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Research Article

Factors Associated with Success Rate of Vaginal Birth After Single Caesarean Section in Khartoum Maternity Hospital

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Abstract

Objectives: To determine success rate of VBAC (Vaginal birth after cesarean section) with reference to prognostic factors to predict successful VBAC in Khartoum Maternity Hospital- Sudan

Methodology: It was descriptive, cross sectional and hospital based study conducted in a period of one year, involving 342 pregnant women with one previous C/S who were admitted in the labor room as emergency cases, were evaluated thoroughly, data collected through designed questionnaire include:- Socio-demographic characters, antenatal clinic follow up, previous C/S, variables affect success of VBAC and outcome of current pregnancy.

Results: A total of 342 pregnant women involved in this study, the majority of them (78.36%) were counseled for VBAC. Fetal distress was the most common cause for previous C/S (39.77%) and failure to progress account for 24.56%. Factors affecting success of the VBAC in this study were; BMI between 25-30 was 58.77%, previous successful VBAC was 44.15% and birth weight between 3-3.5kg was 47.37%. The outcome of this pregnancy were; 67.3% had successful VBAC, while 23.7% had emergency caesarean section

Conclusion: This study reported 67.3% success rate of VBAC and concludes a significant increase in the successful rate of VBAC associated with accurate prior ante natal care, meticulous counseling, prior vaginal delivery, previous success VBAC, BMI between 25-30 and maternal age <35 years.

Keywords: VBAC; Success rate; Prognostic factors; Sudan

Introduction

From the late 1980s to mid-1990s vaginal birth after caesarean (VBAC) rates increased in North America. This was a response to public and professional concerns about rising caesarean section rates and increasing evidence indicating that in the absence of contraindications, VBAC is a safe choice [1]. however, since the mid-1990's, the rate of VBAC has declined dramatically in Canada, with the repeat caesarean section (C/S) rate having increased from 64.7% in 1995 to 82.4% in 2008 [2,3]. this increase has occurred despite a consensus, reflected in professional guidelines, that VBAC is a safe and appropriate option for most women who have had a previous cs [4-7]. Although attempts at a trial of labor after a cesarean birth (TOLAC) have become accepted practice, the rate of successful vaginal birth after cesarean delivery (VBAC), as well as the rate of attempted VBACs, has decreased during the past 10 years. Whereas, 40-50% of women attempted VBAC in 1996, as few as 20% of patients with a prior cesarean delivery attempted a trial of labor in 2002. This number is drifting down toward the 10% mark with fewer than 10% of women achieving successful VBAC in 2005[1]. This study attempts to highlight the various factors which have a prognostic significance for success of VBAC.

Material and Methods

It was cross sectional, prospective and hospital-based study conducted during one year (January\2011- December\2011), involving 342 patients with one previous C/S. All the patients with one previous caesarean section who were admitted in the labor room as emergency cases, were evaluated thoroughly. A detailed

history regarding the type of operation, indication, birth weight of infant, prior vaginal births, puerperal complications in previous deliveries etc., were obtained. The presentation, estimated birth weight of present infant, condition of scar and adequacy of pelvis was ascertained. Routine investigations like CBC, Rh group etc. was carried out. Ultrasonography was carried out in all the booked patients to know the maturity of fetus, placenta localization and to rule out anomalies. The patients were carefully selected for vaginal trial of labor based on the ACOG recommendations and were taught to recognize the basic signs and symptoms of labor as well as scar dehiscence. Statistical analysis was performed via SPSS software (SPSS, Chicago, IL, USA). Continuous variables were compared using student's t test (for paired data) or Mann-Whitney U test for non-parametric data. For categorical data, comparison was done using Chi-square test (X2) or Fisher's Exact test when appropriate. A P value of <0.05 was considered statistically significant.

Ethical clearance and approval for conducting this research was obtained from the general manager of the hospital and informed written consent was obtained from every respondent who agreed to participate in the study. Of course, the respondents informed that the study is not associated with experimental or therapeutic intervention while information was collected from her.

Results

Table 1: VBAC and demographic data with significance table and the p value among respondents.

