

Indications for Caesarean Delivery in a State University Teaching Hospital, Enugu, Southeast, Nigeria

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Abstract:

Background: Caesarean delivery is a life-saving procedure that should be available to every woman that needs it. Advances in technology have made the operation safe, and thus liberalized its indications.

Objectives: To review the history of caesarean delivery, determine the rate, and the indications for the procedure in Enugu State University Teaching Hospital (ESUTH).

Methods: This retrospective clinical audit was undertaken from December 31, 2014 back to January 1, 2011. Data on patient's age, parity, booking status, gestational age at delivery, and the indications for caesarean delivery were collected from the labor ward and obstetric theatre registers. The data was analyzed with excel 2007 and by simple percentages.

Results: During the study period, 1215 operations were performed out of 3914 total deliveries. The caesarean delivery rate was 30.8%. Majority of the women were between 20-35 years of age 941 (941/1215, 77.4%), multiparous 727 (727/1215, 59.8%), and attended antenatal care in ESUTH 958 (958/1215, 78.8%). Previous caesarean delivery 387 (387/1215, 31.9%), severe preeclampsia and eclampsia 152 (152/1215, 12.5%), suspected fetal distress 129 (129/1215, 10.6%), poor progress of labor 108 (108/1215, 8.9%), and prolonged labor 108 (108/1215, 8.6%) accounted for 72.5% of the indications for caesarean delivery.

Conclusion: The caesarean delivery rate in ESUTH is 30.8%. Previous caesarean delivery was the commonest indication for the procedure. Reducing primary caesarean delivery; and encouraging vaginal birth after one previous caesarean delivery may reduce its rate in this hospital.

Keywords: Caesarean delivery, rate, indications, Enugu, Nigeria.

1. INTRODUCTION

1.1 Definition and History of Origin of Caesarean Delivery

Caesarean delivery may be described as the delivery of the viable fetus with the placenta and membranes through an abdominal incision (laparotomy) and a uterine incision (hysterotomy). The origin of the name of the surgery is still uncertain and was clouded in unauthenticated histories. The belief that the name was derived from Julius Caesar because he was delivered by this method was erroneous. For Aurelia, the mother of Julius Caesar to survive the operation at that ancient time of caesarean delivery when maternal mortality from the procedure was almost 100% makes the story highly unlikely.[1] Others theories about the origin of caesarean delivery include the Latin verb "caedere," which means cut or "delivery by cutting," and the Roman law of Lex Regis. The Lex Regis of Numa Pompilius of 715 BC prohibited the burial of a pregnant woman until the child had been removed from her abdomen for separate religious burials and baptism of the unborn child. The Lex Regis later became Lex Caesarea, and the operation became cesarean operation.[2-4] Rousset in 1581 was the first to use the term "caesarean birth" in medical writings and he advised that the operation should be performed on a living woman[5] Before Rousset, the ancient caesarean delivery was done as the last resort after every effort to deliver the child from either the dying or dead mother vaginally had failed. It was performed with crude instrument. The abdominal incision was made lateral to the rectus muscles, and the uterus was incised at whichever portion was accessible through the laparotomy incision. The uterine musculature was not sutured, and the patient had to be physically restrained during the procedure because anesthesia was not available.[6] The mortality from hemorrhage and sepsis was very high. Only very infants survived through the procedure at that time.[7]

1.2 Developments and Advances in Modern Caesarean Delivery

The development of the modern caesarean operation started from 1878 with series of innovative trials and errors. Porro's radical caesarean delivery consisted of a laparotomy and hysterotomy followed by subtotal hysterectomy and bilateral salpingo-oophorectomy to reduce uterine infection, sepsis, and hemorrhage and to improve maternal outcome.[6,8] Saenger[9] introduce the use of sutures while Joseph Lister [6] in 1876 introduced the principles of surgical antisepsis. Lower segment uterine incision was introduced in 1786 by Johnson to decrease blood loss at surgery.[6,8] These numerous advances and refinements in surgical technique, asepsis, antibiotic therapy, blood transfusion, and anesthesia made caesarean delivery a safe procedure. This liberalized the indications for caesarean delivery from being the last resort to: early resort, elective procedure, and even caesarean delivery on demand.[10]

1.3 Trends in Rates and Indications for Caesarean Delivery

The trend in caesarean delivery rates increased worldwide with a wide variation in various regions. The rates ranged from 43.6% to 80% in Brazil [11,12], 32% in America[13], 27.4% in Enugu[14] to 9.9% in Sokoto. [15] These rates were higher than the 15% upper limits set by the World Health Organization since 1985[16] The increase in caesarean delivery rates is largely driven by multiple factors which include the safety of the operation, societal demands for improved maternal and fetal outcomes, increased number of high-risk expectant mothers, a decrease in vaginal births after a caesarean delivery and the obstetricians fear of litigation.[13, 17-21] These demands made several indications for caesarean delivery to emerged.[22] They include two or more previous caesarean delivery, contracted pelvis, major degree placenta previa, malpresentation, previous vesico-vaginal fistula repair, intrauterine growth restriction, bad obstetric history, precious baby, and caesarean delivery on demand.[10, 23,24] Efforts made in the last two decades to limit the rate of caesarean delivery include reducing primary caesarean delivery, encouraging vaginal births in selected cases of vaginal delivery after one previous caesarean delivery and vaginal breech delivery, discouraging caesarean delivery on demand, and the use of fetal scalp PH to confirm fetal distress before embarking on caesarean delivery.

