Vaginal Birth After Caesarean Section (VBAC): A Descriptive Study From Middle East

G Puliyath

Citation

G Puliyath. *Vaginal Birth After Caesarean Section (VBAC): A Descriptive Study From Middle East*. The Internet Journal of Gynecology and Obstetrics. 2009 Volume 12 Number 2.

Abstract

The study, conducted in the tertiary care military hospital of Muscat, Sultanate of Oman, describes the outcome of vaginal birth after caesarian section (VBAC) in women with a previous caesarean. The women opted for trial of labor was subjected to obstetric protocol of the hospital. Of the 370 women on trial of scar, 74.86% had successful vaginal delivery and 25.14% had emergency caesarean section. Majority (93%) had spontaneous onset of labor and it was induced in the rest with prostaglandin E2 vaginal gel. VBAC was higher in those with a prior vaginal birth and was poor among women operated upon earlier for failed progress of labour or cephalopelvic disproportion. But for one maternal death due to sickle cell crisis, no serious complications occurred for mother or the baby. To conclude, if women with previous single caesarean section for nonrecurring indication are subjected to trial of labor, around 75% could have successful vaginal delivery.

INTRODUCTION

Vaginal birth after a previous caesarean section is a safe option for many women (1). This is true in several countries, especially in the Middle East where the reproductive pattern is characterized by a pregnancy starting at an early age and high fertility throughout the reproductive years. Therefore after a caesarean section, many women prefer a vaginal birth in order to reduce the consequences and complications of multiple caesarean sections especially for continuing fertility. However, the proportion of women who opt vaginal delivery globally after a prior caesarean delivery has decreased rapidly because of concern about safety (2). The decline in VBAC is not without clinical implications. Multiple caesarean sections are associated with complications such as placenta previa and placenta accreta which increases morbidity and mortality.

METHODS

The study to analyze the outcome of trial of labour after a previous caesarean section was conducted from September 2005 to December 2007 in a tertiary care military hospital in Muscat, Sultanate of Oman. Majority of women with previous one caesarean section, attending the antenatal clinic preferred to deliver vaginally. They presented at the antenatal clinic regularly and most of them had records of previous delivery. Counseling was given for all women regarding the advantages and disadvantages of vaginal birth after caesarean section (VBAC). The hospital policy is to give trial of labour for all women with previous single caesarean section, unless there is an indication for repeat caesarean section. Therefore all women who had a successful VBAC would attempt a second VBAC, unless they had a previous scar dehiscence or adherent placenta . Individuals with a previous caesarean section who were given a trial of labour were identified from delivery suite records and information collected from computerized data sheet which was then statistically analyzed. Those women who delivered in the hospital were monitored in the delivery suite with 1:1 mid wifery staff and continuous cardiotocography. All round services of anaesthesia, operation theatre and neonatology care were available. The hospital protocol is to wait till 41 completed weeks for starting induction of labor in an otherwise uncomplicated pregnancy. The expected date of delivery was confirmed by early ultrasound scan. Those women selected for induction of labour were given prostaglandin E 2 vaginal gel 1 gm and the same dose repeated at six hourly intervals for maximum three doses. Oxytocin acceleration was administered according to the uterine contractions.

STATISTICAL ANALYSIS

The association of various maternal characteristics with VBAC was assessed by using chi-square test. Yates correction for continuity was carried out in 2 by 2 tables.

RESULTS

The number of women with a previous single caesarean section delivered during the study period was 399 among a total delivery of 2412, which constituted 16.54% of the total deliveries. Among them, trial of labor was attempted in 370 women (92.73%) and the others were elective caesarean section mainly done for abnormal presentations, placenta praevia, and severe intrauterine growth retardation or on request. Trial of labour included two cases of intrauterine fetal death and nine breech presentations. VBAC success rate was 74.86%. This is consistent with published reports (3, 4, and 6). Emergency caesarean section was done in 25.14%. Fetal distress was the main indication for emergency caesarean section (39.7%) followed by failed progress of labor (33.3%). Only three women were willing for sterilization operation at the time of caesarean section and they had more than five children. Among vaginal deliveries, three were assisted breech deliveries (0.8%), 18 vacuum deliveries (4.8%) and four women who were selected for vaginal birth delivered in the car before reaching the hospital (birth before arrival) (1%).