Variable		Success rate	Failure rate	P value
Age	<20 years 20-30 years 31-40 years >40 years Total	30 (08.8%) 115 (33.6%) 72 (21.1%) 13(03.8%) 230(67.3%)	14 (04.1%) 40 (11.7%) 31 (09.1%) 27 (07.8%) 112(32.7%)	002*
Antenatal care	Regular Irregular No antenatal care Total	112(32.7%) 103(30.1%) 15(04.5%) 230(67.3%)	39(11.4%) 36(10.5%) 37(10.8%) 112(32.7%)	000*
Party	Para 2 3-4 Grand multiparty>5 Total	135(39.5%) 65(19.0%) 30(08.8%) 230(67.3%)	62(18.1%) 39(11.4%) 11(03.2%) 112(32.7%)	0.03*
Education level	Illiterates Primary Secondary University Total	05 (01.5%) 35(10.2%) 172(50.3%) 18(05.3%) 230(67.3%)	06(01.8%) 18(05.2%) 60(17.5%) 28(08.2%) 112(32.7%)	0.123
Socioeconomic status	Low Moderate High Total	129 (37.7%) 88(25.8%) 13 (03.8%) 230(67.3%)	50(14.6%) 42(12.3%) 20(05.8%) 112(32.7%)	50(14.6%) 42(12.3%) 20(05.8%) 112(32.7%)
Counseling for VBAC	Yes No Total	221(64.6%) 09(02.7%) 230 (67.3%)	47(13.7%) 65(19.0%) 112(32.7%)	0.01*

*Statistically significant at 0.05 level

Table 1 The mean ± SD of age was 25.7 + 3.1 years, 67.8% of women were secondary educated, almost half of them were in low socioeconomic status and majority of patients (88.0%) were paras between 2-4. Antenatal clinic follows up to 5 visits 151(44.15%), more than 5 visits were 139(40.65%) and no follow were 52(15.2%). Counseled for VBAC in antenatal clinic were 268(78.36%) and not counseled were 74(21.64%) (Table 2).

Table 2: VBAC and prognostic factors with significance table and the p value among respondents.

Variable		Success rate	Failure rate	P value
Indication of previous C/S	FD APH Severe preeclampsia Failure to progress Malpresentation Total	106 (30.9%) 19 (05.6%) 39 (11.4%) 32(09.5%) 34(09.9%) 230 (67.3%)	30 (08.8%) 12 (03.5%) 16 (04.7%) 52 (15.2%) 02(00.5%) 112(32.7%)	.0.00*
Previous success VBAC	Yes No Total	145(42.4%) 85(24.9%) 230 (67.3%)	06(01.8%) 106(30.9%) 112(32.7%)	000*

BMI	<20 20-25 26-30 31-35 >35 Total	09(02.6%) 45(13.2%) 162(47.4%) 08(02.3%) 06(01.8%) 230 (67.3%)	04(01.2%) 27(07.9%) 39(11.4%) 13(03.8%) 29 (08.4%) 112(32.7%)	0.00*
Type of previous C/S	Emergency Elective Total	151(44.2%) 79(23.1%) 230(67.3%)	74(21.6%) 38(11.1%) 112(32.7%)	0.02*
Fetal weight	<2.5 kg 2.5-3 kg 3.1-3.5 kg 3.6-4 kg >4 kg Total	33 (09.6%) 88(25.8%) 86 (25.2%) 20(05.9%) 03(00.8%) 230(67.3%)	02(00.6%) 04(01.2%) 76(22.2%) 24(07.1%) 06(01.6%) 112(32.7%)	0.00*
Fetal gender	Male Female Total	92(26.9%) 138 (40.4%) 230(67.3%)	70(20.5%) 42 (12.2%) 112(32.7%)	0.02*
Inter pregnancy interval	<18 months >18 months Total	78 (22.8%) 152(44.5%) 230(67.3%)	86(25.1%) 26 (07.6%) 112(32.7%)	0.02*

*Statistically significant at 0.05 level

Indication of the previous caesarean section were fetal distress 136(39.77%), APH 31(9.06%), severe preeclampsia 55(16.08%), failure to progress 84(24.56%) and mal presentation 36(10.53%). Caesarean section done emergency in 225(65.79%) and elective in 117(34.21%). The body mass index less than 20 was 13(3.81%) of women, between (20 - 25) 72(21.05%), between (25 - 30) 201(58.77%), between (30 - 35) 21(6.14%) and more than 35 35(10.23%). Previous successful VBAC in 151(44.15%) of women and no previous successful VBAC 191(55.85%). The study showed a significant correlation between successful rate of VBAC and following factors, accurate prior ante natal care, meticulous counseling, prior vaginal delivery, previous success VBAC, maternal age <35 years, increased parity, body mass index (25-30), birth weight less than 4kg, inter pregnancy interval >2 years, female fetus and non-recurrent indications, such as breech birth and APH.

