



Interpregnancy Interval and Labour Outcomes After Previous One Cesarean Section

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Abstract

High rates of c section increases not only maternal and perinatal morbidity and mortality but also increased burden on already overcrowded hospitals. VBAC not only reduces rates of cesarean sections and maternal morbidity but the hospital load of patients is also lessened.

Aim: To compare the labour outcomes of short vs long interpregnancy intervals in women with previous cesarean section.

Methods: It was a prospective Cross-sectional study conducted in Kuwait teaching and Mercy teaching hospitals of Peshawar from June 2020 to June 2021. Patient's data were collected from patient's record register. Patients who had lower segment cesarean section previously and singleton pregnancy with a cephalic presentation in present pregnancy were included in the study. Patients who had previous two or more cesarean sections, multiple gestations, Malpresentation in this pregnancy, and previous upper segment cesarean section were excluded from the study. Outcomes including vaginal delivery, cesarean section, postpartum hemorrhage, scar dehiscence, low Apgar score < 7 in five minutes, and NICU admission were recorded. The percentages and frequencies were calculated for categorical variables while mean and standard deviation were calculated for numerical variables. Student's t test was applied to find out p value.

Results: Patients were divided in two groups with group 1 with interval less than 18 months and second group more than 18 months duration. There were no statistical difference of VBAC, Emergency repeat Cesarean section, PPH and scar dehiscence in both groups (p value 0.26, 0.21, 0.18, 0.19) respectively while NICU admissions is high in short interpregnancy interval p-value 0.05.

Conclusion: There is no difference of VBAC success and emergency Cesarean section rate, PPH and scar dehiscence on interpregnancy interval in women with previous one Cesarean section but low APGAR score and NICU admission of neonates is high in women with short interpregnancy interval than long interpregnancy interval in women with previous one Cesarean.

Keywords: Interpregnancy; Cesarean Section; VBAC

Introduction

Worldwide c section rates have increased and this can be due to lack of clinicians' experience for instrumental delivery, breech

delivery, and also due to excessive use of electronic fetal monitoring and medical litigations. In USA repeat cesarean sections account for almost more than one-third of the cesarean section rate [1]. Repeat

c section significantly increases maternal and perinatal morbidity such as anesthesia complications, blood transfusions, prolonged hospital stay, thromboembolism, postpartum hemorrhage, morbidly adherent placenta, transient tachypnea of newborn, NICU admissions. A 203 studies meta-analysis shows increased maternal mortality (1.34%/10,000) with repeat cesarean section than VBAC (0.38%/10,000) while with VBAC perinatal mortality is high then repeat c section (13 vs 5/10,000). VBAC is cost-effective in terms of hospital stay however the main risk of VBAC is rupture of the uterus but a study conducted in China's county-level hospital shows uterine rupture of only 0.1% out of 1692 cases and in another study of 616 cases of VBAC only one uterine rupture was noted (0.16%) [2] various factors affect the success of VBAC including, previous vaginal deliveries, obstetric history, wound infection, suturing technique and suture material used in previous cesarean section and inter-pregnancy interval. Generally, an interpregnancy interval less than 18 months in term pregnancy is considered a short interpregnancy interval. Inter delivery interval of up to 18 months was associated with an increased rate of scar dehiscence during labor in previous cesarean scar patients [3]. Short interpregnancy interval is associated with poor scar healing and increased risk of scar dehiscence during labor, 9.5% scar dehiscence was noted in patients with short interpregnancy interval [4]. WHO recommended 24 months as a safe interpregnancy interval after previous cesarean section to reduce maternal and perinatal morbidity while the society of obstetricians and gynecologists of Canada (SOGC) recommended more than 18 months as inter delivery interval to reduce scar dehiscence risk. Radiographic and hysteroscopy evidence shows scar healing is incomplete between 6-12 months after cesarean section so 18 months inter delivery interval is considered safe for minimum scar healing and is associated with a low risk of scar dehiscence during the trial of labour after previous cesarean section [5]. Short interpregnancy interval of less than 6 months is not only a risk for uterine rupture but also a two to four-fold increased risk of maternal morbidity while a long interpregnancy interval of 60 months or more is not associated with maternal morbidity or uterine rupture. According to Huang and colleagues, the VBAC success rate was low in patients with inter delivery interval of less than 19 months (14%) than patients with long inter delivery interval (86%) [6]. According to a study in Tanzania short pregnancy interval is less than 18 months between delivery of last baby and conception of index pregnancy

and VBAC failure in this group is high 29.3% and VBAC failure was because of meconium-stained liquor and poor progress during labour [7].

