



**The Rate of Successful Vaginal Birth After Caesarean Section (VBAC)
Among Women at Omdurman Maternity Hospital, Sudan**

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Abstract

Background: Caesarean section rate has been on the increase in the past few years. Previous caesarean sections are a major indication for caesarean sections. The risks 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 a previously scarred uterus.

Aims and Objectives: To determine rate of successful VBAC, the pregnancy outcome and complications of vaginal birth after caesarean section at Omdurman Maternity Hospital, Sudan.

Materials and Methods: This was a retrospective descriptive study of 121 women with one previous caesarean section who presented at the labour ward of Omdurman Maternity Hospital between January 1, 2015, and December 31, 2015. Data was obtained from the case notes, ward, and theatre registers, encoded into a spreadsheet, and analyzed using SPSS 22.0. The results are presented as means, rates and proportions. Associations between variables were assessed using students *t*-test and Pearson's correlation. Statistical significance was considered at $P < 0.05$ in the first minute, while 10 (8.55%) were admitted in the Special Care Baby Unit. Maternal age, socioeconomic status, gestational age at delivery and birth weight were not significantly associated with the outcome of VBAC.

Conclusion: Vaginal Birth after Caesarean Section is safe and should be recommended in carefully selected women with previous caesarean section, to reduce the morbidities associated with repeat caesarean sections.

Keywords: VBAC, complication, Omdurman Maternity Hospital, Sudan.

Introduction

The rising rate of caesarean section has been a concern to obstetricians, and this brought about the option of Vaginal Birth after Caesarean section (VBAC) in parturient with a previously scarred uterus. As a result of this increase in caesarean section rate, there are an increasing number of pregnant women with previous scarred uterus. The conduct of VBAC reduces the rate of repeat caesarean section [1, 2]. There has been a wide variation in VBAC rates. Research conducted in Ethiopia reported a success rate of 60-80% [3], while studies done in Nepal, Bangladesh and Greece reported success rates of 73.33%, 53.57% and 9.8% respectively [2, 4, 5]. In Sudan, VBAC rates of 53.5%, 33.8% and 72.5% have been reported [6-8].

However, despite these success rates, some obstetricians are yet to embrace the practice of VBAC for fear of uterine rupture. Recognizing that the practice is declining, the American College of Obstetricians and Gynaecologists recommended that Trial of Labor after Caesarean delivery (TOLAC), an alternative term for VBAC, should be attempted in women with prior delivery and a low transverse uterine incision in facilities that can provide caesarean delivery [9].

The predictors of a successful VBAC include a previous vaginal delivery before or after caesarean section, rupture of membranes on admission, increasing cervical dilatation, and prior caesarean section done for a non-recurrent indication such as fetal distress, malpresentation, placenta praevia. The factors that may reduce the likelihood of success include fetal macrosomia, intrauterine growth restriction, induction and augmentation of labor, short inter-delivery interval, non-reassuring fetal heart tracing on admission and a previous caesarean section done for a recurrent indication [3, 10, 11, 12]. The decision for VBAC should be individualized and based on thorough examination and counselling [13].

Management of these patients should be done in a tertiary health facility in which complications such as uterine rupture can be recognized and managed expediently. During the antenatal period, the previous obstetric records should be reviewed, noting the details of labour, indications for caesarean section, operative details, and post-operative recovery [12]. Induction of labour is contentious and should only be considered when the indication is compelling; with amniotomy being the preferred option [12]. A study done in south-eastern Nigeria reported favourable fetomaternal outcomes following induction and augmentation of labour [14]. The advantages of VBAC include reduction of blood transfusion and hysterectomy rate as compared to repeat caesarean sections. Also, there is a higher chance of vaginal delivery in subsequent pregnancies and a lower rate of repeat caesarean section [15].

Maternal complications of VBAC include uterine rupture requiring hysterectomy and blood transfusion, intrapartum and primary postpartum haemorrhage, postpartum infection such as endometritis. Some studies have reported complications of scar dehiscence followed by hysterectomy, cervical tear, primary postpartum haemorrhage, and manual removal of placenta. [8, 16, 17]

Complications that could occur in the newborn include respiratory distress, neurological impairment, and perinatal death [16, 17] Successful VBAC has been reported in most studies with favorable fetal outcomes [5, 14].

However, some have reported fetal distress as the commonest indication for repeat caesarean sections [17]. This study sought to determine the maternal and perinatal outcomes and associated complications of vaginal delivery in women with previous caesarean section at Omdurman Maternity Hospital.

Materials and Methods

This was a retrospective study of 121 women with one previous caesarean section who presented to the labour ward of Omdurman Maternity Hospital between January 1, 2016 and December 31, 2016. Data was collected from case notes, labour ward / theatre registers and entered into a pre-designed proforma. Information obtained included socio-demographic characteristics, details of previous caesarean section, outcome and complications of previous caesarean section, maternal and neonatal complications. The proforma for each patient was checked for completion before it was entered into a pre designed spreadsheet. The data collected was coded and analyzed using SPSS version 22.0 for windows®. The results are expressed in tables with percentages. The level of statistical significance was set at $p < 0.05$. Ethical approval for the study was obtained from the ethical review board of SMSB.

