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Original Research Article

Vaginal birth after previous caesarean section in women at Al-Wahda hospital Derna, Libya

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ABSTRACT

Background: Vaginal birth after caesarean section is one strategy that has been developed to decrease the rate of caesarean section.

Methods: The prospective observational study was carried out over a period of 01 January 2017 to 31 December 2018 years. VBAC was routinely offered at Al-Wahda hospital Derna to women fulfilling the criteria for trial of scar, according to the hospital protocol.

Results: A total of 5018 deliveries took place in the study duration, there were 1039 (20.7%) had previous one caesarean section, out of which 319 (30.7%) were the number of underwent repeat caesarean section and 720 (69.3%) were the number of VBAC. The indications for emergency repeat caesarean section at Al-Wahda hospital was (29.3%) malpresentation, (24.45%) FD, (13.47) postdate, (11.59) obstructed lab and abruptio pl (5.95%). Anemia and difficult intubation were observed in repeated caesarean section.

Conclusions: This study concluded that there is a high chance of success in a trial of labor. These findings might help clinicians and women in the decision-making for the mode of delivery when it comes to pregnancy with a previous caesarean section. Women are explained about the option of trial of scar and told about the risk associated with a repeat CS, so many CSs can be avoided.

Keywords: Vaginal birth, Previous caesarean section, Derna, Libya

INTRODUCTION

Vaginal birth after caesarean section (VBAC) is one strategy that has been developed to decrease the rate of Caesarean section (CS). Pregnant women with one previous CS are faced with two delivery options: trial of scar or elective repeat CS. Successful of VBAC vary from one woman to other. However, it is possible for women to have vaginal delivery after a previous caesarean delivery. It has been shown 55-67% of women, who had previously delivered through caesarean delivery, had successful vaginal delivery afterward.^{1,2} In recent meta-analysis conducted by Ellen and Eileen found that VBAC section

may result in small increase in uterine rupture and fetal mortality rates compared with elective repeat CS, while the successful VBAC may reduce the febrile morbidity, blood transfusion, and hysterectomy rates.³⁻⁵

In addition, VBAC increases the chance of succeeding vaginal birth and reduces the repeat CS rate with subsequent postoperative morbidities. VBAC section has less complications and faster recovery compared with CS. Conflicting data exist concerning the safety of induction of labor in women with previous single CS. The greatest impact of failed trial of VBAC is emergency CS.^{6,7} CSs are associated with more blood loss, more risk of bladder and

ureteral injuries, postpartum infections, pulmonary embolisms, and more risks of neonatal respiratory complications (if performed before 39 weeks).^{6,8}

In addition, multiple repeat CSs can lead to increased risk of maternal morbidity and mortality because of abnormal placental adherence and caesarean hysterectomy, which increases with each subsequent CS.^{9,10} Such complications are difficult to manage and can cause significant consequences and even maternal death.¹¹

Therefore, VBAC reduce the consequences and complications of multiple caesarean sections especially for continuing fertility.

Aim

The aim of the study was to determine the success of vaginal birth after one previous SC, to know the cause of repeated SC and to evaluate the maternal and perinatal complications in both VBAC and SC.

METHODS

The prospective observational study was carried out over a period of 01 January 2017 to 31 December 2018 years. VBAC was routinely offered at Al-Wahda hospital Derna to women fulfilling the criteria for trial of scar according to the hospital protocol.

All the women admitted with previous one caesarean section during the study period were included in the study. Complete history including indication of previous one caesarean section, intra and postoperative complications of previous one caesarean section. Eligibility criteria for VBAC include previous one CS are no absolute indication for SC as contracted pelvis, placenta previae or malpresentation, average fetal weight with vertex presentation.

RESULTS

A total of 5018 deliveries took place in the study duration, 1039 had previous CS, out of which 319 (30.7%) were the number of CS (underwent repeat caesarean section), 142 were emergency and 177 elective caesarean section and

720 (69.3%) were the number of VBAC. The mean age of the women delivering was 30.8 ± 5.6 years; of the women delivering by caesarean was 31.1 ± 5.9 years and by vaginal delivery was 30.5 ± 5.3 . Majority of women (69.0%) were multigravida and 78.8% of the women were parity from 1 to 3.