Figure 1

Table 1 . Vaginal birth among women on trial of scar and other maternal characteristics

Characteristic	Vaginal birth		Emergency caesarean	Total	χ^2	d.f.	P-value
	n	%					
Maternal age at birth in years							
<25	34	69.39	15	49			
25-29	121	76.58	37	158	1.67	3	>0.20
30-35	77	77.00	23	100			
≥35	45	71.43	18	63			
Parity							
1 (No previous vaginal delivery)	72	59.02	50	122	23.1	1	<0.001
≥2 (Previous vaginal delivery)	205	82.66	43	248			
Birth weight							
Low (<2.5 Kg)	22	68.75	10	32	4.4	2	=0.111
Normal (2.5-4.0)	198	78.26	55	253			
Overweight (>4.0)	57	67.86	27	84			
Gender of the baby							
Male	132	70.59	55	187	3.6	1	=0.058
Female	145	79.67	37	182			
Birth interval in months							
≤12	37	86.05	6	43			
13-24	97	72.93	36	133	3.3	3	>0.20
25-36	63	73.26	23	86			
≥37	80	74.07	28	108			
Gestational age							
<38 weeks	32	76.19	10	42	0.0	1	>0.20
≥38 weeks	245	74.70	83	328			
SCBU							
No	264	75.86	84	348	2.3	1	=0.132
Yes	13	59.09	9	22			
Total	277	74.86	93	370			

There was no difference in the successful VBAC across age groups. The maximum parity observed in this study was a woman with 17 children. She had a caesarean section for the fifth delivery for fetal distress followed by 12 successful VBAC. VBAC success is more with those who had an earlier successful vaginal birth (5, 6). In 72% of vaginal deliveries the perineum was intact. First-degree perineal laceration was seen in 7.8% of cases and second degree lacerations in 6.1%. Right medio lateral episiotomy was done for 12.7% of vaginal deliveries. The hospital does not follow routine episiotomy. There was no significant association between birth weight and successful VBAC. With low birth weight babies (birth weight less than 2500g), VBAC was 68.75%. It was 78.26% for birth weight in the range 2500 to 4000g. Those with more than 4Kg, VBAC was 67.86% (P-value = 0.111). The result, though not statistically significant, does not confirm to the general observation that increasing birth weight is associated with more caesarean section (7). VBAC success rate was poor in previous caesarean indication of failed labour progress and cephalopelvic disproportion (58% and 44% respectively). In those who have had breech presentation, PIH and fetal distress, there was high success rate – (77%, 85% and 78%, respectively). It is consistent with published data (6). Successful VBAC is more seen in those who delivered female babies (79.67% versus 70.5%). However, it is not statistically significant (P-value = 0.058) and in disagreement with the finding of the male fetus being a poor predictive factor for successful VBAC (6).A short birth interval was not associated either with uterine rupture or success of VBAC. No relation was observed between gestational ages and VBAC outcome. In those with 37 to 40 completed weeks of gestation, VBAC was 70.21% and in less than 37 weeks VBAC was 58.80%. With completed 40 weeks and above VBAC rate was 62.50%. It is known that there is a slight increase in failure of VBAC in those after 40 weeks. (8)

Blood loss was more than 500ml in 1.9% of trial of scar and blood transfusion rate was 1.08%. Only one case of uterine rupture was reported and rate comparable to that from other reports (2, 9). Induction of labor with prostaglandin E2 vaginal gel was attempted in 26 patients (7%) and 17 cases delivered by successful VBAC (65.3%). There was no increase in scar tenderness, scar dehiscence or uterine rupture either in the induction group or acceleration by Oxytocin. This is similar to the study by Pathadey et al in United Kingdom (10). In their study, the VBAC rate was 79% among 81 induced patients. There were few complications and no cases of uterine rupture .However, literature review showed that women with previous one caesarean section attempting a trial of labour who require induction have a higher rate of caesarean section and have a slightly increased risk of uterine rupture (11-13). A case of

maternal death occurred in this study. The cause of death was not related to obstetric conditions and was a third gravida with sickle cell disease who developed multiorgan failure following sickling crisis. Admission to neonatal intensive care unit was comparable in successful VBAC and emergency caesarean section group. The five-minute APGAR score less than seven was observed in three babies of VBAC group and two among the emergency caesarean section group. None of the deliveries were complicated by postpartum sepsis or thromboplebitis. Routine prophylactic antibiotics and thromboprophylaxis is administered for all emergency caesarean sections in the hospital.

