

# Maternal and Fetal Outcome of Elective Caesarean Section at 37 – 38 Weeks versus 39 Completed Weeks of Gestation in Enugu, Southeast Nigeria

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Received January 15, 2013; Revised April 19, 2013; Accepted April 23, 2013

**Abstract** A retrospective study comparing maternal and neonatal outcome of singleton fetuses delivered at 37–38 weeks of completed gestation with those delivered at 39 completed weeks of gestation or longer by elective caesarean section at the University of Nigeria Teaching Hospital, Enugu between January 1, 2004 and December 31, 2008. There were 164(21.3%) elective caesarean deliveries during the study period. 117 (71.3%) were performed between 37–38 weeks of completed gestation and 47(28.7%) at 39 completed weeks of gestation. Elective caesarean births at 37-38 weeks were associated with significantly higher rates of admission to the neonatal care unit, neonatal jaundice, and a higher proportion of newborns with Apgar score <6 at 5minutes. As a result of increased morbidity and iatrogenic prematurity in the developing countries due to elective caesarean delivery at 37-38weeks associated with increased cost of admissions in the newborn special care units, elective caesarean delivery should be advised at or after 39 weeks of gestation unless there is evidence of fetal lung maturity. At 39 completed weeks of gestation, elective caesarean delivery is associated with better fetal outcomes than at 37-38 weeks of completed gestation.

**Keywords:** maternal outcome, fetal outcome, elective caesarean section, gestational age, Enugu-Nigeria.

## 1. Introduction

Elective caesarean section is a planned caesarean section performed on pregnant woman for either maternal or fetal indications before the onset of labour [1,2]. Caesarean sections in low resource areas pose challenges to clinicians [3]. Fetal outcome following caesarean section is a serious concern [2,3]. Caesarean delivery has been shown to be a safe procedure for both the mother and fetus [4,5].

The incidence of caesarean deliveries at the University of Nigeria Teaching Hospital is 25% with elective caesarean section constituting 21.3% of all caesarean deliveries [6]. There is a growing opinion that elective caesarean section should not be done before 38 weeks unless there is evidence of fetal lung maturity to avoid adverse neonatal outcomes [7]. Several studies have documented high incidence of respiratory problem, the newborn special care unit admission, prolonged hospitalization, low Apgar score, iatrogenic prematurity, surfactant deficiency, and transient tachypnoea of newborn [8,9,10,11,12], following elective caesarean delivery. Studies done in United States, more than one third of elective caesarean deliveries at term were performed before 39weeks gestation [13]. The neonatal outcome at 37-38 weeks was compared with neonatal outcome at 39 weeks gestation and it was shown that deliveries at 37-38 weeks were associated with adverse

neonatal outcomes such as neonatal death, neonatal sepsis, respiratory complication and admissions into the Newborn Special Care Unit (NBSCU) as compared to delivery at 39 completed weeks of gestation and delaying delivery beyond 42 weeks was also associated with increased rates of neonatal adverse outcomes [13].

This study was a pioneer study on the maternal and fetal outcome of elective caesarean section at 37-38 weeks versus 39 completed weeks of gestation in Enugu, South East, Nigeria.

## 2. Method

A 5-year retrospective study of obstetrics theatre register of University of Nigeria Teaching Hospital Enugu between January 1, 2004 and December 31, 2008 was carried out. At surgery, the pediatricians (neonatologists) were present.

The medical records were reviewed by trained staff using pre-established data extraction forms. The records of women who had elective caesarean deliveries for singleton pregnancies during the study period were retrieved and data extracted. The data extracted include maternal age, parity, and neonatal outcomes like admission to the Newborn Special Care Unit (NBSCU) (defined as any length of time spent in the NBSCU after delivery), Apgar scores at 5 minutes, neonatal jaundice and perinatal death.

Maternal and neonatal outcomes of elective caesarean deliveries at 37-38 completed weeks of gestation were compared with elective caesarean deliveries at 39 completed weeks of gestation or longer using chi-square test at 95% confidence level. P-values less than 0.05 were considered significant. The data were analyzed using SPSS version 12.

Booked patients were those who had registered for formal antenatal care at UNTH, while unbooked patients were those who had not registered.

### 3. Result

A total of 3078 deliveries were undertaken during the study period. Caesarean section accounted for 770 deliveries giving an incidence of 25.0%. A total of 606 (78.7%) caesarean sections were done as emergencies, while 164 (21.3%) were done as elective caesarean section for singleton pregnancies. During the study period, 117 (71.3%) caesarean section were performed between 37-38 completed weeks of gestation and 47 (28.7%) at 39 completed weeks of gestation or longer.

All the patients for elective caesarean section were booked patients of the hospital. Thirty seven women (22.6%) had no formal education, 30 women (18.3%) had primary education, 20 (12.2%) had secondary education while 77 women (47%) had tertiary education.

The main indications for elective caesarian section in this study were illustrated in [Table 1](#).