The mean gestational age of the women delivering VBAC was 36.6 ± 4.6 weeks and the women delivering by repeat caesarean section was 37.9 ± 4.7 weeks. The average duration of hospital stay for women having a successful VBAC was lower (1.18 ± 0.52 days) than women who required a repeat CS (3.05 ± 1.55 days) (Table 1).

The indications for emergency repeat caesarean section at Al-Wahda hospital was 211 (29.3%) malpresentation, 78 (24.45%) Fetal distress (FD), 43 (13.47) post-date, 37 (11.59%) obstructed lab and abruptio pl 19 (5.95%). However, indications for previous caesarean section have been analyzed in several broad categories namely: FD 300 (41%), malpresentation 211(29.3%), obstructed lab 45 (6.3%), primary infertility 25 (3.5%) and severe pre-eclampsia/eclampsia 20 (2.8%) (Table 2).

A total of 37 (78.7%) neonates were admitted to the neonatal intensive care unit following CS delivery and 10 (21.3%) were admitted following VBAC. There were statistical differences between caesarean section and vaginal birth ($X^2=24.50$, $p=0.001$).

The factors associated with cause of admission to neonatal intensive care unit among caesarean section delivery and VBAC, as reported in Table 3, were 23 (48.9%) Respiratory distress syndrome (RDS), 12(25.5%) Infant of diabetic mother (IDM) and birth asphyxia 3(6.4%). However, the most common cause of admission among caesarean section delivery was RDS, IDM and birth asphyxia and the most common cause of admission among VBAC case was RDS. Complications were observed in 5.9% (N=24) of the vaginal birth cases, and 8.8% (N=28) of the caesarean section cases. This difference was not significant ($p=0.192$) (Table 4).

A total of 8 (1.1%) cases of congenital anomalies were recorded, the most common anomalies was club foot 2 (25%) and neural tube defect 2 (25%) (Table 5).

Table 1: Maternal characteristics on admission.

Characteristics	Successful VBAC		Mean±SD	Unsuccessful VBAC		Mean±SD	Total	χ2	P value
	N	%		N	%				
Age (years)									
Less than 25	81	56.3	30.6±5.34	63	43.8	31.12±5.97	144	5.52	0.137
25-30	128	56.9		97	43.1		225		
31-35	114	60.3		75	39.7		189		
36 and more	78	48.1		84	51.9		162		
Parity									
1-3	299	52.7	2.4±1.16	268	47.3	1.76±1.13	567	11.9	0.003
4-6	96	68.6		44	31.4		140		

Continued.

Characteristics	Successful VBAC		Mean±SD	Unsuccessful VBAC		Mean±SD	Total	χ2	P value
	N	%		N	%				
More than 7	6	46.2		7	53.8		13		
Gravida									
Multigravida	253	50.9	3.9±2.24	244	49.1	3.79±1.75	497	14.9	0.001
Grandmulti-gravida	148	66.4		75	33.6		223		
GA									
Pre-term (PT)	13	34.2	36.6±4.6	25	65.8	37.9±4.7	38	20.4	0.001
Term (T)	336	60.1		223	39.9		559		
Post-date (PD)	52	42.3		71	57.7		123		
Birth weight (g)									
Less than 2500	21	41.2	3365.5±559	30	58.8	3334.2±63	51	4.74	0.930
2500-3500	231	57.2		173	42.8		404		
More than 3500	149	56.2		116	43.8		265		
Abortion									
No	254	55.7	1.5±0.83	202	44.3	1.61±1.01	456	0.99	0.529
Yes	147	55.7		117	44.3		264		
Duration of hospital stay									
1-2	391	74.8	1.18±0.52	132	25.2	3.05±1.55	523	281.8	0.001
3-5	10	5.7		165	94.3		175		
6 and more	0	0		22	100		22		

Table 2: Indications for previous caesarean section and current caesarean.

