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REVIEW ARTICLE

OUTCOME OF VAGINAL BIRTH AFTER ONE CAESAREAN SECTION IN ENUGU STATE UNIVERSITY TEACHING HOSPITAL, PARKLANE ENUGU, SOUTHEAST NIGERIA

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ABSTRACT

Background*:* The rate of Caesarean section (CS) has been on the increase in the recent years. Previous caesarean section is a major indication for a repeat caesarean section. The consequences associated with repeat caesarean sections have brought about the need to adopt vaginal birth after caesarean section (VBAC) as the preferred mode of delivery in one previous scarred uterus. ***Aims and Objectives****:* To determine the pregnancy outcome and complications of vaginal birth after caesarean section at the Enugu State University Teaching Hospital Parklane Enugu. ***Materials and Methods****:* This was a retrospective study of women with one previous caesarean section who presented at the labour ward of the Enugu state University Teaching Hospital Parklane Enugu between January 1, 2019, and December 31, 2023. Data was obtained from the case notes, labour ward registers, and theatre registers, encoded into a spreadsheet, and analysed using SPSS 25.0. The results were presented as frequency and percentages. ***Results****:* During the study period, there were 7852 deliveries and 100 planned VBAC. Forty-eight (48%) pregnant women had successful VBAC while 52% had a repeat emergency CS. Successful VBAC in primipara was 15(31.3%) compared to 33(68.7%) in multipara. Repeat CS rate was 23(44.2%) in primipara compared to 29(55.8%) in multipara. A previous vaginal delivery especially a prior vaginal delivery before CS was associated with a higher proportion of successful VBAC 27(56.3%) compared to successful VBAC rate of 14(29.2%) in women who had a vaginal delivery after a previous CS but lowest 7(14.5%) in those women with no previous vaginal delivery. The commonest indication for repeat emergency CS was poor progress in labour due to cephalopelvic disproportion 30(58%), followed by suspected foetal distress 16(32%). The highest 35(72.9%) successful VBAC was seen in babies that weigh between 2.5 to 3.5 kg. ***Conclusion:*** Trial of labour after a CS can result in an excellent outcome in a well-selected patient. The success rate of 48% in our study is encouraging. However, sufficient intrapartum feto-maternal monitoring is recommended to reduce foetal and maternal complications.

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INTRODUCTION

Vaginal birth after caesarean section refers to delivery of a woman who experienced a prior caesarean birth who plans to deliver vaginally rather than by elective caesarean section (ACOG Practice Bulletin No. 205, 2019). It is a procedure of great importance as it provides an alternative to a repeat caesarean section. Almost 100 years ago, Edwin Craigin put forward his dictum of "once a caesarean, always a Caesarean" which sealed the obstetrics fate of women who had a caesarean section (Tsai & Wu, 2017). In his time most caesarean sections were indicated by cephalopelvic disproportion, contracted pelvis, and classical caesarean section was the norm, with its associated significant risk of uterine rupture in subsequent pregnancy and his dictum was thus justified (Tsai & Wu, 2017). In contemporary obstetrics however, indications for caesarean section have widen significantly and a large proportion of caesarean sections are performed for non-recurrent indications (Wu *et al*., 2019). Vaginal birth after caesarean section (VBAC) has been an important tool in an attempt to reduce the caesarean section rate(Atia *et al*., 2021). The number of repeat caesarean section can be reduced by encouraging VBAC (Beloosesky et.al., 2018 & Fitzpatrick *et al*., 2019). The rate of successful vaginal birth after Caesarean section in most African countries is between 60% and 80%. At the University of Benin Teaching Hospital, the rate is 66%. At Nnamdi Azikiwe University Teaching Hospital, the rate was 46.7%. In Lagos, the rate was 73% (Adebayo *et al*., 2018). Pre-labour counselling is an important component of the intrapartum management of trial of labour and VBAC. Patients undergoing trial of labour after caesarean section require special management during antenatal period, in labour and delivery. Detailed past obstetric history regarding the previous caesarean section, whether it was an emergency or elective, in a term or preterm delivery, whether she was in labour or not, the stage of the labour when the caesarean section was done, the indication for the lower segment caesarean section, inter pregnancy interval, post operative complication like puerperal

