

The Trend, Determinants And Maternal Outcome of Caesarean Section At The University of Calabar Teaching Hospital, Calabar, Nigeria; A 5 Year Appraisal.

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Abstract: Caesarean section (C/S) rate is increasing globally, justified by increased fetal salvage rate and reduction in maternal mortality and morbidity. The objectives were to determine the incidence of caesarean section in our centre, assess the pattern and factors that influence the caesarean section rate and outcome in our environment. This was a five year retrospective study of all the patients that had caesarean section in our centre between January 1, 2009 to December 31, 2013. Statistical analysis was done using simple percentages and ratios. Out of the 13,906 deliveries, 3,560 were by caesarean section giving an incidence of 25.6% with a steady rise over the years, 2013(29.7%). Primigravida had the highest rate 32.54%. Of the 3,560 C/S, 2,865 (83.28%) were emergency whereas 575 (16.72%) were elective C/S. Two or more previous C/S was the leading indication for elective C/S, 287(49.95%) while cephalo-pelvic disproportion was the commonest for emergency C/S 606(21.14%) and also the overall leading indication followed by fetal distress. Primary postpartum haemorrhage (PPH) was the commonest complication 432(12.3%). There were 23 maternal deaths during the study period giving a maternal mortality ratio of 646 per 100,000 among patients that had caesarean section. All the deaths were unbooked patients. Antenatal care, hospital delivery, timely intervention and effective blood bank services will reduce complication and death from caesarean section. Need for vaginal birth after caesarean section and careful case selection of breech and instrumental vaginal delivery will reduce caesarean section rates.

Keywords: Caesarean section, cephalopelvic disproportion, repeat caesarean section, complications, maternal mortality, Calabar

I. Introduction

Caesarean delivery is one of the oldest operations and there is no doubt it has contributed immensely to improve obstetric care throughout the world [1]. Caesarean section is the delivery of the fetus, placenta, and membranes after the age of viability through an abdominal and uterine incision [1, 2]. There is a wide global variation in the incidence of caesarean section and also within the same country [2]. The incidence is about 20 to 30% in most teaching hospitals in Nigeria [2]. It varies between 5% - 75% around the world [3]. The rate would have been higher if there had not been acceptance of vaginal birth after caesarean section and some types of breech presentation. It is presently one of the most commonly performed surgical procedures in female [4,5].

The incidence of caesarean section is steadily rising [1,2]. During the last decade there has been two to threefold rise in the incidence from the initial rate of about 10% [6]. Apart from the increased safety of the operation due to improved anaesthesia, availability of blood transfusion and antibiotics, other factors responsible for the rise are identification of at risk foetuses and mothers before term, repeat caesarean section in cases with previous caesarean delivery and rising incidence of elderly primigravida due to educational pursuit. Others are decline in difficult operative or manipulative vaginal deliveries, decline in vaginal breech delivery, increased diagnosis of fetal distress due to modern intrapartum and antepartum fetal monitoring equipments, fear of litigation and adoption of small family norm, amongst others [5,7].

The rise in incidence has been noted all over the world, and there are several valid reasons for this upsurge, but the basic justification lies in the lowering of maternal mortality with an increasing fetal salvage rate as compared with vaginal delivery.

The fundamental concern today is not an arbitrary percentage rise in incidence of caesarean section but the best and safest method of delivery for mother and baby when intercurrent disease exist or obstetric complications arise [8-10].

Caesarean delivery is done when labour is contraindicated or vaginal delivery is found unsafe for the fetus and/or mother. Indications for cesarean operations have progressively increased [1]. The indications for elective caesarean section are many and varying and are often relative rather than absolute. They include contracted pelvis, major degree placenta praevia, two or more previous caesarean section, malpresentation, HIV infection in pregnancy, previous vesico-vaginal fistula repair, intrauterine growth restriction, and bad obstetric history [1,2,6]. The common indications for emergency caesarean section are cephalopelvic disproportion, fetal distress, prolonged obstructed labour and antepartum haemorrhage. Caesarean section can be associated with

significant morbidity and mortality [1,2,6,8]. Early complications include intra-operative and postoperative haemorrhage, damage to the organs such as the bladder, ureter, bowel, fetal injuries and anaesthetic complications. Other early complications includes neonatal respiratory morbidity, iatrogenic prematurity, atelectasis, lower respiratory tract infection, urinary tract infection, endometritis, wound haematomas, wound infection (superficial or deep), wound dehiscence, paralytic ileus and thromboembolism [1,2,5,8]. Late complications includes increased risk of scar rupture in subsequent pregnancy, placenta praevia with higher risk of placenta accreta, peritoneal adhesions, intestinal obstruction, incisional hernias, keloid scar, hypertrophic scar, endometriosis and genital fistula [1,2,5,6,8]