**Table 1. Indications for elective caesarean section at 37-38 weeks and at 39 weeks gestational age**

Indication	Frequency	Percentages
Previous caesarean section	71	43.3
Breech presentation	24	14.6
Abnormal lie	28	17.1
Elderly primigravida +(infertility)	8	4.9
Caesarean section on request	10	6.1
Cephalopelvic disproportion	23	14.0
Total	164	100

Three (1.8%) admissions into the newborn special care unit were recorded among women who had caesarean delivery at 39 weeks while 37 (22.6%) admissions were for those women who had elective caesarean delivery at 37-38 completed weeks. The difference was statistically significant ( $P=0.005$ ). No neonatal jaundice was recorded among women who had elective caesarean delivery at 39 weeks while 19 (11.6%) cases of neonatal jaundice were recorded for the women that had elective caesarean delivery at 37-38 completed weeks. The difference was statistically significant ( $P=0.002$ ). No neonatal death was recorded among women who had elective caesarean delivery at 39 completed weeks while those who had elective caesarean delivery at 37-38 completed weeks recorded 1 (0.6%) neonatal death. The difference was not statistically significant ( $P=1.000$ ). There was no significant difference between the proportion of newborns with low Apgar scores in both groups ( $P=0.182$ ). No maternal death was recorded in both groups. [Table 2](#) summarizes these. [Table 3](#) and [Table 4](#) summarize the literacy level of the patients and the age distribution of the patients that had elective caesarean section respectively.

The parity of the patients allowed elective caesarean section was illustrated in [Table 5](#).

**Table 2. Maternal and neonatal outcomes following elective caesarean section**

Outcome	37-38 weeks (N=117)	39 weeks (N=47)	P-Value (Fischer exact test)
Perinatal death	1(0.6%)	0(0%)	1.000
Low Apgar score*	11(6.7%)	1(0.6%)	0.182
Maternal death	0(0%)	0(0%)	-
Jaundice	19(11.6%)	0(0%)	0.002
Admission into NICU	37(22.6%)	3(1.8%)	0.005

\* N.B: Apgar score <6 is low Apgar scores in Nigeria.

**Table 3. Literacy level of patients**

Literacy	Frequency	Percentages
No formal education	37	22.5
Primary education	30	18.3
Secondary education	20	12.2
Tertiary education	77	47.0
Total	164	100

**Table 4. Age distribution**

Age	Frequency	Percentage
15-19	5	3
20-24	7	4.3
25-29	31	18.9
30-34	53	32.3
35-39	32	19.5
40-44	18	11
Not stated	18	11
Total	164	100

**Table 5. Parity of patients who had elective caesarean section.**

Parity	Frequency	Percentage
0	10	6.1
1	33	20.1
2	35	21.3
3	29	17.7
4	21	12.8
5	1	0.6
>6	8	4.9
Not stated	27	16.5
Total	164	100

### 4. Discussion

Caesarean section rates continue to rise globally both in developed and developing countries [1,3]. In an effort to reduce the iatrogenic prematurity associated with elective caesarean section, American College of Obstetricians and Gynecologists recommends scheduling elective caesarian section at 39 weeks or later based on menstrual dates and first trimester ultrasound [13]. In this study, more than two-thirds (71.3%) of elective caesarean deliveries at term were performed before 39 completed weeks of gestation compared to the Netherlands where 56.6% of elective caesarean section were done before 39 completed weeks of gestation [14]. In a study in the United States on the

timing of elective repeat caesarean delivery at term, Tita et al. [15], found that 35.8% of elective repeat caesarean section was performed below 39 completed weeks of gestation, much lower than the finding in this study. The rates of elective caesarean delivery before 39 weeks were higher in the European cohorts, (ranging from 51 to 83%) [16] which is similar to this study (71.4%) [16,17].

This study showed that significantly higher proportions of cases of neonatal jaundice were admitted into the NBSCU ( $p=0.005$ ) and neonatal jaundice was observed among elective caesarean deliveries at 37/38 completed weeks than among those at 39 completed weeks of gestation ( $p=0.002$ ). Thus, delaying caesarean section until after 39 completed weeks of gestation will give the liver more time to mature to enable it better handle bilirubin conjugation and excretion. Wilink et al. [14] in their study in Netherlands, also reported higher incidences of hyperbilirubinaemia in neonates delivered by elective caesarean section at 37-38 completed weeks of gestation compared to those delivered at 39 completed weeks of gestation or longer.

There was only one perinatal death in this study and it occurred among the 37-38 weeks group as a result of severe asphyxia. The risk of unexplained still birth has been reported to be no greater than 0.2 of 1000 births at 37 weeks and 0.5 of 1000 births at 38 weeks among Scottish and Canadian cohorts of women who had previous caesarean delivery [18]. The observed low perinatal mortality rate following elective caesarean section in this study was comparable with reports from another study done in Nigeria [5]. This low perinatal mortality rate in this study can be explained by the fact that women who undergo elective caesarean delivery are usually those formally booked in the teaching hospital for antenatal care. In this study previous caesarean section was the commonest indication for elective caesarean section followed by malpresentation and abnormal lie.

These deliveries at 37-38 completed weeks of gestation were associated with a preventable increase in neonatal morbidity and admission to the Newborn Special Care Unit. There may be need to delay elective caesarean delivery until 39 completed weeks of gestation because of the associated medical and economic benefits.

## Disclosure of Interest

The authors report no conflicts of interest. The authors are responsible for the content and writing of the paper.

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