DISCUSSION

It is generally accepted that vaginal delivery is associated with lower maternal morbidity and mortality as against caesarean section (2). The morbidity associated with successful vaginal birth is about one-fifth that of elective caesarean. Perinatal risk is more after a failed trial of labour compared to elective repeated caesarean section without labour (2). Failed trials of labour, with subsequent caesarean section involve almost twice the morbidity of elective section. The information is important for counseling women about their choices of delivery after a previous caesarean section. The adverse events include chorioamnionitis, postpartum endometritis, and uterine rupture requiring hysterectomy, blood transfusion, perinatal and neonatal deaths and neonatal neurological impairment. Many of these adverse events seen in trial of scar are attributable to the failure of labour and the requirement for a repeated emergency caesarean section. However, in this study there were fewer complications noted in those who underwent emergency caesarean section after a trial of labour.

There is a significant reduction in trial of scar globally due to concerns of safety especially attributed to uterine rupture (2). Patients should be counseled that uterine rupture can occur before labour starts and planning a repeat section is no guarantee of safety. The decline in VBAC is seen in many countries may be due to a reduction in trial of labour attempts and not due to a change in success rate. The US National Centre for Health Statistics shows that, after reaching a maximum of 28.3% in 1996, the VBAC rate has declined, and was only 12.7% in 2002 (27). Various studies showed that the chances of successful planned VBAC are 72-76% (3). Maternal satisfaction is more after vaginal delivery (14, 15). The discussion of uterine rupture therefore should not discourage pregnant women in attempting vaginal delivery (16). The lower morbidity in 75% of women who successfully give birth vaginally means that the overall women who opt for a planned vaginal birth after caesarean section suffer only half of the morbidity of women who undergo an elective caesarean section. Babies born by elective caesarean are at increased risk of breathing difficulties, respiratory distress syndrome (RDS) and iatrogenic prematurity which increases the neonatal morbidity and mortality. There is also a 1-9% risk of injury to the baby by surgeon's knife. Mothers are at increased risk of infection, hemorrhage, thrombo embolism, bladder lacerations, need for hysterectomies and longer recovery period from a caesarean surgery compared to a vaginal birth. Even an elective caesarean section had 2.84-fold greater chance of maternal death as compared to vaginal birth. There is increased risk of placental abruption, placenta praevea, and adherent placenta in subsequent pregnancies, a reduction in future fertility and an increased incidence of ectopic pregnancies associated with multiple caesarean sections (17, 25).

A number of factors are associated with successful vaginal birth after a single caesarean section. Previous vaginal birth was the single best predictor for successful VBAC (5-8). Success of VBAC is less if the prior indication was non-progression of labor and cephalopelvic disproportion (7). High success was noted in those with non-recurrent indications such as prior breech presentation with cephalic presentation in current pregnancy. Literature search showed that maternal age of more than 30 years, male fetus, no prior vaginal delivery, prostaglandin induction, excessive weight gain during pregnancy and maternal body mass index of more than 30 are associated with poor VBAC success rate (7-9, 20-21). One study showed that VBAC success rate is more with preterm gestation with less uterine rupture chances (18). However an underdeveloped lower uterine segment in the preterm uterus represents a risk for later rupture, even if the incision is transverse. Literature search also showed that increase in baby weight is associated with increased caesarean section rate. No such difference is noticed in this study. A short inter delivery interval was associated with a decrease in the rate of successful VBAC in patients whose labour were induced, a difference was not found in those who underwent spontaneous labour (19). It is also associated with high chance of uterine rupture. There was no influence for the inter delivery interval in this study. Concerning complications, one of the concerns for the patients and health care providers for VBAC is the risk of uterine rupture. The incidence of uterine rupture after trial of scar is less than 1% from various studies. Induction of labor