Discussion

Vaginal birth after cesarean section (VBAC) has been strongly advocated, resulting in a significant increase in attempted and successful vaginal births and a decreasing overall cesarean section rate. However, recently, some cautions have been raised surrounding complications such as uterine rupture or uterine dehiscence that may occur with VBAC and, as such, VBAC rates have declined. VBAC is becoming a standard of practice in all obstetrical institution around the globe, the success rate of trial of vaginal birth after one previous cesarean section have been reported to be 60-80%. In this study success rate of VBAC 67.3% which is comparable with previous studies and the globe standard [8,9]. The current study demonstrated that, there is significant decline in the success rate of VBAC with increase maternal age and revealed only 3.8% of women >40 years had success VBAC compared with 33.6% success rate among women age between 20-30 years. This finding is similar with studies done by Wing DA which was reported that after adjusting for confounding factors, women older than 40 years who have had a prior cesarean delivery have an almost 3-fold higher risk for a failed trial of labor compared with women younger than 40 years. In one scoring system, women younger than 40 years were given an extra point as a predictor for successful VBAC [10]. Bujoldeta l4 also reported from their14year study covering 2493 women that maternal age at the time of TOL equal or greater than 35years old was associated with a lower rate of successful vaginal delivery (OR :0.73,95%CI: 0.56-0.94). While previous studies have evaluated pre-pregnancy weight and height to examine the effect on mode of delivery, all of which show that women in the morbidly obese range have a higher risk of failing a trial of labor [11]. Our study found low rates of success VBAC with increase maternal BMI the result of the present study found that only 1.8% success rate of VBAC for women more >35 BMI.

In one study of 510 women with a single C/S, women with pre-pregnancy BMI ≥ 30 were less likely to experience VBAC compared to women with a BMI of 20-25 (546/1000 vs. 705/1000). Women with BMI < 19.8 were most likely to experience a planned VBAC (850/1000). After controlling for other factors, including recurring indications for C/S, increasing BMI was significantly associated with a lower rate of vaginal birth [12]. The present study revealed higher likelihood of success VBAC among women who have had at least one success VBAC and prior vaginal delivery. Again, Our study match meta- analysis performed by Guise et al who concluded that women with prior VBAC were three to seven times more likely to have a VBAC for their current delivery, compared to women choosing VBAC who had not had a prior vaginal delivery [13].

Women with neonatal weights exceeding 3kg in our study had less chances of successful VBAC compared to those having neonatal weights<=3kg.Asimilar result was obtained by another study in which it was concluded that the chances of vaginal delivery decreased as the fetal weight exceeded 3.5kg(P<0.05)2. The indication of prior cesarean section was significantly associated with the success of current VBAC in our study. VBAC was maximally successful

in patients who were operated previously for non-recurrent indications such as mal presentations. Again, our study comparable with several studies which have examined indications for prior cesarean delivery as a predictor of outcome in a subsequent trial of labor. In all studies, Failure to progress, CPD, or dystocia as indications for prior cesarean delivery are also associated with a higher proportion of patients not attempting a trial of labor after cesarean birth [9]. In a meta-analysis of the existing literature prior to 1990, Rosen et al demonstrated that women whose prior cesarean delivery was performed for CPD were twice as likely to have an unsuccessful trial of labor [14]. The timing between pregnancies has recently become an interesting predictor for a number of obstetric outcomes, VBAC success among them. In the present study, women who had an inter pregnancy interval of more than 18 months had an 44.5% chance of VBAC success, while women whose inter pregnancy interval was less than 18 months had a VBAC success rate of 22.8%. Chhabra [15], concluded that an inter conception period of <19months was associated with adverse outcome of VBAC.

Conclusion

The study concludes that a significant increase in the successful rate of VBAC associated with accurate prior ante natal care, meticulous counseling, prior vaginal delivery, previous success VBAC, maternal age <35 years, increased parity, body mass index (25-30), birth weight less than 4kg, inter pregnancy interval >2 years, female fetus and non-recurrent indications, such as breech birth and APH.

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