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An Observational Study of Various Factors that Predict the Successful Vaginal Delivery following Previous Caesarean Section (VBAC)

First Author
Dr. Shivanand Kudtarkar, Medical Superintendent, Karwar Institute of Medical Science, Karwar, Karnataka, India
Second Author
Dr. Annappa Shetty, Associate Professor,Department of OBG, Karwar Institute of Medical Science, Karwar, Karnataka, India
Third Author
Dr. Kishan Kudtakar, Junior Resident, Department of OBG, Karwar Institute of Medical Science, Karwar, Karnataka, India
corresponding Author
Dr. Annappa Shetty

Abstract:
Objective: The study objective is to predict the success of vaginal birth following c-section and to assess various factors that influence. And also study the maternal / fetal outcome.
Methods: This prospective study included 50 women with previous c-section and 50 primigravida as control groups. The various prediction for successful vaginal delivery were assessed and analyzed. Fetal and maternal outcome were compared with control groups.
Results: Out of 50 women with previous c-section 30 had successful vaginal birth while 20 underwent repeated c- section. And the maternal complications in previous c-section group is 12% compared to 2% in control group.
Conclusion:A non-recurring indication for previous c-section, good Bishop score , normal maternal BMI , average sized fetus , spontaneous onset of labor will have significant effect and results in higher chances of successful vaginal birth after previous c-section. Maternal complications were more compared to control group and fetal outcome were similar.
Keywords: Previous caesarean section, VBAC

INTRODUCTION:

With the rise in trend of c-section, we are now facing challenge of managing women with previous c-section more often. In previous decades we are of the opinion that once a caesarean, always a caesarean. Now with the advantage of lower segment c-section and better anaesthia management the statement will no longer holds good..

Vaginal birth after caesarean section (VBAC) is almost safe and advantageous but carries a risk of uterine dehisence and rupture , always carries a risk of 0.5 to 1%. Hence for good obstectric outcome the clinician should be aware of the factors that predict the successful vaginal births.

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Hence the purpose of this study was to identify the various obstrectic parameter that influence the success of vaginal delivery in women with previous history of c- section and also compare the maternal / fetal outcome with the control group.

Materials and methods :

This propective clinical study was conducted at the OBG department of Karwar Institute of Medical Science ,from October- 2020 to September-2021 , on women attending the antenatal clinic. The study involved 50 women with history of previous c-section as study group and 50 primigravida in control group.

The following inclusion criteria were accepted : gestation age > 36 weeks , singleton pregnancy , vertex presentation and well documented lower uterine segment scar, a detailed history with maternal age , pre-pregnancy BMI , indication for c-section , pre and post operative complications were recorded.

In the study group , those presented with intra-uterinefetal death , previous 2 c–section , myomectomy scar, breech presentation / cephalo pelvic disproportion , APH were excluded from the study.

All the women were admitted to the hospital before the expected date of delivery or earlier if they went into spontaneous labor. At the time of admission detailed cervical examination was done and recorded. The women with previous c-section for trail of labor, an informed consent was taken and a unit of cross-matched blood was preserved for emergency needs. If the cervix was unfavourable (Bishop score < 6) primingwas done with PGE_2 gel and if necessary repeated after 6 hours. Oxytocin augmentation was done if there was a need. The progress of labor was carefully monitored with :

- hourly recording of vitals (BP, pulse, respiratory rate , oxygen sauration)
- continuous electronicfetal monitoring
- monitoring of uterine contraction
- partograph
- signs of scar dehiscense/ rupture like maternal tachy-cardia , fever , scar tenderness.
- fetal heart rate variables was monitored

Any further attempts for vaginal delivery was abandoned if there is any suspicion of scar dehiscense or signs of fetal distress or failure to progress.Maternal complications like third degree perineaL tear , haemaotoma , post – operative infection and need for blood transfusion were recoded.

Results :

In the present study group out of 50 women 30 had successful vaginal birth following trial labor , 20 underwent c-section. Among primigravida.. (control) 40 had vaginal delivery and 10 had caesarean section. Demographic comparison showed the control groups were young with respective to women with previous c- section.