with prostaglandin is a risk factor for uterine rupture (11-12, 22). The hypothesis is that prostaglandin induces biochemical changes in the uterine scar favoring dissolution, predisposing the uterus to rupture at the scar of lower uterine segment (23). Sequential use of prostaglandin and oxytocin can increase the chance of uterine rupture. The recommendation for optimal caesarean section rate of 10-15% was made by WHO in 1985 (26). However, the rate of caesarean section is rising in many countries over the past 10 years. Even though the successful VBAC is considered safer than routine repeat caesarean section, the enthusiasm for VBAC is found to be decreasing now due to several reasons. Many women demand for repeat elective caesarean section in order to avoid a painful natural birth. This is mainly due to inadequate patient information. Caesarean operation is now considered to be a safe surgery due to safe anesthesia, better surgical technique, and antibiotic and thrombo prophylaxis. Therefore many doctors also prefer to do caesarean section in order to avoid litigation. Generally women worldwide prefer to have two or three children and do sterilization operation. They opt for an elective caesarean section. However in the Middle East countries like Oman, caesarean section on demand is very less. In this study only two women requested caesarean section. Majority requests trial labour, because they prefer to have a large family due to cultural reasons. According to Ministry of Health protocol, Sultanate of Oman, sterilization is advised at fifth caesarean section and after two previous caesarean sections, an elective caesarean section is recommended. Therefore, most women do not like repeat caesarean section as it reduces the future fertility. In this study, despite giving counseling about the pros and cons of VBAC especially regarding uterine rupture, most women selected an option of trial of scar.

CONCLUSION

The study shows the high success of VBAC and the fewer complications. Many women in the study were multiparous with a prior vaginal birth. Prior vaginal birth is a good predictor for the outcome of VBAC. Notwithstanding the limited sample size, no adverse maternal or fetal effects were observed with induction of labour with prostaglandin E2 vaginal gel and acceleration with oxytocin. Trial of scar is still an option for individuals desirous of more pregnancies dependant on religious and cultural factors. Provided there are no contraindications, a woman with a previous caesarean section can be offered a trial of labour after adequate patient information. The various factors affecting the success of VBAC can be used for counseling women with previous one caesarean section. Long-term consequences of multiple caesarean sections should always be considered when making a decision (24). For a woman with a single prior caesarean section who plans only one additional pregnancy, a strategy of elective repeat section may be preferred because it results in fewer hysterectomies and other complications mentioned earlier than a VBAC attempt. In women desirous of more children, complications of caesarean section like increased risks of placenta previa, placenta accreta in future pregnancies appears to outweigh the immediate risks of VBAC attempt (28). The experience from Oman showed that VBAC still has a role to maintain a woman's fertility and also to reduce morbidity and mortality associated with multiple caesarean sections. Appropriate counseling for women would reduce elective caesarean section..

ACKNOWLEDGMENTS

The author would like to thank Dr.Gokulam Nandini and Dr.Upma Shankar of the Armed Forces Hospital, Muscat, Sultanate of Oman for their expert opinion in preparation of this manuscript.