The aim of the study is therefore to evaluate the incidence of caesarean section in this hospital during the period under review and also assess the factors that influence the caesarean section rate and the complications that arise from the procedure in our environment.

II. Materials And Methods

The case records of patients delivered by caesarean section between January 1, 2009 and December 31, 2013 were reviewed. The labour ward delivery register and theatre operation register were also reviewed. The nature and indications for the procedure were analysed. Other parameters reviewed were the booking status of the patient, parity and maternal outcomes. A patient is referred to as unbooked if she did not attend antenatal clinic at all throughout the course of her pregnancy and presented for the first time at UCTH either in labor or with complications of pregnancy, while booked status is any patient with previous antenatal visit [11]. Results were presented using simple percentages and ratios.

III. Results

During the five year period under review, there were 13,906 deliveries at the maternity annex of the University of Calabar Teaching Hospital. Out of these, 3,560 deliveries were by caesarean section giving an incidence of 25.6%. However, 3,440 case files of patients delivered by caesarean section were available and these form the basis of the analysis in this study.

Table 1 shows the trend of caesarean section during the five year period under review. There was an increased trend in caesarean delivery from 21.6% in 2009 to 29.6% in 2013. Other caesarean section rates were 22.6 in 2010, 26.2% in 2011 and 27.8% in 2012.

Table 2 shows the age distribution and parity of the patients who had caesarean deliveries during the period under review. The age group 25 – 29 had the highest caesarean section rate of 1,342(39.01%) while the combined age group of 20 – 34 accounted for 3,129(90.95%). The age group of 45years and above had the least caesarean section rate of 25(0.74%).

The primigravida had the highest rate of 32.54% while para 4 had the least rate of 8.62%. Other parities were para 1(19.85%), para 2 (15.82%) and para 3 (8.62%) respectively. There was a fall in caesarean section rate with increasing parity, with a slight rise after para 5 or more.

Table 3 shows the booking status and types of caesarean section. It can be seen that out of a total of 3,440 patients who had caesarean section, 2,912(84.64%) were booked while the remaining 528(15.36%) were unbooked brought to UCTH either as referred cases from other hospitals and clinics or from traditional birth attendants (TBA) or from churches.

Emergency caesarean section was commonest with 2,865(83.28%) while 575(16.72%) accounted for elective cases.

Table 4 shows the indications for the caesarean section carried out during the period. The result showed that 2 or more previous caesarean section was the commonest indication for elective caesarean section 287(49.95%), this was followed by cephalopelvic disproportion 74(12.85%) diagnosed prior to labour. Other indications for elective caesarean sections were placenta praevia 64(11.14%), pre-eclampsia 62(10.83%), breech presentation at term 18(3.05%), HIV positive patient 42(7.34%) and least among women with previous pelvic floor repair 4(0.64%).

Cephalopelvic disproportion accounted for the commonest indication for emergency caesarean section 606(21.14%), most of these patient initially were under trial of labour. Fetal distress was the next commonest indication, accounting for 466(16.32%). Others common indications were prolonged labour 286(10.0%), obstructed labour 233(8.15%) and antepartum haemorrhage 231(8.06%). When fetal distress is combined with prolonged labour, it accounted for 752(26.32%) of the emergency procedures. On the other hand, when cephalopelvic disproportion (CPD) is combined with obstructed labour, it accounted for 839(29.29%).