Indications	Previous caesarean		Current caesarean section	
	N	%	N	%
Fetal distress	300	41.7	78	24.45
Malpresentation	211	29.3	211	29.3
Obstructed labor	45	6.3	37	11.59
Infertility	25	3.5	5	1.56
Hypertension	20	2.8	0	0.0
Twin	19	2.6	0	0.0
Elderly primigravida	19	2.6	9	2.82
Oligohydramnios and polyhydramnios	17	2.4	12	3.76
Abruptio placenta	13	1.8	19	5.95
Failed induction	12	1.7	0	0.0
Pelvic surgery	7	1.0	5	1.56
Diabetes mellitus	5	0.7	15	4.70
Postdate	5	0.7	43	13.47
Premature rupture of membranes	0	0.0	8	2.51
Bad obstetric history	0	0.0	4	1.25
Others	22	3.1	18	5.64

Table 3: Cause of admission to neonatal Intensive care unit.

Causes	N	%	Successful VBAC	Unsuccessful VBAC
Respiratory distress syndrome	23	48.93	6	17
Infant of diabetic mother	12	25.53	1	11
Birth asphyxia	3	6.38	0	3
Meconium aspiration	2	4.26	0	2
*Others	7	14.89	3	4

Note: *Meningomyelocel cong, IUGR, Low AP, hemorrhagic disease of new born, small for gestational age

Table 4: Type of complication occurs after VBAC and repeated caesarean section (CS).

Type of complications	N	%	VBAC	Repeated CS
Anemia	17	2.8	4	16
Difficult intubation	12	1.3	3	9
Retained placenta	6	0.8	6	0
Perineal tear	7	1.0	7	0
Fetal complication	5	0.7	4	1
Extened episotomy	2	0.3	2	0
Wound infection	1	0.1	0	1
Abruptio placenta	1	0.1	1	0
Uncontrolled hypertension	1	0.1	0	1

Table 5: Congenital anomalies distribution.

Variables	N	%
Club foot	2	25
Neural tube defect	2	25
Congenital heart disease	1	12.5
*Others	3	37.5

Note: *Cleft lip, yes low set ear abscent ulna, right conal atresia.

DISCUSSION

High caesarean section rates are a worldwide problem; a more recent study showed that the highest rates of caesarean section in Derna, Libya due to repeated caesarean section in general hospitals.¹²

Several studies suggest that for appropriately selected women VBAC is safe, even safer than elective repeat caesarean section. However, high caesarean section rates are a worldwide problem. This study was conducted in order to highlight VBAC as a safe delivery method. The aim of this study was to determine the success of vaginal birth after one previous caesarean section. Published literature shows that there has been a 60-80% success in attempts at vaginal birth after a caesarean section.¹³

The succeed rate of VBAC in present study was 69.3%, this result was comparable with the results of other studies reported by Dhall et al have reported that around 76% of women with previous caesarean undergoing trial of scar have vaginal delivery, Singh et al in the US report 65% VBAC and in the UK, it was confirmed that nearly three-fourths of women at term undergoing a labor after previous caesarean section achieved a successful vaginal delivery.^{5,14,15} Many women request for repeat elective CS in order to avoid a painful vaginal birth in private hospital. This is mainly due to lack of women information. However, the high success rate of VBAC in our study could be due to good monitoring of labor and the fact that many of women with previous one caesarean section are offered a trial of labor.

Many factors are associated with successful vaginal birth after previous caesarean section. Literature search showed that maternal age of more than 30 years, male fetus, no prior vaginal delivery, augmentation and induction,

excessive weight gain during pregnancy and maternal obesity are associated with poor VBAC success rate.¹⁶ Other factors that affect the probability of successful VBAC are assumed to be gestational age beyond 40 weeks, birth weight greater than 4000 g, and the interval from last delivery of less than 19 months.¹⁷ In the present study, 30% of the women where had failed of labor, most of them were older than 36 years and had caesarean section for malpresentation, multiparaous and post-dated.