1.4 Justification of the Study

This is the first study on the indications for caesarean delivery in ESUTH, Enugu. It is thus pertinent to undertake the study in this era of liberalized indications for caesarean delivery and to assess the current situation in our institution.

2. MATERIALS AND METHODS

Setting: Enugu State University Teaching Hospital (ESUTH) Enugu is a state owned tertiary health institution since 2006. It is located in the center of Enugu metropolis and most of the population are Christians and of the Igbo tribe. There are many other health institutions in the metropolis that provide maternity services including caesarean delivery. This includes University of Nigeria Teaching Hospital, Enugu, many faith based health institutions, and many private hospitals. Maternity homes and traditional birth attendant homes are abound in the city.[25] ESUTH provides antenatal care and intrapartum care services. The department of Obstetrics and Gynecology has two professors, a reader, 7 consultants, 3 senior registrars, 17 registers, many house officers, and 45 staff nurse midwives. There are 42 beds in the department and an average of 1250 babies is delivered annually. Pregnant women in labour, irrespective of their booking status, are admitted to the labour ward without restrictions

Methods: This is a retrospective clinical audit of caesarean deliveries carried out in Enugu State University Teaching Hospital, Enugu from December 31, 2014 back to January 1, 2011. The obstetric theatre and labor ward registers were reviewed to identify the indications for caesarean delivery. Other information extracted from the registers includes patients' demographic data, parity, and gestational age at delivery. The above data was analyzed with excel 2007 and by simple percentages.

3. RESULTS AND DISCUSSION

A total of 1215 caesarean deliveries were performed out of 3914 total deliveries, thus giving a caesarean delivery rate of 30.8%. Majority (Table 1) of women were of age range of 20-35 years 941 (941/1215, 77.4%), multiparous 727 (727/1215, 59.8%), and attended antenatal care in ESUTH 958 (958/1215, 78.8%) while 226 (226/1215,18.6%) had their antennal care outside ESUTH. Teenage

pregnancy (<19 years) occurred in 22 (22/1215, 1.8%) women. Table 2 shows the yearly trends in caesarean delivery. It ranged between 28.4% and 34.9% with a peak rate of 34.9% in 2012 without a defined trend. Previous caesarean delivery 387 (387/1215, 31.9%), severe preeclampsia and eclampsia 152 (152/1215, 12.5%), suspected fetal distress 129 (129/1215, 10.6%), poor progress of labor 108 (108/1215, 8.9%), and prolonged labor 108 (108/1215, 8.6%) (Table 3) were the common indications for caesarean delivery. Other indications include antepartum haemorrhage 94 (94/1215, 7.7%), breech presentation 93 (93/1215, 7.60%), post-datism 74 (74/1215, 6.10%), multiple pregnancy 71 (71/1215, 5.80%), obstructed labor 56 (56/1215, 4.60%), cephalo-pelvic disproportion 51 (51/1215, 4.20%), transverse lie 37 (37/1215, 3.00%), and fetal macrosomia 42 (42/1215, 3.4%). Regular appraisal of the rate and indications of caesarean delivery is essential to ensure that the procedure is performed on every woman that needs it, rather than striving to achieve a specific rate. [26] The caesarean delivery rate of 30.8% in this study is within the range of 20.8%-35.5% reported across Nigeria by many authors. [14, 27, 28] ESUTH accepts high risk women in pregnancy and labour without restrictions and this appears to increase its caesarean delivery rate. Primigravida is a high risk pregnancy. [29] They constituted 31.3% of the caesarean delivery in this work and this is consistent with 30% in Osogbo. [27] Previous caesarean section is the leading cause of caesarean delivery in this study as was reported by other workers [14, 15, 27, 30, 31] It accounted for 31.9% of the indications for Caesarean delivery in ESUTH, and may be a reflection of the cumulative effect of the increase in caesarean delivery over the years. [32, 33] Prevention of unjustifiable primary caesarean delivery and encouragement of vaginal birth after one previous caesarean delivery may reduce the caesarean delivery rate of this hospital. The second leading indication for the procedure in this study is severe preeclampsia and eclampsia in 12.5% of the cases. Most of the hypertensive disorders in pregnancy were detected during the antenatal care and were promptly managed to prevent complications. Other common indications for caesarean delivery include suspected fetal distress (10.6%), poor progress of labor (8.9%), and prolonged labor (8.6%). The above top 5 indications were responsible for 72.5% of caesarean delivery in this study. Critical review of these indications may show that they are not absolute indications for caesarean delivery and the decisions to perform the surgeries were often made by resident doctors. Hospital policy of ensuring that consultants review these cases before surgery may prevent some of the unjustifiable operations. Some of the operations due to suspected fetal distress could have been avoided with proper assessment of fetal PH. Breech presentations were responsible for 7.6% of caesarean delivery in ESUTH, 9.0% in Jos, and 9.9% in Osogbo. [27, 28] Term external cephalic version of uncomplicated breech presentation [34] and planned assisted vaginal delivery [35] of selected breech presentation can prevent some of these caesarean deliveries. Other emerging indications like postdate pregnancy, fetal macrosomia (>4.0kg), bad obstetric history, intrauterine growth restriction, caesarean delivery on demand, and poor fetal biophysical profile can be regarded as evidence of high quality antenatal care in ESUTH.