Table 5 show the maternal complications of caesarean section. The majority of the patients had normal puerperium while most patients with post operative complications had more than one complication. Among those who had post operative morbidity, the common complications were postpartum haemorrhage 423(12.3%), wound infection 375 (10.9%), post operative anaemia and transfusion 372(10.8%). Other complications

recorded were urinary tract infection 124(3.6%), anaesthesia 96(2.8%) and endometritis 24(0.7%). There were twenty three (23) maternal deaths associated with caesarean section during the period of review, giving maternal mortality ratio of 646 per 100,000 among patients that had caesarean section. Most of the complications occurred in patients with emergency caesarean section. Also, all the maternal deaths were unbooked patients and were related to complications of anaesthesia, obstructed labour, sepsis, obstetric haemorrhage and eclampsia.

Table 1: Yearly Rate Of Caesarean Section

Year	Total No. of Deliveries	Total Caesarean section	Percentage (%)
2009	2016	435	21.6
2010	2612	527	22.6
2011	2740	718	26.2
2012	3209	892	27.8
2013	3329	988	29.7
Total	13,906	3,560	25.6

Table 2 Age Distribution And Parity Of The Patients

Variables	Number	Percentage (%)
Age (Years)		
15 – 19	129	3.75
20 – 24	822	23.89
25 – 29	1342	39.01
30 – 34	965	28.05
35 – 39	86	2.51
40 – 44	71	2.05
≥ 45	25	0.74
Parity		
0	1119	32.54
1	683	19.85
2	544	15.82
3	412	11.97
4	297	8.62
≥ 5	385	11.20

Table 3 booking status and types of caesarean section.

Variables	Total Number	Percentage (%)
Booking Status		
Booked	2912	84.64
Unbooked	528	15.36
Total	3440	100
Types Of C/S		
Elective	575	16.72
Emergency	2,865	83.28
Total	3,440	100

Table 4 Indication For Caesarean Section

Indications	Number	Percentage (%)
Elective Caesarean Section		
Previous C/S ≥2 Or More	287	49.95
Cephalopelvic Disproportion (Cpd)	74	12.85
Placenta Praevia	64	11.14
Pre-Eclampsia	62	10.83
Retroviral(Hiv)Positives	42	7.34
Bad Obstetric History	24	4.20
Breech Presentation At Term	18	3.05
Previous Pelvic Floor Repair	4	0.64
Emergency Caesarean Section		
Cephalopelvic Disproportion (In Labour)	606	21.14
Fetal Distress	467	16.32
Prolonged Labour	286	10.00
Obstructed Labour	233	8.15
Antepartum Haemorrhage (Placenta Praevia)	231	8.06
Severe Pre-Eclampsia/Hypertension	223	7.77
Eclampsia	131	4.56
Placenta Abruption	131	4.56
Breech Presentation	119	4.14

Failed Induction	115	4.00
Malpresentation	112	3.91
Cord Prolapsed	111	3.86
Multiple Pregnancy	59	2.08
Retained Second Twin	41	1.45

Table 5: Maternal Complications Of Caesarean Section

Post Operative Morbidity	No. Of Patients	%
Post Partum Haemorrhage	423	12.3
Wound Infection	375	10.9
Post Operative Anaemia That Had Blood Transfusion	372	10.8
Puerperal Pyrexia	172	5.0
Urinary Tract Infection	124	3.6
Puerperal Sepsis	120	3.5
Anaesthetic Complications	96	2.8
Abdominal Distension (Paralytic Ileus And Intraabdominal Haemorrhage)	86	2.5
Wound Dehiscence	38	1.1
Wound Haematoma	28	0.8
Post Operative Endometritis	24	0.7
Maternal Deaths	23	0.67
Peritonitis With Pelvic Abscess	22	0.65
Vesico-Uterine Fistula	4	0.1

IV. Discussion

Caesarean section remains a major interventional procedure in childbirth. The overall caesarean section rate of 25.6% in this study is comparable to the rates of 25% and 22.2% reported from UCH, Ibadan [12] and Benin [13] respectively. It is higher than the rate of 18.4% and 15.8% reported from Enugu [14] and Jos respectively [15]. However; it is lower than 28.5% reported from Port Harcourt [16]. The overall incidence of caesarean section in several studies in Nigeria ranged between 15% and 30% [2, 7-12]. However, there is an increase in the yearly rates of the procedure in this study over the period. A definite trend towards an increase in caesarean section has been observed similar to the situation in Western countries [8]. In the developed countries the increase in caesarean section rate was attributed to the introduction of electronic fetal monitoring during labour [14], changing policies in the management of breech presentation [15], and conservation in the issue of previous caesarean section [15].