sepsis and wound break down (Atia *et al*., 2021 & Omigbodun, 2015). Mother's choice on mode of delivery is also an important factor in offering trial of labour (Adebayo *et al*., 2018). VBAC will likely be successful when prior caesarean section was non-recurring indication, lower segment transverse incision, clinically adequate pelvis with normal size fetus with good prospect for vaginal delivery during labour and also, when labour is conducted in tertiary centers. Previous vaginal birth; particularly previous VBAC, is the single best predictor for successful VBAC (Scott, 2014 & Omigbodun, 2015). Caution and contraindication to VBAC include a prior classical or T-shaped incision or previous fundal surgery, contracted pelvis, macrosomia. Other contraindication to VBAC include; short inter pregnancy interval, patient's refusal, and previous caesarean section for dystocia. When these factors are present, successful VBAC is achieved in only 40-50 % of cases (Scott, 2014 & Omigbodun, 2015). Intrauterine growth restriction and fetal asphyxia impede the success of an attempt VBAC (Omigbodun, 2015). Women making an attempt at VBAC should be looked after, in fully equipped labour room with facilities for a caesarean section (Omigbodun, 2015) Sample for haemoglobin estimation, urinalysis and blood group should be taken and wide-bore canula inserted (Atia *et al*., 2021). Monitoring of labour in trial of labour (TOLAC) is very valuable and clinically, patient should be observed closely for signs of uterine rupture which include; abnormal fetal heart rate tracing, persistent abdominal pain beyond uterine contraction, palpation of fetal part, vaginal bleeding and high presenting part during vaginal examination(Adebayo *et al*., 2018, Scott, 2014 & Omigbodun, 2015).

The commonest complication of an attempt at VBAC is failure to achieve vaginal delivery, compelling recourse to a repeat caesarean (Omigbodun, 2015). The indication for recourse to caesarean section are; failure of progress of labour, fetal distress and scar tenderness (Omigbodun, 2015). The most dreaded complication is uterine rupture with a risk of 0.47 % and risk of perinatal death of about 6 %. Draw backs of VBAC are usually minor and are identical to those of vaginal delivery and include risk of perineal tear (Fitzpatrick *et al*., 2019). Maternal morbidity, SCBU admission, length of hospital stay and medical cost are reduced following a VBAC (Fitzpatrick *et al*., 2019 & Omigbodun, 2015). While the the following maternal risks significantly increase with increasing numbers of CS: placenta (previa, accreta, percreta, increta), injury to the bladder, ureters and bowel. Need for postoperative ventilation, Intensive Care Unit admission, hysterectomy and transfusion. It is a known fact that Nigerian women have a strong aversion for caesarean section due to the general belief that caesarean section is a mark of reproductive failure; hence premium is placed on vaginal delivery. Therefore, any means of reducing the rate of caesarean section would be greatly welcome in our society (Ikechukwu *et al*., 2010). Thus the aim and objective of this study.

MATERIALS AND METHODS

This was a hospital based retrospective study of the records of all pregnant women planned for vaginal birth after caesarean section (VBAC) following one previous caesarean section from January 2019 to December 2023 at the Enugu State University Teaching Hospital Parklane Enugu. The patient's data were retrieved from the labour ward register and obstetrics theatre operation register. Their case notes were thereafter retrieved from the medical records department. Information was collected using a proforma designed for the study. The data obtained at the time of delivery included maternal age, parity, gestational age at time of delivery, indication for primary caesarean section, inter-delivery interval, vaginal delivery before or after the primary CS, cervical Os dilatation at presentation, birth weight, APGAR scores and associated maternal complications (perineal tear or laceration, uterine dehiscence, uterine rupture, post- partum haemorrhage and blood transfusion. Data collected were coded and analyse using Statistical Package for Social Sciences Version 25 (IBM SPSS Statistics). All data were presented as numbers and percentages in tables and figures. Ethical approval was obtained from the research and ethics committee of the hospital.

Inclusion criteria: All patients with one previous lower segment transverse incision, singleton fetus in cephalic presentation, and absence of a recurrent factor.

Exclusion criteria: Patients with more than one previous caesarean section and patients planned for repeat elective caesarean section.