In Pakistan cesarean section rate was 2.7% in 1990-1991 and increased to 15.8% in 2012-2013 in poor socioeconomic women while in educated women this rate increased to 40.3% in 2012-2013 [8]. High rates of c section increases not only maternal and perinatal morbidity and mortality but also increased burden on already overcrowded hospitals. VBAC not only reduces rates of cesarean sections and maternal morbidity but the hospital load of patients is also lessened. The attitude of clinicians needs to be changed towards VBAC and women should be encouraged to have a trial of labour after previous cesarean section. Mostly short inter-pregnancy interval is taken as a risk factor for uterine rupture. In this study, we are going to compare labour outcomes in women who have short inter-pregnancy and long inter-pregnancy intervals and had previous delivery by cesarean section. Results of this study will be communicated to clinicians and it will help us to improve the rising cesarean sections rate.

Objectives

To compare the labour outcomes of short vs long interpregnancy intervals in women with previous cesarean section.

Materials and Methods

It was a retrospective Cross-sectional study conducted in Kuwait teaching hospital and Mercy teaching hospitals of Prime foundation Peshawar from June 2020 to June 2021 after ethical approval from ethical committee of college. Patient's data was collected from patients record and registers and recorded in a preformed proforma. Total 121 patients were included in study. Patients who had lower segment cesarean section in a previous pregnancy and singleton pregnancy with a cephalic presentation in present pregnancy were included in the study. Patients who had previous two or more cesarean sections, multiple gestations, Malpresentation in this pregnancy, and previous upper segment cesarean section were excluded from the study. A detailed history of present pregnancy and past pregnancy and indications of previous cesarean section, and any complications of previous cesarean section were noted and the duration of conception after previous pregnancy was recorded in proforma. Data was analyzed

in spss version 22.0. Outcomes including vaginal delivery, cesarean section, postpartum hemorrhage, scar dehiscence, low Apgar score < 7 in five minutes, and NICU admission were recorded. The percentages and frequencies were calculated for categorical variables while mean and standard deviation were calculated for numerical variables. Student’s t test was applied to find out p value.

Results

This study data was divided into two groups, group 1 with patients having intervals from previous pregnancy less than 18 months and group 2 with patients having interpregnancy intervals more than 18 months. 36 patients had interpregnancy intervals less than 18months and 64 patients had interpregnancy intervals more than 18 months. Mean age of patients in both groups were 28.30 ± 4.21 and 28.13 ± 3.12 years and mean period of gestation

in both groups were 38.16 ± 0.65 and 38.51 ± 1.03 respectively. Mean duration of labour, number of previous pregnancies, period of gestation, and complications in index pregnancy is calculated (Table 1). Mechanical induction with intracervical catheter was done in 6 patients in group in which one patient had pregnancy induced hypertention and 5 patients were postdates, while all patients in group 1 had spontaneous onset of labour. Only 2 patients (5.6%) in group 1 had previous one normal vaginal delivery while 10 patients (15.6%) had previous one or two normal vaginal deliveries. Interpregnancy interval was calculated in months. Clinical outcomes i-e VBAC, cesarean section, PPH, scar dehiscence and NICU admissions calculated (Table 2). There is no statistical difference in emergency Cesarean section, VBAC, PPH and scar dehiscence in both groups. Low APGAR score and NICU admissions in newborn is significantly high in group 1 (p value 0.05).

Parameters	<18 months duration (n = 39)	>18 months duration (n = 82)	p-value
Age (in years)	28.30 ± 4.21 SD	28.13 ± 3.12 SD	>0.05
Previous Normal del	2 (5.12)	14 (17.07%)	>0.05
Duration of labour (hours)	9.30 ± 1.95 SD	9.45 ± 2.47 SD	>0.05
Parity of patients	Para one 37 (94.8%)	Para one 68 (83%)	>0.05
	Para two (5.2)	Para two 8 (9.7%)	
	Para three	Para three 6 (7.3%)	
Nature of labour	Spontaneous 39 (100%)	Spontaneous 75 (91.4%)	0.05
	Induced	Induced (9.6%)	
Period of gestation (weeks)	38.16 ± 0.65 SD	38.51 ± 1.03 SD	<0.05
Complications in index pregnancy	1 (2.56%)	3 (3.65%)	>0.05

Table 1: Characteristics of patients.