The results show that the success rate of VBAC with indications for previous caesarean section have been analyzed in several broad categories namely: fetal distress, malpresentation, obstructed labor, primary infertility and severe preclampsia/eclampsia study by Landon et al have report similar results.¹⁸

In our study, the rate of emergency repeat caesarean section at Al-Wahda hospital was 30.7% and commonest indication was malpresentation, fetal distress, postdate, obstructed lab and abruptio placenta, which was similar to McMohan et al reported vaginal delivery in 66% of those with dystocia, 84% of those with malpresentation and 75% of those with fetal distress as indication of pervious caesarean section.¹⁹ However, Phelan et al and Dayal et al reported a lower (15%) rate of FD requiring CS.^{20,21}

The average duration of hospital stay for VBAC was 1.18±0.52 days and 3.05±1.55 days for repeat CS. Benson et al concluded that the successful VBAC and shorter hospital stay has a positive impact on the psychology of the woman and decreases the total cost of hospitalization.²² Similar observations were made by other workers.^{23,24}

VBAC has less complications and faster recovery compared with repeated caesarean section. Women should aware of the benefits and harms associated with the mode of birth especially on a trial of labor after one previous

caesarean birth. In our study, women with a failed trial of labor had an increased rate of anemia and difficult intubation which similar to Sharvit et al, Marshall et al, and Marshall et al.^{7,25,26}

High numbers of neonates were admitted to the neonatal intensive care unit following caesarean section delivery and few numbers of neonates were admitted following VBAC. There were statistical differences between caesarean section and vaginal birth. The factors associated with cause of admission to neonatal intensive care unit among VBAC were respiratory distress syndrome similar to Hansen et al.²⁷ However, the most common cause of admission among CS delivery was RDS, infant of diabetic mother and birth asphyxia.^{27,28}

There were some limitations to this study that should be pointed out. First of all, there were three private hospitals in Derna and it was thought that some of the missing women might have presented at these hospitals and the second, some people migrate from Derna in the second half of 2018 because of military actions.

CONCLUSION

This study concluded that the high success rate of VBAC could be due to good monitoring of labor and the fact that many of women with previous caesarean section are offered a trial of labor. These findings might help clinicians and women in the decision-making for the mode of delivery when it comes to pregnancy with a previous caesarean section. Women are explained about the option of VBAC and told about the risk associated with a repeat caesarean section, so many caesarean sections can be avoided.