ISSN: 0975-3583, 0976-2833 VOL 13, ISSUE 02, 2022

Table 1 : Success of VBAC in relation to pre-preganancy BMI

Previous c-section	BMI in kg/m^2			
	<19.8	19.8-26	26-29	>29
SUCCESSFUL	5	17	3	5
	100%	72%	45%	44%
FAILED	0	7	6	7

The women underwent trail of labor (previous LSCS) were categorized into 2 sub-groups on the basis of success or failure of trial labor and predictions of success were analyzed carefully.

In relation to age , out of 50 women the rate of success of VBAC in the age group of less than 30 years , 30-34 years , and more than 35 years was 58.7% , 64.5 %, 50 % respectively.

In the present study 10 women with BMI less than 19.8 had successful vaginal delivery. Out of 7 overweight women with BMI > 29 , 5 had repeat LSCS. This observation suggests that when pre-pregnancy BMI increases the chances of having successful VBAC decreases.

Table – 2: Indications of previous c-section as predictor of VIBAC

GROUP	Indication of previous c-section			
	Breech	Fetal distress	Failed induction	others
Successful	8	13	2	7
	77%	71%	24%	65%
Failed	3	6	6	5
Total	11	19	8	12

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Further, we classified 50 women with previous LSCS on the basis of neonatal birth weight into three sub-categories (<2 ,2-3 ,3-4). Vaginal birth success rate in the above sub-groupwere100% , 72 % , 45 % respectively. Hence with increasing neonatal birth-weight the chances of having successful VBAC gets reduced. In the present study , 3 women in the study group shows the history of post operative infection following previous c-section. But the success rate of VBAC in these women does not differ from those without such history.

After the analytical observation of the study , it was found that in patients where primary c-section was done for fetal mal-presentation or fetal distress the successful VBAC was higher compared to those whose primary caesarean was done for failure to progress or failed induction.

Out of 50 women with previous LSCS , 24 were admitted to the hospital with spontaneous labor in whom 18 delivered vaginally and 6 underwent repeat LSCS. Among 26 women who were induced for onset of labor only 12 delivered vaginally (successful VBAC) and 14 underwent repeat c-section. This shows that the women presented with spontaneous labor pain have better success rate for vaginal delivery compared to women who were induced. (Better VBAC for spontaneous labor).

In relation to Bishop score, these women were classified into four groups (<2 , 3-5 ,6-8 ,and 9-12) , 15 women had Bishop's score below 2 , 24 women had Bishop score in between the range of 3-5 and 8 women had in the range of 6 to 8 , 3 women presented with advanced labor with Bishop score above 9.

19 of the 24 with Bishop score of 3-5 delivered vaginally (70%). Majority of the women with Bishop score of 6 to 8 delivered vaginally. This shows that for successful VBAC a good Bishop score at the beginning of labor is one of the best predictive factor.

Out of the 50 women with previous c-section , 3 baby (6%) needed NICU admission compared to 2 babies in primigravidae (4%). Hence perinatal morbidity is not significant in both the groups. Among 50 women who underwent trail labor with previous LSCS 14 % of them had maternal morbidity in the form of wound dehiscense.

Postpartum haemorrage , post-partum infection , need for blood transfusion as compared to only 2 % in the control groups.