RESULTS

There were 7852 deliveries and 100 pregnant women who had one previous caesarean section that planned for trial of labour after one previous caesarean section during the study period. The incidence of planned VBAC in our center was 1.3%. However, the overall successful VBAC rate was 48(48%) while the repeat emergency caesarean section rate was 52(52%) during the study period. Five (10.4%) patients had successful VBAC out of 7 women that were above 40 years and the remaining 2(3.8) had repeat emergency CS. The highest successful VBAC rate was among the 30-39 years age group accounting for 29(60.4%) while the age range with highest number of repeat emergency CS was 20-29 years. The 20–29-year age group had VBAC in 14(29.2%) and CS in 30–39-year age group was 13(25%). The multipara had a successful VBAC rate of 33(68.7%) as against primipara with 15(31.3%). The repeat CS rate among multipara and primipara were29 (55.8%) and 23(44.2%) respectively. The indications for the primary CS ranged from foetal distress 47(47%), cephalopelvic disproportion 12 (12.0%), pre-eclampsia /eclampsia 12 (12%), poor progress of labour 9(9%), placenta praevia/abruptio placenta 9 (9%), breech presentation was 8(8%), cord prolapse 2(2%) and retained second twin 1(1.1%). The indications for the repeat CS were as follows; cephalo-pelvic disproportion 26 (50%), foetal distress in first stage of labour accounted 12 (23.1%), inadequate uterine contractions accounted for 8 (15.4%) and prolonged latent phase accounted for 6 (11.5%) each of the total CS. The inter-delivery interval (IDI) was grouped into those within 15-24 months, 25 months or more. The IDI was then compared with the outcome of labour. The successful VBAC rate for those within 15-24 months was 12 (25.0 %) and 33 (63.5%) for repeat CS, while among the 25-48 months group 36 (75.0%) had a successful VBAC while 19 (36.5%) had a repeat CS. Three patients had uterine dehiscence but no history of uterine rupture. The neonatal outcome assessed using the 5th minute APGAR scores showed no cases of severe birth asphyxia, and neonatal death. However, moderate birth asphyxia accounted for 1 (1.0%), mild asphyxia for 2 (2.0%) and 97 (97.0%) had normal APGAR scores at 5 minutes.

Table 1. The age range of the patients and outcome of trial of labour after one caesarean section

Variable (Age) years	Frequency (%)	VBAC (%)	Repeat CS (%)
20-29	50(50%)	14(29.2%)	37(71.2%)
30-39	43(43%)	29(60.4%)	13(25%)
40 and above	7(7%)	5(10.4%)	2(3.8%)
Total	100(100%)	48(100%)	52(100%)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 2. The parity of the patients and outcome of trial of labour after one previous caesarean section

Parity	VBAC (%)	Repeat CS (%)
Primipara	15(31.3%)	23(44.2%)
Multipara	33(68.7%)	29(55.8%)
Total	48(100%)	52(100%)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 3. Interdelivery interval and outcome of trial of labour after one caesarean section

Interdelivery interval	VBAC (%)	Repeat CS (%)
15-24 months	12(25%)	33(63.5%)
24 months and above	36(75%)	19(36.5%)
Total	48(100%)	52(100%)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 4. Gestational age and the mode of delivery

Gestational age in weeks	Frequency (%)	VBAC (%)	Repeat CS
<37	18(18%)	8(16.7%)	10(19.2%)
37-38	24(24%)	8(16.7%)	16(30.8)
39-40	56(56%)	31(64.6%)	25(48.1%)
>41	2(2%)	1(2.1%)	1(1.9%)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 5. Outcome of labour compared with cervical os dilatation at presentation

Cervical os dilatation (cm)	VBAC (%)	Repeat CS (%)
< 4	17(35.4)	32(61.5)
4-6	20(41.7)	14(26.9)
7-10	11(22.9)	6(11.5)
Total	48(100)	52(100)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 6. Birth weight compared to the Obstetrics outcome

Birth weight(kg)	VBAC (%)	Repeat CS (%)
< 2,5	7(14.6)	24(46.1)
2.5-3.9	35(72.9)	20(38.5)
4.0 and above	6(12.5)	8(15.4)
	48(100)	52(100)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

Table 7. Effect of vaginal delivery on outcome of labour after one previous CS

Mode of delivery	Vaginal delivery before CS (%)	Vaginal delivery after CS (%)	No previous vaginal delivery (%)
VBAC	27(56.3)	14(29.2)	7(14.5)
CS	24(46.2)	19(36.5)	9(17.3)

VBAC: Vaginal birth after caesarean section, CS: Caesarean section

DISCUSSION

The VBAC rate in our center was 48%, which is comparable to 46.7% rate in Nnewi and 44.7% in Jos but lower than 69 % to 73.3% in USA while 76.6% rate reported in Canada (Edugbe *et al*., 2023, Coassolo *et al*., 2005, Coassolo *et al*., 2007, McDorman *et al*., 2012 & Grobman *et al*., 2027). The probably reason for the above is because women with twin gestation underwent induction of labour with Foley's catheter while macrosomia and sometimes two previous CS are allowed to labour in USA and Canada (Obstet Gynaecol guideline 2005, Tahseen & Griffiths, 210). Meanwhile in our centre the presence of these in a woman with a previous scar would result in an elective repeat CS since we don't have the statutory facilities to monitor these women and the manpower to ensure that an emergency CS is carried out within shortest possible safe period. The commonest indication for a repeat emergency Caesarean section was failure to progress due to Cephalopelvic disproportion (CPD) and this is similar to the study carried out in Jos, where CPD accounted for the most common indication for emergency Caesarean section (Edugbe *et al*., 2023).