References

1. Editorial: Vaginal delivery after caesarean section. BMJ 2004; 329:359-360.
2. Landon MB, Hauth JC, Leveno KJ, Catherine et al. Maternal and perinatal outcomes associated with a trial of labor after prior caesarean delivery. N Eng J Med (2004); 351:2581-2589.
3. National Institute for Clinical Excellence (NICE) guideline for Caesarean Section- 2004
4. Hoffman MK, Sciscione A, Srinivasana M, Shackelford DP, Ekbladh L. Uterine rupture in patients with a prior cesarean delivery: the impact of cervical ripening. Am J Perinatol (2004); 21(4): 217-22.
5. Ghaffari A, Ahmed BB. Safety of vaginal birth after cesarean delivery. Int J Gynec & Obst (2006); 92 (1): 38 – 42.
6. Landon(ochrostat): Factors affecting the success of trial labor after previous caesarean. Am J Obstet Gynecol (2005); 193: 1016.
7. The MFMU Cesarean Registry: Impact of fetal size on trial of labor success for patients with previous cesarean for dystocia. Am J Obstet Gynecol (2005); 195(4): 1127 – 1131.
8. Coassolo KM, Stamilio DM, Pare E, Peipert JF. Safety and efficacy of VBAC at or beyond 40 weeks gestation. Obstetrics and Gynaecology (2005); 106: 700-706.
9. Risk of uterine rupture during labour among women with a prior caesarean delivery.N Engl J Medicine 2001;345;3-8
10. Pathadey, Vanwoerdone. Induction of labor after a previous caesarean section, a retrospective study J Obstet Gynecol (2005); 25: 662.
11. Zeteroglu S, Ustun Y, Engin-Ustun Y, Sahin HG, Kamaci M. Eight years' experience of uterine rupture cases. J Obstet Gynaecol (2005); 25: 458-461.
12. Kayani SI, Alfirevic Z. Uterine rupture after induction of labor in women with PCS. BJOG (2005); 112: 451.
13. McDonagh MS, Osterweil P, Guise JM. The benefits and risks of inducing labour in patients with prior caesarean

delivery: a systematic review BJOG (2005); 112(8): 1007-15.
14. Dunn C, O'Herlihy. Comparison of maternal satisfaction following vaginal delivery after caesarean section and caesarean section after previous vaginal delivery. European Journal of Obstetrics & Gynecology and Reproductive Biology (2005); 121(1): 56 – 60.
15. Hassan A. Trial of scar and VBAC. J Ayub med coll Abbottabad (2005); 17: 57.
16. Sur S, Mackenzie IZ. Does discussion of possible scar rupture influence preferred mode of delivery after CS? JOG (2005): 25: 338.
17. Macones GA, Peipert J, Nelson DB, et al. Maternal complications with vaginal birth after cesarean delivery: a multicenter study. Am J Obstet Gynecol (2005); 193(5): 1656-62.
18. Quinones JN, Stamilio DM, Pare E, et al. The effect of prematurity on VBAC success and maternal morbidity ACOG (2005); 105: 519.
19. Huang WH, Nakashima DK, Rumney PJ, Keegan KA. Inter-delivery interval and the success of VBAC. ACOG (2002); 99: 41-44.
20. Juhasz G, Gyamfi C, Gyamfi P, Tocce K, Stone JL. Effect of body mass index and excessive weight gain on the success of VBAC. OG (2005);106: 741.
21. Goodall, Ahn J, Chapa J, Hibbard J. Obesity as a risk factor for failed trial of labor in patients with previous cesarean delivery . Am J Obstet Gynecol (2005); 192(5): 1423-26.
22. SOGC clinical practice guidelines for VBAC
23. Catalin S, Buhimschilrnia A, Patel BS, Andrew M, P.Weiner MCP. Rupture of the uterine scar during term labour: contractility or biochemistry? BJOG (2005); 112: 38.
24. Paré E, Quiñones JN, Macones GA. Vaginal birth after caesarean section versus elective repeat caesarean section: assessment of maternal downstream health outcomes. Int J Gyn Obst (2005); 89: 319.
25. Mukherjee SN. Rising caesarean section rate -Review article. J obstet gynaecol India (2006); 56(4): 298-300.
26. WORLD HEALTH ORGANISATION. Appropriate technology for birth. Lancet (1985); 436-7.
27. Martin JA, Hamilton BE, Sutton PD, Ventura SJ, Menacker F, Munson ML. Births: final data for 2002. Natl Vital Stat Rep (2003); 52(10):1-113.
28. Pare E, Quinones JN, Macones GA. Vaginal birth after caesarean section versus elective repeat caesarean section: Assessment of maternal downstream health outcomes. BJOG (2006); 113: 75-85.

Author Information

Geetha Puliyath, MD, MRCOG.
Department of Obstetrics & Gynaecology, Armed Forces Hospital Muscat