In terms of age distribution, the highest group of caesarean deliveries was 25–29 years. This, no doubt is the group of maximum reproductive potentials as seen in some studies [12-14]. Caesarean section was commonest in the Nulliparous women. This is similar to findings in other studies [12,13,16]. Nulliparity in isolation has been noted as a factor for increase in caesarean section [13]. Cephalopelvic disproportion/ obstructed labour are commoner in nullipara since their pelvis had not been previously tested in labour.

The proportion of the unbooked patients was high and this highlights the persistence of the problem of low acceptability of antenatal care in developing countries which has been of concern globally [2,12]. Emergency caesarean section was significantly higher than elective in this study and this finding is also reproduced in some studies in developing countries [12,13,16]. This may due to high rate of unbooked patients, increased delivery in the church and traditional birth attendance only to present with complications in the hospital.

The commonest indication for elective caesarean section in this study was previous caesarean section and cephalopelvic disproportion. This is similar to findings in some studies [12,16]. Repeat caesarean section contributes to this high rate of caesarean section in our environment [17,18]. The leading indication for emergency caesarean section was failure to progress due to cephalopelvic disproportion (21.04%), followed by fetal distress (16.27%), prolonged labour (9.97%) and obstructed labour (8.12%). Although cephalopelvic disproportion has always remained an indication for caesarean deliveries in developing countries [12,14,16,17], it is becoming obvious that its contribution to the procedure is on the increase. A possible explanation is that mothers who because they were malnourished and had small pelvis, or even normal pelvis now live in a relatively more affluent era and therefore give birth to bigger babies, this phenomenon could lead to difficult labour [13,18].

Other possible reasons which can be advanced for the steadily increasing caesarean deliveries in our Hospital include the fact that it is a Teaching Hospital (tertiary/ specialist health centre) [2,12]. There is a shift of high risk deliveries from the General Hospital, private clinics and maternity homes, traditional birth attendants and churches to teaching Hospital. Also there is an increasing acceptance for delivery by caesarean section by HIV positive patients who commence anti-retroviral therapy late as a means of reducing mother to child transmission. This has no doubt added to the increase in caesarean deliveries noted in this centre.

In this series, postpartum haemorrhage and sepsis were the commonest post operative morbidity. This experience is similar to those from other centres in Nigeria [6,12,18]. All these indicate the need for rigorous attention to asepsis during surgery and also availability of effective blood transfusion services. Meticulous observation of sterile surgical techniques and judicious use of antibiotics would help in gradual reduction of this problem [23].

The maternal mortality ratio of 646 per 100,000 among patients that had caesarean section is comparable to 780 per 100,000 from Benin City [13], but this is very much higher than the 7.5 per 100,000 recorded from the developed countries such as the United States of America [19]. The high case fatality rate in this study indicates that caesarean section is still more dangerous to the mother than vaginal delivery. Other conditions associated with the procedure rather than the operation per se were responsible for the higher maternal mortality in this study. These include anaesthesia, prolonged obstructed labour, sepsis, eclampsia, antepartum and postpartum haemorrhage.

The main causes of death, haemorrhage, sepsis and anaesthesia are similar to those in other studies [12,14,17]. Most of our women die from haemorrhage because there is usually lack of blood for transfusion, coupled with the cost, myths, beliefs and misconceptions about blood transfusion [20]. These are preventable causes of maternal deaths. Anaesthetic deaths follow inexperienced registrars, wrong intubation and high spinal block [21].

V. Conclusion

Caesarean delivery is a life saving operation in obstetric practice and its safety has been demonstrated. Caesarean section rate has dramatically increased during the study period and the incidence is high due to high incidence of cephalopelvic disproportion, fetal distress and previous caesarean section. Appropriate measures should be made to encourage antenatal attendance, early referral to tertiary centres for antenatal care of high risk pregnancies, skilled attendant in labour and emergency obstetric care when labour complicates. The high caesarean section morbidity and mortality can be reduced by improving socioeconomic condition of the populace, strict policy on active management of labour, improve blood transfusion services and anaesthetic technique in the centre.

Conflicts of Interest The authors have no conflict of interest in performing the research and have not received fund from any organization.

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