Results

There were 20,661 deliveries during the period under review. Of these, 175 women had vaginal birth after caesarean section, however only 121 case notes were suitable for analysis. Majority 108 (89.26%) of the patients were booked. The mean age was 31.98 ± 4.57 years while the mean parity was 2.83 ± 0.93 . Most 117 (96.69%) of the women were married and 61 (50.41%) had tertiary education. About two-third 72 (59.5%) of the women had a previous vaginal delivery. This is shown in table 1. Table 2 showed that the

most common indications for previous caesarean sections were fetal distress in labour 28 (23.14%), cephalopelvic disproportion in labour 25 (20.66%) and severe pre-eclampsia with unfavourable cervix 10 (8.26%). With regards to the outcome of previous caesarean section, almost all the babies delivered were live births 117 (96.69%) with normal birth weights 100 (82.64%).

The main puerperal complication was post-partum hypertension 10 (55.56%). This is shown in Table 3. The most common maternal complication was perineal tear 38 (31.4%) as shown in table 4. Two women (1.65%) had primary post-partum haemorrhage secondary to cervical laceration that required blood transfusion which they received. Table 5 showed the neonatal outcomes. Most of the babies had normal Apgar scores in the first 103 (85.12%) and fifth minutes 112 (96.55%) respectively.

The birth weight was normal in 104 (85.95%), while 5 (4.13%) were underweight and 12 (9.92%) were macrosomic. A few of the babies 10 (8.55%) were admitted into the special care baby unit, with the most common indication being moderate birth asphyxia 5 (45.45%). This is shown in table 6. There were four perinatal deaths- two of which occurred prior to presentation in unbooked patients, one due to post term pregnancy and the second for poorly controlled diabetes mellitus. Two other perinatal deaths occurred in booked patients who had chronic hypertension with superimposed severe pre-eclampsia.

Characteristics	Frequency	Percent
Age (years)		
20-29	38	31.40
30-39	76	62.81
40-49	7	5.79
Mean + SD (Min, Max)	31.98 + 4.57 years	
Parity		
2-3	98	80.99
4+	23	19.01
Mean + SD (Min, Max)	2.83 + 0.93	
Marital Status		
Single	4	3.31
Level of Education		

No formal education	2	1.65
Primary	15	12.40
Secondary	43	35.54
Tertiary	61	50.41
Booking status		
Booked	108	89.26
Un-booked	13	10.74
Occupation		
Business / trading	48	39.67
Housewife	27	22.31
Applicant	16	13.22
Professional (banker, health personnel, etc)	14	11.57
Civil servant	10	8.26
Artisan	6	4.96
Previous vaginal delivery	72	59.50
After C/S	44	61.11
Before C/S	28	38.89
Inter-pregnancy interval (months)		
< 12	12	9.91
13-24	32	26.44
> 25	77	63.63

Table-1: Socio – demographic characteristics of the women

Characteristics	Frequency	n = 121	Percentage (%)
Type of caesarean section			
Emergency caesarean section	97		80.17
Elective caesarean section	24		19.83
Indication for previous caesarean section			
Fetal distress in labour	28		23.14
Cephalopelvic disproportion in labour	25		20.66
Severe preeclampsia with unfavorable cervix	10		8.26
Nullipara with breech presentation	9		7.44
Abruptio placentae with live baby	8		6.61
Poor progress in labour	5		4.13
Major degree placenta praevia	4		3.31
Prolonged labour	4		3.31
Cord prolapse	3		2.48
Eclampsia with live baby	2		1.65
Retained second twin	2		1.65
Unstable lie at term	2		1.65
Postdate pregnancy	2		1.65
Obstructed labour	2		1.65
Others	14		11.62

* *Others* – failed induction for postdate pregnancy, fetal hydrocephalus, fetal macrosomia, bad obstetric history, gestational diabetes mellitus, impacted transverse lie, etc.

Table 2: Indications for previous cesarean section

Characteristics	Frequency n = 121	Percentage (%)
Fetal outcome		
Alive	117	96.69
Fresh stillborn	4	3.31
Baby's birth weight (grams)		
Underweight (<2,500)	8	6.61
Normal (2,500-3,999)	100	82.64
Macrocosmic (\geq 4,000)	13	10.74
Mean + SD (Min Max)	3232.23+583.16 (1500,4800) grams	
Puerperal complications		
Hypertension	10	55.56
Anaemia	4	22.22
Puerperal psychosis	2	11.11
Breast engorgement	1	5.56
Wound sepsis	1	5.56

Table-3: Outcome of previous caesarean section

Characteristics	Frequency n = 121	Percentage (%)
Estimated blood loss (mls)		
<500	114	94.21
>500	5	4.13
\geq 1000	2	1.65
Blood Transfusion		
Yes	2	
No	119	
Number of Units (n=2)		
1	2	100.00
Episiotomy		

Yes	6	4.96
No	115	95.04
Perineal tear		
Yes	38	31.40
No	83	68.60
Degree of perineal tear (n=38)		
First degree	29	76.32
Second degree	5	13.16
Cervical laceration	4	10.53