Parameters	<18 months duration (n = 39)	>18 months duration (n = 82)	p-value
C section	9 (23.1%)	27 (33%)	>0.05
VBAC	30 (76.9%)	55 (67%)	>0.05
NICU admission	06 (15.38%)	04 (4.87%)	0.05
PPH	2 (5.12%)	1 (1.21%)	>0.05
Scar dehiscence	2 (5.12%)	1 (1.21%)	>0.05

Table 2: Clinical outcome.

Discussion

As the Cesarean section rate is increasing world wide, vaginal birth after Cesarean section in women who have one previous Cesarean section is considered a safe choice to reduce the risk of repeat Cesarean birth in pregnant women [9]. Trial of labour is considered a risk for scar rupture, post partum haemorrhage and emergency Cesarean section in patients with previous Cesarean delivery so obstetricians are extremely sensitive for making decision in such patients. A study conducted by Luo *et al.* states majority of obstetricians do not recommend trial of labour after Cesarean section due to its associated risks, lack of proper guidelines, women preference for repeat Cesarean section and litigations due to complications [10]. Mostly women select elective Cesarean section with short inter pregnancy interval due to fear of complications [11]. RCOG recommends planned VBAC in women with previous Cesarean delivery to reduce the risks of maternal and perinatal morbidity and mortality associated with repeat Cesarean section [9]. Short interpregnancy interval is considered a risk factor for failure of VBAC and scar rupture [12,13]. Obstetricians are reluctant to give trial of labour to women with short interpregnancy interval. This study is conducted to compare the labour and perinatal outcomes in women who had short interpregnancy interval and long interpregnancy interval and had previous birth by cesarean section. In our study there is no statistically significant difference of interpregnancy interval on success of VBAC in the next pregnancy (76.9% vs 67% p value >0.05) which is comparable with a previous study [14]. These results are comparable with study conducted by Torjano G., *et al.* states that there is no relation of Interpregnancy interval and adverse pregnancy outcomes while inter delivery interval of less than 18 months is associated with increased risk of scar dehiscence [15]. Repeat Cesarean section rate in both groups is comparable (23% vs 33%, p-value >0.05). These results could be due to majority of women in our study presented in advance labour and had spontaneous onset of labour which contributed in success of VBAC and no intervention or augmentation of labour was used. Majority of women with interpregnancy interval more than 18 months were booked and presented in latent phase of labour so were subjected to continuous fetal monitoring during labour and few were also subjected to induction by intracervical catheter due to some medical complication or postdate pregnancy, so these factors contributed to increased Cesarean section rates. Continuous fetal monitoring contributes to increased risk of operative delivery

during labour [18]. Devane D., *et al.* states that admission CTG and continuous electronic monitoring during labour increases risk of Cesarean delivery and instrumental delivery than intermittent heart rate monitoring during labour [19]. Majority of short interval pregnancy women were presented in advanced labour due to fear of repeat Cesarean delivery because of short interpregnancy interval, so this factor contributed in success of VBAC.

In our study NICU admission was significantly high in short interpregnancy group women (15.38% vs 4.37%, p-value 0.05) and these results are similar with a study conducted in Tanzania which shows short interpregnancy interval is associated with low APGAR score and NICU admissions [16]. According to Hefley, *et al.* short interpregnancy interval of less than 6 months and long interpregnancy interval > 60 months is associated with increased neonatal complications like respiratory problems, intraventricular haemorrhage, and periventricular leukomalacia [17]. In our study short interpregnancy interval was associated with more neonatal complications and hospital admissions of babies and leading to psychological and economic stress for the parents. In our study the rate of pph and scar dehiscence is increased in short interpregnancy interval (5.12% vs 1.21%) but there is no statistical difference in both groups (p value 0.19 and 0.18 respectively i.e. > 0.05). According to Rani H., *et al.* there is no difference of visual health of cesarean scar with respect to interpregnancy interval [3]. Uterine scar needs at least 18 months for healing [5] and during that time if woman gets pregnant again this increases stress on already healing scar so risk of scar dehiscence and pph is increased. According to Almas., *et al.* Short interpregnancy interval of less than 18 months is associated with thinning of scar and increased risk of scar rupture while long interpregnancy interval of > 18 months is associated with healthy and thick scar (3.93 mm vs 5.25 mm thickness) respectively [20]. Interpregnancy interval of less than 6 months is associated with scar rupture and increased blood transfusion and maternal morbidity while long interpregnancy interval is not associated with major complications [21].

Conclusion

There is no difference of VBAC success and emergency Cesarean section rate, PPH and scar dehiscence on interpregnancy interval in women with previous one Cesarean section but low APGAR score and NICU admission of neonates is high in women with short interpregnancy interval than long interpregnancy interval in women with previous one Cesarean section.

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