Women whose new born weigh more than 3.5 kg have less rate of successful VBAC and this was similar to the study done in Jos, where the neonatal weights exceeding 3.5 kg was associated with less chances of successful VBAC (Edugbe *et al*., 2023). Macrosomia on its own is not a contraindication for VBAC, but the success rate of VBAC decreases with birth weight greater than 4kg and this is similar to what was obtained in our study. The inter-delivery interval calculated in months from the previous delivery and start of trial of labour in the current pregnancy in our centre is a minimum of 15 months. This is because postpartum restoration of the lower segment hysterotomy may require at least 6 months as suggested by Magnetic Resonance Imaging studies, plus the nine months of pregnancy (Haung *et al*., 2002). The inter delivery interval greater than 24 months had the highest success rate of VBAC compared to 15 - 24 months inter delivery interval. The CS rate was highest in the 15-24 months group compared to in the greater than 24 months. This finding was similar to a study done by Haung et where the VBAC success was 79%, for patients with an inter-delivery interval of less than 19 months compared to 85.5% when the inter delivery interval was greater than or equal to 19 months(Haung *et al*., 2002). Another study showed that when the inter-delivery interval was greater than 24 months, the VBAC success rate was 78.3% and 21%, when inter-delivery interval was less than 24 months (Doshi *et al*., 2010).

Good foetal and maternal outcomes of labour were reported among women who had trial of VBAC in this study. This is because there were no case dreaded complication of VBAC such as uterine rupture and also no report of perinatal and maternal deaths (Weinstein *et al*., 1996 & Ugwu *et al*., 2014). Previous retrospective reviews from Nigeria had recorded one to five cases of uterine rupture and one to three cases of neonatal death with no maternal death but with higher rates of successful VBAC (Edugbe *et al*., 2023,Weinstein *et al*., 1996, Egwuatu & Ezeh, 1990). In those reviews, a greater proportion of women with one previous Caesarean section were allowed trial of VBAC than in this study, and this may explain the inability of this study to detect these complications. Women who had a previous vaginal delivery especially before the primary CS, had a higher VBAC rate (56.3%) when compared to 29.2% seen in women who had a vaginal delivery after one previous CS. This was contrary to a higher success recorded in women with a prior VBAC in other studies compared with previous vaginal delivery before CS (Edugbe *et al*., 2023 & Doshi *et al*., 2010). The effect of vaginal delivery resulting in VBAC in US is 89.9% compared to 67.0% in those with no

prior vaginal delivery and in Benin those with vaginal delivery had a 54.2% successful VBAC and 22.4% had failed VBAC (Edugbe *et al*., 3023 & Olagbuji *et al*., 2010). Some studies however, shown that there's no difference in VBAC success rate among women with no prior vaginal deliveries 70.4% compared to 77.5% with prior vaginal delivery(Haung *et al*., 2014).

CONCLUSION

A previous caesarean section does not preclude a vaginal birth and it is prudent to carefully select patient that will attempt VBAC. The VBAC rate in our centre is comparable to what is obtainable in our country but far less than what is reported in high income countries. However, the low maternal morbidity and low perinatal morbidity in this study are good signs considering the lack of advanced monitoring facilities in our centre. Trial of labour after CS should therefore be considered in women who have no contraindications after detailed discussion. The outcome of a trial of labour after caesarean as demonstrated in the study is evidence of well selected patients for the intervention in a hospital where consultant led decision prevail. Women with prior caesarean section, who want to embark on trial of labour should have antenatal care in facilities, equipped for adequate monitoring of mother and fetus in labour and ready for emergency delivery service if needed.

Ethical Approval: Ethical approval for the study was obtained from the Hospital ethics committee.

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REFERENCES

ACOG Practice Bulletin No. 205: Vaginal Birth After Cesarean Delivery. *Obstet Gynecol.* 2019; 133(2): e110-127.

Adebayo F, Muhammad R, Adewole N, Adesope A. Trial of Labour after Caesarean Section: A 5-Year Review. *Open J Obstet Gynecol*. 2018: (8) 1121-1129.