Table-4: Maternal outcome of VBAC

Characteristics	Frequency n = 121	Percentage (%)
Outcome		
Live	115	95.00
Stillborn	6	5.00
Birth weight		
Underweight (<2500)	5	4.13
Normal (2500-3900)	104	85.95
Macrocosmic (>4000)	12	9.92
Mean + SD (Min, Max)	3.29 + 0.49 (1.9 , 5.0) kg	
APGAR scores 1min		
Abnormal (<6)	18	14.88
Normal (7-10)	103	85.12
Mean + SD (Min, Max)	7.80 + 2.18 (3,6)	
APGAR scores 5mins (n=116)		
Abnormal (<6)	4	3.45
Normal (7-10)	112	96.55
Mean + SD (Min, Max)	8.70 + 1.13 (5,9)	

Table-5: Neonatal outcome of VBAC

Indication (n=11) (Multiple Response)	Frequency	Percentage (%)
Asphyxia	5	45.45
Macrosomia	2	18.18
Duodenal atresia	1	9.09
Low birth weight	1	9.09
Risk for sepsis	1	9.09
Total	10	
Baby's outcome in SCBU (n-10)		
Discharged	9	90.00
Unknown	1	10.00

Table-6: Indications for SCBU admission

Discussion

Repeat caesarean sections increase the risk of maternal and perinatal morbidity such as antepartum and postpartum haemorrhage, wound infection, postpartum thromboembolism, increased risk of blood transfusion, anaesthetic complications, and neonatal respiratory morbidity [2]. In Sudan, VBAC success rates of 33.8% and 50% were reported in northern and western Sudan respectively. Higher rates have been reported in India and the Middle East, as well as Omdurman Maternity Hospital. The mean age of women in this study was 31.98 + 4.57 years. 10.00 favourable predictive factor as majority of the women had a previous vaginal delivery before or after the caesarean section. This corroborates the finding in other studies. [2,7,17]

This is because the patients were well selected and their previous caesarean sections were for non-recurrent indications. The study in Enugu also highlighted multiparity as a predictor of successful vaginal delivery [14]. This was like the report from Nnewi [7] but lower than that from Greece, in which majority of women were aged between 31-40 years [5]. The premium placed on marriage and childbirth in our environment may explain the lower age range reported in Northern Sudan. Most of the women in this study were booked (89.26%). This finding was like that of a study done in Ebonyi state, Nigeria. [8]

This may be attributed to the fact that booked patients have adequate antenatal care and a birth plan which makes for successful VBAC. A clear preference for vaginal delivery was demonstrated in our study. This is in keeping with a study done in Enugu, Nigeria [14]. Fetal distress was the commonest indication for the previous caesarean section, which was in keeping with findings from another study [4].

However, the study in Enugu reported prolonged labour as the leading indication for previous caesarean section, closely followed by preeclampsia [14]. These were non recurrent indications for caesarean section, hence VBAC was allowed in these patients. This is contrary to the findings of the Indian study that reported cephalopelvic disproportion as the leading indication for the previous caesarean section and a VBAC rate of 67.6%. This was because most of the women had inter pregnancy intervals of greater than 6 months [19].

Concerning predictors of a successful VBAC, this study revealed that previous vaginal delivery was a A few maternal complications were observed in this study. Perineal tear was the commonest maternal complication, most of which were first degree tears. Perineal lacerations reported in the Middle East and in Greece were much fewer than in our study [5, 17]. Also, the episiotomy rates were higher compared to our study, and this could have accounted for the fewer perineal tears. Two (1.65%) patients had primary postpartum hemorrhage, which was lower than that seen in a study by Esike et al. in southeast Nigeria [8].

The low incidence of post-partum haemorrhage is because of the practice of active management of the third stage of labour at our centre. Complications such as retained placenta, scar dehiscence and ruptured uterus were reported in some other studies in Sudan [7, 8] Two of the cases of uterine rupture in a previous study were in unbooked patients, one of which occurred following the use of misoprostol before referral [7]. With regards to perinatal complications, a few babies required admission into the Special Care Baby unit. This was lower than reported in an Indian study [16] and is probably because most of our patients were booked and carefully selected. The perinatal mortality rate was like other studies because these are all tertiary centres and unbooked patients are referred to these hospitals [7, 8].

Conclusion

Vaginal delivery and multiparity are predictors of successful vaginal births after caesarean delivery with good fetomaternal outcome. The challenge in resource-poor settings like ours remains non availability of facilities for continuous electronic fetal monitoring which is of great importance in this subset of patients. Booking for antenatal care also improves outcomes as seen in our study. Hence, women with previous

caesarean sections who are desirous of having vaginal birth in future pregnancies should be encouraged to register in a facility that is equipped for essential obstetric care, provided there are no contraindications to vaginal delivery.

Limitations of the Study

The major limitation of this study was non availability of records of many patients with VBAC. Thus, it is difficult to make a general statement as the number of successful cases is under-reported and is not an exact picture of the success rate of VBAC in our centre.

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