfortunately, the reduced maternal morbidity and improved perinatal outcome associated with caesarean section in the developed countries have not been observed in this study. The neonatal facilities have to be strengthened to cope with the neonates of these mothers whose pregnancies have to be terminated by caesarean section in order to avoid what the patient might consider a 'double tragedy'. The unbooked mother contributes disproportionately to the overall CS rates and the high perinatal mortality rates. Appropriate measures should be made to encourage antenatal booking and early referral to tertiary centres for antenatal care of these high-risk pregnancies.

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