In conclusion, caesarean delivery is a life-saving procedure that can effectively prevent maternal and perinatal mortality and morbidity when it is medically justified or indicated. Every effort should be made to provide caesarean delivery to every woman in need of it, rather than striving to achieve a specific regional rate. Previous caesarean delivery is the leading indication for caesarean delivery in ESUTH. Prevention of unjustifiable elective and primary caesarean deliveries; and encouragement of vaginal birth after one previous caesarean delivery may reduce the caesarean delivery rate of this hospital. Primary caesarean delivery can also be reduced by careful management of labor, accurate assessment of fetal distress, and provisions of term external cephalic version of uncomplicated breech presentation and planned assisted vaginal breech delivery. Consultants should review cases before booking them for caesarean delivery to minimize unjustifiable operations.

4. LIMITATIONS OF THE STUDY

The study is retrospective clinical audit with a lot of missing or not stated data. The indication for caesarean delivery was not stated in 8.60% cases. This limits generalization of the findings in the general population. Important information like emergency or elective operations was also not stated in the registers. There were series of interruptions of services because of workers strike actions. This prevent of us from getting a clear trend in the caesarean delivery rates over the 4-year period.

Ethical clearance was obtained from the ESUTH ethical committee before the commencement the study. The author funded the research and has no **competing interests** to declare.

Table 1. Distributions of patients age, parity, booking status and gestational age at delivery

1. Age in years	Number	Percentage
< or =19	22	1.8%
20—35	941	77.4%
> 35	419	34.5%
Not stated	118	9.7%
Total	1215	100%
2. Parity		
Primigravida	380	31.3%
1 ---4	727	59.8%
5 & above	60	4.9%
Not stated	48	4.0%
Total	1215	100%
4. Booking status		
ANC* in ESUTH**	958	78.8%
ANC* not in ESUTH**	216	17.8%
No ANC* anywhere	1	0.1%
Not stated	40	3.3%
Total	1215	100%
5. Gestational age in weeks at delivery		
< 34	68	5.6%
34—37	187	15.4%
38—42	715	58.8%
> 42	8	0.7%
Not stated	237	19.5%
Total	1215	100%

*ANC= Antenatal care; **ESUTH= Enugu State University Teaching Hospital

Table 2. Yearly trends in caesarean delivery

Year	Total Delivery	Total caesarean delivery	Caesarean delivery rates
2011	464	132	28.4%
2012	1182	412	34.9%
2013	1315	391	29.7%
2014	980	280	28.5%
Total	3941	1215	30.8%

Table 3. Indications for caesarean delivery

Previous caesarean delivery	387	31.90%
Hypertension in pregnancy	152	12.50%
Suspected fetal distress	129	10.60%
Poor progress of labour	108	8.90%
Indications not stated	105	8.60%
Prolonged labour	104	8.60%
Antepartum haemorrhage	94	7.70%
Breech presentation	93	7.60%
Post-date pregnancy (38 to <42 weeks)	74	6.10%
Multiple pregnancy	71	5.80%
Obstructed labour	56	4.60%
Cephalo-Pelvic Disproportion	51	4.20%
Transverse lie	37	3.00%
Fetal Macrosomia	42	3.40%
PROM* at term	45	3.70%
Intrauterine fetal death	24	2.00%
Failed induction of labour	20	1.60%

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Bad obstetric history	20	1.60%
Diabetes mellitus in pregnancy	16	13%
Cord prolapse,	13	1.10%
Retained twin	12	1.00%
Oligohydramnios	10	0.80%
Hand prolapse	9	0.70%
Cervical dystocia	7	0.60%
Caesarean delivery on demand	6	0.50%
Poor biophysical profile	4	0.30%
Compound presentation	4	0.30%
Poyhdramnios	3	0.20%
Precious baby	1	0.10%
Sickle cell disease in pregnancy	1	0.10%
Hydrocephaly	1	0.10%
Intrauterine growth restriction	1	0.10%

PROM Premature Rupture of Membranes*

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