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REFERENCES

1. Senturk MB, Cakmak Y, Atac H, Budak MS. Factors associated with successful vaginal birth after cesarean section and outcomes in rural area of Anatolia. *Int J Womens Health.* 2015;7:693-7.
2. Brill Y, Windrim R. Vaginal birth after Caesarean section: review of antenatal predictors of success. *J Obstet Gynaecol Can.* 2003;25(4):275-86.
3. Mozurkewich EL, Hutton EK. Elective repeat cesarean delivery versus trial of labor: a meta-analysis of the literature from 1989 to 1999. *Am J Obstet Gynecol.* 2000;183(5):1187-97.
4. Betrán AP, Gulmezoglu AM, Robson M, Merialdi M, Souza JP, Wojdyla D, et al. WHO global survey on maternal and perinatal health in Latin America: classifying caesarean sections. *Reprod Health.* 2009;6:18.
5. RCOG. Green-top Guideline No. 45. Birth after Previous Caesarean Birth, 2015. Available at: <https://www.rcog.org.uk/en/guidelinesresearchservices/guidelines/gtg45>. Accessed on 20 July 2021.
6. Sharvit M, Rubinstein T, Ravid D, Maor G, Fishman A, Shental T. Patients with high-risk pregnancies and complicated deliveries have an increased risk of maternal postpartum readmissions. *Arch Gynecol Obstet.* 2014;290.
7. Nair M, Kurinczuk JJ, Knight M. Establishing a National Maternal Morbidity Outcome Indicator in England: A Population-Based Study Using Routine Hospital Data. *PLoS One.* 2016;11(4):0153370.
8. American College of Obstetricians and Gynecologists. ACOG practice bulletin no 115: Vaginal birth after previous caesarean delivery. *Obstet Gynecol.* 2010;116:450-63.
9. Farquhar CM, Li Z, Lensen S, McLintock C, Pollock W, Peek MJ, et al. Incidence, risk factors and perinatal outcomes for placenta accreta in Australia and New Zealand: a case-control study. *BMJ Open.* 2017;7(10):01771.
10. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, et al. Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstet Gynecol.* 2006;107(6):1226-3.
11. Akker T, Brobbel C, Dekkers OM, Bloemenkamp KWM. Prevalence, Indications, Risk Indicators, and Outcomes of Emergency Peripartum Hysterectomy Worldwide: A Systematic Review and Meta-analysis. *Obstet Gynecol.* 2016;128(6):1281-94.
12. Elzahaf RA, Ajroud S. Prevalence and indication of caesarean section in Al-Wahda Hospital, Derna, Libya: A retrospective study. *Libyan J Med Sci.* 2018;2:68-72.
13. Gregory KD, Korst LM, Cane P, Platt LD, Kahn K. Vaginal birth after cesarean and uterine rupture rates in California. *Obstet Gynecol.* 1999;94(6):985-9.
14. Dhall K, Mittal SC, Grover V, Dhall GI. Childbirth following primary cesarean section--evaluation of a scoring system. *Int J Gynaecol Obstet.* 1987;25(3):199-205.
15. Clarke SC, Taffel S. Changes in cesarean delivery in the United States, 1988 and 1993. *Birth.* 1995;22(2):63-7.
16. Puliyath, G. Vaginal birth after caesarean section (VBAC): a descriptive study from Middle East. *Intern J Gynecol Obstet.* 2010;12(2):20.
17. ACOG Practice bulletin no. 115: Vaginal birth after previous cesarean delivery. *Obstet Gynecol.* 2010;116(2):450-463.
18. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW, et al. Maternal and perinatal outcomes associated with a trial of labor

- after prior caesarean delivery. *N Engl J Med.* 2004;351:2581-9.
19. McMahon MJ, Luther ER, Bowes WA, Olshan AF. Comparison of a trial of labor with an elective second cesarean section. *N Engl J Med.* 1996;335(10):689-95.
 20. Phelan JP, Clark SL, Diaz F, Paul RH. Vaginal birth after caesarean. *Am J Obstet Gynecol.* 1987;157:1510-5.
 21. Dayal V. Trial of vaginal delivery in cases of single previous caesarean section. *J Obstet Gynecol.* 1985;35:445-50.
 22. Horowitz BJ, Stanley W, Lippmann L. Once a caesarean, always a caesarean. *Obstet Gynaec Survey.* 1981;36:592-7.
 23. Traynor JD, Peaceman AM. Maternal hospital charges associated with trial of labor versus elective repeat cesarean section. *Birth.* 1998;25(2):81-4.
 24. Gibbs CE. Planned vaginal delivery following caesarean section. *Clin Obstet Gyn.* 1980;23:507.
 25. Sharvit M, Rubinstein T, Ravid D, Maor G, Fishman A, Shental T. Patients with high-risk pregnancies and complicated deliveries have an increased risk of maternal postpartum readmissions. *Arch Gynecol Obstet.* 2014;290(4):629-33.
 26. Marshall NE, Fu R, Guise JM. Impact of multiple cesarean deliveries on maternal morbidity: A systematic Review. *Am J Obstet Gynecol.* 2011;205(3):262.
 27. Hansen AK, Wisborg K, Uldbjerg N, Henriksen TB. Risk of respiratory morbidity in term infants delivered by elective caesarean section: cohort study. *BMJ.* 2008;336(7635):85-7.
 28. Tharaux C, Carmona E, Colle MH, Bréart G. Postpartum maternal mortality and cesarean delivery. *Obstet Gynecol.* 2006;108(3):541-8.

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