Figure 1 : Relation of onset of labor with success of VIBAC

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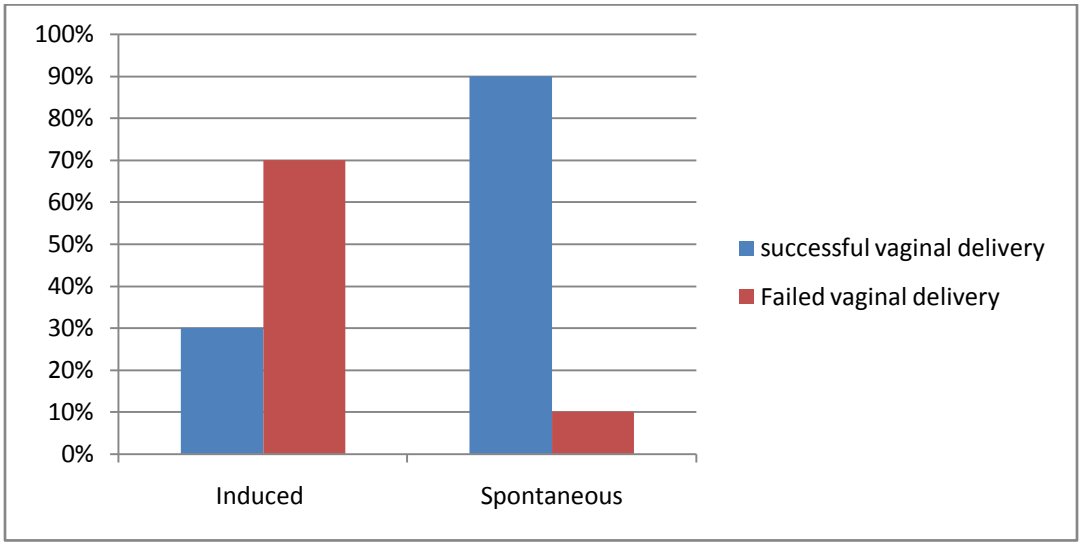
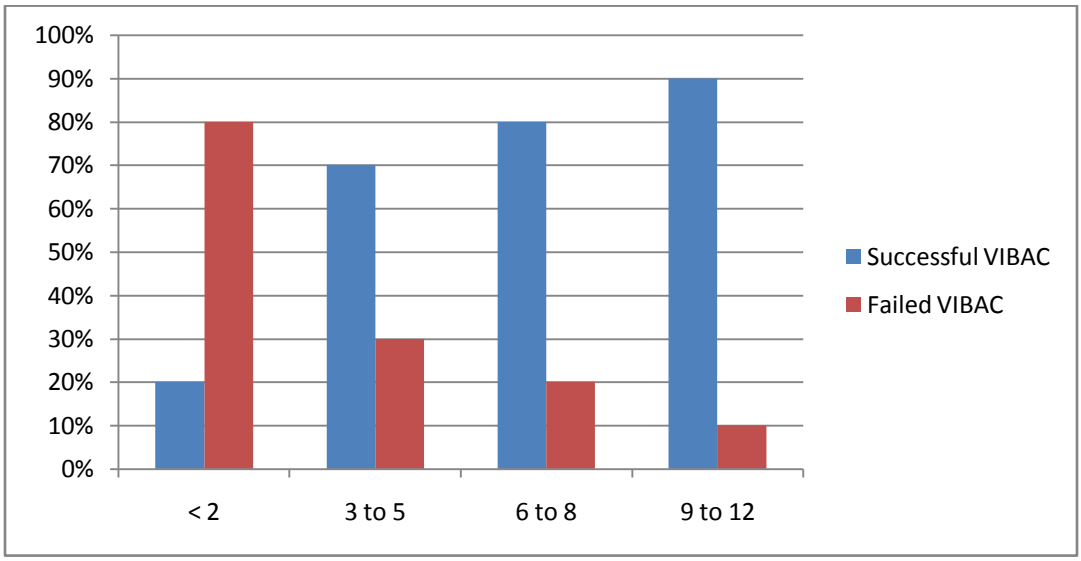


Figure -2 : Relation of Bishop's score and success of VIBAC



Discussion :

It is now known that vaginal birth following c-section is safe and cases has to be selected with suitable criteria.

Srinivas et al (1) and Bujold et al (2),analyzed the maternal age and successful VBAC. Both the studies shows that maternal age >35 years have significantly lower success.

As per the studies by Chauhan et al(3) and Caroll et al (4) ,obese women less likely to have successfully VBAC which was very similar to our study. (successful VBAC reduced from 100 % to 42% with increasing BMI)

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As per the study done by Juhas'z G etal (5)the success rate of VBAC is directly related to Bishop's score. Higher the Bishop's score better the success rate. Our study also found the same result.

Hoskin and Gomez et al (6) studied the indications for the previous LSCS and its effect on successful VBAC. The above study concluded that indication for previous LSCS is an important factor to predict the success of trail of labor. The study shows that women who underwent c-section for fetal mal-presentation or fetal distress had more chances of having a successful VBAC as compared to those c-section done for failure to progress or failure of induction. It was also noted that those women who had spontaneous labor and better Bishop's score had maximum success for trail for VBAC

Conclusion:

Finally the above study concluded that maternal pre-pregnancy BMI , good Bishop's score, average neonatal birth weight , non- recurring indications for previous c-section and spontaneous onset of labor are predictions of successful vaginal delivery following trail labor for previous LSCS mother. It was also noted that the perinatal morbidity is not significantly increased but maternal morbidity was more common in women who failed their trail of labor. Therefore we can predict who can benefit trail for vaginal delivery following previous LSCS (VBAC) by assessing various factors mentioned in the above study.

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