Atia O, Rotem R, Reichman O, Jaffe A, Grisaru-Granovsky S, Sela HY *et al*. Number of prior vaginal deliveries and trial of labor after cesarean success. *Eur J Obstet Gynecol Reprod Biol.* 2021; 256:189-193

Beloosesky R, Khatib N, Ganem N, Matanes E, Ginsberg Y, Divon M, Weiner Z. Cervical length measured before delivery and the success rate of vaginal birth after cesarean (VBAC). J Matern Fetal Neonatal Med. 2018;31(4):464–8.

Coassolo CY, Landon MB, Gilbert S. Risk of uterine rupture and adverse perinatal outcome at term after caesarean delivery. *Obstet Gynecol*. 2007; 110(4):801-7.

Coassolo KM, Stamilio DM, Pare E. Safety and efficacy of vaginal birth after caesarean attempts at or beyond 40weeks of gestation. *Obstet Gynecol.* 2005; 106(4):700-6.

Doshi HU, Jain RK, Vazirani AA. Prognostic factors for successful vaginal birth after caesarean section. *J Obstet Gynecol India.* 2010; 60(6):498-502.

Edugbe AE, Bitrus J, Nnawike OC, John O, Mikah S. Obstetric outcomes of vaginal birth after caesarean section in Bingham University Teaching Hospital, Jos, Nigeria. Int *J Reprod Contracept Obstet Gynecol 2023*; 12:2911-5.

Egwuatu VE, Ezeh IO. Vaginal delivery in Nigerian women after a previous cesarean section. *Int J Gynecol Obset.* 1990; 32(1):1–6.

Fitzpatrick KE, Kurinczuk JJ, Bhattacharya S, Quigley MA. Planned mode of delivery after previous cesarean section and short-term maternal and perinatal outcomes: A population-based record linkage cohort study in Scotland. *PLoS Med.* 2019;16(9): e1002913.

Grobman WA, Gilbert S, Landon MB. Outcomes of induction of labor after one prior caesarean. *Obstet Gynecol.* 2007;109(2):262-9.

Guidelines for vaginal birth after previous caesarean birth. SOGC clinical practice guidelines. *J Obstet Gynaecol Can.* 2005;27(2):164-74.

Haung WH, Nakashima DK, Rumney PJ, Keegan KA, Chan K. Inter delivery interval and the success of vaginal birth after caesarean delivery. *Obstet Gynecol.* 2002; 99(1):41-4.

Ikechukwu JI, Mbamara SU, Afuba AN. Vaginal birth after one caesarean section; A review of the practice at Nnewi, Southeast Nigeria. J Med Medical Sci. 2010;1(7):309-13.

McDorman MF, Declercq E, Mathews TJ, Stotoland N. Trends and characteristics of Home vaginal birth after caesarean delivery in the United States and selected States. *Obstet Gynecol.* 2012; 119:734-44.

Olagbuji B, Ezeanochie M, Okonofua F. Predictors of successful vaginal delivery after previous caesarean section in a Nigerian tertiary hospital. *J Obstet Gynecol.* 2010; 30(6):582-5.

Omigbodun AO. Vaginal birth after caesarean section. In: Kwawukume EY, Emuveyan EE (Eds). Comprehensive Obstetrics in the tropics. Asante and Hittscher printing press (Dansoman). 2015; 156-162.

Scott JR. Intrapartum management of trial of labour after caesarian delivery: evidence and experience. BJOG. 2014; 121: 157-162

Tahseen S, Griffiths M. Vaginal birth after two caesarean section (VBAC-2) – a systematic review with meta-analysis of success rate and adverse outcomes of VBAC-2 versus VBAC-1 and repeat (third) caesarean sections. BJOG. 2010; 117:5-19.

Tsai HT, Wu CH. Vaginal birth after cesarean section-the world trend and local experience in Taiwan. *Taiwan J Obstet Gynecol.* 2017; 56(1):41–5

Ugwu GO, Iyoke CA, Onah HE, Egwuatu VE, Ezugwu FO. Maternal and perinatal outcomes of delivery after a previous Cesarean section in Enugu, Southeast Nigeria: a prospective observational study. *Int J Womens Health.* 2014; 6:301-5.

Weinstein D, Benshushan A, Tanos V, Zilberstein R, Rojansky N. Predictive score for vaginal birth after caesarean section. *Am J Obstet Gynecol.* 1996; 174(1):192–198.

Wu Y, Kataria Y, Wang Z. Factors associated with successful vaginal birth after a cesarean section: a systematic review and meta-analysis. *BMC Pregnancy Childbirth* 2019; (19): 360.

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